



FERTILIZER SPREADER

Automatic spreading management,
actuators and valves command,
dynamic weighing and working data storage



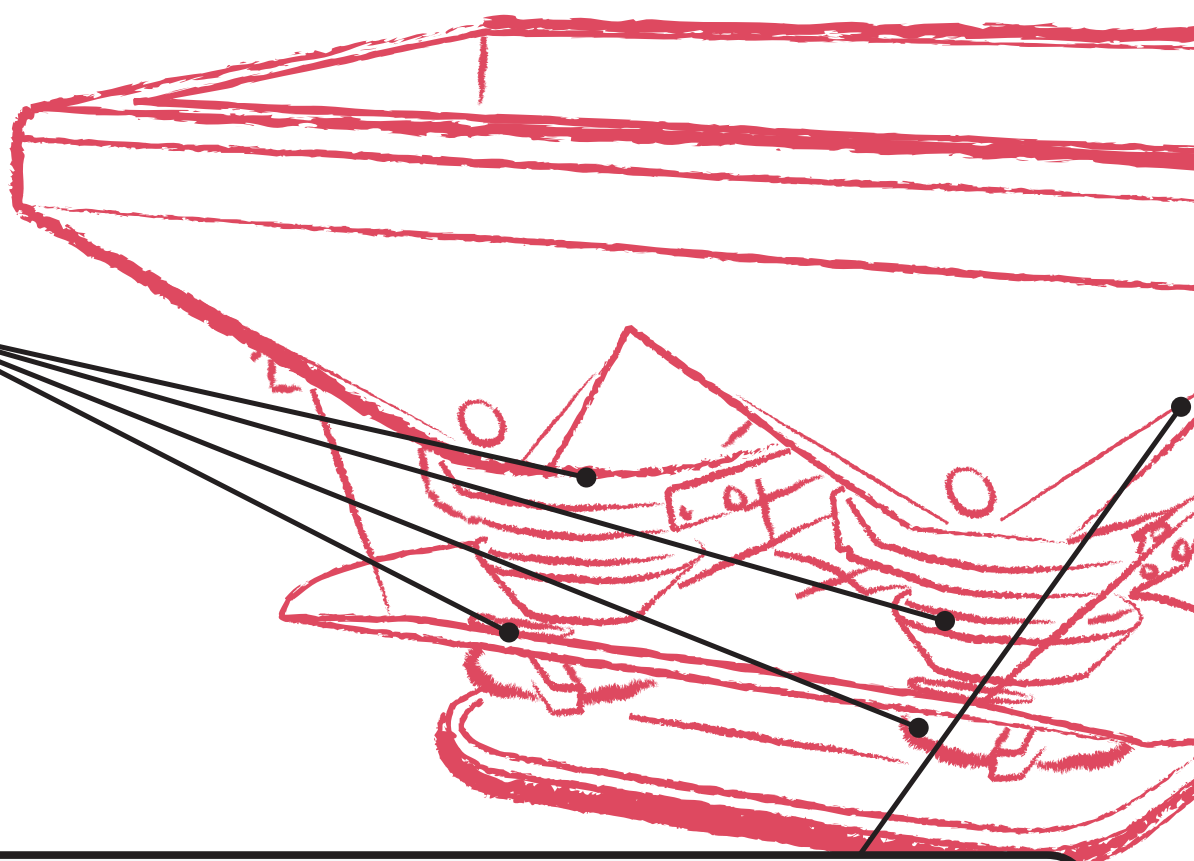
APPLICATION FOR SPREADERS OF: FERTILIZER/SALT/GRAVEL/LIME

Automatic spreading rate adjustment, based on the set quantity per acre on the vehiclespeed and for modles with weighing system onboard, on the dynamically detected weight.

- Outlet **shutters** control through electric actuators
- **Dynamic weighing** for an accurate control of the fertilizer spread
- Selectable working mode: **automatic**, semi-automatic, speed, manual
- Vehicle **speed** detection through sensor, GPS, ISO 11786 connector
- **Border** function available
- Control of hydraulic **gates** available for quick shut off at field end
- Detection of spreading **discs** rotation speed available
- **Sensor** for empty hopper available
- **Counters** and **statistics** management and display with storage of data like **working** hours, spread surface and spread amount per field or customer
- Products **tables** management with automatic **features** trial sequence for table creation
- Data transfer to **PC** for a detailed association of job to customer
- **Modular** system configuration based on machine set
- Easy, intuitive and **ergonomic** command and display system
- Keyboard **customizing** available with customer's logo and colors
- **Consulting** and support during design to define the correct position of the weigh sensors on the implement



Proximity **sensors** to detect vehicle speed, acutator stroke, spreading discs speed. Analog or digital sensors for bus connection



Weighing System: WM series weighing modules for signal acquisitor from load cells and digitizing of the weigh value on BUS. Dynamic filtering to guarantee maximum accuracy, even during vehicle movement. System designed to guaratee maximum reliability and modularity.

Load Cells for installation on the implement. Maximum resistance to external agents guaranteed by specific treatments and decades of experience in the field. **Pin**, **shear beam**, **dual shear beam**, **off center** load cells.

WM

From 1 to 4 load cells signal digitizing

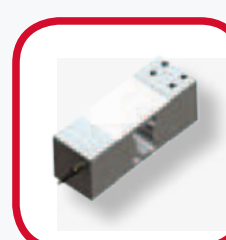
LOAD CELLS



Pin



Shear Beam



Off-Center



Double Shear Beam

Command and Interface Unit in the cabin: ease of use, thanks to the intuitive icon-based commands on **ICON** LCD display. Automatic spreading management based on vehicle speed and set quantity per acre. Display and storage of working statistics. Command of the electrical and hydraulic functions of the implement.



ICON D
Backlighting Graphic
Display and
16 operating keys

OPTIONS



Integrated
Emergency
Button



USB port for
data exchange



Mounting supports
for different surface
features



Colors and
graphic
customizing
available

Devices Driving Units: HYDRA and H-BLOCK modules to drive electric actuators (shutters) and solenoid valves, both on/off and proportional (belt, screw, ...). Signals detection from sensors (vehicle speed, discs, belt, screw, ...) and signals acquisition from external devices, like GPS modules or data interface on ISO 11789 connector.

Command of different optional devices like lights, beacons, or other.



H-BLOCK
Up to 6 Outputs (PWM)
Up to 10 inputs



BIG-BLOCK
Up to 16 Outputs (PWM)
Up to 16 Inputs

OPTIONS



Digitized sensors
for communication
on BUS



Sensor for
empty hopper

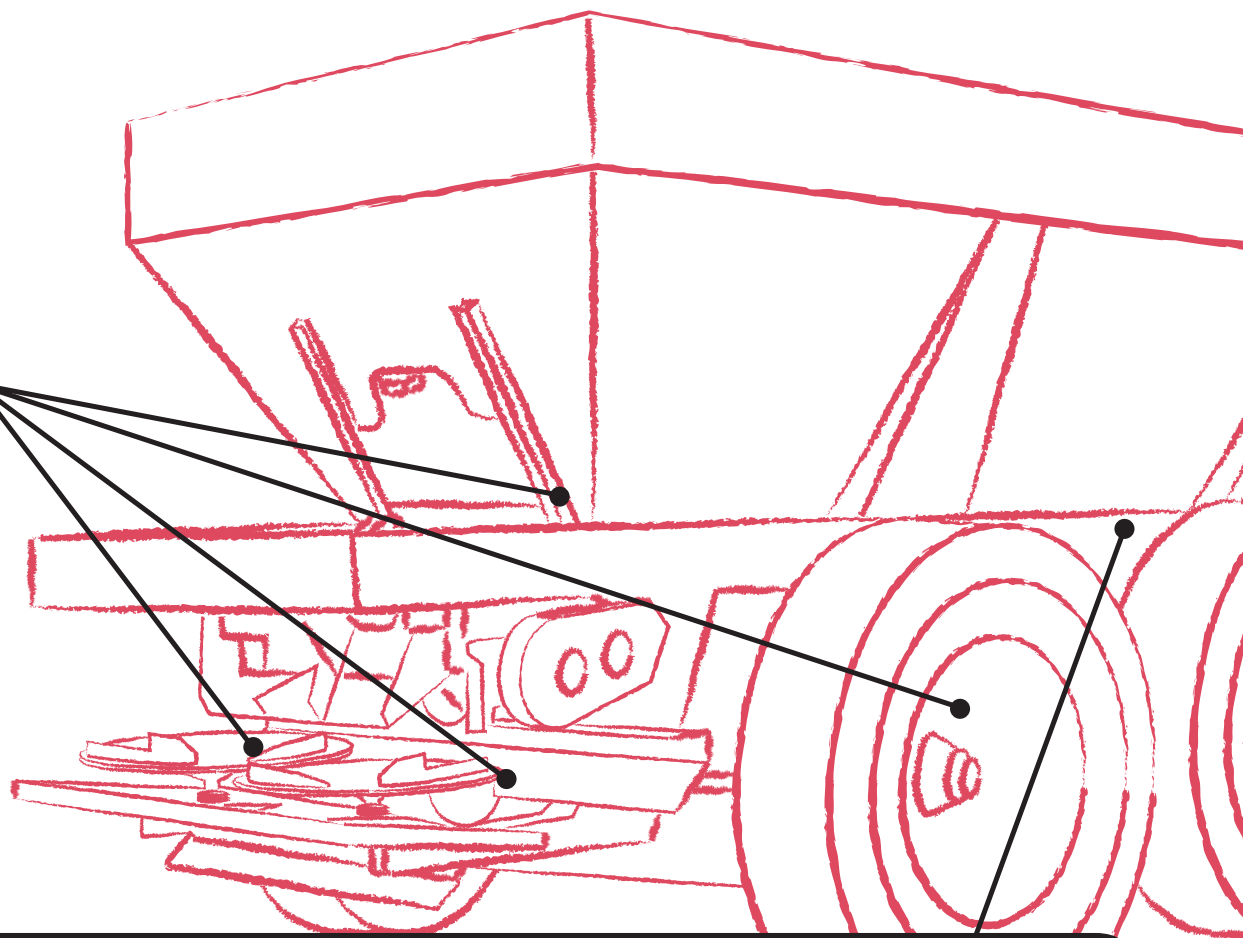
APPLICATION FOR SPREADERS OF FERTILIZER/SALT/GRAVEL/LIME

Automatic spreading rate adjustment, based on the set quantity per acre, on the vehicle speed and, for models with weighing system onboard, on the dynamically detected weight.

- Outlet **shutters** control through electric actuators or hydraulic cylinders
- **Dynamic weighing** for an accurate control of the fertilizer spread
- Selectable working mode: **automatic**, semi-automatic, speed, manual
- Vehicle **speed** detection through sensor, GPS, ISO 11786 connector
- **Border** function available through electric actuators or hydraulic cylinders
- Detection of spreading **discs** rotation speed available
- **Belts** and screws speed adjustment for salt, gravel and lime spreaders
- Management of **lights**, beacons or other devices
- **Counters** and **statistics** management and display with storage of data like **working** hours, spread surface and spread amount per field or customer
- Products **tables** management with automatic **features** trial sequence for table creation
- Data transfer to **PC** for a detailed association of job to customer
- **Modular** system configuration based on machine set
- Easy, intuitive and **ergonomic** command and display system
- Keyboard **customizing** available with customer's logo and colors
- **Consulting** and support during design to define the correct position of the weigh sensors on the implement



Proximity **sensors** to detect vehicle speed, belts, screws or spreading discs speed. Analog or digital sensors for bus connection.



Weighing system: WM series weighing modules for signal acquisition from load cells and digitizing of the weight value on BUS. Dynamic filtering to guarantee maximum accuracy, even during vehicle movement. System designed to guarantee reliability and modularity.

Load Cells: for installation on the implement. Maximum resistance to external agents guaranteed by specific treatments and decades of experience in the field. **Pin, shear beams, dual shear beam, off-center** load cells.

WM

From 1 to 4 load cells signal digitizing

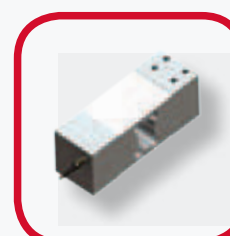
LOAD CALLS



Pin



Shear beam



Off centre



Double shear beam

Command and Interface Unit in the cabin: ease of use, thanks to the intuitive icon-based commands on **ICON** LCD display. Automatic spreading management based on vehicle speed and set quantity per acre. Display and storage of working statistics. Command of the electrical and hydraulic functions of the implement.



ICON D
Backlighting Graphic Display and 16 operating keys

OPTIONS



Integrated Emergency Button



USB port for data exchange



Mounting supports for different surface features



Colors and graphic customizing available

Devices Driving Units: HYDRA, H-BLOCK and BIG-BLOCK modules to drive electric actuators (shutters) and solenoid valves, both on/off and proportional (belt, screw,...). Signals detection from sensors (vehicle speed, discs, belt, screw,...) and signals acquisition from external devices, like GPS modules, or data interface on ISO 11786 connector. Command of different optional devices, like lights, beacons or other.



HYDRA HT12
12 Outputs
8 PWM



H-BLOCK
Up to 6 Outputs (PWM)
Up to 10 inputs



BIG-BLOCK
Up to 16 Outputs (PWM)
Up to 16 Inputs

OPTIONS



Digitized sensors for communication on BUS

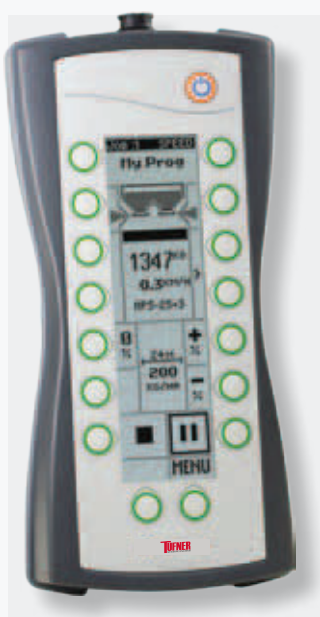


Direct reading of external sensors



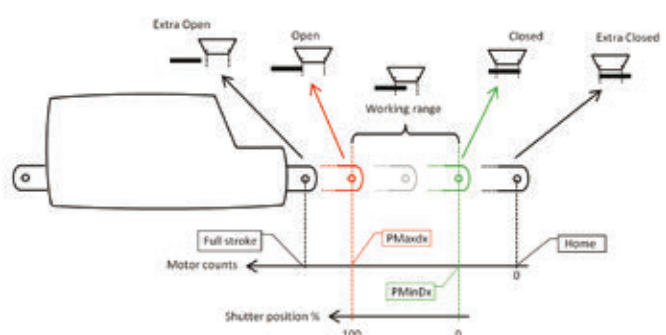
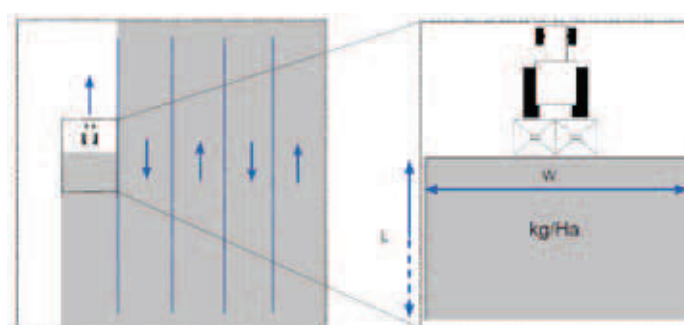
Emergency button onboard the machine

SPREADING MANAGEMENT



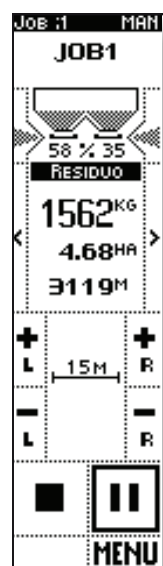
Management of the fertilizer spreading quantity: automatic spreading rate adjustment based on the set quantity per acre, on the vehicle speed and, for models with weighing system onboard, on the weight, measured by load cells installed on the hopper.

Jobs setting, speed detection, weighing system onboard, to reach the aim of a uniform distribution of the fertilizer on the field, based on the requested quantity per acre.

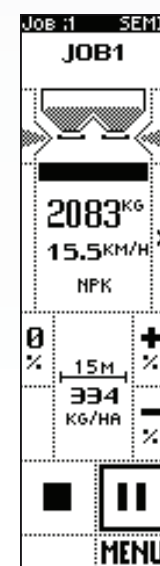
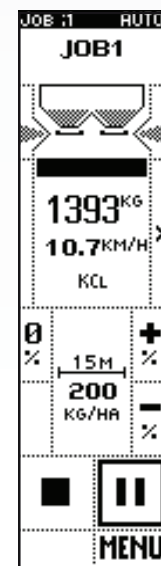


Actuators management based on spread quantity, shutter's shape and fertilizer's features. Actuator's setting to suit the spreader design.

Spreader without weighing systems onboard: "speed" working mode, with spread rate proportional to the tractor's speed, based on product features, spreading width and required norm. Manual working mode also available, with operator's control of the shutters position.



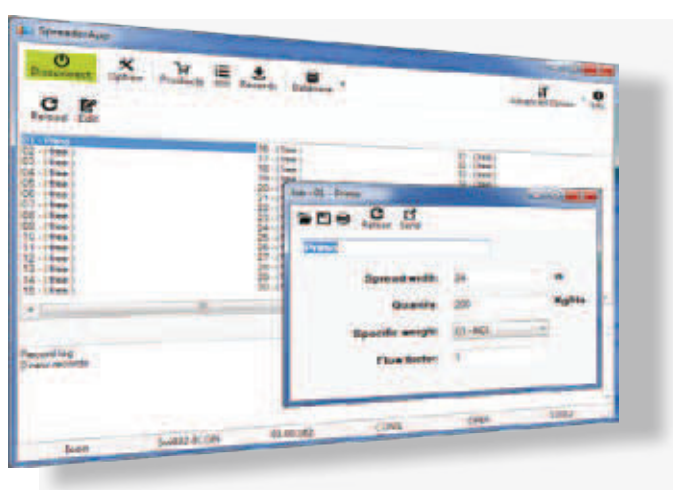
Spreader with weighing systems onboard (load cells and weight module): fully automatic working mode available, with flow factor periodical recalculation during working, or semi-automatic mode, with flow factor recalculation on operator's request. Speed mode and manual mode always available.



SOFTWARE: SPREADER APP

Tufner Spreader App software for PC, to define product features and data exchange with the ICON unit onboard the vehicle.

Product tables management imported from the ICON unit or exported to it through USB memory or cable.
Working data analysis available, with reports and exportation in standard formats.

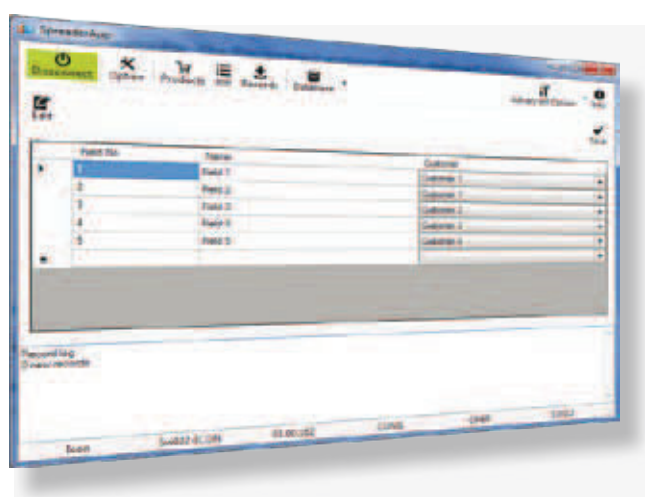
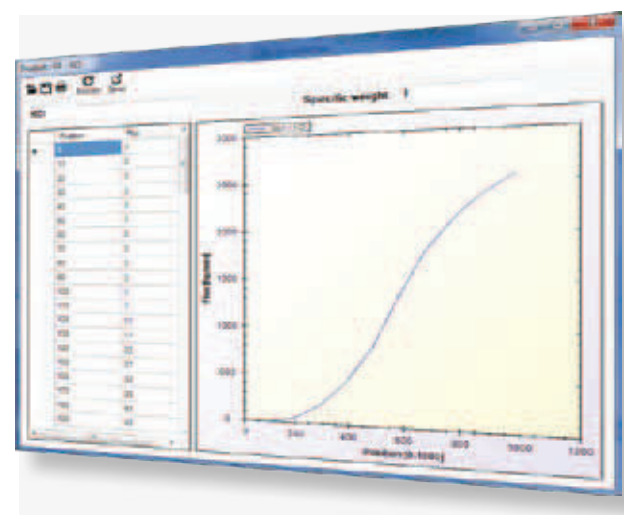


Jobs Management

- Load and unload **formulas** creation, with name, to be transferred to the indicator
- Possibility to transfer to the indicator formulas **selected** among those in the data base
- **Animals** number settings
- Pro-animal ration for each **component**
- Quantity to be unloaded for each **unload**

Fertilizer Management

- Up to 50 **components** can be inserted with name and transferred to the indicator
- **Stocked** amount displayed for each component
- **Consumed** amount displayed for each component



Customers and Fields Management

- Reported by **formula**, **component** or unload **box**
- Reported by **date**
- Report of **load**, unload data or both
- **Summary** or **detailed** report

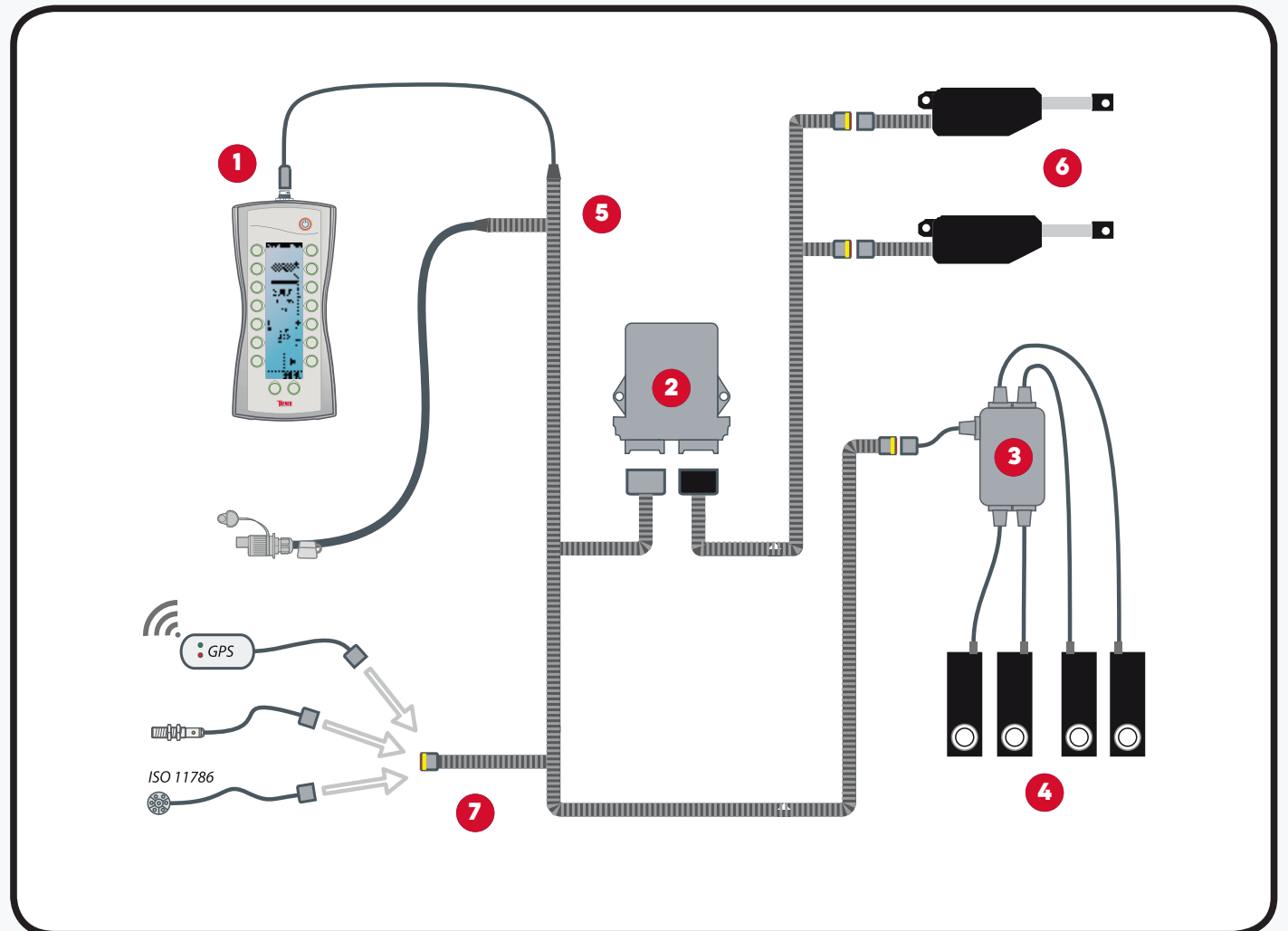
Data Reports and Printing

- Reports display
- Reports exportation as spreadsheet (MS Excel™) or pdf



EXAMPLE: UP TO 2 ACTUATORS AND WEIGHING SYSTEM

- 1 ICON D Command Unit
- 2 H-BLOCK Module
- 3 WM Weighing Module
- 4 Load Cells
- 5 BUS + power supply cabling in "Automotive Grade" execution
- 6 Electric actuators for spreading shutters
- 7 Ground speed detection, through inductive sensor or GPS device or from ISO 11786 connector



EXAMPLE: UP TO 5 ACTUATORS AND WEIGHING SYSTEM

- 1 ICON D Command Unit
- 2 BIG-BLOCK Module
- 3 WM Weighing Module
- 4 Load Cells
- 5 BUS + power supply cabling in "Automotive Grade" execution
- 6 Electric actuators for spreading shutters
- 7 Electric actuator for border function
- 8 Electric actuators spread width adjustment
- 9 Ground speed detection, through inductive sensor or GPS device or from ISO 11786 connector

