January 1978

David Brown Tractors: Inside Story

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INSIDE STORY

by Allen Walker

A summary of the design and manufacturing achievements of David Brown Tractors Ltd.
Meltham Mills, headquarters of David Brown Tractors Ltd., is approximately 8km or 5 miles south-west of Huddersfield in West Yorkshire.

The name Meltham Mills derives from a small corn mill built in 1760 by Mr. Nathaniel Dyson, who substantially extended the premises in 1786.

In the early part of the 19th century, Jonas Brook and Bros. Ltd., pioneers in the manufacture of sewing cotton, established a factory nearby. By 1822 this family-owned textile business was flourishing and had erected additional comparatively large buildings in this wooded valley in the foothills of the Pennines.

In 1845 it acquired the original corn mill premises which were either converted to textile use or replaced. The company continued to prosper and expand until the general trade depression in the 1930's. In 1931 Jonas Brook and Bros. amalgamated with J. and P. Coats to form United Thread Mills Ltd., by which name the company was known until it closed down in 1939. Shortly after the buildings and site were purchased by David Brown Tractors Ltd. an era in the history of Meltham M. began.

Background to the illustration

This lithographic print by an unknown artist is believed to have been produced in the late 1860's. It incorporates in the foreground a view of the original Meltham Mills (now the headquarters of David Brown Tractors Ltd.). The picture also illustrates other textile mills and buildings some of which were actually located several miles away. The apparent purpose was to present an overall impression of principal buildings in the area.
David Brown 'Firsts'

Few, if any, tractor manufacturers can equal the David Brown record of pioneering achievement in tractor manufacture and development. Major examples are:

1937 - World's first farm tractor equipped with hydraulic lift and converging 3-point linkage
1948 - Two speed power take-off
1949 - High-speed direct injection diesel engine for farm tractors
1953 - Traction control (Implement weight transfer)
1948 - Six-speed and 1966 - twelve-speed gearboxes
1959 - All purpose tractor hydraulic system with single lever control
1964 - Dial-controlled tractor hydraulic system
1968 - Introduction of fully approved safety cabs for all models
1971 - Semi-automatic transmission providing on-the-move clutchless changes to any of four ratios in each working range

Honours List

In recent years the company and its products have been granted an unusually large number of national awards and distinctions.

On four occasions - 1966, 1968, 1971 and 1978 - the company has been granted a Queen's Award to Industry for export achievement.

In 1972 its Hydra-Shift semi-automatic transmission was awarded silver medals for outstanding design by four national agricultural institutions - the Royal Agricultural Society of England, the Royal Association of British Dairy Farmers, the Dublin Agricultural Society and the Royal Ulster Agricultural Society.

In 1974 the company also gained a Queen's Award to Industry for technological achievement (Hydra-Shift semi-automatic transmission) - the first such award made to a farm tractor manufacturer.

In 1976 the company received a Design Council Award for the design of the Hydra-Shift semi-automatic transmission.

Since 1955 the company has held a Royal Warrant of Appointment to Queen Elizabeth II as manufacturers of agricultural machinery.

INSIDE STORY

Updated and reprinted: 1978.

The front-cover illustration, showing a sectionalised DB 1412 Hydra-Shift tractor, is also published by David Brown Tractors Ltd. In full-colour as a wallchart. Smaller drawings on the wallchart feature the Hydra-Shift transmission system, the DB 6-cylinder engine, hydrostatic steering, the DB 12-speed forward 4-reverse speed synchronesh gearbox, the turbocharger and the reversible-shaft 1000/540 r/min PTO.

This wallchart has been published in English, Arabic, French, German, Hebrew, Italian, Portuguese and Spanish, and in an alternative form showing the 1412 tractor with C-cab, in English, Danish, Finnish and Swedish.
David Brown involvement in farm machinery began in 1936 when the company, then a subsidiary of the local family firm David Brown and Sons (Huddersfield) Ltd., collaborated with Mr Harry Ferguson in the manufacture of the legendary Ferguson-Brown tractor.

Built initially in the corner of the David Brown gear factory, the Ferguson-Brown model was the world's first production tractor to be equipped with hydraulic lift and converging 3-point linkage, a revolutionary concept which soon became a fundamental part of farm tractor design the world over.

Approximately 1,350 Ferguson-Brown tractors were built - the last twenty or so at the present Meltham factory - before Ferguson and Brown parted; the former to join Henry Ford in the USA; the latter to make tractors of his own design.

The first David Brown model was exhibited at the 1939 Royal Show. It was widely acclaimed but before quantity production could begin the Second World War broke out and the Meltham factory's resources were directed mainly towards gear manufacture, for which the name David Brown - then as now - was renowned.

However, the Meltham plant was able to maintain and develop its tractor manufacturing expertise by producing small quantities of aircraft towing and recovery vehicles. This facilitated the switch-over to peacetime production of farm tractors in 1946.

Despite the company's comparatively late entry into the highly competitive farm tractor industry, Meltham-built machines quickly earned a world-reputation for quality and inventive design.

In 1955 the company acquired the long-established firm of Harrison, McGregor and Guest Ltd. of Leigh, Lancashire, whose range of Albion farm machinery products (notably mowers and binders) had previously earned them high international esteem.

In recent years the Meltham and Leigh plants have been extensively modernised and extended. In July 1971 a new tractor assembly complex - the most modern of its type in Europe - was completed at Meltham, containing many unique features and production techniques with particular emphasis on quality control.

The revitalised Leigh plant became the main supplier of large tractor components for the Meltham plant and also designs and builds basic tractor-mounted implements: front loaders and a rear-mounted ditcher/digger/loader.

By this time the David Brown company had become Britain's third largest farm tractor manufacturer. The company holds the Royal Warrant and has won several Queen's Awards to Industry for export achievement (four out of every five David Brown tractors are sold overseas).

In 1976 the company’s unique Hydra-Sm semi-automatic tractor transmission won a Design Council Award - the first such award to be made in respect of farm tractor design.
The year 1972 marked another significant milestone in the company's development. David Brown Tractors Ltd. was acquired in that year by the international conglomerate, Tenneco Inc., of Houston, Texas, and was affiliated to another world-famous Tenneco subsidiary, the J I Case Company, of Racine, Wisconsin, USA.

Under the Tenneco banner, David Brown Tractors and Case are actively and successfully co-ordinating and expanding their combined production, marketing and distribution facilities. Early visible evidence of this powerful new alliance came in 1973 with the adoption of a new unified color scheme throughout the full range of David Brown and Case farm tractors; a combination of orchid white, power red, and black.

DBT Distributors and Dealers in the UK and in several other parts of Europe now offer selected machines from the Case company's complementary range of farm tractors. In other parts of the world also many joint DBT/Case franchises are being established. Additionally, an increasing number of Case construction equipment products employ engines and transmission units manufactured by David Brown Tractors Ltd.

The Meltham Company has three subsidiary companies in Scandinavia; David Brown Traktor A/S, Denmark; David Brown Tractors AB, Sweden; and David Brown Tractors Oy, Finland. There are two additional European subsidiary marketing companies, David Brown Tractors (France) SA and David Brown Tractors GmbH, German Federal Republic. The Company operates a series of retail outlets in the East of England and in Northern Ireland and has a further subsidiary in the Republic of Ireland.

Former DBT marketing companies in South Africa, Canada and Australia have been absorbed into the J I Case subsidiaries in those countries.
The following notes relate to principal wheeled tractor models manufactured by David Brown Tractors Ltd. since 1936. Other lesser-known models, some of which were supplied exclusively to certain countries, are listed on pages 10 and 11.

1936 – 1939 Ferguson-Brown Type A
This model painted battleship grey was built by David Brown to the design of the late Mr. Harry Ferguson at Park Gear Works, Huddersfield, and at the present Meltham Mills tractor factory. It had a 4-cylinder water cooled petrol (gasoline) or petrol/TVO (gasoline/kerosene) engine. The first 500 tractors built had a Coventry Climax type ‘E’ engine. The remainder of the 1,350 machines built had a David Brown engine of 2,010cc capacity, developing 20hp (14.9kW) at 1,400 rev/min. There were 3 forward and 1 reverse gears and independent wheel brakes.
The Ferguson-Brown was the world’s first production tractor with hydraulic lift and converging three-point linkage.

1939 – 1945: David Brown VAK I
The VAK I was the first tractor completely designed and built by David Brown. Painted a distinctive ‘hunting pink’ it developed 35hp (26.1kW) at 2,000 rev/min from a 4-cylinder water-cooled petrol or petrol/TVO (gasoline/kerosene) engine. There were 4 forward and 1 reverse gears and the specification available included independent hand brakes, power lift and 35mm (1½in) diameter PTO shaft. The track was adjustable by dished wheel centres (a David Brown patent) and implement depth was controlled by a patented depth (gauge) wheel system.

A ‘streamlined’ bonnet (hood) and windshield gave the tractor clean and functional lines.
Number manufactured: 5,350.

1945 – 1947 VAK IA
Developed from the proven VAK I model, the VAK IA featured an improved engine lubrication system and a more precise governor. An automatic load controlled hot spot for rapid TVO (kerosene) engine warm-up was introduced and the now universally used turnbuckle top link was fitted.
Number manufactured: 3,500.

1947 – 1953: Cropmaster
The long production run of Cropmaster tractors saw many new features pioneered by the company and did much to enhance the reputation for reliability and quality enjoyed by the David Brown tractor. With the introduction of the Cropmaster the company introduced the popular policy of including in the standard specification many items normally regarded as extras – at this time such items as hydraulic lift, swinging drawbar and electric lighting. The 2-speed PTO, 6-speed gearbox, coil ignition and the high speed direct injection diesel engine were all introduced by David Brown in this period. The diesel engine was introduced in 1949 and developed 34hp (25.3kW) at 1,800 rev/min.
Number manufactured: 59,800.
1953 - 1959: 50D
The 50D was based on the 6-cylinder 50hp (37.3kW) power unit developed for a track-laying tractor. A rugged, heavy machine, it was ideally suited to towing operations and featured a 4-speed PTO unit. It was unique amongst David Brown tractors in having a side mounted belt pulley instead of the more familiar rear mounted unit. The 50D was the first David Brown tractor to be available only with a diesel engine. Number manufactured: 1,260.

1953 - 1956: 30C and 30D
The 30C petrol (gasoline) and TVO and 30D diesel engines had overhead valves and coil ignition or direct injection with powers of: diesel - 34hp (25.3kW) at 1,800 rev/min; petrol (gasoline) - 41hp (30.6kW) at 2,300 rev/min; TVO (kerosene) - 37.6hp (27.6kW) at 2,300 rev/min.

In 1954 the new series 30C and 30D models were equipped with TCU - the subsequently world famous Traction Control Unit® and the first controlled weight transfer system for tractors. In 1955 a special hitch® to give the advantage of TCU in hauling heavy trailers was introduced. TCU is still the most efficient and by far the simplest method of obtaining controlled weight transfer.
Number manufactured: 16,073.

1953 - 1958: 25 and 25D
The diesel version developed 31.3hp (23.1kW) at 1,800 rev/min and the petrol (gasoline) model 31.7hp (23.2kW) at 2,000 rev/min. These were the first small tractors to have the advantage of TCU. Also featured were a 2-speed PTO and belt pulley unit and a 6 forward 2 reverse speed gearbox.
Number manufactured: 24,742.

1956 - 1961: 2D
Idealised for precision market garden work, the 2D was also used as a specialist rowcrop machine on larger farms. It had a lightweight, rear mounted, air cooled 2-cylinder diesel engine of 14hp (10.4kW) with 4-speed gearbox and was designed for use with mid-mounted implements. A rear lift and PTO® were available as options. Both lifts were operated by compressed air and the two front mid-mounted lift cylinders® could be operated independently.
Number manufactured: 2,008.
1956 - 1958: 900
The 900 was available with four alternative engines; diesel - 40hp (29.8kW); TVO (kerosene) - 37hp (27.6kW); petrol (gasoline) - 40hp (29.8kW), and high compression petrol (gasoline) - 45hp (33.5kW). The diesel model pioneered the use of the now familiar distributor type fuel injection pump and also featured dual category linkage with the David Brown patented swivelling ball type top link and detachable bonnet (hood).

In 1957 the 900 Livedrive was introduced, the first David Brown model with a dual clutch giving live hydraulics and a live PTO.
Number manufactured: 13,770.

1958 - 1959: 950 (T and U series)
The 950 was similar in design to the 900 but had increased power – diesel 42.5hp (31.3kW); petrol (gasoline) 42hp (31kW). A much improved recirculating ball type steering unit was fitted and the universal drawbar was dimensioned to comply with British Standard 1495: 1958 SAE Standard J718.
Number manufactured: 5,574.

1959 - 1962: 950 Implematic
The introduction of the Implematic offered farmers, for the first time, the opportunity to use depth (gauge) wheel or draught (draft) control with equal facility. Automatic weight transfer was available through the Implematic® draught (draft) control or controlled weight transfer through the TCU system.

In 1961 the V and W series was superseded by the 950 Implematic A and B series which had improved front axle clearance and multi-speed PTO to provide both 540 and 1,000 rev/min standard speeds.
Number manufactured: 18,126.

1960 - 1965: 850 Implematic
The A and B series 850 Implematic tractors had a 4-cylinder diesel engine giving 35hp (26.1kW) at 2,000 rev/min. Petrol (gasoline) versions were also offered. The Implematic hydraulic system enabled this small tractor to give an outstanding performance with mounted implements. The later C and D series had diesel engines only and featured the multi-speed PTO and improved front axle clearance. From April 1963 height control was included in the hydraulic system.
Number manufactured: 14,242.

1961 - 1965: 880 Implematic
A higher speed range than the 850 Implematic made the C and D series 880 an ideal tractor for the “one-tractor” farm. The same 42.5hp (31.3kW) 4-cylinder power unit was employed, but the diesel versions were superseded by the E and F series 880 Implematic with a new 3-cylinder diesel engine. A choice of 11/49 (high-speed) or 9/50 (low-speed) final drives gave speed ranges similar to those of the old 950 and 880 Implematic, but the high torque of the new engine gave a much improved lugging power.
Number manufactured: 19,207.

1961 - 1965: 990 Implematic
With the introduction of the 990 Implematic, David Brown first used the principle of the cross-flow cylinder head in conjunction with the two-stage front-mounted air-cleaner. The 990 was powered by a 52hp (38.8kW) direct injection diesel engine. In 1963 height control was introduced in the Implematic hydraulic system, the wheel-base was increased, the battery relocated behind the radiator grille, and a 12-speed alternative transmission introduced. Number manufactured: 40,600.
1965 – 1970: 770 Selectamatic
Powered by a 3-cylinder 33hp (24.6kW) diesel engine, the 770 was the first tractor to have the outstanding simple Selectamatic hydraulic system © which proved so successful that it was introduced on all tractors in the David Brown range in October 1965. The 770 also had a 2-lever 12 forward 4 reverse speed gearbox ©. Early versions of the 770 were finished in hunting pink. In October 1965 the 770 was upgraded to 36hp (26.9kW) and at the same time was completely restyled and painted in a distinctive new colour combination of orchid white and chocolate brown.
Number manufactured: 12,206.

1965 – 1971: 880 Selectamatic
Painted orchid white and chocolate, the re-styled 880 incorporated the Selectamatic hydraulic system, multi-speed power take-off and differential lock. The 3-cylinder engine was re-rated at 46hp (34.3kW). Available with 12 forward 4 reverse speed gearbox and high clearance conversion unit. Full flow filtration of hydraulic oil was incorporated in 1970.
Number manufactured: 33,379.

1965 – 1971: 990 Selectamatic
Like the 880, the 990 was restyled and finished in white and chocolate. The 4-cylinder engine was re-rated at 55hp (41kW) and the specification included Selectamatic hydraulics, multi-speed PTO and differential lock. Available with 12-speed gearbox and high clearance conversion. A 4-wheel drive version was introduced in 1970 and in the same year full flow filtration of hydraulic oil was incorporated in the specification.

1967 – 1971: 780 Selectamatic
A lightweight version of the 880, with the same engine, the 780 was available only as a Livetractor with two-stage clutch. A Narrow version was introduced in 1969.
Number manufactured: 12,198.

1967 – 1971: 1200 Selectamatic
This 67hp (49.9kW) tractor, uprated to 72hp (53.7kW) in 1968, was the first DB model to have a separate hand control unit controlling the drive to the PTO. Also the hydraulic pump was directly driven from the front of the engine and it had three-point linkage of category 2 only. A luxury suspension seat was fitted as standard. The 4-wheel drive 1200 was announced in 1970.
Number manufactured: 18,990.

1968: Safety Cabs and Frames
In anticipation of new UK legislation (applicable from September, 1970) requiring farm tractors to be fitted with safety cabs or frames capable of withstanding government-approved crush and impact tests, the David Brown company introduced safety cabs (initially as alternative equipment) nearly two years before the legislation came into effect. As a result the first three safety cab approval certificates granted by the UK Ministry of Agriculture were awarded to David Brown tractor models.
1971: 885 Synchromesh
This model superseded both the 780 and 880 Selectamatic tractors. It has a 3-cylinder direct injection cross-flow diesel engine of 48 DIN hp (35.9kW) and 12-speed gearbox with synchromesh.

Standard specification for most markets includes live Selectamatic hydraulics, multi-speed PTO, full road and field lighting, alternator, trailer socket, hydraulic take-off valve and coupling.

An 885 Narrow version is available for specialist work in orchards, vineyards, market gardens and similar confined spaces.

Also available in selected markets as 885 Highway model.

1971: 990 Synchromesh
This third version of the best-selling 990 series has a 4-cylinder engine of 58 DIN hp (43.2kW). In other respects the standard specification is generally similar to that of the 885 model.

Available in some markets with factory-fitted high clearance conversion unit and as DB 990 Highway model.

An alternative version of the 990 was introduced in 1978 featuring a fully independent hand-operated PTO clutch.

1971: 995 and 996 Synchromesh
Both are powered by a 4-cylinder engine of 64 DIN hp (47.7kW), otherwise the standard specification of both machines is generally similar to that of the 885 model. The 995 model is additionally equipped with fully independent hand-operated PTO clutch.

Both the 995 and 996 models are available in some markets with high clearance conversion unit. The 995 is additionally available as a Highway model. In certain countries the 996 is marketed as a special version of the 995 model.

Four-wheel drive versions of the 990 and 996 models were introduced in 1978.

1971: 1210 Synchromesh
Powered by a 72 DIN hp (53.7kW) 4-cylinder engine the 1210 incorporates the extensive basic specification common throughout the David Brown range. Additionally it has independent PTO and live engine-driven hydraulic pump. A 4-wheel drive version is available. This model has on-the-move engagement of front wheel drive and hydrostatic power steering as standard equipment.

A high clearance conversion unit is available in some markets.

1971: 1212 Hydra-Shift
Fitted with the same 72hp (53.7kW) 4-cylinder engine as the 1210, the 1212 tractor was the first model to be equipped with the patented Hydra-Shift semi-automatic transmission. This unique David Brown development provides on-the-move clutchless changes to any of 4 ratios in each pre-selected working range – Creep, Field, Road or Reverse. These changes (up or down) are effected through a simple hand lever mounted on the fascia. The changes are effected smoothly without loss of power and without loss of engine braking.

The Hydra-Shift transmission earned the Company a Queen's Award to Industry “for technological achievement” in 1974 – the first Award in this category to be granted to an agricultural tractor manufacturer. In 1976 the Hydra-Shift transmission was granted a Design Council Award – another rare distinction.

1974: 1410 Synchromesh and 1412 Hydra-Shift
The largest David Brown tractors so far made these two sturdily built models are both powered by a 91 DIN hp (67.9kW) 4-cylinder engine producing 81 PTO hp (60.4kW). They are the first standard DB tractors to be turbocharged.

In addition to the normal extensive basic specification these 91 hp models have a large diameter clutch with heavy duty linings, strengthened rear axle, massive final drive units, oil-immersed independent disc brakes with self-balancing master pedal, high capacity hydraulics, telescopic link ends, and slotted lift rods. Both are also equipped with a new type of hydrostatic power steering.

The standard specification of the 1212 model also includes hydrostatic steering and selective top link sensing unit.

The 1410 model has a 12-forward 4-reverse gearbox with Synchromesh.

The 1412 model is equipped with the Hydra-Shift semi-automatic gearbox.

In 1976 a 4-wheel drive version of the 1410 model was introduced. This was the first model to be equipped with a reversible-shaft PTO unit. This has 21 splines at one end of the shaft to drive 4000 r/min implements and 6 splines at the other to drive at 540 r/min. Reversing the shaft, which is retained by four bolts, automatically engages the appropriate PTO speed.
1975: DB 'Q' (Quiet) Cab

Introduced at the 1975 Royal Smithfield Show the DB 'Q' Cab complied fully with the safety cab noise regulations applicable in the UK from June, 1976. Design features include: noise level well below the legal maximum of 90 decibels; totally enclosed insulated cab; completely new internal layout; rubber-covered spacious floor area; main manual controls grouped at driver's right hand; instruments and steering column enclosed in single soundproof housing; armchair seat; easy access to rear-mounted implements.

The basic specification of all tractors fitted with 'Q' Cab is extended to include: hydrostatic power steering; hydraulically operated balanced braking.

The DB Quiet Cab went into production in January 1976 and soon afterwards was a standard fitment on all tractor models marketed in the UK.

A new version of the DB Q-Cab was introduced in December 1977. The main improvement was the provision of wider doors providing easier access. An alternative De-Luxe Cab was introduced into the UK at the same time. Available on 91 and 72hp tractors, this cab had previously been restricted to Scandinavian countries for a number of years.

Highway Tractors

Supplied to the UK market only, DB Highway tractors, painted a distinctive yellow, are based on five of the Company's range of highly successful farm tractors – the lightweight manoeuvrable 3-cylinder DB 885 of 48hp (35.8kW); the more powerful 4-cylinder 990 and 995 models of 58 and 64hp (45.2 and 47.7kW) respectively, and also the 1210 synchromesh and 1212 Hydra-Shift (both 72hp: 53.7kW).

In October, 1977 (Silver Jubilee Year of H.M. Queen Elizabeth) the Meltham factory produced its 500,000th David Brown tractor. This tractor, a DB 1412 Hydra-Shift model, was fitted with an improved Q-Cab painted silver and royal purple. This historic tractor was auctioned at the 1977 Royal Smithfield Show and the proceeds (£16,000) donated to H.M. the Queen's Silver Jubilee Appeal Fund.

All five Highway tractors can be supplied to full UK Road Traffic Act specification and are available with standard metal-clad Weatherframe safety cab or with the improved David Brown 'Q' (Quiet) cab.

A large number of local authorities throughout the UK have purchased these purpose-built tractors which can handle a wide variety of specialised equipment. Apart from municipal authorities the tractors have been supplied to the Ministry of Defence, Department of the Environment, the National Coal Board, the Central Electricity Authority, General Post Office, Water Boards, River Boards, Airlines, contractors, builders, and mechanical handling specialists.

In standard form each Highway model is a truly multi-purpose tractor. It can handle specialised equipment such as flail and gang mowers, loaders, post hole diggers, rotary brushes, verge trimmers, sprayers, winches, pumps, compressors, hedge cutters, and dozer blades. Each machine is also capable of carrying out normal field work with simplicity of operation, ease of maintenance, proven reliability, and genuine economy.

DB 995 Highway equipped with front loader and rear-mounted ditcher/digger/loader.
Lesser known DB tractor products

For the record we list below some of the lesser-known David Brown products which were manufactured at Meltham for specialist applications or for a particular market.

Wheeled tractors

Wartime Production: 1939 – 1945
When the first tractor of wholly David Brown design, the David Brown VAK I model, was introduced at the 1939 Royal Show it received an enthusiastic reception and orders poured in. However, war intervened and the major part of the Meltham factory's output was diverted to production of war material – e.g. gear units for fighter aircraft, hydraulic units for various types of military aircraft, and transmissions for tanks and other military vehicles. However, the Company was able to continue to produce limited quantities of tractors, mostly for the armed services. In this connection the principal contributions were a heavy-duty wheeled tractor designed for general airfield towing duties, and a larger tracked machine used by army engineers.

1941 – 1944 VIG1/100 and VIG1/462 Air Ministry Tractors
Fitted with a 37hp (27.6kW) gasoline unit and low-speed gearbox some of these tractors (painted in RAF blue) had a conventional dry-plate clutch but others incorporated a fluid-drive torque converter. Designed for towing heavy aircraft, bomb carriers, etc. these tractors were fitted with a heavy-duty winch and land anchor.
Number manufactured: 2,400.

1948 – 1965 Taskmaster VIG1AR; VID1AR
This model incorporated basic units developed for the successful Cropmaster agricultural tractor – i.e. mainframe, engine, gearbox and rear axle. However, being intended for general haulage work the Taskmaster had a single foot-pedal operating the outboard rear wheel brakes (the inboard brakes being used for hand brake purposes), and also had heavy duty steering and mudguards, etc. First models had a four-cylinder gasoline engine. The original four-speed gearbox was later superseded by a six-speed unit and many of them incorporated a fluid-drive torque converter in the transmission.
Number manufactured: 2,752.

1952 – 1958 VIG/1C (Aircraft towing tractor)
Developed from the wartime Air Ministry tractors and powered by a 30hp (22.4kW) gasoline engine with a fluid-drive torque converter in the transmission these tractors, many of which were fitted with a rear-mounted winch, were a heavier version of the Taskmaster industrial towing tractor.
Number manufactured: 350.

1960 – 1963 Oliver 500 and 600
Manufactured for, and sold exclusively by the Oliver Corporation in the USA these tractors were basically DB 850 (500) and DB 950 (600) models but with a restyled bonnet and in the green and white livery of the Oliver Corporation. Number manufactured: 2,148.
Crawlers

1942 – 1949 DB4
Fitted with a 4-cylinder 38.5 hp (28.3 kW) Dorman diesel engine, five-speed gearbox and clutch-and-brake steering, these tractors were the first diesel models produced at Meltham, and were used by army engineers for general construction work. Number manufactured: 110.

1952 – 1965 Trackmaster Diesel 50; 50TD; 50T
Fitted with a six-cylinder 50 hp (37.3 kW) diesel engine, six-speed gearbox and differential steering these tractors were later designated 50TD (agricultural) or 50T (industrial). Later versions had a larger diameter clutch and redesigned running gear. These were designated 50T Mark II. Number manufactured: 1,667.

1950 – 1965 Trackmaster 30; 30T; 30TD; 30T (gasoline or kerosene), 30TD (diesel) or 30T (industrial diesel). These were eventually superseded by a 40T version, which had a 40 hp (29.8 kW) diesel engine, large diameter clutch and redesigned running gear. Number manufactured: 3,080.

DB 25 and DB 30 series, and the crawler versions were thereafter designated 30T (gasoline or kerosene), 30TD (diesel) or 30TD (industrial diesel). These were eventually superseded by a 40TD version with a 40 hp (29.8 kW) diesel engine, large diameter clutch and redesigned running gear. Number manufactured: 3,080.

Engines and ‘Skid’ units

For many years the Meltham Factory has supplied David Brown engines and ‘skid’ units (engines/transmission units in various stages of assembly) to other manufacturers in the UK and overseas for incorporation into a wide range of products. Examples include:

- Engines: for marine applications, and for operating balers, combine harvesters, electric generating sets.
- ‘Skid’ units: for fork lift trucks, forestry and industrial tractors, loader/backhoe units, industrial loaders, aircraft towing tractors, and harvesting machines handling a variety of specialist crops (e.g. blackcurrants, sugar beet, peas).
- Case construction equipment: since 1972 DB engines have been used to power various types of Case construction equipment – crawlers, wheeled loaders, and the Uni Loader. Combinations of DB engines, gearboxes and rear axles are also incorporated in some Case products.
Implement manufacture

The Company’s first involvement in implement manufacture coincided with its production in the late 1930’s of the Ferguson-Brown tractor. Implements in general use up to that time were based on horse-drawn equipment and were merely towed behind the tractor.

With its hydraulic lift and 3-point linkage, the revolutionary Ferguson-Brown tractor brought an entirely new concept to implement design. Equipment could now be mounted on the tractor and could be lifted in and out of work. Implements of this type made by the David Brown Company specially for the Ferguson-Brown tractor included: single and 2-furrow ploughs; 3-row ridger; rigid tine cultivator; and spring tine cultivator.

When, in 1939, the Company designed and built its first David Brown tractor, the VAK I model, it also produced a similar range of mounted tillage equipment – ploughs, ridgers and cultivators. As a concession to tradition, a trailed plough was also produced initially.

When tractor production was increased after World War II, the DB implement range was extended to include an alternating plough, disc ploughs, disc harrows, mowers and a potato spinner. During this time a number of detailed changes were made and various options were offered but the basic implements underwent very little change.

In 1955 the Company acquired the old-established firm of Harrison, McGregor and Guest Ltd., and with it an extensive range of Albion implements and barn machinery. The ultimate objective (since achieved) was to convert the Leigh plant into a main supplier of tractor components. In the meantime selected Albion products were added to the DB implement range, and all implement production was concentrated at Leigh. The result was that, by the late 1950’s, the revised implement range included:

- **Mouldboard ploughs** from one to six furrows plus single and two-furrow alternating ploughs.
- **Match plough**, a fully adjustable 2-furrow model which was designed for competition work and achieved considerable success at national and international level.

- **Disc ploughs** of two, three or four furrows and a special two-furrow model with reversible discs.
- **Cultivators** with either rigid tines, spring tines, ‘C’ spring tines or gang hoes; fully adjustable and mounted on a toolbar 78 or 96in long (198/244cm).
- **Ridger** with three bodies mounted on a 78 or 96in (198/244cm) toolbar. Fully adjustable and suitable for row widths of 20 to 36in (51/91cm).
- **Rotary Tiller** for high-speed cultivation. Four freely-revolving axles in diamond formation and in widths of 50, 106 and 118in (228/269/299cm).
- **Ripper/Mole Drainer** with a 2in (50.8mm) diameter mole capable of operating at depths up to 24in (61cm).
- **Manure Spreaders** of approximately 35cwt (1778kg) capacity with ground wheel drive to the spreader mechanism.
- **Seed Drills** (12, 14 or 15 rows) and a combined seed and fertiliser drill (12 or 16 rows).
- **Mowers** of different types. Tralled machines with ground wheel drive and semi-mounted machines with PTO drive. It is estimated that more than 200,000 Albion mowers (including the horse-drawn variety) were sold before production finally ceased in the late 1950’s. A later David Brown innovation was a mid-mounted machine with hydraulic drive to the cutter bar.
- **Swath Turners** with two reversible heads. Two models were offered: a mounted machine with PTO drive; and a trailed machine with ground wheel drive.
- **Pick-Up Baler** with the unusual arrangement of a transverse mounted bale chamber. This was a PTO driven machine capable of producing up to eight full size bales per minute.
- **Forage Harvester (Hurricane Series)** This was the first flail type harvester.
manufactured in the UK. PTO driven, it cut, chopped and loaded the crop in one operation. The series include in-line and offset machines, and a special version for verge trimming.

**Binders** of 4ft 6in (137cm) to 10ft (305cm) cut with either PTO or ground wheel drive. More than 67,000 Albion binders (all types) were built before it was phased out in 1958.

**Combine Harvesters** (both bagger and tanker models). These were PTO driven machines with various alternative attachments for different crops.

During the 1960's the production emphasis at Leigh was progressively transferred from implements to tractor components. Many of the implements listed above went out of production although some (e.g. Hurricane forage harvester, disc plough, rotary tiller) were taken up by other manufacturers and continued to be made under licence. Implement manufacture was concentrated on a range of basic tractor-mounted equipment: ploughs (fixed and reversible); front loaders; and rear-mounted ditcher/digger/loaders. By the mid-1970's this list had to be reduced still further (by ceasing plough manufacture) to enable the renovated and greatly expanded Leigh factory to meet the steadily increasing demand for tractor components, including safety cabs. Implement production is currently confined to the following items:

- **Front Loaders** with a variety of attachments: dirt buckets, manure forks, root crop buckets, parallel fork lift, grabs etc.

- **Ditcher/Digger/Loader** a versatile rear-mounted implement with a wide section of attachments.

Top: PTO-driven combine harvester

Centre: 3-furrow reversible plough

Bottom: Ditcher/digger/loader with alternative attachments
Sporting history

In 1959 an ingenious adaptation of two David Brown agricultural implements - the DB steerable hoe and ripper/mole drainer - made sporting history. In collaboration with the Turf Research Institute of Bingley, Yorkshire, David Brown engineers designed a machine which successfully laid underground heating cable at Murrayfield, headquarters of the Scottish Rugby Football Union - the world's first installation of its kind at a sporting arena.

This David Brown machine subsequently carried out similar installations at four soccer grounds - Everton, Arsenal, Leeds United and Hamar (Norway); at one rugby league ground (Leeds); and at several greyhound racing tracks at Manchester, London and Bradford.

Registered Trade Marks

The following are among a considerable number of trade marks which have been registered in the UK and various other countries by David Brown Tractors or its subsidiaries:

<table>
<thead>
<tr>
<th>Mark</th>
<th>Product Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBION</td>
<td>Mowers reapers, barn machinery</td>
</tr>
<tr>
<td>CROPMASTER</td>
<td>Tractors</td>
</tr>
<tr>
<td>DAVID BROWN</td>
<td>Tractors and implements</td>
</tr>
<tr>
<td>HYDRA-SHIFT</td>
<td>Tractors, power transmissions</td>
</tr>
<tr>
<td>HURRICANE</td>
<td>Harvesters, manure spreaders</td>
</tr>
<tr>
<td>IMPLEMATIC</td>
<td>Tractors, hydraulic power lift mechanisms</td>
</tr>
<tr>
<td>SELECTAMATIC</td>
<td>Tractors, hydraulic power lift mechanisms</td>
</tr>
<tr>
<td>DB EMBLEM</td>
<td>Tractors, implements</td>
</tr>
<tr>
<td>TASKMASTER</td>
<td>Tractors</td>
</tr>
<tr>
<td>TCU</td>
<td>Hydraulic power lift mechanisms</td>
</tr>
<tr>
<td>TRACKMASTER</td>
<td>Endless track tractors</td>
</tr>
</tbody>
</table>

Patents

An extensive list of patents has been granted to David Brown Tractors Ltd. The major inventions made by the Company and covered by patents are indicated by the symbol © in this publication.

Historical data

In order to ensure that appropriate archival material is available to historians and to others who may be interested, David Brown Tractors Ltd. has placed on permanent loan with the Museum of English Rural Life an extensive collection of early publications, photographs and documents relating to the company and its products.

Restorers of old David Brown tractor models, students of farm mechanisation history and others who may require information of this type are invited to apply to:

The Museum of English Rural Life, The University, Whiteknights, Reading, England RG6 2AG
The headquarters and main manufacturing and assembly plants are located at Meltham, Huddersfield in West Yorkshire. This 78 acre (32 ha) site comprises well over 1m square feet of administration and manufacturing space (over 90,000 m²).

Major components manufactured at Meltham include: engines, transmissions, and hydraulic components. Items purchased from external sources include: castings (most of which are machined at Meltham), forgings, wheels, tyres, springs, tubes, pipes and sundry proprietary components like batteries, filters, injectors, clutches, seats etc.

Completed in 1971 the main tractor assembly complex at Meltham contains over 2500 ft (760m) of conveyor and a complete tractor emerges from the end of the production line approximately every 4 minutes. The line is designed to handle tractors weighing up to 4 tonnes and is divided into three main areas – the preliminary building line, the painting section and finishing department.

The upper floor of the 2-storey assembly complex is on the same level as the adjoining main machine shop. This facilitates the flow of machined components to appropriate stations on the assembly line. Sub-assemblies from other parts of the factory and bought-in components are similarly fed to the primary line. All of these have previously undergone thorough inspection procedures. For example, all David Brown engines undergo some 163 checks covering component alignment and tolerances during manufacture. Moreover, all engines are run for one hour before being passed to the tractor assembly line. On the assembly line itself there are three inspection stations. Installation of engines is checked at the first; reductions, covers etc. at the second; and ancillary equipment at the third.

Approved assemblies are then transferred from the building line via overhead conveyor for painting in the totally enclosed, dust-proof section of the line. Paint is applied in four stages: prime painting, stoving, application of finishing coat, and final stoving. The complete painting process takes about four hours.

Still attached to the overhead conveyor the partially assembled tractors are delivered to the finishing line where additional equipment (instrument panels, electrical equipment and wiring, mudguards, bonnets, wheels etc.) is fitted. Additional quality control checks are carried out before the tractor is handed over for rigorous road testing prior to despatch.

The Leigh Manufacturing Division (formerly Harrison, McGregor and Guest Ltd.) occupies approximately 20 acres (8ha) near the centre of Leigh in Lancashire. The Harrison, McGregor Company was founded here in 1872 specialising in the manufacture of horse-drawn mowers. Production was later extended and diversified to include: barn machinery for the preparation of feeding stuffs for livestock – oat crushers, root and chaff cutters, plate mills; reapers and binders; rakes, swath turners and corn drills. The name 'Albion' by which these products were identified in the Company's early years is still remembered with affection and respect in many countries.

Today the Leigh Manufacturing Division, which has been completely modernised and greatly expanded, acts as the main supplier to the Meltham factory of a wide range of tractor components. At the same time it has retained some of its links with the past by continuing to design and manufacture a number of tractor-mounted implements - front loaders and rear-mounted ditcher/digger/loaders.

In the tractor component field the superbly equipped Leigh factory specialises in fabrication, machinery, and sheet metal work.

In 1978 a new metal treatment and paint plant was installed. In addition to providing increased capacity, this ultra-modern installation incorporates several advanced technologies new to the agricultural machinery industry.

Among an impressive and increasing range of production items are hydraulic rams, power take-off units, front axles, radiator guards, bonnets, and mudwings. In addition the factory manufactures and assembles complete safety cabs which are transported to Meltham for fitment to appropriate David Brown tractors.

Assembly of safety cabs was transferred to a new building erected for this purpose in 1978.

Parts Supply
In 1978 a centralised Parts Supply centre was established at Batley, West Yorkshire. Designed to expand and streamline the worldwide distribution of replacement parts, the 121,000 sq. ft. (11,240 m²) plant is equipped with modern mechanical handling, packaging and processing facilities.
Symbol of co-operation

Many people ask about the origin of the David Brown emblem and particularly about the significance of the two roses, one white and the other red, which are incorporated in the design. To trace the origin and significance of the White and Red roses, it is necessary to go back some five hundred years or more, to the time when civil war raged in England, a struggle known to historians as the Wars of the Roses. Two of the English noblemen involved in that conflict – the Duke of York and the Earl of Lancaster – adopted respectively a white rose and a red rose as their battle emblems.

Today the white rose is the official emblem of the county historically known as Yorkshire and the red rose is the symbol adopted by neighbouring Lancashire. Rivalry, except in the field of sport, is forgotten and these two regions together play a vital role in the industrial and agricultural prosperity of Britain.

Thus the coupling of a red and white rose in the David Brown emblem symbolises the integration and cooperation of two famous names in the agricultural world – the Yorkshire-based company of David Brown Tractors Ltd. and its Lancashire manufacturing plant (formerly Harrison, McGregor and Guest Ltd.).