

NEWS

ABOUT
CONNAUGHT
RACING CARS

JR/CE/208

13th August, 1954

STREAMLINED RACER OFF THE SECRET LIST

Tests Start on New Formula 1

Grand Prix Car.

A 12-month secret was ended today when the new two-and-a-half-litre Connaught Grand Prix racing car arrived at Goodwood motor racing circuit to begin its track tests. The new car, which has an all-enveloping aerodynamic body and a large tail fin, was revealed as Britain's first-ever streamlined Grand Prix racing car.

Today, 38-year-old Rodney Clarke, designer of the car and partner with Kenneth McAlpine in the small privately financed Connaught concern, took out the streamliner for its first test runs. Trials will continue for many weeks. If there are no major difficulties the car may be raced this season.

Two more cars, out of a production line of seven, are now having their bodies fitted. Some cars will have non-streamlined bodies.

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At this stage Connaught have not found the money to support an official works team.

The new car, as with the earlier Formula 2 Connaught has been developed solely for the purpose of creating British motor racing prestige.

Technical notes on the car together with further background details and pictures are attached.

JOHN ROWE
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* IMPORTANT NOTE:- The new Connaught has yet *
* to pass its tests. Your help in not over *
* boosting the car at this stage will be much *
* appreciated. It may be harmful to British *
* prestige to make claims which have yet to *
* be proved. *

"TODAY" MEANS THURSDAY

NEWS

ABOUT
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THE STREAMLINED CONNAUGHT

The new 2½-litre fully-streamlined Connaught Grand Prix racing car represents Great Britain's first serious attempt to compete in the new Formula 1 international motor racing class. The revised Formula, which was internationally introduced on 1st January, 1954 limits major Grand Prix racing cars to 2500-cc unsupercharged or 750-cc supercharged.

It was not until September of last year, when no member of Britain's motor or allied industries had expressed any intention of building a car to offset the strong Italian and German Grand Prix challenge, that Connaught Engineering decided to assume the responsibility of designing a new Formula 1 car for Britain.

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Connaught Engineering is a non-profitmaking concern which does not receive financial support from publicity seeking companies or organisations. It is financed entirely by Kenneth McAlpine, whose undying wish is to see a competitive British Grand Prix car on the circuits of Europe. In the Surrey village of Send, progenitor Rodney Clarke has charge of an enthusiastic band of 40 draughtsmen and engineers and a cluster of small modern workshops.

Thus it was that 12 months ago, in the face of the giant industrial resources of Ferrari, Maserati, Lancia and Mercedes, that Rodney Clarke designed this country's first streamlined racing car.

Following four years of successes with the 1950 2-litre Connaught sufficient off-the-drawing-board orders were obtained for the $2\frac{1}{2}$ -litre Formula 1 car for an initial batch of seven to be laid down. The first of these is the streamlined prototype; the second, also a streamliner, is going to Kenneth McAlpine; the third, which will have an ordinary monoposto body, will be for Rob Walker for Tony Rolt to drive; No. 4, another streamliner, has been bought by Leslie Marr and No. 5, a second monoposto,

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is going to Peter Whitehead. A second production batch is now being considered.

The prototype car was ready for track tests in early August - just one year after the car was first conceived. These trials will continue until the car is race-perfect and under no circumstances will the prototype appear in international events until the most exhaustive tests have been completed. At the moment, and without outside sponsorship, Britain cannot sport an official Connaught team. Money is the problem and £50,000 a year is needed.

To have produced a successful technically unorthodox car would have been a lengthy process, so Connaught have drawn on their own fund of many well-tried and fully developed ideas and woven them into a completely new basic design. To these ingredients has been added one outstanding feature - an all-enveloping fully streamlined body smooth in contour, devoid of excrescences and aesthetically attractive.

Following, then, is a detailed description of the car in the simplest technical terms :-

THE CHASSIS ...

In common with earlier Connaught designs, large-section

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steel tubes are employed for the main chassis members. There are two parallel side members of $3\frac{1}{2}$ in. diameter 16 gauge tubular steel, with four cross-members of the same dimensions welded into position at right angles. Welded to this is a basic superstructure of smaller steel tubes and square section tubular members. This combines bracing for the chassis with mountings for the instrument panel and the body structure.

THE FRONT SUSPENSION ...

Built across the forward end of the main chassis frame just aft of the front cross-member is a rigid, welded box structure which provides the anchorage points for front suspension components. The front suspension is independent by two square-section, tubular wishbones of unequal length on each side, and Armstrong combined telescopic damper and helical spring units incorporating special modifications by Connaught Engineering.

These suspension units are located at their upper end at a mounting on the box structure. They pass through the top wishbone on each side and are attached to a bracket on the lower wishbones. Each of the lower wishbones is linked to a torsion bar which runs transversely through the front cross-member of the chassis.

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THE STEERING GEAR ...

Steering is by rack-and-pinion with the gear itself mounted transversely on a step on the forward face of the front chassis box structure. It is positioned forward of the hubs, and all the ball joints in the connecting arms are in yokes. The gearing is arranged to give two turns from lock to lock and the geometry is such that there is almost no Ackerman.

THE REAR SUSPENSION ...

The new Connaught employs a De Dion type rear axle. In this layout, the De Dion tube is located by two radius arms, one on each side, running forward of the axle. They are mounted at their forward ends on an outrigger support, about mid-way between the two central chassis cross-members.

Braking torque is counteracted by a short torque arm jointed at each end, which is anchored at a central point on the De Dion tube and a mounting on the top of the differential casing. Lateral location is provided by a short compound linkage on the nearside which has the same effect as would a full-length Panhard Rod.

This layout is used in conjunction with a longitudinally-disposed torsion bar on each side. A short shackle and a straightforward arm link the axle to the torsion bars on each side. Damping is by Armstrong double acting units.

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THE 2470 cc ALTA ENGINE ...

Almost any available Grand Prix engine can be accepted by the readily adaptable Connaught chassis. For the immediate future however a $2\frac{1}{2}$ -litre 4-cylinder Alta engine will be the standard unit. It is a twin overhead-camshaft engine with a bore and stroke of 93.5 mm. and 90.0 mm. respectively (2,470 c.c.) The alloy block-casing and crankcase are all-in-one. Within the casing is positioned a single casting which forms four "wet" cylinder liners. There is a three-bearing crankshaft and Vandervall thin-wall bearings are employed for both the mains and the big-ends. Engine lubrication is on the dry-sump principle.

The cylinder head is detachable and is jointed by Wills rings. A compression ratio of $12\frac{1}{2}$ to 1 is employed. Carburation is by the latest S.U. fuel injection system with the pump being driven from the rear of the nearside camshaft. The timing gears are also at the rear of the block. Ignition is by a Lucas coil.

TRANSMISSION ...

From the rear of the engine a prop-shaft with Hardy Spicer joints connects to a four-speed Armstrong Siddeley preselector gearbox which is positioned aft of the driver, close to the rear axle. The gearbox in turn is linked to the final drive unit through a Layrub joint. The final

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drive unit is a Connaught design with a magnesium alloy casing; it incorporates a double reduction gear which allows for up to a four-per-cent variation in axle ratio to be speedily effected. The unit is rigidly positioned in strong mounting-plates which are welded to form an integral part of the main chassis frame. Universally-jointed shafts provide the final drive from the differential to the wheels.

BRAKES AND WHEELS ...

Two-leading shoe Girling hydraulic brakes are employed utilizing Alfin (light alloy bonded to steel liner) 9 in. by $1\frac{5}{8}$ in. drums at the rear and 12 in. by 2 in. units at the front. Specially-designed magnesium castings form the back plates. The brake master cylinder is a twin unit coupled by rod to the pedal and by cable to the handbrake. It is mounted inboard of the offside main chassis member about mid-way along its length and is connected to a remote reservoir.

The Borrani Rudge type wire wheels are equipped with 5.50 by 16 tyres at the front and 6.00 by 16 tyres at the rear.

Subject to satisfactory tests, later models may have disc brakes used in conjunction with pin-drive wire wheels.

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THE BODYWORK ...

The aluminium coachwork of the streamlined car is 14 ft. 4 in. long and 5 ft. 6 in. wide. It encloses the driver up to shoulder height and features a large combined head-fairing and fin. In the nose of the body there are air intakes for the front brakes, the radiator (which is an ultra-light alloy unit) and the engine. Unobtrusive ducts, low down in the side of the car, direct air on to the rear brakes. The underside of the chassis is also fully faired in.

The complete body is divided at its waist-line so that in a matter of minutes the complete top half can be removed. Fuel tanks housed in the tail of the car and on each side of the driver, provide a total capacity of about 50 gallons. From the general aspect of the car it will be noted that the driver sits well towards the forward end. His feet are, in fact, on each side of the engine. This has been arranged so that in conjunction with a downward sloping bonnet line the driver can obtain the best possible forward and side visibility.

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THE 1954 GRAND PRIX FORMULA I CONNAUGHT.

Brief Specification.

ENGINE

Cylinders: 4. Bore: 93.5 mm. Stroke: 90 mm.

Cubic Capacity: 2,470 c.c.

Valves: 2 per cylinder. Operated by twin o.h. camshafts.

Compression Ratio: 12½ to 1.

Max. r.p.m.: 7,000 approximately.

Carburation: S.U. Fuel injection.

Ignition: Lucas coil. Lubrication: Dry Sump.

TRANSMISSION. Clutch: Nil.

Prop. Shaft: Engine to gearbox, Hardy Spicer joints.

Gearbox: Armstrong-Siddeley, preselector remote from engine; coupled to final drive unit by Layrub joint.

Final Drive: Connaught double reduction axle with magnesium alloy casing. Universally-jointed shafts to wheels.

CHASSIS. General design: Tubular. Two parallel side members and four cross-members each 3½ in. diameter, 16 gauge.

Front Suspension: Independent. Unequal length wishbones with modified Armstrong suspension units (helical spring).

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Rear Suspension: De Dion with torsion bars. One radius rod on each side forward of the axle.

Dampers: Armstrong units at front. Double-acting piston-type Armstrongs at rear.

Wheels: Borrani Rudge-type, wire.

Tyres: Front, 5.50 x 16; Rear, 6.00 x 16.

Brakes: 2LS Girling drum, 9 in. x $1\frac{5}{8}$ in rear, 12 in. x 2 in. front. Alfin drums, magnesium back plates.
Note: Later models may have disc brakes in conjunction with pin drive disc wheels.

Steering Gear: Rack and pinion, 2 turns lock to lock.

Tank Capacity: 50 gallons.

DIMENSIONS. Wheelbase: 7 ft. 6 in.

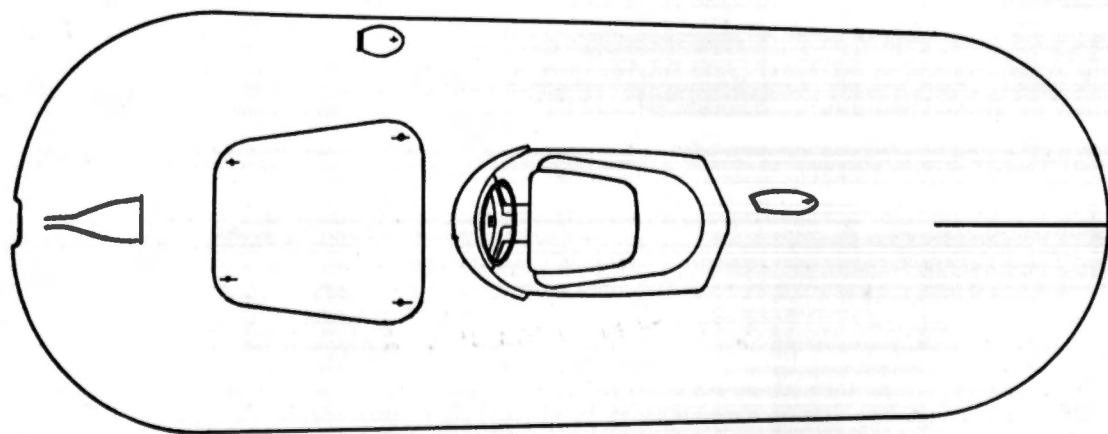
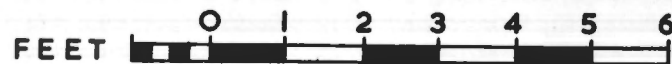
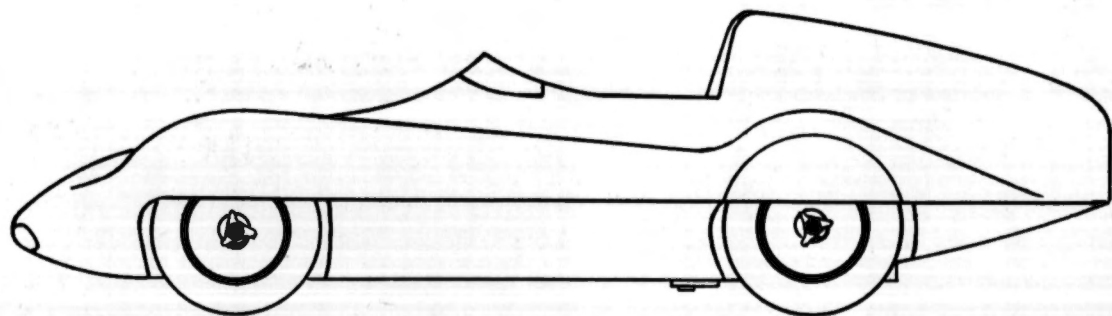
Track, Front & Rear: 4 ft. 2 in.

Overall length: 14 ft. 4 in.

Overall width: 5 ft. 6 in.

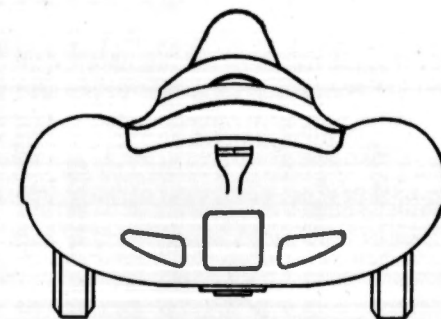
Ground clearance: 4 in.

Weight, dry: Not released.



2 1/2 LITRE FORMULA 1

CONNAUGHT
RACING CAR



WHEELBASE	7' 6"
TRACK - FRONT	4' 2"
REAR	4' 2"
LENGTH OVERALL	14' 4"
WIDTH	5' 6"
GROUND CLEARANCE	4"
WHEELS-FRONT	16X4 1/2 WITH 16 X 550 TYRES
REAR	16X5 WITH 16 X 600 TYRES
FUEL CAPACITY	UP TO 65 GALLS
ENGINE	ALTA
CYLINDERS	4
BORE	93.5 MM
STROKE	90 MM
CAPACITY	2470 CC
FUEL SYSTEM	S.U. FUEL INJECTION
GEARBOX	ARMSTRONG SIDDELEY SELF CHANGE

T. Robert Cloke.