The Rutland Clipper

1954 - 1955

Contents

Cover Illustration: The prototype Rutland Clipper with Whitson C41C coachwork, seen with its final owner Astons Coaches of Marton. (Roy Marshall).

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The Rutland Clipper was the rarest of all British coach chassis with a prototype built in 1954 and a production run of one (although some sources say two chassis were built) in 1955, with just two known examples entering service.

The story starts in 1947, just after the end of World War II, when Frank Manton established Manton Motors Ltd with its headquarters at 23, Shirley Road, Croydon. The company also had a large workshop situated at Teevan Road, Croydon, which operated a commercial vehicle repair section with facilities for mechanical handling of heavy components. An active side of the business was the rebuilding of engines with up to 16 units a week passing through the workshops, many of which were large diesel engines for PSV operators. Manton Motors was also a service agent for Perkins engines as well as being a main agent for Commer and Karrier vehicles.

In 1951 Manton decided to set up his own company to manufacture commercial vehicles under the name Waggon Rutland (later becoming Motor Traction Ltd – more commonly abbreviated to MTN) and was based in New Addington, Surrey. The name 'Rutland' was apparently chosen as it was his father's birthplace.

MTN specialised in the manufacture of commercial vehicles from 1 ton up to large 4-axle trucks with the chassis being built to the customers

specifications using the major components of other manufacturers. 75% of Rutland production went overseas to Portugal, Spain, South America, Rhodesia (now Zimbabwe), India, Pakistan and Turkey.

In 1954 MTN introduced the 'Clipper' rear-engined coach chassis, which was a development of a heavier rear-engined export chassis already available. It was intended to give greater engine accessibility, together with easier engine servicing for the operator without a pit and greater passenger comfort by reason of the reduced engine noise. Once again a number of standard components were used in its construction. The prototype chassis was bodied by Whitson with 41-seat centre-entrance coachwork. It was retained by Whitson as a demonstrator for a while and then went to West Kent Motor Services who ran it for a couple of years where it gained an appalling reputation for unreliability, overheating and lack of speed. Overheating may have been the reason for the later addition of the large roof-mounted air scoop on the second Clipper, 776LMU. Both chassis were later scrapped.

The company ceased trading in 1957 and was liquidated in 1958 by the shareholders due to relatively poor sales and low returns.

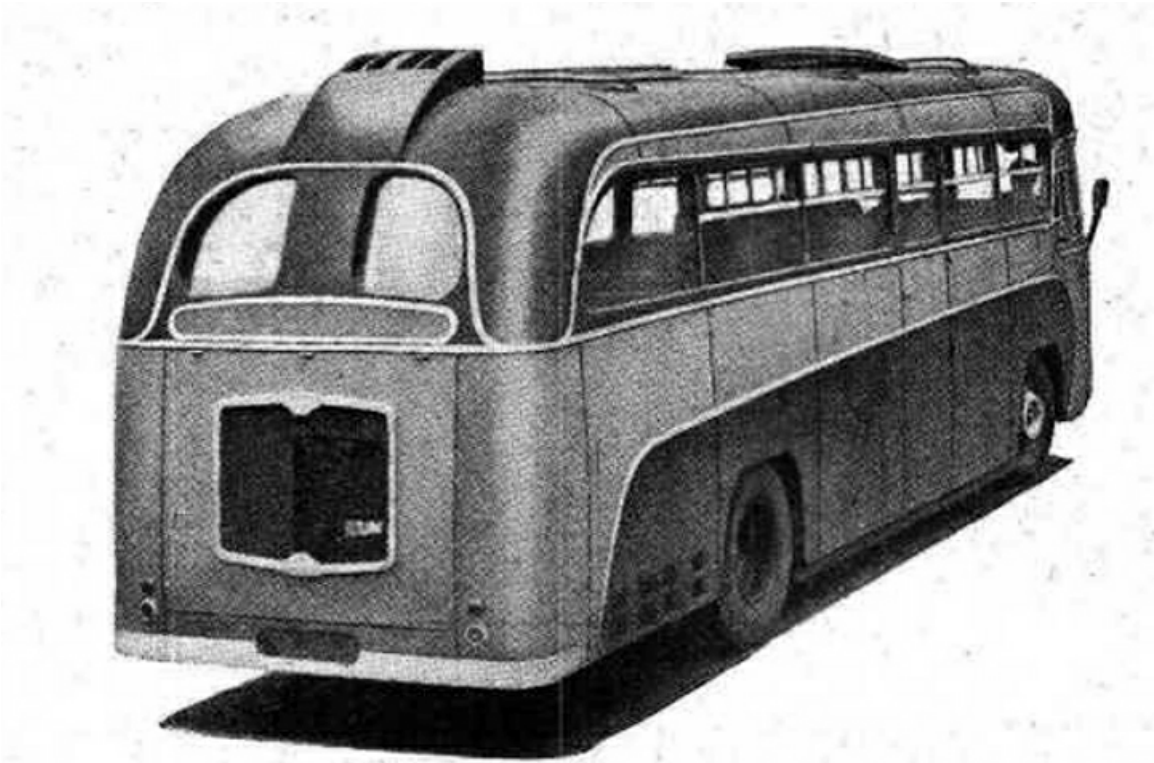
The prototype Clipper TKE741 with Whitson C41C coachwork with its third owner, Spiers of Henley. (LTHL collection).

Details of a road test of the Clipper appeared in Commercial Motor in August 1956 and the notes below are based on this article.

Several alternative power units were offered in the Clipper chassis, although the test vehicle was powered by a Meadows 4DC 330 oil engine developing 85bhp at 2200rpm. The engine, which had a 14in diameter clutch, was mounted as a unit with a David Brown 45S four-speed synchromesh gearbox at three points. Metacone mountings were used and those in twin form at the rear of the engine were interesting in that the unit hung from the chassis brackets and safety bolts were fitted to avoid any chance of the mountings fracturing and the engine dropping to the ground. The drive to the transfer box was through a two-piece propeller shaft and the box, which contained single helical spur gears, was rubber mounted in the frame, using the same mounting points as would be employed for the rear of the power unit in the underfloor-engined chassis application. The engine and gearbox unit, together with the radiator, were carried on a detachable sub-frame and it was possible to effect an engine change in 3½ hours, using three men and a 6-ton hydraulic jack.

In other respects the chassis specification was conventional. The frame was a straightforward assembly using six cross-members. Girling hydraulic brakes with a Clayton Dewandre vacuum servo were employed and the test vehicle had an Eaton 16500 two-speed axle. Hydraulic clutch operation was used but the accelerator linkage was through rods.

An illustration from Commercial Motor showing the test vehicle identifies it as 776LMU and not the prototype and was presumably built in 1955. (Commercial Motor Archive).



A rear view of the Clipper showing the large radiator cover on the boot door and roof mounted exhaust. (Commercial Motor Archive).

The second Rutland Clipper was 776LMU, which was delivered to Acorn Motors in late 1956 and is seen at the Brighton Coach Rally the same year. (LTHL collection).

A Whitson 41-seat body of composite construction was mounted on the test chassis and little impression of the engine position was conveyed by the seating layout. The only effect noticeable inside the body was that the rear seat was 8in forward of the rear panel, the kick-board of this seat was flush with the forward edge of the cushion and the floor was slightly ramped upwards towards the rear, giving improved visibility to rear passengers.

The vehicle, which had covered only 800 miles prior to my test, was taken to Titsey Hill for the first test and during the journey out to the hill the running characteristics of the Clipper from the passengers' angle was observed.

As might be expected, the engine noise level was extremely low and the quietness of the power unit was surprising even when sitting in the back seat. Passengers in this position would become aware of the closeness of the power unit only when it was idling, very slight noise and vibration being apparent under this condition. I was disappointed in the amount of noise conveyed from the transfer box but was given to understand that experimental bearings had been fitted temporarily and that the original bearings and a different grade of oil produced much more silent running. The ride over varying types of surfaces was above criticism. Telescopic dampers at both axles were contributory to this, but it was apparent that a high degree of stability was imparted by the engine position, particularly during fast cornering.

Titsey Hill, which is almost a mile long, with a general gradient of 1 in 6 and a steepest gradient of 1 in 5, was approached from the top, therefore a fade test was conducted first. For this, the Clipper was driven down the hill in neutral, with the foot brake applied to restrict the speed to 20mph. The descent was made in 3 minutes 10 seconds, and by the time the coach had reached the lower slopes, heavy pedal pressure was required to keep the speed down.

A crash stop from 20mph produced a Tapley meter reading of 32 per cent which, when compared with the average Tapley meter reading of 67 per cent obtained later in the day, showed that a certain amount of fade was present. Profuse smoking at the front drums suggested that these facings had faded whilst the relatively cool rear brakes had lost little efficiency. The test was severe, however, and such conditions were hardly likely to be repeated in normal service.

A climb of the hill was then made in an ambient temperature of 68ºF. Before making this climb the Clipper was taken for a brief run to bring the coolant temperature up to normal and this normal temperature was recorded as 167ºF. A five-minute climb to the summit produced a temperature rise of 6ºF in the coolant whilst the engine oil temperature rose by 11ºF to 168ºF, the pressure dropping by only 2psi.

Whilst the climb could have been made in second gear, low axle ratio, the engine appeared to pull better in low gear, high axle ratio and this

combination was used for the steeper sections of the hill. The test was sufficient to prove, however, that the engine cooling is more than adequate for hilly operation in this country and would be sufficient for operation in most hot climates.

Returning to the 1-in-5 section of the hill, a stop-start test was made, the hand brake holding the vehicle easily on this slope and a satisfactory start was made in first gear with high ratio in the axle engaged. A certain amount of smoke was present in the exhaust during this re-start and slight hazing was observed during the non-stop climb also.

In view of the good gradient performance of the Clipper, I elected (against the advice of the Rutland representative!) to take the chassis out to Succombs Hill, where there are two gradients of 1 in 4 severity, one of which occurs on a sharp bend. On both these gradients very successful smooth stop-start tests were carried out using first gear, low axle ratio and a three-quarter throttle. Once again, the multi-pull hand brake showed itself capable of holding the vehicle on this gradient, although I prefer to see a straight pull hand brake on a passenger vehicle.

Fuel-consumption tests were conducted over a 20.5-mile out and return route between Caterham and Hobbs Barracks, East Grinstead. This route is undulating in nature and starts with a 31-minute climb which demands the use of third gear, high ratio. Despite such climbs and several traffic hold-ups an average speed of 29.11 mph was maintained and the use of just

over 10½ pints of fuel indicated a consumption rate of 15.9 mpg. During this test the coolant temperature remained at between 160ºF and 165ºF, the ambient temperature having dropped slightly since the hill climb was made.

Acceleration tests produced satisfactory figures in view of the low power-to-weight ratio. The best figures for the 0-30 mph tests were achieved by starting off in second gear with low axle ratio engaged, changing to third gear and then changing to high ratio and the final change being a split one to top gear low ratio.

It was impossible to make the direct-drive tests with the higher axle ratio engaged because of transmission roughness, but the vehicle pulled away from below 10 mph in low axle ratio with only a slight vibration period between 9 and 13 mph.

The brake tests were carried out along a level piece of concreted road adjacent to the Motor Traction factory in New Addington. High pedal pressure was required to produce satisfactory braking distances, but a pedal ratio which would give this effect had been deliberately chosen so as to avoid the chance of causing injuries to passengers during emergency conditions. Changing this ratio was relatively simple, alternative clevis holes being provided in the relay lever and some tests carried out with a more advantageous ratio produced average Tapley meter readings of 85 per cent without wheel-locking or deviation from a straight course.

This figure was decidedly unsuitable for passenger work, so the main tests were carried out with the harder pedal. The braking was quite smooth and progressive in the circumstances, with no wheel-locking and there was very little evidence of time lag in the system. From both speeds the average Tapley meter reading was 67 per cent. The Clipper is a pleasant vehicle to drive, although it is a little strange not to be able to hear the engine note. Several times this led me to suppose that the engine was not pulling well – an impression that was belied by glancing at the speedometer, which showed the road speed to be far higher than suspected.

A certain amount of work could have been done in connection with the pedal controls and the gear change; all the pedals are heavy in operation, whilst the gear change is inclined to be sloppy, although this is a feature often found on rear-engined vehicles and one which is difficult to overcome without recourse to the use of electric, pneumatic or hydraulic operation.

Access to the engine could hardly be bettered in any design. The engine compartment, which is the full width of the body, allows plenty of room on each side of the power unit. So much so, that it is intended to move the spare wheel and fuel tank into this space. This would then give additional luggage lockers below the floor, making the total capacity as great, if not greater, than that obtainable with a conventional rear boot.

Commercial Motor 10 August 1956

MODEL: Rutland Clipper REC 714 rear-engined 16-ft. 6-in.-wheelbase coach chassis with Meadows oil engine and Whitson 41-seat body.

WEIGHTS:

	Tons	cwt.	qr.
Unladen (kerb weight) ..	6	6	0
Payload	2	8	0
Driver, observer, etc. ..		3	2
	8	17	2

DISTRIBUTION:

Front axle	3	0	2
Rear axle	5	17	0

ENGINE: Meadows 4DC 330 four-cylindered direct-injection oil engine; bore 120 mm. (4.724 in.); stroke 120 mm. (4.724 in.); piston-swept volume 5.43 litres (330 cu. in.); maximum output 85 b.h.p. at 2,200 r.p.m.; R.A.C. rating 35.7 h.p.; maximum torque 230 lb.-ft. at 1,300 r.p.m.

TRANSMISSION: Through 14-in.-diameter single-dry-plate clutch to David Brown 45S. four-speed synchromesh gearbox, thence by two-piece propeller shaft to transfer box and by single propeller shaft to the fully floating Eaton 16500 two-speed rear axle.

GEAR RATIOS: 6.5, 3.44, 1.87 and 1 to 1 forward; reverse, 7.05 to 1; rear-axle ratios, 4.89 and 6.8 to 1.

BRAKES: Girling hydraulic system, with two-leading-shoe units at all wheels, assisted by Clayton Dewandre VH4/200 vacuum servo. Hand brake linked mechanically to rear wheels only. Diameter of drums, front, 16 in., rear, 15.25 in.; width of facings, front, 3.0 in., rear, 5.0 in.; total frictional area, 480 sq. in., that is, 54 sq. in. per ton gross weight as tested.

FIRING ORDER 1-3-4-2
VALVE CLEARANCE 0·010"
COMPRESSION RATIO 16:1

FRAME Pressed steel channel section with six cross-members bolted in position. Engine mounted on detachable sub-frame.

STEERING: Marles 861 cam and double roller.

SUSPENSION: Semi-elliptic springs with telescopic dampers at all wheels.

ELECTRICAL: 24-v. compensated-voltage-control system with 135 amp.-hr. battery.

FUEL CONSUMPTION: (Undulating route), 16.04 m.p.g. at 29.11 m.p.h. average speed, that is, 142.4 gross ton-m.p.g. as tested, giving a time-load-mileage factor of 4,145.

TANK CAPACITY: 48 gallons, range approximately 750 miles.

ACCELERATION: Through gears, 0-20 m.p.h., 15.75 sec., 0-30 m.p.h., 40.25 sec.; direct drive (low axle ratio), 10-20 m.p.h., 17.75 sec., 10-30 m.p.h., 41.6 sec.

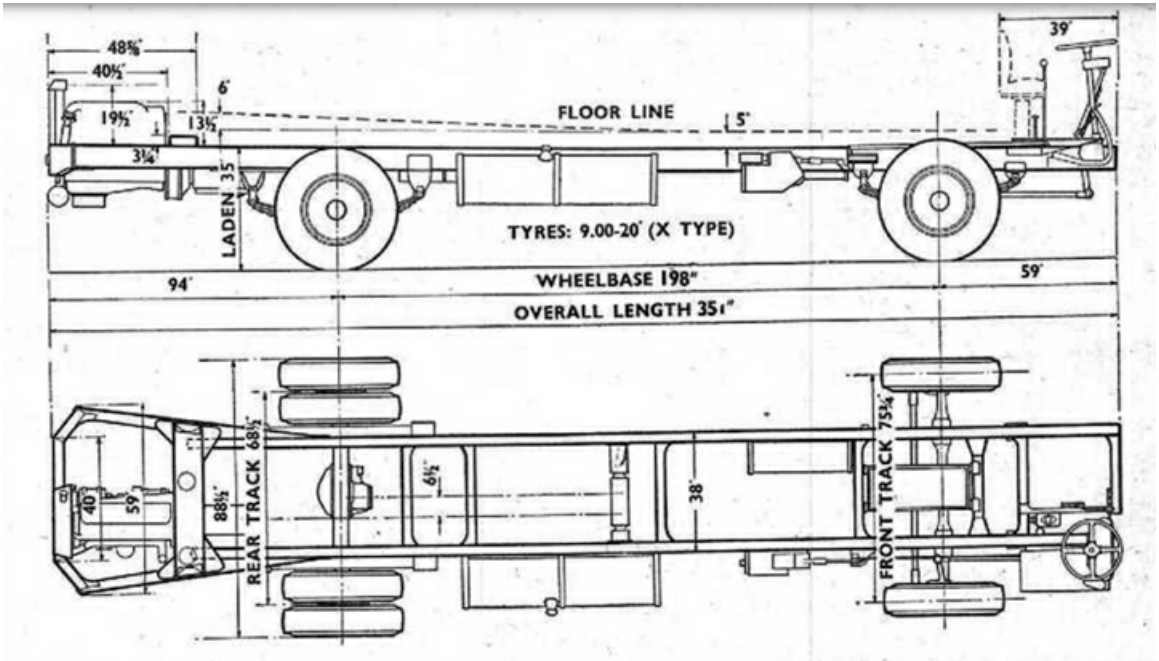
BRAKING: From 20 m.p.h., 30 ft. (14.3 ft. per sec. per sec.); from 30 m.p.h., 61.5 ft. (15.8 ft. per sec. per sec.)

WEIGHT RATIOS: 0.479 b.h.p. per cwt. gross weight as tested.

TURNING CIRCLES: 57.5 ft. both locks.

MAKERS: Motor Traction, Ltd., New Addington, Surrey.

Rutland Clipper details and specifications from Commercial Motor Archive 10 August 1956



Chassis details and specifications from Commercial Motor 10 August 1956

Rutland Clipper - Chassis Production 1954-1955

Date New	Reg. No.	Chassis No.	Body	Seating	Original Owner
1954	TKE741	TW5026	Whitson	C41C	Whitson
1955	776LMU	TW5052	Whitson	C41C	Acorn Motors

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