

The great attraction of compact tractors compared to other grounds maintenance machines is their versatility to work every day of the year, says GLYN BRYAN

Whenever any item of grounds maintenance equipment is acquired, the most expensive elements to buy and maintain are generally the engine and transmission. Yet if you buy a ride-on mower, all-terrain load carrier or mini excavator, the chances are that when the machine is not working at its specialist task, its motive power unit (the engine and transmission) cannot be used for anything else and must stand idle.

Of course there are times when a compact tractor cannot compete with, say, a ride-on mower in terms of manoeuvrability, but when the mowing season ends a compact tractor can swap its mower for another implement and continue working.

Compact tractors may all look similar, but they can offer significantly different features. To get the best out of a machine it is important to choose one with features most relevant to your particular needs. For example a transmission system ideal for loader work is of little value if you never use a loader.

Starting with the engine, compact tractors invariably use diesel power. Traditionally diesel engines have been noisier and heavier than petrol, but the difference at compact tractor size is not great and the diesel engine works better from cold, can use untaxed fuel, has a longer life and better torque characteristics.

Torque still causes a lot of confusion with horsepower. Horsepower is a measure of the energy from an engine. For example, two machines, both with X horsepower engines can shift five pallets of compost from A to B in five minutes. Machine 1 is fast but not very strong, so moves the pallets one at a time, taking only a minute for each pallet. Machine 2 is slow but very strong, so can take all the pallets in one load, but takes five minutes to move from A to B. Machine 2 has the higher torque, sometimes referred to in sales jargon as pulling-power. For most jobs around a golf course, engines with higher torque capacities are more desirable. These engines tend to slower revving, with large cylinder displacements.

Getting the power from the engine to the wheels is the transmission, and here I have always tended to prefer a manual gearbox. They are lighter, more efficient and I have always felt more "in control" with a manual change. A horticulturalist I knew however, chose hydrostatic transmissions for his compact tractors because he towed trolleys heavily laden with potted plants. Achieving a smooth move off with a manual transmission had meant he kept burning out clutches, but this problem doesn't occur with a hydrostatic unit. Hydrostatic transmissions are also easier to operate and they allow on the move changes in speed, even when working or pulling heavy attachments.

Iseki, Massey-Ferguson, Kubota and Ford offer the choice

● Ford offers five models, ranging from the 16.7hp 1220 (shown) to the 41.3hp 2120



TRACTORS

of manual or hydrostatic versions on many models in their ranges, while Ferrari has gone one better and has a 30hp tractor with both manual and hydrostatic transmission within the same machine. Those who like the control of a manual with the flexibility of a hydrostatic should take a look at Honda's debut machine, the new H6522. It has a nine forward, three reverse powershift transmission. The difference between a manual gearbox and the powershift is that the operator can move from one gear to another without dipping the clutch, so the power can be kept on at all times.

The other option to look at in the transmission is what is referred to as a synchro or power shuttle. Put simply, it means the ability to change from forward to reverse by pulling a single lever or pedal. This applies to mechanical transmissions and allows the tractor to move backwards or forwards without having to de-clutch, change gear and re-engage. It is primarily of use for loader work. Whether to choose two or four-wheel drive is now largely academic. Manufacturers have recognized that two-wheel drive is becoming obsolete and many now only supply their four-wheel drive versions in the UK. Power take-offs are a common service on compact tractors.



COMPACT TRACTORS

● Power take-offs and hydraulic services are major contributors to the versatility of compact tractors, as shown by this shot, above, of a John Deere 755 with 303 hydraulic gang mower.

● Honda's debut machine, the 22hp H6522, right, features powershift transmission, optional front PTO and the highest hydraulic lift capacity in its class

28 • All manufacturers supply a rear PTO as standard, but check that the speed(s) available will match the implements to be used. Having a mid-mounted PTO offers the flexibility to run a mower without having to detach it before using other implements. Going a step further, other manufacturers are following the lead of farm tractor makers by making provision for a front-mounted PTO. In theory at least, it should be possible to run one tractor operating three implements at the same time.

Honda offers a front PTO option while Iseki has it as either optional or standard for most of its machines. Marshall compacts have a front PTO option for the complete range. A typical item of equipment attached to the three-point linkage of a golf-course compact is a leaf collector. Take a close look at one of these when fully loaded and you realise the importance of a good lift capacity for the three point linkage. This is a feature many manufacturers choose to ignore, but others such as John Deere, Massey-Ferguson, Ford, Hinomoto and Honda publish lift capacities in their promotional literature. Honda claim the strongest lift capacity in the 22hp category with a load of 950kg, but the best overall range (for the machines featured on Page 32) is Ford, with four out of its five models having the best lift capacity. Ford's range are also the heaviest machines – so presumably you need less weights to counter balance at the front of the tractor.

Still on the subject of hydraulics, think about the ancillary hydraulic services needed – the number of single or double-acting valves you need to operate your implements. A single-acting hydraulic ram (such as on a trailer) extends by receiving oil under pressure, but relies on

gravity to force the oil out when it needs to contract. A double-acting ram receives oil in the same way to extend, but a second inlet on the other side of the "plunger" pushes the other way to contract the ram – providing force both outwards and inwards. Double-acting hydraulics are seen typically on backhoe/back actor digging attachments. Iseki, John Deere, Massey-Ferguson and Ferrari include single or double-acting valves in the base specifications, but other companies will only supply them as options – which can add an average of around £250 (per double-acting valve) to the price.



COMPACT TRACTORS COMPARED

| Make | hp | Length | | Width | | Weight | | Transmission | PTO | | | Hyd lift cap. | | Hydraulic Services |
|--|--|---|-------|---|------|---|--------|---|--|--|------|--|--------|--|
| | | m | (in) | m | (in) | kg | (lb) | | Fr | :Md | :Rr | kg | (lb) | |
| Honda H 6522 | 22 | 2.77 | (111) | 1.33 | (52) | 834 | (1839) | Semi auto | Opt | :Std | :Std | 950 | (2095) | N/S |
| John Deere 670 755 855 955 1070 | 18.5 20 24 33 38.5 | N/S N/S N/S N/S N/S | | N/S 1.33 (52) 1.33 (52) 1.49 (59) N/S | | 844 (1860) 807 (1780) 848 (1870) 903 (1990) 1481 (3265) | | 4F 1R x2 2-range hyd. 2-range hyd. 2-range hyd. 9F 2R | N/S :Opt N/S :Std N/S :Std N/S :Std N/S :N/S | :Std :Std :Std :Std :Std | | 358 (790) 409 (899) 409 (899) 491 (1079) 916 (2020) | | N/S Twin SCV Twin SCV Twin SCV N/S |
| Marshall 184 224 264 304 | 18 22 25.8 29 | 2.18 (86) 2.30 (91) 2.18 (86) 2.52 (99) | | 0.98 (39) 0.96 (38) 1.00 (39) 1.21 (48) | | 630 (1390) N/S 700 (1545) N/S | | 5F 3R 12F 6R 6F 3R 12F 6R | Opt :Opt Opt :N/S Opt :Opt Opt :N/S | :Std :Std :Std :Std | | 550 (1210) N/S 550 (1210) N/S | | 1SCV, 1DCV N/S 1SCV, 1DCV N/S |
| Shibaura S320HST S330 S435 | 20 33 45 | 2.70 (109) 3.08 (123) 3.21 (128) | | 1.20 (48) 1.50 (60) 1.60 (64) | | 625 (1378) 1195 (2635) 1370 (3021) | | Hydrostatic 12F 4R 12F 4R | N/S :Std N/S :N/S N/S :N/S | :Std :N/S :N/S | | N/S N/S N/S | | 1SCV, (1DCV) (4DCV) (4DCV) |
| Iseki TX2160F TU318F TU320F TA525F TA530F TA537F TA545F | 18 19 22 26 33 40 48 | 2.00 (80) 2.71 (108) 3.02 (121) 2.95 (118) 3.05 (122) 3.33 (133) 3.41 (136) | | 1.09 (44) 1.06 (42) 1.30 (52) 1.48 (59) 1.31 (52) 1.54 (62) 1.55 (62) | | N/S 710 (1565) 900 (1984) 1150 (2535) 1170 (2579) 1535 (3384) 1760 (3880) | | 6F 2R 6F 2R or Hyd 6F 2R or Hyd 4F 4R x4 4F 4R x4 4F 4R x4 4F 4R x4 | Std :N/S Opt :N/S Opt :N/S N/S :N/S Opt :N/S N/S :N/S N/S :N/S | :Std :Std :Std :Std :Std :Std :Std | | N/S N/S N/S N/S N/S N/S N/S | | (1SCV, 1DCV) 1DCV, (1DCV) 1DCV, (1DCV) 2DCV 2DCV 2DCV 2DCV |
| Massey Ferguson 1010-4 1010-4HST 1020-4 1020-4HST 1030-4 1035-4 | 16 16 21 21 26 31 | 2.16 (86) 2.30 (91) 2.40 (96) 2.81 (112) 2.67 (107) 2.72 (109) | | 1.02 (41) 1.02 (41) 1.15 (46) 1.15 (46) 1.46 (58) 1.51 (60) | | 641 (1413) 650 (1433) 830 (1830) 960 (2117) 1235 (2723) 1235 (2723) | | 6F 2R 2-range hyd. 12F4R 3-range hyd. 12F4R 12F4R | N/S :N/S N/S :N/S N/S :N/S N/S :Std N/S :N/S N/S :N/S | :Std :Std :Std :Std :Std :Std | | 550 (1210) 550 (1210) 700 (1543) 700 (1543) 780 (1720) 780 (1720) | | (1SCV) 1SCV 1SCV 1SCV 1SCV 1SCV |
| Kubota B1550 B1750 B2150 L2550GST L2850 Reversible L3250 L5450 | 17 20 24 26.5 31 36.5 54 | 2.59 (104) 2.59 (104) 2.78 (111) 2.77 (111) N/S 2.93 (117) 3.49 (139) | | 0.98 (39) 1.04 (42) 1.36 (54) 1.30 (52) N/S 1.42 (56) 1.72 (68) | | 630 (1389) 650 (1433) 830 (1830) 1160 (2557) N/S 1245 (2740) 2510 (5522) | | 6F 2R or Hyd 6F 2R or Hyd 9F 3R or Hyd 8F 8R 16F 16R 8F 7R 8F 8R | N/S :Std N/S :Std N/S :Std N/S :Std N/S :N/S N/S :N/S N/S :N/S | :Std :Std :Std :Std :Std :Std :Std | | N/S N/S N/S N/S N/S N/S N/S | | (1SCV, 1DCV) (1SCV, 1DCV) (1SCV, 1DCV) 1SCV (1DCV) 1SCV (1DCV) 1SCV (1DCV) 1SCV 1DCV |
| Ford 1220 1520 1720 1920 2120 | 16.7 22.7 27.4 33.1 41.3 | 2.70 (106) 2.83 (111) 3.08 (121) 3.21 (126) 3.48 (137) | | 1.04 (41) 1.23 (48) 1.40 (55) 1.48 (58) 1.57 (62) | | 648 (1429) 1034 (2278) 1220 (2690) 1392 (3069) 1750 (3858) | | 9F 3R or Hyd 9F 3R or Hyd 12F4R or Hyd 12F4R 12F4R | N/S :Opt N/S :Opt N/S :Opt N/S :N/S N/S :N/S | :Std :Std :Std :Std :Std | | 669 (1474) 874 (1921) 1034 (2275) 1062 (2341) 1800 (3960) | | (1DCV) (1DCV) (1DCV) (1DCV) (1DCV) |
| Hinomoto C144 C172 C174 C174HST E2304 | 17 20 20 20 28 | 2.10 (84) 2.10 (84) 2.10 (84) 2.36 (94) 2.77 (111) | | 1.03 (41) 1.03 (41) 1.03 (41) 1.06 (42) 1.27 (51) | | 668 (1473) 580 (1279) 658 (1451) 760 (1676) 980 (2161) | | 6F 2R 9F 3R 9F 3R Hydrostatic 12F4R | N/S :N/S N/S :N/S N/S :N/S N/S :Std N/S :N/S | :Std :Std :Std :Std :Std | | 528 (1164) 528 (1164) 528 (1164) 790 (1742) 986 (2174) | | (1SCV, 1DCV) N/S (1SCV, 1DCV) (1SCV, 1DCV) (1SCV, 1DCV) |
| Ferrari 18-3W 22-3W 22-4W 1300 Series 1300 Series 1300 Series | 22 30 30 30 33 38 | N/S 2.77 (111) 2.30 (92) N/S N/S N/S | | N/S N/S 0.96 (38) N/S N/S N/S | | N/S 910 (2007) 920 (2029) N/S N/S N/S | | 12F 6R 12F 6R 5F & or Hyd 12F 6R 12F 6R 12F 6R | Opt :Std Opt :Std Opt :Opt Opt :Std N/S :Std N/S :Std | :Std :Std :Std :Std :Std :Std | | N/S N/S 420 (926) N/S N/S N/S | | 1SCV 1SCV 1SCV, 1DCV 1SCV 1SCV 1SCV |

Key: N/S = Not specified (in company literature); 4F 1R x2 = Four forward, two reverse, two ratios; SCV = Single Control Valve (in brackets means option); DCV = Double Control/Acting Valve (in brackets means option). Information shown is taken from manufacturers/distributors price lists or promotional literature.