

## **The History of Nuffield and Leyland Tractors - The 'Mini', 'British Leyland', the birth of 'Leyland Tractors' & 'Position Control' Hydraulics**

Although Nuffield tractors never achieved the same level of sales as Ford or Ferguson, the Nuffield was a well respected tractor with a loyal following of customers.

The 10/42 and 10/60 models were introduced in 1964 and saw the introduction of a high/low feature in the gearbox, this gave 10 forward and 2 reverse gears. Also introduced were self energising disc brakes, twin delivery hydraulic pump and mechanical governor. Model designations reflected the number of forward gears and engine horse power.

December 1st 1965 saw 'Mini' mechanization day. Nuffield tractors introduced their new 'Mini' following five years of research and experimentation. The tractor was not well received; it was introduced at a time when tractors were getting larger. The Mini measured a mere 8' 2¼" long and 3' 8½" from the ground to the bonnet top, it weighed in at 2,098 lbs.

A large amount of the development was done by 'Harry Ferguson Research' of Coventry (this may have accounted for the great similarity with the early Ferguson TE 20 of the 50's). It was offered at first with a BMC 950 cc diesel engine which produced a mere 15 hp. This was followed in 1967 with an alternative 950 cc Petrol engine which produced 20 hp. Technically the Mini was very advanced with a 9 forward, 3 reverse constant mesh gearbox. Fully live, self contained, lift, hold & drop hydraulics with 'Free Linkage' draught control, pump pressure of 2500 psi & 1000 lb lift, and, for the first time on a Nuffield, 2 speed PTO. The brakes featured a three pedal self energising disc brake set up. A hand operated diff lock and single clutch also featured, the tractor was of Monocoque construction.

Since the design and appearance of the Nuffield was getting a bit tired it was decided that a new image was required, so, in 1967 the 3/45 and 4/65 were introduced. These models not only looked much more modern they were given many new features. The main ones were; New hydraulics with double acting top link, dual chamber hydraulic pump, 6.5 gall for main and auxiliary & 1.5 gall for draught control. Pressure was increased to 2600 psi and the lift capacity raised to 3350 lb. (it should be noted that lift capacity is always quoted at maximum mechanical advantage i.e.; when all link arms, lift rods and lift arms are at right angles to each other. Lift capacity can be substantially reduced when the linkage is at an angle less than or more than 90°). The fuel tank was repositioned to the front of the tractor in front of the radiator and the steering was redesigned. Along with a new instrument panel, a dry element type air cleaner and front weight frame was fitted. To round off the face lift a new bonnet, side panels & grille were designed, the mud wings were changed to a square type.

During the late 60's a 4/65 with Lucas Hydrostatic transmission was built and tested but never put into production. This tractor has been restored and is in full working order.

To overcome the power issues with the Mini tractor new engines were fitted, a BMC 1.5 ltr Diesel of 25 hp and a BMC 1.6 ltr Petrol of 28 hp. Model designation changed to 4/25. A new bonnet was fitted but otherwise the rest of the tractor remained the same.

In May 1968 the merger took place between, as it was known then, British Motor Holdings, and Leyland Motor Corporation thus creating Britain's largest motor vehicle manufacturer, providing the new organisation with research, development, design and marketing facilities unequalled by the majority of their competitive vehicle producers. One of the unintended consequences of the merger was that the Standard Motor Company, which had been taken over in 1960 by Leyland Motors Ltd, had a prototype small tractor stored away. This tractor was designed by Standard when they realised that they would need a tractor to manufacture after they had sold their tractor production facility at Banner Lane to Massey Ferguson. (Standard Motor Co. had been building tractors, on contract, for MF from 1946). The tractors were designed around the Standard diesel engine and looked very similar to the Ferguson TE 20. In the event they never went into production.

Under the new name, 'British Leyland', the Nuffield tractors were redesigned and emerged under the new name, house colours and bonnet design of Leyland at the Smithfield Show of 1969. The models introduced were 154, 344 & 384, designations indicating engine capacity in litres and number of engine cylinders, (i.e.; 384, 3.8 litre, 4 cylinders). Horsepower for these models were 25/28, 55 and 70 respectively. The 3 cylinder engine fitted to the 3/45 was dropped in favour of a 3.4 litre 4 cylinder engine in the 344. Both the 3.4 & 3.8 engines gained a harmonic balancer to remove the primary/secondary 'Out of balance' vibration problem associated with the 4/65 tractor. The balancer was basically two counter rotating 'Bob' weights rotating at twice engine speed. This balancer was a great success and proved very reliable in service. (The 3.8 ltr engine had in fact a capacity of 3.77 ltrs and always had been since the beginning!)

A new universal drawbar & pick-up hitch, standard double 11" clutch and repositioned air cleaner completed the changes. Transmission and hydraulics remained essentially the same as the previous 3/45 & 4/65, the 384 did however have the option of Heavy Duty linkage.

During this period (1967 to 1972) Motransa, a tractor manufacturer in Spain, began building tractors using a mixture of old 10/60 and 4/65 Nuffield parts. They used either a 3.4 or 3.8 ltr BMC engine as well as a 6305E Perkins. Later models (1973 to 1977) used 'Leyland' tin work and were available in either 2 or 4WD. The 2WD models were designated Panther, Jaguar, Puma and Tiger whilst the 4WD models used the same names with the prefix 'Super'. 'SAVA' engines, built under licence from Leyland were fitted. After 1977 Motransa built tractors under their own name with Leyland tin work and a 4.07ltr re-worked Leyland engine. They also fitted Perkins 6 cyl engines.

A Training centre for dealers and service engineers was set up in 1970 next to the factory at Mosside Farm, this farm was farmed commercially by members of staff with help from neighbouring farmers and measured 150 acres. Many of the sales brochures for Nuffield and Leyland tractors show photographs of machines in a farm environment. The action shots were taken at Mosside Farm whilst studio shots were taken in a commercial film studio at Penicuik, a few miles South of Edinburgh.

After a long gestation period new 'Position' control hydraulics were introduced to the 344 & 384 in November 1971. These units represented a big leap forward and included micronic filtration to keep the oil 'clean'.

From 1968 to the late 70's J C Bamford used the Nuffield 'Skid Unit' as a base for their diggers. Production figures aren't available so the actual quantity can't be verified, but, on occasions the entire production line was filled with units for JCB. When JCB finally produced their own transmission a mortal blow was dealt to tractor production from which it never really recovered.

Over the years various specialist manufactures used Nuffield and Leyland as a basis for 4 wheel drive and other vehicles, they include, Cantatore of Italy, Hymac diggers, Roadless Traction half tracks, Coventry Climax forklifts and Bray. An oddity was converted in Sweden (Hultdins Verkstad AB) to give twin, side by side, engined 4 wheel drives. In Norway Hymas used the Leyland skid unit as a base for their 'Digger'. Numbers of these conversions weren't large and few details remain.

It should be noted that vast numbers of Nuffield and Leyland tractors were supplied to Finland over many years. Too many, some considered, for the number of farms in Finland. Presumably other manufacturers were also supplying to Finland. It was suggested that there may have been a connection in the fact that Finland had a long international land border with what was at the time the USSR. In 2009 this cross border supply was again suggested but can't be confirmed.

In 1970 the law in the UK demanded that agricultural tractors had to have an approved 'Safety Cab' fitted, there were a number of exemptions however, therefore were these applied, and for export markets, tractors were still available without cabs.

In markets where 'Safety Frames' were required this could also be fitted. This was in fact a Safety Cab without any windscreen, side windows or doors. The roof was retained and as with the Safety Cab was fully tested and approved.