



# COMPACT TRACTORS

Never underestimate the compact tractor, advises HUGH TILLEY. In many areas they are more than a match for their big brothers

Compact tractors have become an almost uniquely Japanese phenomena, but there are several European models with similar size and feature attributes. In the UK compacts are marketed under their own names, for example as Kubota or Iseki, and/or in the livery of several major UK tractor suppliers, such as Ford, Massey-Ferguson and John Deere. The important feature of their development must be the Japanese dominance in small diesel engine design and production. Built up around their success is an entire UK industry devoted to producing attachments and implements, these ranging from cabs and controls through all types of mower to wrap-around loader/backhoe combinations.

Features which have contributed to this popularity are their manoeuvrability and ease of use, together with the fact that they offer most of the features expected from a modern tractor such as PTO, hydraulic linkage and external services, at a very competitive price. In terms of power, 'compacts' range from about 12 hp to about 40 hp or above, although it could be debated that they lose their compactness at the top end of this power range, equating to the smaller tractor in terms of price, weight and size.

The majority of compacts have a conventional clutch/gearbox transmission, however most manufacturers produce one or more hydrostatic models, generally in low or mid power ranges where the engineering is not too expensive or power loss too noticeable. The advantages of instant clutchless forward/reverse and infinitely variable



The Charterhouse Turf Tidy, mounted on a Kubota L275

speed for mowing or loader work are obvious. Selection of a conventional manual gearbox should take into consideration the work for which the tractor is required – will there be sufficient low gear ratios for core tining etc.?

Power is of vital importance in the ability to undertake the tasks required on a golf course, but weight usually conferred with greater power is also occasionally necessary for stability – and even for grip. Even so, compacts should not be under-estimated, because with four wheel drive, more efficient engine/transmission systems and a well set-up implement, most are able to compete with their bigger (and more expensive) brethren. There are three basic options for utilising tractor power: traction, power take-off (PTO) and hydraulics, these latter making 'tractor' a misnomer. Tractors have become prime-mowers and main sources of power – and this is particularly true with the compact tractor.

Traction is an essential component on many operations – perhaps trailer work typifies these on a golf course – but other draught operations include ground cultivation, scarifying and rolling. All modern tractors go back to the late Harry Ferguson's principles of weight transfer – of imposing

the implements weight on the tractor (rear) wheels to increase grip – in fact Mr Ferguson would thoroughly approve of the concept of the compact. The Ferguson type trailer has the axle set right at the back with coupling close under the rear axle to impose much of the load weight there. Four wheel drive did not come into the original concept, however it provides a spectacular advantage in grip and is not an expensive addition at 'compact' size. It also provides extra weight and strength for the front axle and power steering, all useful attributes for other applications such as front loader work. Another important factor in the grip equation are the tyres. Traction tyres are essential to maximise grip, especially when on bare soil, but they are not user friendly. The simple ➔ 46



The SIS Powadrag linked to a Ford 1220

■ The author, Hugh Tilley, is a technical journalist whose specialised knowledge includes modern greenkeeping machinery.



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45 → answer is to have two sets of wheels – or buy a set of wheel chains (sold for forestry).

The power take off, invariably abbreviated to PTO, has become perhaps the most important point from which to extract power from the engine and is usually the most efficient. Rear PTO is standard, but front and mid PTO options may be available and found ideal for mowers and other implements, perhaps with limitations of power output and/or speed. It may be possible to mount an extra hydraulic pump or similar to the front of the engine crankshaft and this can be useful for uprating performance of loaders or for powering a hydrostatic mower. The British Standard PTO speeds are 540rpm, or 1000rpm (for higher power output), but some tractors offer other variations – which may need adaption to the implement. 'Live' PTO drive is also an essential modern requirement – with the PTO having an independent clutch.

A three point linkage was the operation system devised by Harry Ferguson for implement carriage and control – this having become standardised in categories (Zero, One and Two) according to power and size – so that in theory any implement should fit any similar category tractor. In practice this does not always work, but the exceptions are reasonably rare. More frequent are variations between link end and PTO measurements. Lift control may be a simple spool valve or a quadrant and lever – normally controlling the position of the links – however higher specification models also have, or can have, draught control to automatically adjust the depth (draught) according to tractive effort.

Of growing importance are external hydraulic services, used to operate front loaders, lift and fold mowers, control splitter depth and tip trailers. These services – and the use and abuse of them – contribute to more problems in compact tractor operation than any other cause. Often this is due to a lack of specification or knowledge by suppliers of tractor and implement. A crucial fact is to realise the difference between single and double acting spool valves and hydraulic rams. Spool valves vary in type and operation so it is essential to ensure the right one is matched to each specific implement.

Cab or no cab is another question of individual preference and use, ROPS being the compact norm. A top specification cab provides a (relatively) quiet, cool, dry and clean environment without too much impediment to getting on and off, but adds over £1,000 to the price.

A loader can be extremely useful on a compact, however if required for intermittent use ensure that it is readily detachable. For satisfactory service it should be fitted to a robust tractor or have adequate chassis reinforcement, for many compact tractors owe much of their light weight and price to the use of pressed and folded steel in place of traditional castings.

Compact tractors offer exceptional value for money and great versatility and can undertake most of the tasks required on a golf course. However, they should not be expected to do the same work that is expected of a 50-70 hp tractor, nor with implements designed for such vehicles.



The Amazone Sweeper mounted on an Iseki 320



■ The role of formulations and packaging in the agrochemical industry is undergoing a transformation. Regulatory authorities, led by the UK, expect manufacturers to build the most appropriate technologies into their product – in other words minimise hazard to operators and the environment.

ICI have been at the forefront and the result is now seen in a new bottle, funnel shaped with an isolating handle to prevent lodging when emptied, which requires only one hand to pour and with a 63mm wide neck prevents 'glugging'. Three ICI products will initially be packed in these, the revolutionary Water Dispersible Granular (WDG) herbicide formulations Groundhog, Speedway and Soltair. "Now 15 years after its introduction we are witnessing a marked trend toward WDGs," said Roger Mossop, ICI Professional Products Marketing Manager.

■ The buoyant Jacobsen division of Textron has announced a joint marketing agreement with the turf care equipment manufacturers, Smithco. The agreement covers the international distribution of the complete Smithco range and will be available under the newly created name of Jacobsen-Smithco, the products to feature under the familiar Jacobsen orange livery.

Pictured after signing the agreement, are Rene Orban, Bill Kenney, Dick Miller and Tom Carter.

■ Marketing Link and Milliken Chemicals, through their UK distributor, Farmura Ltd, have launched a "Better-Way-to-Spray" campaign to introduce greenkeepers to the benefits of Blazon spray pattern indicators. Greenkeepers who purchase 12 litres of Blazon before September 30th will receive a golf towel and the opportunity to join the BIGGA delegation to the GCSAA Convention in New Orleans. The successful winner, chosen in a draw by BIGGA Chairman, George Malcolm, will be invited to Aldwark Manor to receive the prize.

■ Fisons Horticulture have appointed Avoncrop Amenity Products of Sandford, Bristol, as a main distributor of Fisons professional turfcare and amenity products. Avoncrop will cover the south west and south of England.

■ In the Tillers Fibreturf competition held at the Landscape Industries Exhibition, the £100 prize for guessing the number of fibres in a 10 litre bucket of Fibreturf rootzone was shared between John Churchward of Torquay and Mr Kennedy of Worcester G&CC. They were nearest to estimating 858,500 fibres which, if laid end to end would contain enough fibres to join London with Moscow! Tough stuff indeed.

■ Turf Irrigation Services, the UK's major Toro Irrigation distributor, have appointed Irriserve of Preston as an Authorised Area Dealer and Installer operating in Lancashire and Cumbria.

■ Industrial Power Units (IPU) have set minds at rest following the closure of JLO GMBH and the news that Technamotor UK will distribute JLO spares in the UK from October 1st.

IPU is a diverse company and JLO sales represented only 15% of their overall business. Having the Dori range of grass maintenance equipment and, more recently, having added Ferris rotaries to the stable, IPU are very confident of their future and only recently delivered six Ferris 36" Hydrostatic rotaries to Mid Glamorgan's maintenance wing, TransPlant. Our picture shows the handing-over.



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