

## AGRITECHNICA 2009

### Agriculture has changed, as have Handling Operations...

This year MANITOU is celebrating the 20th anniversary of the MLT, its first all-terrain telescopic truck designed for the agricultural market. 20 years of innovation and performance requirement in order to respond to the changes taking place in the day-to-day needs of the agricultural sectors.

#### Changes in the quality of life...

Today the area of land under cultivation is as large as it ever was, but it is managed by an ever smaller number of agricultural workers. This means that overall the need for mechanisation has increased.

Farmers must keep costs low and this means optimising the fleets of equipment in use and minimising working time.

The versatility of the MANITOU is in direct response to the demands of modern agriculture which requires productive and efficient machinery to undertake a wide variety of farm handling duties. Today's farmer appreciates the MANITOU machine as a pivotal part of his farming business.



Agricultural users spend more time in their telescopic trucks than on their tractors. MANITOU has striven to improve user comfort, both on the interior and exterior of their machines. The latest "Evolution" cab provides proof of this. Unrivalled visibility provided by extensive tinted window areas. A spacious and comfortable environment with an ergonomic design that provides more intuitive access to the machine's functions. The objective? To guarantee user safety and efficiency throughout the entire working day.

The objective is the same for the **ECS - Easy Connect System**.

This completely new system for decompressing the accessory line requires less effort and provides increased safety for agricultural users. The assistance provided by the ECS is effective in reducing workloads during **changing of accessories**, a repetitive and tedious operation.

PRESS CONTACT:  
COMMUNICATIONS DEPARTMENT: PASCALE NOEL-HUDSON / DAMIEN COCTON  
[p.noel-hudson@manitou.com](mailto:p.noel-hudson@manitou.com) / [d.cocton@manitou.com](mailto:d.cocton@manitou.com)  
TEL: +33 (0)2.40.09.10.56 / 17.56  
FAX: +33 (0)2.40.09.21.90

### As well as the nature of the work carried out...

Animal care, harvesting work, everyday handling operations, bulk loading/unloading... Today MANITOU offers a wide range of solutions to all the jobs associated with handling, ranging from compact to "heavy duty" machines, as well as high-reach equipment.

The **versatility of an MLT** is a major benefit. Where two machines would have been necessary, as with the distribution of feed using a silage bucket, or for rapid filling of a mixer wagon the MLT provides a one-machine response to the user's needs.



The **towing capacity** of a MANITOU telescopic truck means that a trailer can be easily moved into the fields and loaded without assistance from any other machinery.

The MANITOU design teams have made their contribution towards reducing operation working times and towards ensuring safety in handling activities.

- **The JSM**, a patented MANITOU design, brings together all the machine's essential functions. It reduces the amount of force that the wrist needs to exert and releases the "precision grip" (the thumb and index finger) for operation of the most frequently used functions. Thus safety and precision save time on a daily basis.



- **The LSU (Load Sensing Ultra)** pump allows several movements to be carried out at once, precisely and flexibly.

- **The Powershift transmission** is particularly well suited to the long distances that need to be covered over ever-increasing operating areas. Its six gear-ratios mean that reduced fuel consumption can be achieved.



### And all designed to ensure that environmental constraints are being met.

MANITOU machines, manufactured on an **ISO 14001** certified site, are 95 % recyclable.

MANITOU has adapted to meet environmental constraints by manufacturing efficient, productive and economical machines.

As an eco-responsible manufacturer, MANITOU was quick to ensure that its machines met the **EURO III standards**.

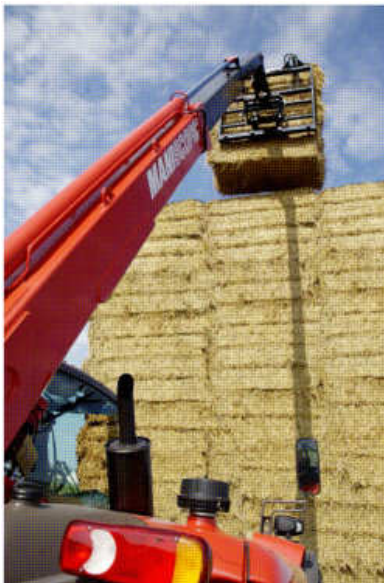
The **LSU pump (Load Sensing Ultra)** produces fuel savings during handling work, since movements are better controlled and more precise.

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COMMUNICATIONS DEPARTMENT: PASCALE NOEL-HUDSON / DAMIEN COCTON  
[p.noel-hudson@manitou.com](mailto:p.noel-hudson@manitou.com) / [d.cocton@manitou.com](mailto:d.cocton@manitou.com)  
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The telescopic trucks in the MANITOU range consume less fuel, since, unlike tractors, they are specifically designed for handling applications.

MANITOU has worked to reduce the amount of Diesel consumed by its machines and contributing to reducing CO<sub>2</sub> emissions by promoting the use of bio-lubricants and bio-fuels...

All of which are arguments that contribute to making the **MLT series - MANISCOPIC** range the benchmark in the agricultural market for telescopic trucks.



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# ZOOM ON

## Equipment: MANITOU AUTOCLEAN SYSTEM

*This equipment, developed by MANITOU, has proved a tremendous success with agricultural professionals for its undeniable advantages: it increases the efficiency of the cooling system during cycles of intensive use, enables the air aspiration grids to be cleaned when clogged, ensures the machine's optimum work capacity, helps save fuel and finally extends engine life.*

#### HOW DOES IT WORK?

AUTOCLEAN SYSTEM, composed of three elements, is activated by the operator from his cabin:

#### A self-cleaning primary filter catches the particles and dust in the air

The primary filter « bowl » contains a mobile helix that starts turning when MANISCOPIC is functioning. Its rotation provokes a flow of centrifuged air repelling dust and detritus.

#### Result:

- Proven efficiency in tough working conditions,
- No premature crushing of the air filter,
- No cleaning constraint.

#### A straw deflector limiting clogging of the aspiration grids

This protection covers the upper air aspiration grid ensuring cooling of the various radiators.

#### Result:

- A grid can be kept free,
- Reduces clogging of the grid
- Lateral visibility is not adversely affected.

#### A ventilator with reversible "sucking/blowing" blades

This solution enables efficient, regular cleaning of the radiators and aspiration grids by reversing airflow without halting the thermal engine. In aspiration mode, the ventilator sucks in air to cool the radiators. In blower mode it expulses, at regular intervals, the detritus clogging the aspiration grids.

CONTACT PRESSE :

SERVICE COMMUNICATION / PASCALE NOEL-HUDSON / DAMIEN COCTON  
[p.noel-hudson@manitou.com](mailto:p.noel-hudson@manitou.com)  
TEL : 02.40.09.10.56 / 17.56  
FAX : 02.40.09.21.90

## European Standard Tractor 2003/37/EC DIRECTIVE

In order to apply the new European directive on the registration of tractors to its telescopic forklift trucks designed for agricultural handling, MANITOU is developing its MLT series. The latter allows you to 'drive on the road' at a maximum speed of 40 km/hr.

### THE DIRECTIVE DEMANDS...

- 45 cm on both sides of the steering column
- Pull-down and automatically-adjustable right-hand side rear-view mirror
- Braking system for trailers
- Number plate lighting

### THE MANITOU SOLUTION

The models from the MLT series (630, 634, 731, 735, 741 and 1035) benefit from a complete MANITOU solution adapted to these new standards.

- Enlargement of the cabin (new mat, new door sill, new cabin filter, etc.)
- Cabin volume increase of 15%
- Pneumatic braking system for trailers
- Reinforced security: 3 emergency exits



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# ZOOM ON

## LSU Technology

### Innovation at the service of farm handling equipment

*In 20 years MLT has become the reference for handling equipment in the farm world. Today it is often the machine that is used the most on farms due, in particular, to its great flexibility. To reinforce its advantages on the farm market, MANITOU is constantly developing innovations to meet users' new needs.*

### LSU TECHNOLOGY: SIMULTANEOUS MOVEMENTS

LSU technology (**Load Sensing Ultra**) combines an electronically adjusted pump with variable power pistons functions (on the 123 hp models) and an « intelligent » distributor (DDIC: Division du Débit Indépendamment de la Charge manutentionnée - Division of Output Independent of Load Handled) optimising maximum output at 150 litres/minute to 270 bars. This system also enables 2, 3 or 4 precise movements to be executed simultaneously with the correct amount of power.

### MULTIFUNCTION JOYSTICK: PRECISE MOVEMENTS

The multi-function joystick with electro-proportional control provides precise movements in the most used functions (raising / lowering; digging / dumping). The proportional roller switches on the joystick enable « finger-tip » control of proportional functions of the boom (extension / retraction) and the accessory (for instance grab closing). Thanks to its ergonomic handle, the joystick has improved grip offering the user greater comfort.

### INCREASED PRODUCTIVITY

LSU technology, combined with the multi-function joystick, ensures extremely precise movements. Its ease of use offers highly efficient execution. For instance, for cereals, loading speed (tonnes / hour) is increased by more than 20%

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## New model in MANITOU's agricultural range MLT 735 T LSU

*This new model extends Manitou's range of MLT all-terrain telescopic forklift trucks in the 7-metre category.*

### THE KEY POINTS OF THE MACHINE

- 7 metres / 3.5 tonnes
- 100 HP Engine
- Excellent weight/power/quality ratio
- EVOLUTION Cab
- The market reference: height / power / demand

### A REALLY DYNAMIC MACHINE: OPERATIONS CAN BE CARRIED OUT WITH COMPLETE CONFIDENCE

The MLT 735 presents the weakest weight/power ratio of its category which makes it a rapid machine backed up by real dynamic performance.

The wheel base provides great stability to the machine. For all applications, the machine is 'glued' to the ground which makes the operator more confident and more operational when carrying out different manoeuvres.

### THE INDISPENSABLE LSU (LOAD SENSING ULTRA)

This model offers the possibility of using a 2,500 litre container. Combined with the famous MANITOU LSU, the operator is guaranteed efficiency. LSU technology combines a piston pump, of variable capacity, with an 'intelligent' dispenser (the DDIC: Division du Débit Indépendamment de la Charge manutentionnée - Division of capacity regardless of load handled) optimising the maximum capacity to 110 litres/minute. Moreover, this system enables the execution of 2, 3 or 4 simultaneous and perfectly measured movements.



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## Easy Connect System

### MANITOU presents a preview of its completely new and innovative decompression system for accessory lines, a 100% MANITOU design.

As a direct response to the needs of today's agricultural users, MANITOU has developed a new system designed to facilitate accessory connection and disconnection.

### Principle of operation

Changing accessories is a repetitive and tedious job for agricultural users of handling equipment.

With the engine running, the driver gets out of the machine and stands besides the hydraulic couplings. They first of all operate the protected ECS control, releasing residual pressure in the attachment hydraulic circuit. The hydraulic couplings can then be disconnected with ease.

### The technical and economic objectives of the ECS

Because this new function is so easy to use and is located on the chassis in a protected position, it requires **less effort** on the part of the user.

**No longer any need to stop the engine...** The operator reduces the hydraulic pressure in the service line just using a single click. The time required to change an attachment is halved.

**Improved safety...** The risk of injury to the operator and of oil discharge at the moment of disconnection is eliminated.

**For longer...** The working life of couplers is extended, so hydraulic contamination is reduced. In addition, the starter motor working life is extended since operators no longer need to stop the engine.

Available as an option, the **Easy Connect system (ECS)** is a positive response to the demands of telescopic truck users and is an effective aid for reducing their work leads.

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**NOTE....**

This new feature has already attracted a great deal of interest, having received an INEL D'OR special mention, awarded by the FRANCE AGRICOLE Group.

Present at SPACE 2007, MANITOU also received a star award for INNOV'SPACE, in the adaptation of existing products, services or equipment category.

These two prizes confirm the fact that the E.C.S. provides real everyday added value for agricultural users.

**EARL Guillon**

Operation: mixed /stock rearing (350 head of beef cattle)  
Claude GUILLOIN  
La Bliinière  
44522 MESANGER (France)  
Tel. +33 (0)2 40 96 73 91



"This decompression system is genuinely a really good idea! No more need to switch off, then struggle to remove the couplers and perhaps sometimes repeat the operation before you get it right.

Now it's just so easy to do. I leave the truck running, press the button and the couplers can be removed without any effort. In the yard I've got more than ten accessories, including buckets, grabs, silo unloaders / distributors, the manure forks, the muck pusher, bail grips... I could go on. Let's just say that I haven't got time to waste.

I need to use it perhaps a dozen times a day, and what's more there's less wear on the starter motor, and the couplers as well, since I don't have to pull down on them so much. In fact it's obvious that I couldn't do without it now."

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Schéma de fonctionnement	Operating diagram
Tablier d'accrochage	Hooking apron
Coupleurs hydrauliques pour l'accessoire	Hydraulic couplers for the accessory
Flexibles hydrauliques de la ligne accessoire	Accessory line hydraulic couplers
Réservoir hydraulique	Hydraulic reservoir
Accessoire	Accessory
Electrovannes indépendantes, pilotées pour la mise au bac	Independent solenoid valves, controlled for dumping
Commande protégée ECS	Protected ECS controls



## JSM - Joystick Switch & Move Version 2



A 100% **MANITOU** patented design, the **JSM** "Joystick" is fitted as standard on all **LSU** versions of the new **MLT "Evolution" series**.

Truly a virtual extension of the operator's arm, the new JSM control lever (a registered Manitou patent) combines the standard functions to be found in the MLT range.

Movements are fully proportional: raising/lowering of the boom, digging/tipping, and the accessory line using the two thumbwheels.

Also linked to the JSM is the MANISCOPIC drive function (reverse linked with safety neutral and gear ratio changes for MLTs equipped with Powershift gearboxes).

The operator's left hand is therefore completely free for steering and the right hand free to control of the boom and select the direction of travel. The JSM is therefore a truly multi-functional control handle.

Developed by MANITOU in collaboration with a team of ergonomic experts, designers and users of MLTs, the JSM offers improved manual control. The curved form and alignment of the new control handle provides better support and positioning for the hand.

It reduces the level of force that needs to be exerted by the wrist and releases the "precision grip" (the thumb and index finger) to operate the most frequently used functions. The joystick therefore "falls into" the hand and the right-hand console provides a wide and comfortable rest for the forearm.

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