

# Douglas

## *Peace Programme.*

**DOUGLAS MOTORS LTD.  
KINGSWOOD, BRISTOL**



**BELGIUM**

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# DOUGLAS MOTORS LTD.

WORKS : - KINGSWOOD, BRISTOL

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Telegrams : " DOUGLAS, KINGSWOOD, GLOS."

Telephone : - - - BRISTOL 4687.

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LONDON : 39 NEWMAN STREET, W.C.

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PARIS : - 190 BOULEVARD PERIERE.

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# Douglas

## INTRODUCTORY PREFACE.

From the earliest days of motorcycling down to the present time is only some twenty years or so, yet in these two decades there has been an astonishing development; improvements of which the early experimenter never dreamt are now part and parcel of every good mount. Performances beyond their best imagination are now ordinary events.

The modern motorcycle, with its silent three-speed gear, hand-controlled clutch, spring fork and neat engine unit of remarkable power, is so vastly superior to the clanking, clattering contraption of the early 'nineties, that one can hardly realise that the mechanical supremacy of the one directly arises from the mechanical inefficiencies of the other.

Many great names are associated with these wonderful developments; many have passed and are forgotten, but the name of DOUGLAS will be associated for ever with the success of that most efficient type of engine, the horizontally opposed twin cylinder.

In spite of the early critics who prophesied all manner of trouble, MESSRS. DOUGLAS BROTHERS persisted in their efforts to produce the perfect motorcycle.

To say that these efforts have been crowned with complete success infers that the Douglas is the "perfect" motorcycle; an unwise claim, as finality in any mechanical development is to all intent impossible, but that it is the nearest approach to the ideal motorcycle yet manufactured is undoubted by those who can speak from experience, and the wonderful record of war service, recounted on another page, adds a clinching argument to this big contention.

To the doubting ones we would say, give a Douglas machine searching trial, live with it and on it, make it your second self, and you will agree that our claim to superiority is in every way justified.

DOUGLAS MOTORS LTD.

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# War Service

## The Greatest Reliability Trial in the History of Motorcycling.



IN the gigantic struggle of 1914—1919, which is happily a thing of the past, the internal combustion motor played an enormous part, and the Allied Victory was due in no small measure to the wonderful progress in the development of the petrol motor.

A big slice of this credit is due to the productions of MESSRS. DOUGLAS MOTORS LTD.

ALL THE ARMIES OF THE LINE ON ALL FRONTS—BRITISH, FRENCH, ITALIAN, AMERICAN, CANADIAN, AUSTRALIAN, NEW ZEALAND, ROUMANIAN — WERE

DOUGLAS EQUIPPED.

OVER 25,000 DOUGLAS MOTORCYCLES HAVE BEEN SUPPLIED FOR WAR PURPOSES.

Large numbers of Douglas "Wireless" Plants and Douglas Power Stations have been in use day and night with complete success.

There has been a constant flow of eulogy from those responsible for the upkeep of these machines.

The varied character of their working conditions is remarkable. Journeys have been made through the Jungles and Swamps of WEST AFRICA, and right away into the regions around the NYANZA and UGANDA, constant operations of long lines of transport across MESOPOTAMIA and KURDISTAN and PERSIA, districts where no motor of any kind had been seen. In the high regions of INDIA, TRANS-CASPIA, CAUCASIA, MURMANSK and NORTHERN RUSSIA. Long rides across desert areas in EGYPT and PALESTINE. In



PALESTINE.



MESOPOTAMIA.

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# 1914- 1919

FRANCE and ITALY the "Douglas" has gained great fame by the remarkable reliability displayed on the appalling mud and shell-wrecked roads. From all the many scenes of operations comes a genuine chorus of approval for the little twin-opposed Douglas.

No wonder the firm is proud of its war record.

All models have been in use :  $2\frac{3}{4}$  h.p., 4 h.p. and 10 h.p. engine set, both air and water-cooled ; but the use by despatch riders of the well-known W.D. Models, the  $2\frac{3}{4}$  two-speed, often under the most difficult conditions, stands as a triumphant success.

The ingenuity of the BRITISH SOLDIER is evidenced in the way the engine units have been adapted to many emergencies which arose in the field ; for instance, they have been fitted to a small "jigger" trolley for railway inspection work, and



adapted to driving grindstones, emery wheels and small lathes in repair shops.

SUCCESS ON WAR SERVICE IS A SURE  
GUARANTEE OF SUCCESS IN PEACE.



EGYPT.



GALLIPOLI.



FRANCE.

# Douglas

## MODELS FOR THE YEAR OF PEACE, 1920.

The output of our factories is being concentrated upon an extensive production of the following two models:—

### *2 $\frac{3}{4}$ h.p. Model, W-20*

This machine embodies practically all the desirable features of the lightweight motorcycle, so long called for by technical critics:—A powerful, speedy, yet vibrationless, engine, with exceptional accessibility. Well mudguarded. Economical in fuel and tyres. Easy of control, with maximum riding comfort.

Three-speed, kick-starter, hand-controlled clutch .. ..

### *4 h.p. Model, B-20*

Although primarily intended for use with a sidecar, this mount is in frequent demand for solo work; but it is capable of taking a fully-loaded sidecar over any British or Colonial roads, as witness its wonderful performance in the Scottish Six Days' Trials of 1919.

Three-speed, kick-starter, clutch .. ..

Sidecar .. ..

These two models will form the standard programme for the year. Messrs. Douglas Motors Ltd. feel certain that the two models hereafter described will meet all the needs of both average riders and experts, and they take this opportunity of wishing every Douglas owner a very successful year's riding in 1920.

**IMPORTANT.**—THE WHOLE OF THE DOUGLAS PRODUCTIONS, TOGETHER WITH ALL FITTINGS, ARE OF BRITISH MANUFACTURE.



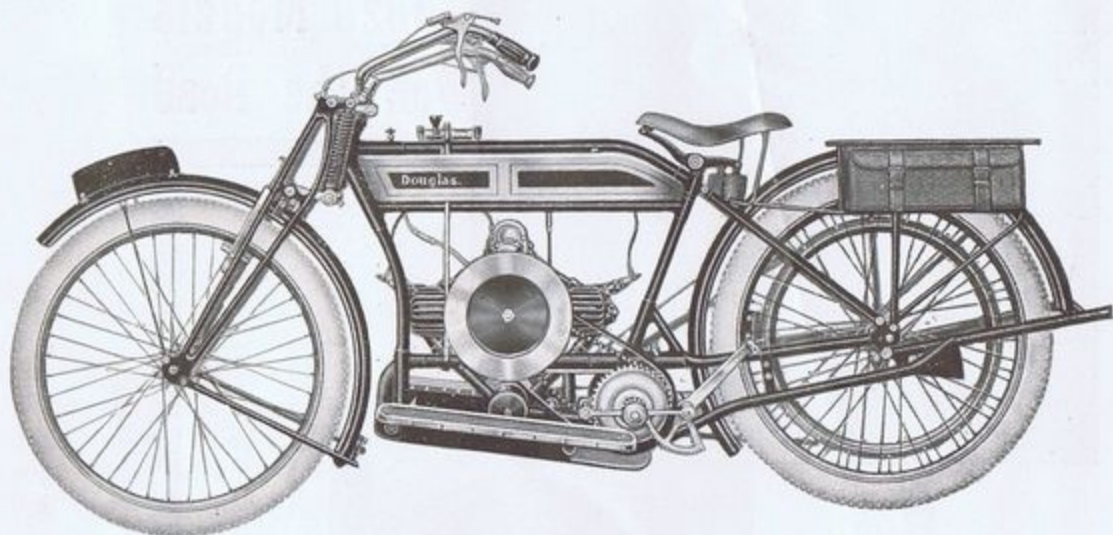
# Douglas

1920 Models  
on the Road



BARNSTORMERS.CO.NZ

# 2 $\frac{3}{4}$ h.p. 3-speed Model, W-20



## BRIEF SPECIFICATION.

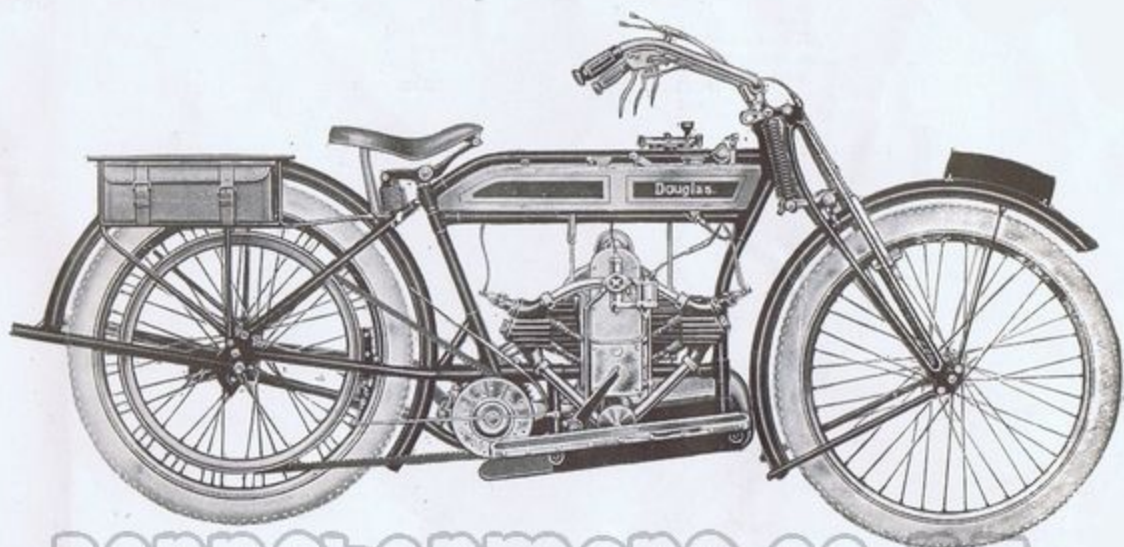
This is the latest development of the well-known W.D. Model, having incorporated a three-speed gear of new but well-tried design. Fitted with kick-starter and hand-controlled clutch, it forms the ideal lightweight touring machine, which will appeal to young and old alike.

- ENGINE UNIT.** Two cylinders, horizontally opposed, 61 mm. bore x 60 mm. stroke driving on a two-throw crankshaft with outside flywheel, and inclined side by side valves.
- CARBURETTOR.** Amac, with exhaust-jacketed mixing chamber, specially made by the Amac Co. to Douglas design. Two lever control. If available, the new vertical automatic Amac single lever will be fitted.
- MAGNETO.** E.I.C. or other first-class British make.
- GEARBOX & CLUTCH.** The latest pattern of Douglas three-speed with kick-starter and hand-controlled clutch.
- TRANSMISSION.** 1/4" x 5/8" pitch chain, and 3/4" belt.
- LUBRICATION.** Semi-automatic pump and sight feed.
- FRAME.** Improved Douglas pattern, entirely re-designed for 1920, with specially strengthened head and lugs, machined from solid steel stampings.
- FORKS.** Improved type of Douglas spring forks. Adjustment and lubrication have been arranged very successfully.
- BRAKES.** Rear foot brake operating in belt rim. Front rim brake, hand-applied.



# 2 $\frac{3}{4}$ h.p. 3-speed Model, W-20

- TANK. Special design on very neat lines ; accommodating :— petrol, 1 $\frac{1}{4}$  gallons ; lubricating oil, 3 pints.
- WHEELS & TYRES. 26" x 2 $\frac{1}{4}$ ". Hutchinson, Clincher, non-skid or other first-grade tyres
- HANDLEBARS. Upturned touring bar or semi T.T. if desired.
- MUDGUARDS. Very strong and wide, with ample valances and belt shield.
- UNDERSHIELD. Amply protecting engine and clutch, fitted as standard.
- CARRIER. Welded tubular, of ample dimension, housing two large leather (metal encased) toolbags.
- SILENCER. Very effective expansion chamber, and large diameter exhaust pipe carried to the rear.
- FOOTBOARDS. Wood, brass bound and covered with cork lino.
- SADDLE. Lycett's pan type or other first grade.



**Price** (subject to alteration without notice according to fluctuations in the labour and material markets)

**Nett Cash.**

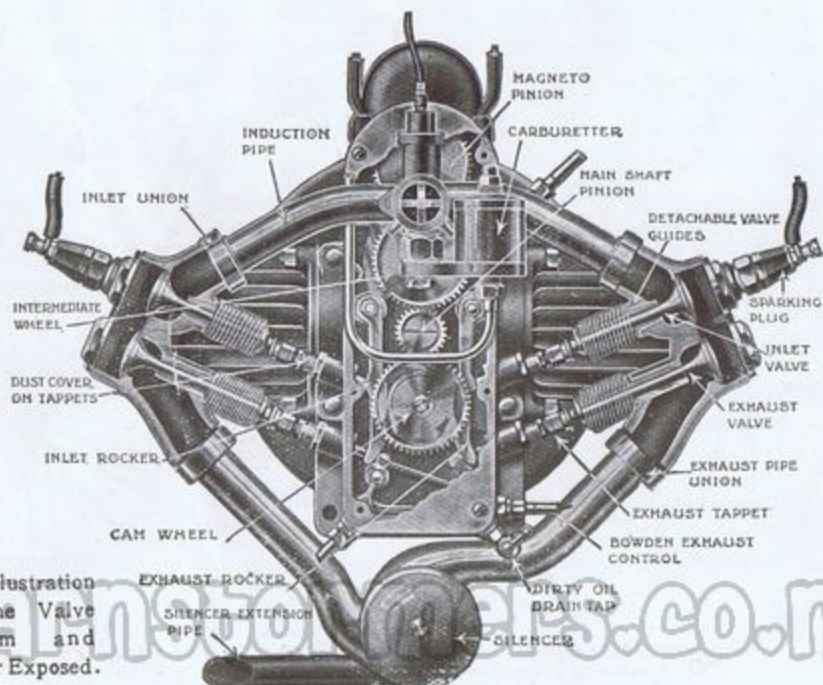
# 2 $\frac{3}{4}$ h.p. Engine Unit

The engine fitted to this model, in common with all other models, is manufactured throughout in the Douglas Factory. It is of the Twin-opposed type, and is, in fact, the original of this design. The bore is 61 mm. and the stroke 60 mm., giving 349 cc. Side-by-side valves are retained on the score of simplicity, reliability and silence. Although rated at 2 $\frac{3}{4}$  h.p., power considerably in excess of this is obtained from all engines before they leave the factory, and clients often write and tell us how they beat engines rated at even 6 h.p. "Motor Cycling" says the 2 $\frac{3}{4}$  Douglas is the "finest example of opposed engine efficiency."

**CYLINDERS.**—It is not generally known that Douglas engine cylinders are cast in the works foundry. Before the war, when motorcycle firms were buying foreign cylinders, high-class foreign firms were buying Douglas castings. The 1920 cylinders are cast in a fine grey iron, unequalled for its tensile strength and suitability as a cylinder metal, and its secret is jealously guarded in the Douglas Foundry. The longitudinal radiating fins have been increased in area to assist cooling, the ports are large and cleanly made, and the valve pockets are streamlined to give an easy passage to the gases. Cast-iron detachable valve guides are now fitted as standard.

**CRANKCASE.**—Another example of good casting, in aluminium; the clean lines and plain surfaces and the absence of dirt accumulating corners and angles will be appreciated by all.

**THE MAIN BEARINGS** for the crankshaft are of unusual size, being equal to those on much higher-powered machines. On the flywheel side a double ball bearing is fitted, and on the timing side one bearing is considered sufficient.



Sectional illustration showing the Valve Mechanism and Timing Gear Exposed.



# 2 $\frac{3}{4}$ h.p. Engine Unit

**CRANKSHAFT.**—This shaft is machined from a solid stamping of special quality, low carbon steel; the machining and grinding is carried out to a very fine limit, and every care taken to produce a perfectly balanced crankshaft.

**CONNECTING RODS.**—Are machined all over from similar steel to the crankshaft.

**PISTONS.**—Are cast in a special iron alloy of great tensile strength, which is extremely light and yet remarkably durable. The internal webbing of the head effectively prevents irregular expansion. Two cast-iron piston rings are employed, accurately ground and hammered by our patented method.

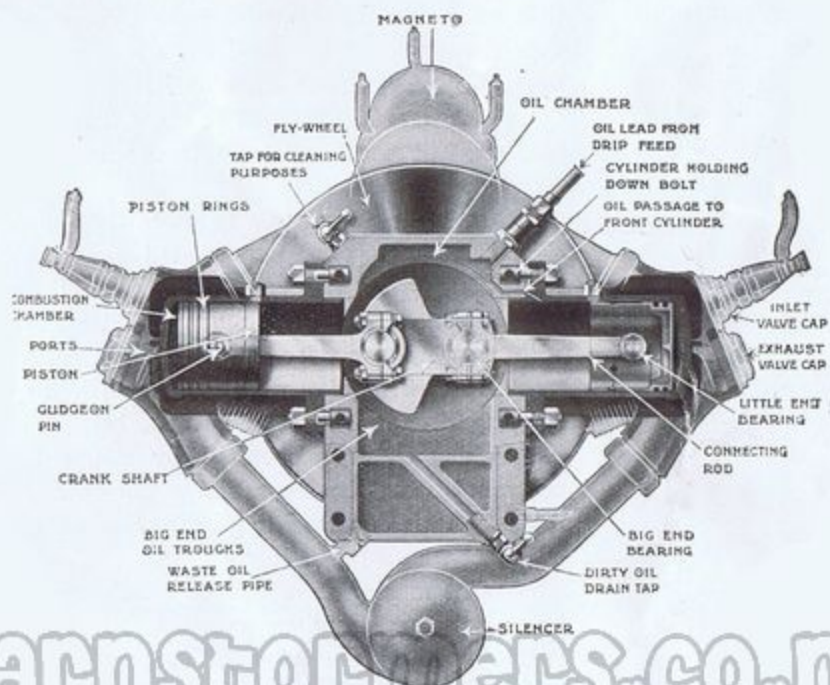
**FLYWHEEL.**—Outside, machined from a solid stamping, and fitted to the shaft without keys by an accurately ground taper.

**TIMING GEAR.**—Consists of a single cam wheel mounted on a long, plain bearing, driven direct from the main shaft pinion; the cams operate four rockers; these are machined and ground all over and have large bearing surfaces.

**VALVE AND VALVE SPRINGS.**—Follow the best accepted practice. The valves are of special steel, very accurately made, and breakages are practically unknown.

**VALVE TAPPETS.**—Are in direct engagement with the rockers and are adjustable; efficient dust covers are fitted to exclude dirt and grit. The tappet guides are screwed in and therefore removable.

**MAGNETO DRIVE.**—Is by pinion wheels in train with the main shaft pinion placed directly above the timing gear. One aluminium plate covers in the whole gearing.

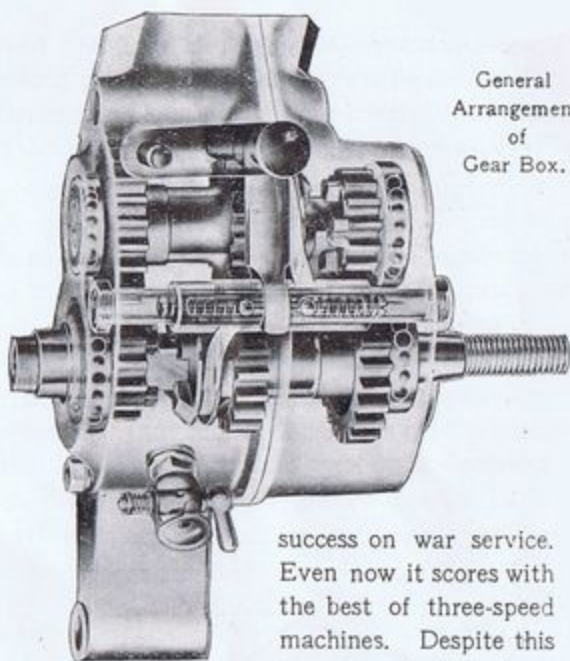


Internal view, showing Crankshaft, Pistons, etc.

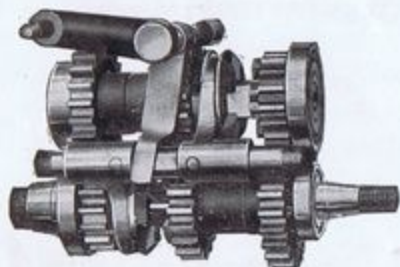
## 2 $\frac{3}{4}$ h.p. Details

### THE THREE-SPEED COUNTERSHAFT GEAR COMMON TO BOTH MODELS.

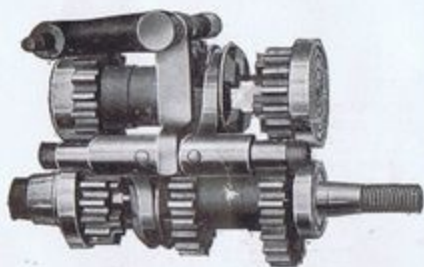
There has never been any doubt as to the efficiency of the Douglas two-speed gear. It has taken part in the Douglas victories in all the principal motorcycle events throughout the world. The T.T. RACES; BROOKLANDS; ENGLISH SIX DAYS' TRIALS; MELBOURNE TO SYDNEY; JOHANNESBURG TO DURBAN, etc.; later it proved its value beyond doubt in the extraordinary



General Arrangement of Gear Box.



Top Gear in mesh.



Second Gear in mesh.



First Gear in mesh.  
GEAR POSITIONS.

success on war service. Even now it scores with the best of three-speed machines. Despite this success of the two-

speed, for some years past we have recognised the desirability of having the third gear. It was in 1913-14 that we decided to standardise the three-speed gear, but with the advent of the great war our plans for production were delayed, although experimental work has continued. To-day we are in a position to claim that we produce the simplest, yet most efficient, three-speed gear box ever designed.

It has been our aim to retain the simplicity of the older two-speed gear. Complicated changing mechanism and striking gear has been eliminated; the gear is fool-proof and needs only a minimum of attention, yet it will withstand hard wear for an interminable period.

It consists of a main shaft and a lay shaft, each carrying three pinion wheels, each pair being always in mesh. Sliding dog clutches, operated by simple forked levers, controlled from the lever above the tank, lock up the requisite train of wheels to give the desired gears, leaving the other wheels to run idly.

The manipulation will be found extremely easy, it being only necessary to ease the driving power of the engine by lifting the valve lift lever on the left handlebar, or by depressing the clutch pedal, then to shift instantly into the gear most suitable for the needs of the moment.



## 2 $\frac{3}{4}$ h.p. Details

It should be remembered that this gear box has been designed in a very hilly district—the West of England is notoriously so—and riders who live in correspondingly hilly neighbourhoods need have no fear of the capabilities of a Douglas when fitted with this gear.

It is quite the rule for our machines to run ten thousand or more miles without any other attention to the gears than the regular injection of a small amount of heavy cylinder oil every 300 or 400 miles.

The gear is of the same design for all models.

The belt pulley is adjustable, giving considerable variation from the standard gear ratios. A typical range of gears is as follows—

Teeth on Engine Sprocket.	Top	Second	Low.
16	5.1 to 1	7.8 to 1	12 to 1.

These may be lowered by opening the belt pulley, or they may be raised by fitting a larger engine sprocket.

### DRY PLATE CLUTCH AND KICK-STARTER.

The need of a really efficient clutch has always been in the mind of the Douglas firm, and their earlier types of cork inset and cone clutches each marked a stage in the progress towards present successful design.

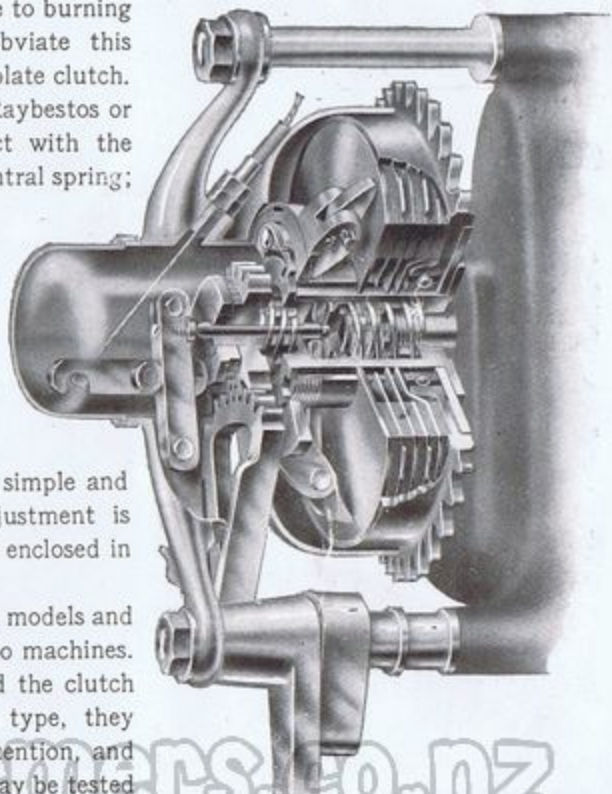
The cork inset clutch, whilst it has given excellent service, was not so reliable in the hands of careless riders, and was somewhat prone to burning if slipped to any extent. It is to obviate this possibility that we have perfected the dry plate clutch. This consists of circular metal and fibre (Raybestos or Ferodo) plates held in frictional contact with the countershaft chain wheel by a powerful central spring; the pressure is distributed equally over the plates by three compensating levers mounted on an annular ring.

In all there are ten large circular surfaces with which to obtain the necessary friction grip. The clutch holds remarkably, and yet it runs perfectly free when the pressure is relieved.

The control is arranged in a very simple and easy manner, and the method of adjustment is equally simple. The whole mechanism is enclosed in a domed cover.

Hand control is fitted to the 2 $\frac{3}{4}$  h.p. models and foot control to the 4 h.p. sidecar and solo machines.

We are confident that riders will find the clutch a great improvement over any previous type, they will find that it requires practically no attention, and that burning out is impossible, though it may be tested abnormally until smoking without serious harm resulting.



Phantom view of the new patented Plate Clutch fitted to all 1920 models.

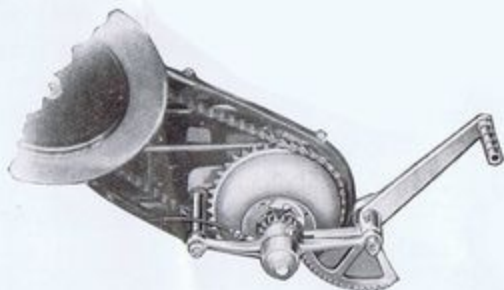
# 2 $\frac{3}{4}$ h.p. Details

## KICK-STARTER.

An external starter is incorporated with the clutch of the 2 $\frac{3}{4}$  h.p. and 4 h.p. models.

Again we have aimed at simplicity ; the operation is that of a simple quadrant lever engaging with a cog-wheel and ratchet on the main shaft. and turning the clutch and gear, and through it, the engine.

A stout spring on the starter pedal returns it out of engagement when the foot is lifted.



The neat arrangement of the new Clutch and Kick-Starters.

It shows a marked improvement in its action over previous designs ; it is undoubtedly the most effective starter yet constructed, and the worries of starting up, as present with so many machines, are non-existent with the Douglas.



The head lug stamping weighs 9.2 lbs. before machining.

The finished lug weighs only 2.5 lbs.



The Y piece stamping weighs 5 lbs.

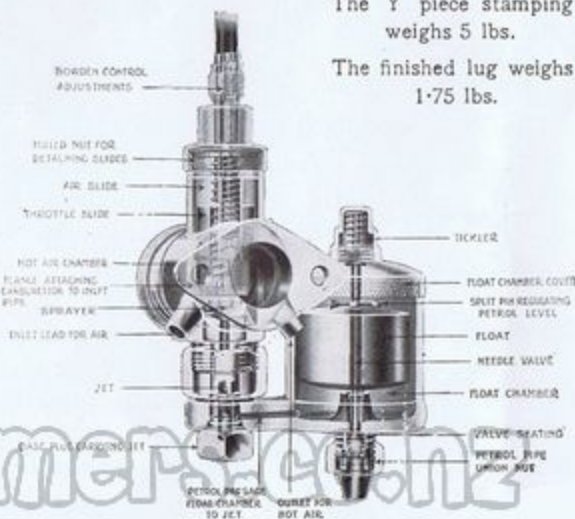
The finished lug weighs 1.75 lbs.

## CARBURETTOR.

All Douglas Models are sent out fitted with a special type of two-lever Amac Carburettor. The float chamber, with inverted needle valve, follows standard practice ; the mixing chamber

has a jacket around it to which a pipe from the exhaust is taken, and a short outlet pipe provided. Thus the mixture is formed under the best circumstances of gentle heat ; this ensures proper vaporisation, and the consequent economy in fuel is considerable.

The attachment to the induction pipe is successfully designed to avoid all chances of air leaks, and carburation troubles are practically unknown.





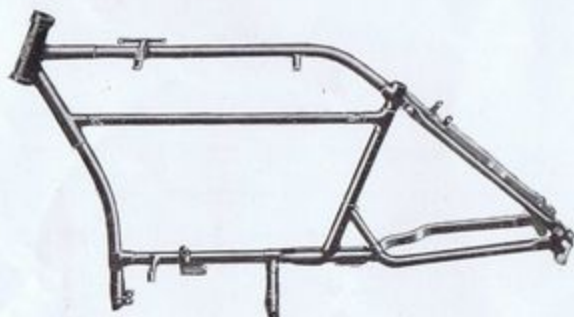
# 2 $\frac{3}{4}$ h.p. Details

## MAGNETO.

Douglas Motorcycles are not always fitted with the same make of magneto. Supplies are not yet sufficiently consistent, but the owner may rest assured that only the best and most reliable types of British manufacture will be used. Instruction booklets relative to the particular magneto will be found in the tool bag.



If supplies are available the new Vertical Automatic Amac Carburettor will be fitted. This instrument is very simple to operate, as both air and petrol are controlled by a single lever.



An entirely new Frame is a 1920 feature.

excellent service during the war. In fact, despite the abnormal rough usage, breakages are practically unknown. For 1920 the frame has been entirely redesigned to accommodate much wider mudguards and to give greater wheel clearance.

## FORKS.

Douglas Spring Forks have stood the test of war service equally well. An improved method of adjustment and lubrication has been adopted; and the fork now presents the *beau-ideal* of resilience, coupled with substantial construction. The principle of its action is well known.



The pleasing lines of the new Adjustable Spring Forks.

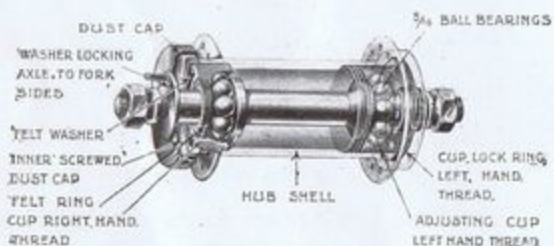
# 2 $\frac{3}{4}$ h.p. Details

## LUBRICATION.

Oil is delivered from the tank through a sight feed by a semi-automatic pump to a well in the top of the crankcase, from whence it is supplied to the front cylinder. the two big-end sumps, and ultimately by splash to all internal bearings.

## TRANSMISSION.

The drive is first by 1/4" x 5/8" pitch chain, which is considerably heavier than that previously fitted, from the main shaft to the countershaft, and thence on the other side by 3/4" belt over a large diameter pulley to the back wheel. This chain-cum-belt transmission has proved so successful in the past that it is retained with certain minor refinements.



THE DOUGLAS DUST, WATERPROOF, OIL RETAINING HUB.

## WEATHERPROOF HUBS.

Our wheel hubs retain the oil and exclude dirt and water very successfully by means of felt washers and screw dustcaps; when well loaded with grease they require little attention during a season's riding.

## MUDGUARDING.

The guards now fitted are of very substantial construction, very wide, giving ample protection; a large clearance is given between the tyres and guards, and the rider will find that he is protected in the best possible manner.

## BRAKES.

The rear foot brake is operated in the groove of the belt rim by a right pedal. A special compensating device is employed to give equal pressure. This brake does not hinder the removal of the wheel.

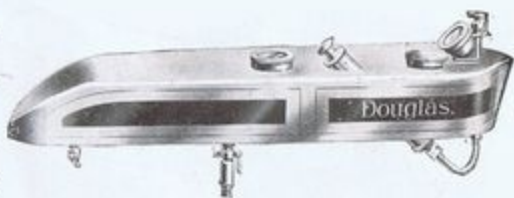
The front brake is of the standard rim type but particularly sturdy and efficiently operated by a right-hand grip lever



## 2 $\frac{3}{4}$ h.p. Details

### TANK.

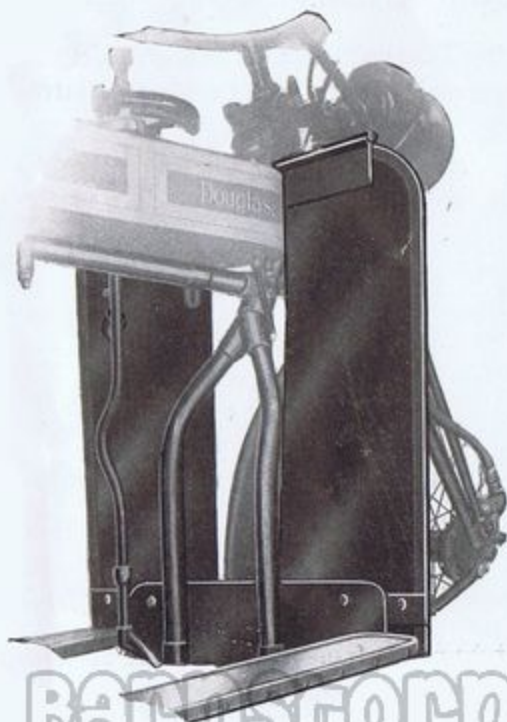
A really well-made petrol and oil reservoir like the Douglas is exceptional; heavy gauge material and the best of workmanship and finish ensure a pleasing appearance and an absence of trouble.



Capacity : Petrol, 1 $\frac{1}{4}$  gallons ; lubricating oil, 3 pints.

### UNDERSHIELD AND LEG SHIELDS COMMON TO ALL MODELS.

A substantial metal undershield is fitted as standard, the front being upturned and the sides bolted to the underside of the footboards. Flexible leather leg shields carried on a cross bar dropped over the top frame tube behind the head are coupled by nut and bolt to the front of the undershield. These can be supplied at an extra cost of £1. They may be removed or replaced in a few moments, and form with the undershield an excellent protection for the rider and engine in bad weather.



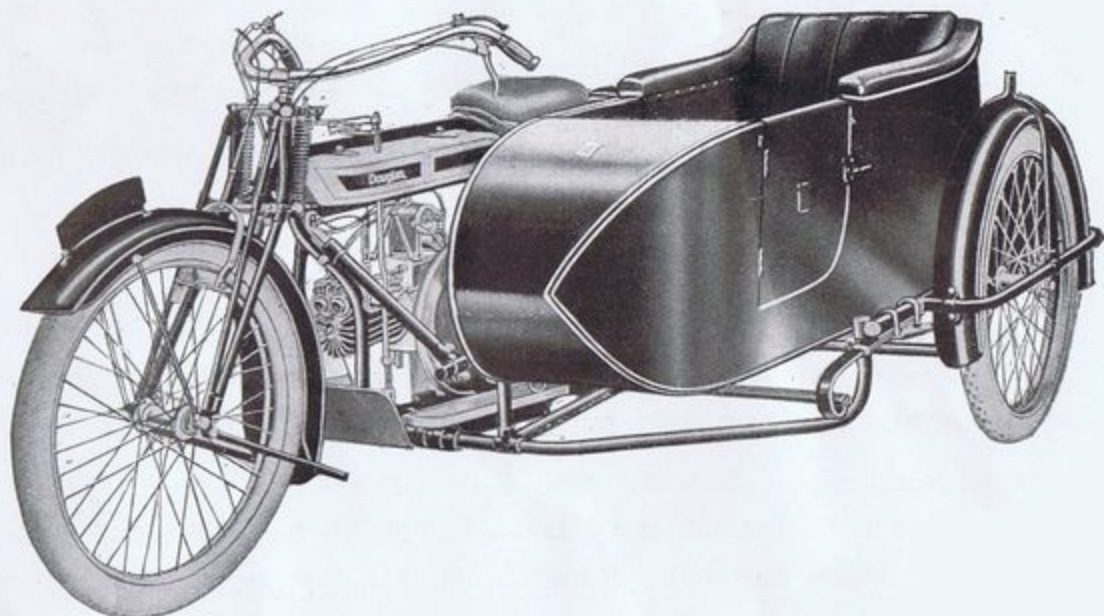
### CARRIER AND TOOL BAGS.

By a construction of the best tubing with all joints welded this carrier is made exceedingly strong, and well withstands the vibration when loaded.

Tool bags are made of the best stout leather, each enclosed in a metal casing ; they provide ample room for the customary tool kit and spares, including spare tubes.

BARNSGORMERS.CO.NZ

## 4 h.p. Model, B-20



### BRIEF SPECIFICATION.

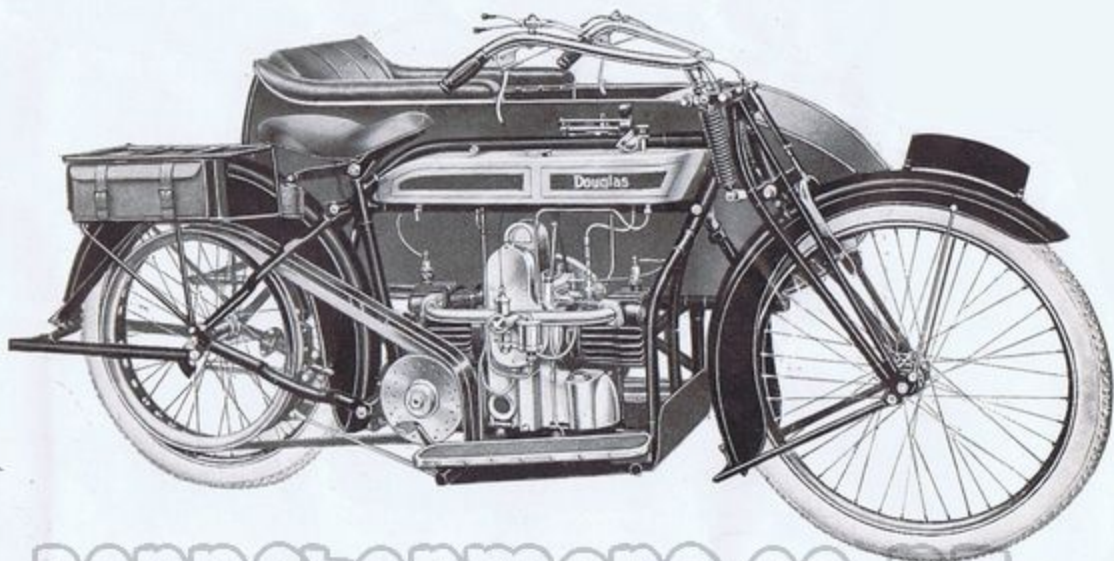
This model has very little in common with other Douglas models. The engine is of the same type, the twin-cylinder four stroke, horizontally opposed, but otherwise the machine is of totally different design.

ENGINE UNIT.	4 h.p., 74.5 mm. bore, 68 mm. stroke—595 cc.
CARBURETTOR.	Amac 2-lever, fitted with hot air jacket, or Amac vertical automatic if supplies are available.
MAGNETO.	E.I.C. or other British magneto, handle-bar controlled.
GEAR BOX, CLUTCH AND KICK-STARTER.	Douglas three-speed countershaft gear, with dry plate clutch, foot operated, and improved kick-starter.
TRANSMISSION.	1/4" x 5/8" pitch chain to countershaft, and 7/8" belt to rear wheel.
LUBRICATION.	Mechanical pump, gear driven; oil carried in large sump under crankcase. Sight feed on the tank. Oil lead to front cylinder and big-end trays. All internal bearings lubricated by splash.
FRAME.	Douglas patent double-tube cradle frame, with specially strengthened head and lugs. All lugs machined from solid steel stampings.
FORK.	Douglas improved spring fork, adjustable and thoroughly lubricated.



# 4 h.p. Model, B-20

- BRAKES.** Powerful foot brake, operating in belt rim but permitting the easy removal of the rear wheel. Hand brake substantially mounted and acting on the front rim.
- TANK.** Standard Douglas design accommodating 2 gallons petrol (no oil).
- WHEELS & TYRES.** 26" x 2 $\frac{3}{8}$ " Hutchinson, Clincher, or other first-grade non-skid tyres.
- HANDLEBARS.** Upturned touring pattern ; semi T.T. if desired.
- MUDGUARDING.** Large, substantially mounted, rolled steel guards, with wide valances giving ample protection in all weathers—wide wheel clearances. Belt guard and undershield are features of the guarding.
- CARRIER.** Standard design, with two large leather tool bags (metal encased)
- FOOTBOARDS.** Wooden boards, brass bound, and covered with cork lino.
- SADDLE.** Lycett's, or other first-grade seat.



**Price** (subject to alteration without notice according to the fluctuations of the labour and material markets) **Solo,** ; **Sidecar,**

# 4 h.p. Engine Unit

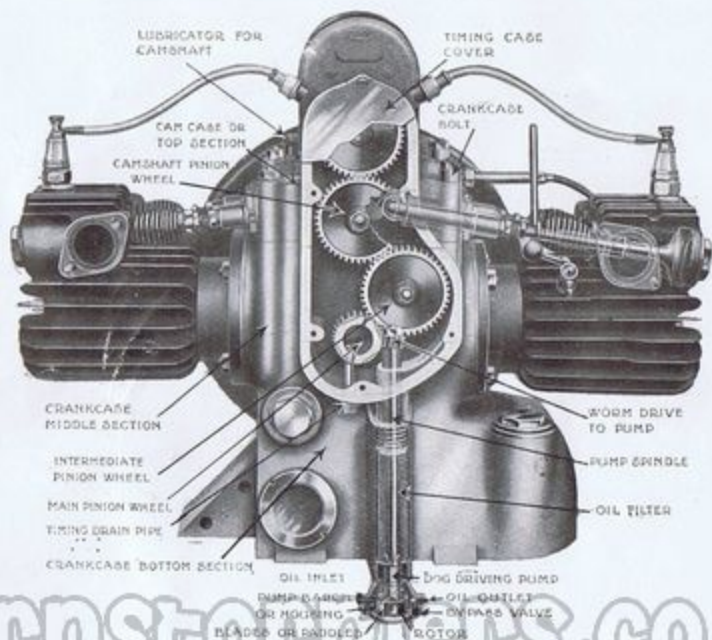
Is an exceptionally compact engine embodying in its design all modern knowledge that has been accepted by practical engineers. It is really powerful and pulls well at all engine speeds, which, together with its perfect balance, flexibility and economy, makes it an ideal two-purpose engine.

Experienced motorcyclists are often amazed at the performance of the 4 h.p. Douglas engine, and although it is only 595 cc., being 74.5 mm. by 68 mm., they say it pulls like a "big eight," but is as easily handled as its little brother, the 2 $\frac{1}{2}$ .

The two cylinders are cast in excellent grey iron, similar to other models, but are different in many points of construction. The valve and valve pockets are placed side by side on the top of the cylinders, the valves being operated by a camshaft set centrally across the crankcase, mounted on ball bearings, and driven by pinion in mesh with the main shaft pinion. The cams lift the valve tappets direct without intermediate rockers. One of the simplest yet most efficient forms of cam gearing ever designed.

The crankcase is formed in three parts, which makes the engine the most accessible of all power units; the lower part is a reservoir for lubricating oil which is raised to the sight feed on the tank by a small rotary pump, driven by a worm, off the main shaft pinion wheel.

The centre portion of the crankcase carries the main ball bearings of the crankshaft, and the upper part accommodates the cam gearing, and forms a supporting base for the magneto.



4 h.p. Engine, showing Timing Gears and Pump.



# 4 h.p. Engine Unit

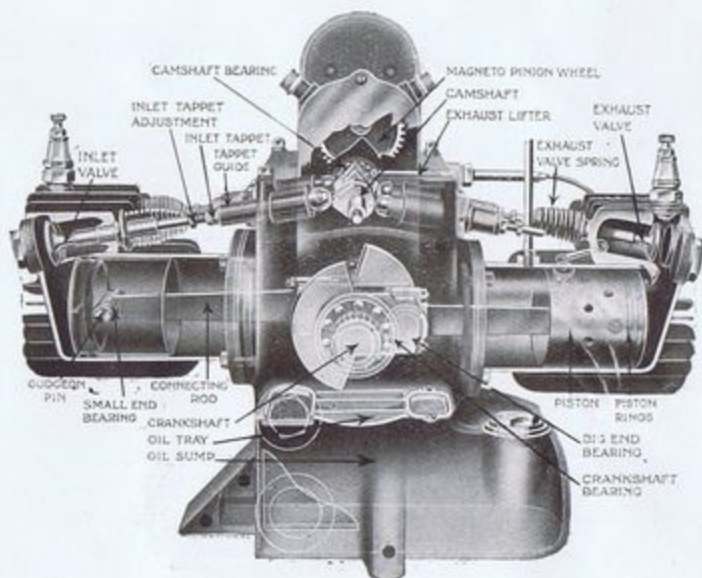
The crankshaft is formed in one piece hardened and ground to very fine limits, a sound piece of work, and runs in a double-row ball bearing at either end. The flywheel, following Douglas practice, is mounted externally.

Connecting rods are machined all over from special quality nickel chrome steel, and are designed to combine lightness with strength. The big-end bearings are split to facilitate assembly and adjustment.

Pistons follow usual Douglas design with two top rings, drilled skirt, and the interior of the head webbed to prevent distortion. They are cast from Douglas grey iron of great tensile strength, permitting the reduction of weight to a minimum.

The unit is attached at its base to the frame tubes by two bolts and a special system of anchor plates. The third point of attachment is by two short stay tubes from the top of the crankcase to the undertank tube. This method ensures absolute rigidity, and yet removal is an easy matter.

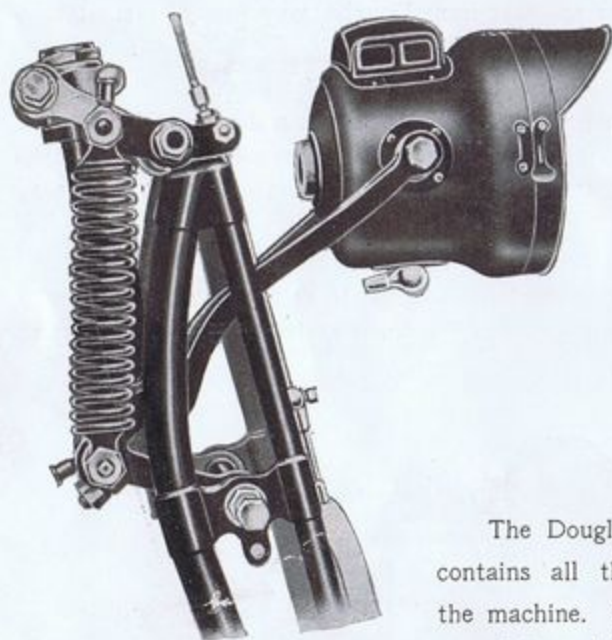
The three-speed gear box, clutch and kick-starter are similar in design to those previously described, except that they are correctly proportioned for the heavier duties they have to perform.



The 4 h.p. Douglas Engine, manufactured throughout in the Douglas factory and covered by several patents. Its exclusive oiling system and three part crankcase, giving remarkable accessibility, are features which distinguish it from the rank and file of engines.

# 4 h.p. Details

Carburettor, magneto, wheels and tyres, transmission, brakes, tank, mudguards, carrier, etc., follow the same lines as those described in the 2 $\frac{3}{4}$  h.p. model, with the exception that they are correctly proportioned for their respective duties.



An ideal method of carrying the head lamp. Messrs. Powell and Hanmer supply direct this "Douglas" design of bracket.



This illustration depicts the oiling and bearing systems of the new "Douglas" 4 h.p. and 2 $\frac{3}{4}$  h.p. forks. The method of adjusting all side play is worthy of notice.

## TOOL KIT.

The Douglas kit of tools as supplied with all machines contains all that is needed to disassemble any part of the machine. Box spanners, shifting and fixed spanners, screwdriver, belt punch, valve spring lifter, tyre lever, magneto spanner, etc., are the principal items. An oil gun is

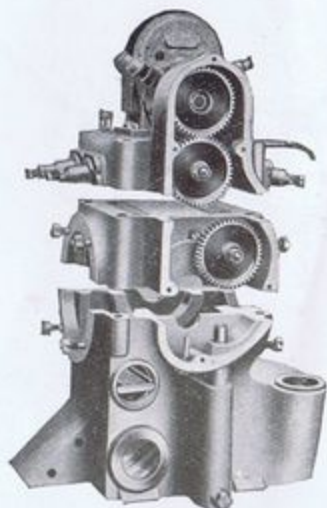
provided for forced lubrication of the gear box, cam gearing and hubs. A strong Blumel's foot pump will be found clipped under the tank.



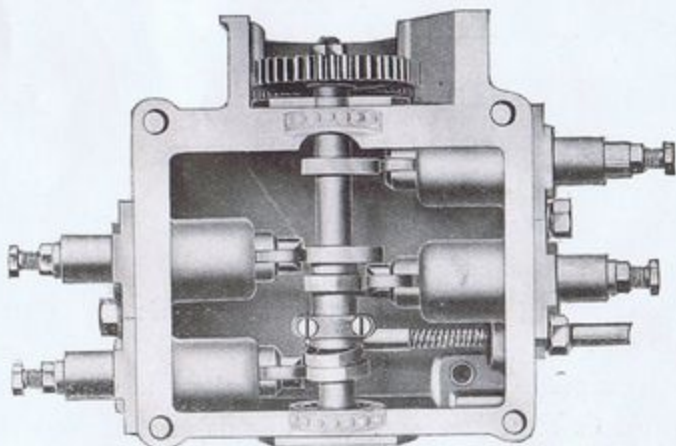
The rotary pump fitted to the 4 h.p. model. The oil pressure is governed by the tension of the spring on the by-pass valve.



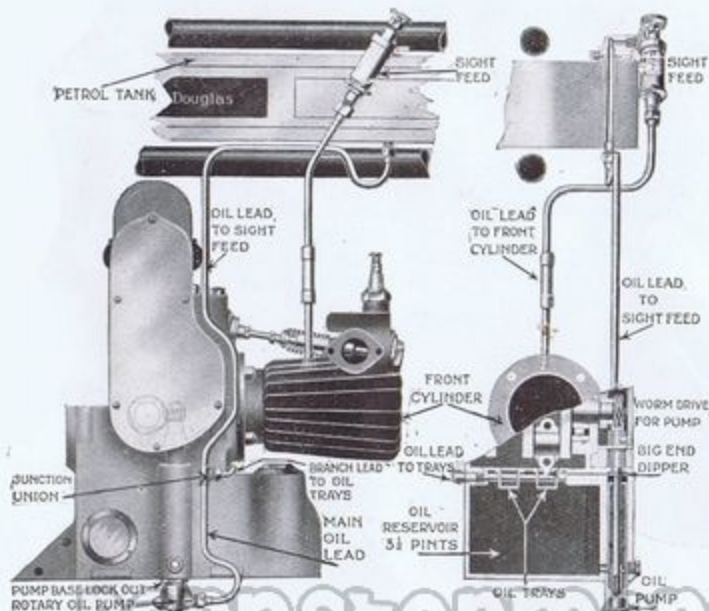
# 4 h.p. Details



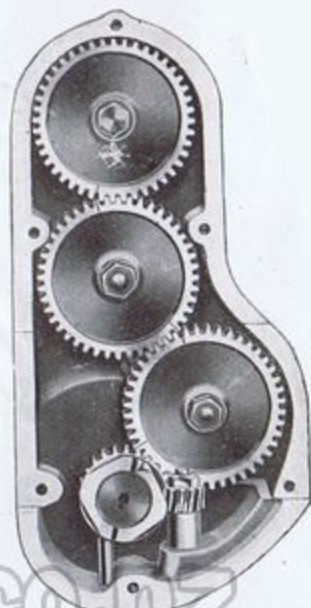
The patented three-piece crankcase of the 4 h.p. engine is the last word in accessibility. It is quite possible to remove the magneto and top section with cam shaft and tappets without interfering with the other sections, and by removing the middle section the big ends may be inspected or adjusted.



View of the valve operating mechanism of the 4 h.p. engine looking from underneath.



Diagrammatical view of the mechanical oiling system of the 4 h.p. engine. It is entirely mechanical and only needs replenishing from time to time by the rider.

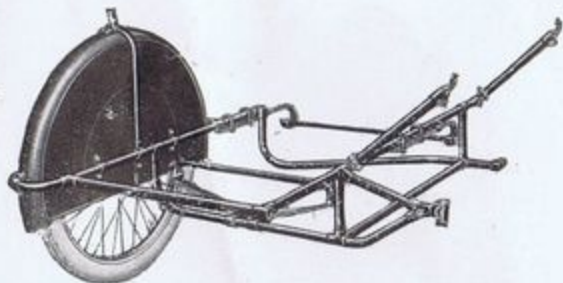


Timing gear, showing pinions in correct position.

# Sidecar

Unlike other manufacturers. MESSRS. DOUGLAS MOTORS LTD. make their sidecars, bodies and chassis in the works.

The chassis is built in a same substantial manner as the frames of the motorcycles. The arrangement of tubes is specially designed to counteract the unusual stresses and strains to which a sidecar is subject; the connections are particularly strong and breakages are unknown.

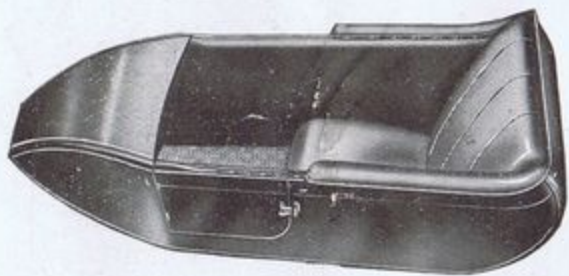


The design of the body is very pleasing; a good standard shape has been aimed at to suit all parties without extravagant attempts at stream-line shapes, which generally prove very uncomfortable to the passengers. For 1920 the body work has been considerably improved, cane beading has given way to aluminium moulding, while the upholstering material is of a very high quality.

The material in frames, panelling and upholstery is excellent. The body is roomy, as is also the storage accommodation in the back locker. Fittings are of the best, and generally the whole sidecar is a handsome and suitable attachment for the Douglas motorcycle.

One pattern only, a medium weight is made, which is intended for use with the 4 h.p. model.

The finish is Saxe blue with dark blue upholstering.



## PRICE

(including wheel and first-grade tyre, and apron):

(Nett cash).

ELECTRICAL EQUIPMENT. Several systems of electric lighting are undergoing test, but, for the present, we are unable to specify any particular type.



# Douglas Successes

The following is a selection of the chief successes gained on Douglas machines in reliability and other trials from APRIL to OCTOBER, 1919.

Our full list, set out in separate booklet, records some 200 victories.

## ENGLAND.—

BIRMINGHAM M.C.C. VICTORY CUP TRIAL.  
2 Gold Medals, 1 Silver Medal.

BRISTOL M.C.C. LAND'S END AND BACK TRIAL.  
5 Starters. All secured Gold Medals.

M.C.C. LONDON—EDINBURGH RUN.  
18 Starters. 15 Gold Medals, 1 Silver Medal.

The two retirements were through no fault of the machines.



E. Kickham on Old Wyche, Malvern Victory Cup Trial.

ESSEX M.C.C. OPEN SPEED TRIALS, WESTCLIFF-ON-SEA.  
4 First, 1 Second, 4 Third Awards.

A.C.U. SIX DAYS' TRIAL.  
1 Silver and Two Bronze Medals.

## SCOTLAND.—

SCOTTISH SIX DAYS' TRIALS.  
3 First Class, 1 Second and 1 Third Class Awards.

EDINBURGH M.C.C. REDSTONE RIGG HILL CLIMB.  
4 First and Fastest Time in Three Classes.



"Billy" Cooper & V. Olsson passing through Brough in 1919 London—Edinburgh Run.

## IRELAND.—

THE CORK AND DISTRICT M.C.C. 20 HOURS TRIAL.  
Gold Medal, Bronze Medal, and Special Prize.

DUBLIN AND DISTRICT M.C.C.—IRISH 24 HOURS TRIAL.  
Special Gold Medal and Silver Medal.

M.C. UNION OF IRELAND IRISH END TO END TRIAL.  
3 Gold Medals, 4 Silver Medals 2 Cups,  
Special Prize and Team Prize.

IRISH TWO DAYS' TRIAL.  
1 Gold Medal and 2nd Place for Roche Cup.



# Douglas Successes

## FRANCE.—

PARIS—RHEIMS—PARIS TRIAL—350 CC. CLASS.

First and Second Prizes.

PARIS—TROUVILLE TRIAL.—350 CC. CLASS. First.

## ITALY.—

TURIN M.C.C. LE CIRCUIT D'ORBASSANO. 350 CC. CLASS.

First and Third Prizes.

GRAND PRIX DE TURIN. 350 CC. CLASS.

First, Third and Fourth and Team Prizes.

ITALIAN T.T. RACE, CREMONA. First.



R. B. Clarke, in Scottish Six Days.

## SOUTH AFRICA.—

NATAL M.C.C. HILL CLIMB.

First and Douglas Trophy.

Third, Fifth, Sixth and Seventh Places.

INCHANGA BANK HILL CLIMB. F. A. R. Zurcher, S. Africa.

First and Shimwell Trophy.

Third, Fourth, Fifth and Sixth Places.

RAND M.C.C. LIGHTWEIGHT RELIABILITY TRIAL.

First and Monogram Trophy.

JOHANNESBURG TO DURBAN RACE. First and Sixth Prizes and Trophy.

SPAIN.—COMPEONATO DE SANTANDER. Three Firsts and 3 Special Prizes.



Messrs. Ball, Gibb and Moffat, the Victorious Irish End to End Team.



# Unsolicited Opinions

## TESTIMONIALS.

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*July, 1919.*

A. H. ALEXANDER, EDINBURGH, THE WELL-KNOWN COMPETITION RIDER AND EXPERT.

"One point I have proved in all my recent competition rides, that it is impossible to make the engine overheat, no matter how hard they are ridden; also that valve trouble and under lubrication troubles are non-existent on the 4 h.p. model."

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WAR SERVICE IN AFRICA—

LT.-COMM. W. WHITTILL, THE LATE COMMANDER OF NO. 1 SQUADRON, R.N. CAR DIVISION IN WEST AFRICA, AND LATER IN EAST AFRICA.

"During the whole of the campaign (2 years) I have never sent a motorcyclist out on a mission which was not duly performed within the time expected."

Under this officer 28 machines were taken to West Africa; after 12 months gruelling work 26 were still in use. Ten of these were sent on to East Africa, and the rest returned for home service. Of the 10 in East Africa, 8 were still on the road 12 months later, having seen over 2 years solid grind under appalling conditions. All were of Douglas manufacture.

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MAJOR BONHAM CARTER, 40th PATHANS, KILWA, EAST AFRICA.

*February 4th, 1918.*

"Since our arrival here, in January, 1916, the machines have been in constant use, and have been given very little or no attention, and they are still being used daily, as good as ever. I may add that we have never experienced any mechanical trouble with the machines, although they have covered thousands of miles, and often been ridden by most inexperienced riders. . . . I recommend the Douglas as the motorcycle for all-round work and reliability. . . . No machines could have passed a more severe test than ours have."

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JAS. BROWNE, DUBLIN, AN IRISH TRIALS COMPETITOR.

*June 29th, 1919.*

After the Irish 24 Hours' Trial:—

"My machine (2½ h.p.) gave absolutely no trouble and was untouched from start to finish. I had no mechanical trouble of any kind. My machine was the only one of 350 cc. to climb Glengesh Hill. It was a grand performance."

## After the Cork 24 Hours' Trial :—

"The machine never gave the slightest trouble from start to finish, and tool bags were not opened during the run. She is most comfortable to ride; in fact, she is a little beauty."

NOTE.—This rider, who is an amateur, rode the same machine through the four Irish Trials of this year, viz.:—Cork, 20 hours; Irish, 24 hours; Irish End to End; and Irish 2 days; the total distance of 1,686 miles of notoriously rough country, and mostly under bad weather conditions, without the loss of a mark, gaining 1st Class Award in each, and two additional special prizes. This machine is a standard model, and has been in constant use for several years.

## SCOTLAND.

August, 1919.

The well-known motoring journalist, "Chinook," of the *Motorcycle*, selected a 3½ h.p. spring frame Douglas on which to follow and report the Scottish Six Days' Trials of 1919, undoubtedly the hardest trial in the history of motorcycling.

It is sufficient to say here that he was entirely successful in following the whole trial, climbing every hill, and keeping up the time everywhere without difficulty. In his own words :—

"We floated through the trial from beginning to end—the very best 'bus for the job one could wish. The hand clutch is delightful, and the new model will fill the bill for practically every rider, from the elderly potterer in search of maximum comfort and docility to the speed merchant, who wants something that will hold the road, and "rev" like nothing he has ever tried before."

Full details of his experience are recorded in a separate pamphlet.

## MR. C. H. ELGAR, FRESHWATER. I.O.W.

August 1st, 1919.



"After six months' hard running with your 4 h.p. combination, I should like to express my entire satisfaction with your machine, which I consider far superior to any other in reliability, smooth running, power and appearance. I am just now completing 2,000 miles without adjustment of any kind, and the ease with which I have climbed the famous Carisbrooke Hill on top gear with sidecar and passenger astonishes most motorists. When I require a new mount I shall not hesitate to select another Douglas."

## CPL. J. S. PAUL, R.E. SIGNAL SECTION, EGYPTIAN EXPEDITIONARY FORCE. January 14th, 1918.

"I have had every opportunity of testing the merit of the Douglas both at home and out here, after two years constant riding, and I find it to be a most comfortable mount, easy to start and manipulate, an ideal little machine. . . . It has given no trouble whatever and I was surprised at the way in which it pulls through sand."



June 27th, 1917.

"Whilst on leave in Scotland I obtained the loan of a 2 $\frac{3}{4}$  Douglas with a featherweight sidecar attached. On several occasions I carried an adult passenger and a child. I came across a good many hills (Stirlingshire abounds with them), but the little Douglas surmounted them splendidly."



PTE. J. COTTAM, APIA, SAMOA. April 12th, 1916.

"I am very pleased with my Douglas; the conditions in this country are so very different to other countries." [The writer proceeds to give statistics of the abnormal rainfall and variation in temperature.] "I have been riding in Samoa for twelve months, through the wettest season for years. . . . Roads are very rough, but the machine continues very successfully."

MR. G. L. MAITLAND WARNE, UGANDA, CENTRAL AFRICA.

August 11th, 1919.

Speaks very highly of the good service of a group of Douglas lightweights on the Southern frontier of Uganda in June, 1916, and says that "Your machine proved to be a great success, particularly for this type of country; all machines, except one on our station at that time were Douglas."



Mr. Maitland Warne and other Officials. Uganda, Central Africa.

MR. J. E. SAUNDERS, BRITISH RED CROSS (No. 1),  
PROVINCIA DI UDINE, ITALY.

*April 26th, 1916.*

"I rode one of your 2½ two-speed models for four months last winter, on the Italian front, over the very worst of roads in an extremely hilly district among the mountains, and I must say that my Douglas was in every way satisfactory, giving me no trouble whatever."

MR. L. B. SPILSBURY, PUBLIC WORKS DEPARTMENT,  
BEREILLY, U.P., INDIA.

*March 8th, 1916.*

"I have had my machine for over two years, during which time it has done approximately 12,000 miles, and it is running as well as ever it did. I have been a motorcyclist since 1904, but I have never found anything to equal the Douglas for speed, reliability, good wearing qualities and general excellence."

2nd LIEUT. AND TRANSPORT OFFICER,  
2/8th (CYCLIST) BATTALION, THE ESSEX REGIMENT, GT. CLACTON.

*April 15th, 1916.*

"It may be of interest to you to know that up to the end of March, the seventeen motorcycles supplied by you in August have covered a distance of almost 50,000 miles with most satisfactory results. The average petrol consumption worked out at eighty miles per gallon."

MR. S. R. WRIGHT, MACCLESFIELD.

*March 24th, 1916.*

"In traffic, it is simplicity itself to control, whilst in the country, it can maintain an average speed which is a revelation."

MR. S. SHAN, WINNEBAH, GOLD COAST, WEST AFRICA.

*May 10th, 1919.*

"Although I have been a keen motorcyclist for several years I have never ridden anything like this Douglas before. It is just splendid, and I can't imagine anything to equal it. As long as there is a Douglas about I shall never want to ride any other machine."

REV. S. GARABEDIAN, ST. PAUL'S RECTORY, CAPE TOWN.

*May 22nd, 1917.*

"Two years ago I lost my right leg, amputated through the knee joint. I possessed two Douglas motorcycles, one with sidecar, and a 2½ for solo work. When I had fully recovered I determined to try riding again. At first I thought I would only be able to ride with a sidecar. Then I gained confidence and tried, at first very carefully, the solo mount. I had an arrangement made to work the back brake from the left side, and a support fitted on the right footboard to take the heel of my artificial foot. I have now been riding the Douglas solo for a whole year. I can generally get a start by sitting across the machine and pushing off with my left leg. I get about here, there and everywhere on my little Douglas without the least trouble."

D.R. 2782 E. CARDINAL, NO. 2 CANADIAN DIVISIONAL SUPPLY COLUMN,  
B.E.F., FRANCE.

*April 25th, 1917.*

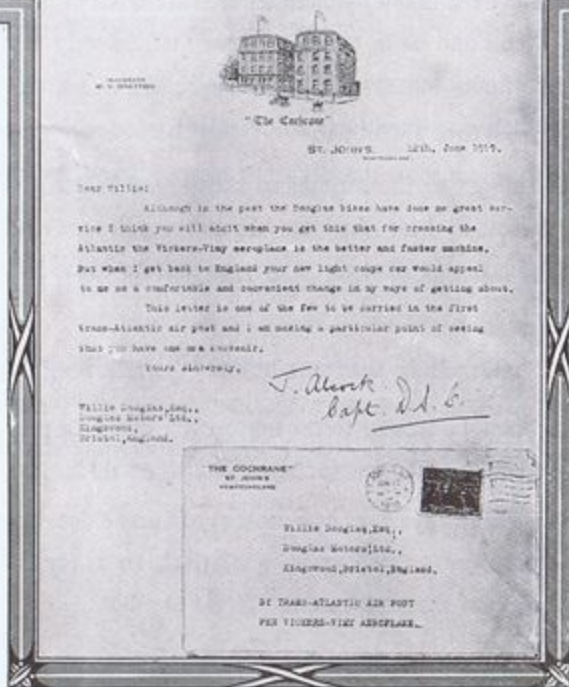
"I have now been in France a little over fifteen months with the Canadian Expeditionary Force, and the Douglas has proved highly satisfactory to me in my work, which carries me over very bad roads in all kinds of weather. I shall always have a good word to say for the Douglas, for I always manage to get there and back."



# Unsolicited Opinions



CAPT. SIR JOHN ALCOCK, D.S.C., R.A.F., whose wonderful flight across the Atlantic in the Vickers-Vimy stands as the greatest flying achievement up to the present time, has been a consistent devotee of the Douglas for many years past, and he was a frequent rider of our overhead valve racing machines at Brooklands when that track was the scene of early aero experiments.



One of the few letters which he carried on his successful flight, addressed to Mr. W. W. Douglas, is reproduced here, and the top illustration shows him still partial to the Douglas, riding as passenger with Mr. Laurence H. Cade on a 4-h.p. outfit a few days after his successful flight from Newfoundland.

## COPY OF LETTER

Dear Willie,

Although in the past the Douglas bikes have done me great service, I think you will admit when you get this, that for crossing the Atlantic the Vickers-Vimy aeroplane is the better and faster machine. But when I get back to England your new light coupe car would appeal to me as a comfortable and convenient change in my ways of getting about.

This letter is one of the few to be carried in the first Trans-Atlantic air post, and I am making a particular point of seeing that you have one as a souvenir.

Yours sincerely,

J. ALCOCK, Capt., D.S.C.

# Guarantee

**We** give the following guarantee with our motorcycles instead of the guarantee implied by statute, or otherwise, as to the quality or fitness of such machines for the purpose of motorcycling; any such implied guarantee being in all cases excluded. In the case of machines which have been used for "hiring out" purposes or from which our Trade Mark or manufacturing number has been removed, no guarantee of any kind is given, or is to be implied.

WE GUARANTEE, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of material and workmanship; but this guarantee is to extend and be in force for three months only from the date of purchase, and damages for which we make ourselves responsible under this guarantee are limited to the replacement of any part which may have proved defective.

WE UNDERTAKE, subject to the conditions mentioned below, to make good at any time within three months any defects in these respects. As motorcycles are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear-and-tear, misuse or neglect.

The term "misuse" shall include, amongst others, the following acts:—

- I. The attaching of a sidecar to the motorcycle in such a manner as to cause damage or calculated to render the latter unsafe when ridden.
- II. The use of a motorcycle, or of a motorcycle and sidecar combined, when carrying more persons, or a greater weight, than that for which the machine was designed by the manufacturers.

Any motorcycle sent to us to be plated, enamelled, or repaired, whether the repairs are required for the purpose of making good the defect before referred to or otherwise, will be repaired upon the following conditions, *i.e.*, we guarantee that all precautions which are usual and reasonable have been taken by us to secure excellence of material and workmanship, such guarantee to extend and be in force for three months only from the time such work shall have been executed, and this guarantee is in lieu and in exclusion of any common law or statute warranty, and the damages recoverable are limited to the cost of any further work which may be necessary to amend and make good the work found to be defective.



# Guarantee

**Conditions of Guarantee.** If a defective part should be found in our motorcycles, or in any part replaced, it must be sent to us, carriage paid, and accompanied by an intimation from the sender that he desires to have it repaired free of charge under our guarantee, and he must also furnish us at the same time with the number of the machine, the name of the agent from whom he purchased, and the date of the purchase, or the date when the alleged defective part was replaced, as the case may be.

Failing compliance with the above, no notice will be taken of anything which may arrive, but such articles will lie here at the risk of the senders; and this guarantee, and any implied guarantee, shall not be enforceable.

We guarantee only those machines which are bought either direct from us or from one of our duly authorised agents, and under no other conditions.

We do not guarantee the specialities of other firms, such as tyres, saddles, chains, lamps, etc., or of any component part supplied to the order of the purchaser differing from our standard specification, supplied with our motorcycles or otherwise.

**The Term "Agent"** is used in a complimentary sense only, and those firms whom we style our agents are not authorised to advertise, incur any debt, or transact any business whatsoever on our account, other than the sale of goods which they may purchase from us; nor are they authorised to give any warranty or make any representation on our behalf other than those contained in the above guarantee.

**Terms: Payment.** Our terms are nett cash. Delivery: At our works. Orders should be accompanied by remittance. Cases are charged at cost, and are not returnable. Packing: free.

**Conditions of Sale.** All Douglas Motorcycles are sold under the guarantee and conditions mentioned on this page, and the specialities of other firms, such as tyres, belts, electrical fittings, etc., are outside our warranty.

**BARNSTORMERS.CO.NZ**  
DOUGLAS MOTORS LTD., KINGSWOOD, BRISTOL.



TRADE MARK

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(t.g)