

PRESS RELEASE – September 2015

First McCormick CVT tractors launched in Britain – the X7 Series with VT Drive

- McCormick X7 VT Drive brings precise speed control to field operations
- EasyPilot and Data Screen Manager provide simple control of functions
- Five models with 136hp-194hp max using four- and six-cylinder engines

A simple to use continuously variable 'CVT' or 'vario' transmission features in new additions to the McCormick X7 Series, bringing the benefits of seamless acceleration, precise speed control and intelligent powertrain management to deliver improved productivity and fuel economy.

The McCormick X7 VT Drive tractors build on the success of the Pro Drive semi-powershift models that farmers and contractors first started using last year. The 24x24 speed Pro Drive transmission with its manual or auto shifting through ranges and speeds is a genuinely smooth operator – but VT Drive takes operator comfort, speed control and powertrain efficiency to another level.

“There will always be operators perfectly content with a powershift transmission, especially one like the McCormick Pro Drive that provides push-button control, adjustable shift response to suit different situations and a number of automated features,” says Paul Wade, product specialist.

“But VT Drive provides a premium experience, with speed adjustment available to the finest degree for any task, and selectable modes that automatically get the best from the tractor in terms of power, performance and fuel economy.”

Five McCormick X7 VT Drive models are now available – a trio of four-cylinder tractors with peak outputs of 136hp to 166hp for draft work and up to 175hp for pto-driven implements and road transport, and a pair of six-cylinder machines with 171/181hp and 180/194hp outputs.

They are pretty much identical to their Pro Drive counterparts but use ZF's latest continuously variable transmission – Terramatic – which draws on unrivalled engineering experience in CVT drives. The transmission and engine are controlled as a single entity by purpose-designed control software developed by McCormick manufacturer Argo Tractors to provide a full suite of operating modes and settings to suit different field work and road transport situations.

“As with the Pro Drive transmission, a clear objective was to make the new VT Drive system easy and intuitive to use while still providing the features that make CVT so attractive,” says Paul Wade. “A driver new to this type of transmission can jump in the seat and drive away safely and confidently with just a few minutes’ instruction; but time spent in the seat will be rewarded by an understanding of the more sophisticated features that make the most of the new transmission.”

McCormick X7 VT Drive tractors come as standard with a seat-mounted control console and one of the biggest touch-screen terminals available. The 12in colour display of the Data Screen Manager complements the information shown on the tractor’s instrument panel and provides an easily navigated set of screens for various transmission, engine, pto and hydraulic functions.

As an option, it can be configured for monitoring and control of implements equipped with ISOBUS electronics and the tractors can also operate with integrated satellite guided steering for maximum productivity and driving ease.

VT Drive operation

Start the engine, move the left-hand shuttle lever from neutral to either forward or reverse, release the hand-brake and press down on the accelerator pedal – those are the only actions needed to start driving a McCormick VT Drive tractor.

On the way to a field, the infinitely variable transmission accelerates the tractor seamlessly, then automatically achieves the operator’s required ground speed using the least engine revs. The result is a quiet, smooth and more economical journey, with engine braking available for steep hill descents when the transmission ‘freeze’ feature is engaged.

In the field, the operator can switch out of Auto to one of three other settings: in Manual mode, upper and lower engine rev limits can be imposed to keep the power unit within a band that fully exploits the engine’s power and torque characteristics. This mode is therefore ideal for heavy draft work with ploughs and cultivators.

Cruise provides a constant working or transport speed, with the engine and transmission responding in harmony to inclines or other changes in load on the tractor. The operator can set a reverse Cruise speed for headland turns and recall the memorised working speed with the press of a button; likewise the chosen transport speed when Cruise has disengaged by the brakes being used.

The only times an operator need move the hand throttle is when operating in Manual mode – to maintain revs for optimum hydraulic performance working with a loader, for example – or to set the engine speed in PTO mode.

When using a pto-driven implement, the transmission automatically alters ground speed if necessary to compensate for any significant changes in load and so keep

the pto speed constant – such as when moving through different soil types with a power harrow or rotary tiller, or when baling along an uneven swath.

Speed adjustment

With no range or other gears to change in the VT Drive transmission, the operator can regulate the tractor's ground speed using the accelerator pedal, which is the most natural option for road travel and loader work, or the EasyPilot multi-function controller, which is easiest for most field applications when the tractor is often running over a bumpy surface.

In Cruise mode, speed-up and slow-down (+/-) buttons on the EasyPilot controller are used to fine tune the tractor's speed.

“Pushing the EasyPilot controller increases ground speed, pulling it back towards the operator slows the tractor,” explains Paul Wade. “The controller returns to the centre position in both cases, and the further the controller is moved, the faster the transmission responds.”

A light touch on the brake pedal – upon reaching a road junction, for example – puts the transmission into ‘power hold’ status, which keeps the tractor stationary even on a slope but ready to move off again promptly.

For maximum controllability, the operator can select one of four speed bands to suit different situations.

The factory set default speeds, starting at 0.5kph in each case, are up to 3kph – the so-called ‘creeper’ band; up to 12kph and 21kph for different types of field work; and up to the maximum speed of 40kph or 50kph for road travel. For VT Drive tractors operating specialist planters and harvesters, the transmission can be wound down below the 0.5kph default by engaging Cruise with the creeper band selected.

“The operator can also adjust each speed band and therefore the sensitivity of response to control inputs to suit particular applications,” points out Paul Wade. “When the engine is switched off, any new setting is saved ready to use again; also, forward and reverse target speeds can be memorised for instant recall in the road band and in any one of the other three.”

The big attraction of CVT, of course, is that unlike tractors with a purely mechanical transmission, the X7 VT Drive can never be in the wrong ‘gear’ for a given situation.

“Being able to run at the optimum speed can improve output, get jobs completed faster and use less fuel,” Paul Wade emphasises. “Optimising work quality, such as when making seedbeds for potatoes and other crops, is another benefit. The McCormick VT Drive system gives the operator so much more control and yet it's so easy to use.”

Seat-mounted console

An uncluttered and clearly laid-out seat-mounted console carries all the controls routinely used by an operator, who will undoubtedly feel less tired at the end of a working day because of the reduced control operations needed.

The EasyPilot controller, shaped to fit comfortably in the hand, carries the speed-up and slow-down buttons, a lift/lower switch for the three-point linkage, and a button each for Cruise speed set and recall, and forward/reverse shuttle.

“Forward and reverse can also be selected using the left-hand shuttle lever as usual or by holding in the enable button and moving the EasyPilot controller fully forward or back,” notes Paul Wade. “How the transmission responds to these controls is adjustable, so operators not only have a choice of shuttle controls but also a means of adjustment to suit different situations and their own preferences.”

Without moving a hand from the controller, the driver can also activate headland management sequences and operate a hydraulic spool valve – to turn a reversible plough, for example.

Other hydraulic valves are operated using either the mini joystick or the lever switches that provide a proportional response at the time- and flow-adjustable spools. Four-wheel drive, diff locks and optional auto guidance and fast steering are among the other major functions engaged using clearly-identified buttons on the console.

Two dials mounted on the side adjust the hydraulic linkage settings and a small ‘turn and click’ encoder dial selects and adjusts functions displayed in the tractor’s instrument panel and on the Data Screen Manager.

Data Screen Manager

The impressive Data Screen Manager terminal is mounted at the front of the armrest console. It has a 12in colour display that responds instantly to fingertip touch and a port for transferring data in and out using a USB memory stick.

The DSM’s home page display complements the tractor’s instrument panel by showing information such as the rear hitch position, front and rear pto status and wheelslip, and the engine/transmission management mode being used. The speed band selected is displayed and the maximum speed in each band is clearly shown on the perimeter of an analogue speedometer display positioned above a similar one showing engine revs – both are supplemented by digital readouts.

An Application Menu page displays icons to access transmission, auxiliary valve, three-point hitch and pto settings. Tapping the Transmission icon displays the ‘split throttle’ panel showing Manual mode maximum and minimum engine rev settings, the ‘engine droop’ setting – ranging between maximum economy and

maximum power, shuttle modulation and the top speed set for each of the four transmission speed bands.

On the Auxiliary Valve page there are scales for flow and timing at each of up to four rear and two mid valves, all of which can be allocated to different tasks and isolated individually if required, and the Hitch page displays traction control, draft/position control, drop speed and lift limiter settings.

On all DSM pages, a prominent icon makes it easy to return to the Dashboard display with a single tap of the screen.

Ends



McCormick X7.670 + X7.460 VT Drive 01

Ready for action: McCormick 6cyl 180/194hp X7.670 VT Drive and 4cyl 166/175hp X7.460 VT Drive with stepless transmission.

Right: EasyPilot multi-function controller.



McCormick X7 VT Drive 01



McCormick X7.670 VT Drive 01

Powerhouse: McCormick X7.670 VT Drive has 180hp for draft work, 194hp for pto and transport applications – and the new CVT transmission.

Right: The Data Screen Manager terminal.



McCormick X7 VT Drive 02a



McCormick X7.670 VT Drive 02a

Smooth operator: Seamless acceleration and a perfect match of ground speed and engine revs is provided by the transmission on this 180/194hp X7.670 VT Drive.

Right: DSM transmission display.



McCormick X7 VT Drive 03a



McCormick X7.670 VT Drive 03

Adaptable: The McCormick VT Drive transmission can be set up for optimum performance regardless of the application – in this case on the 180/194hp X7.670 model.

Right: VT Drive is the first CVT for a McCormick.



McCormick X7 VT Drive 04

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