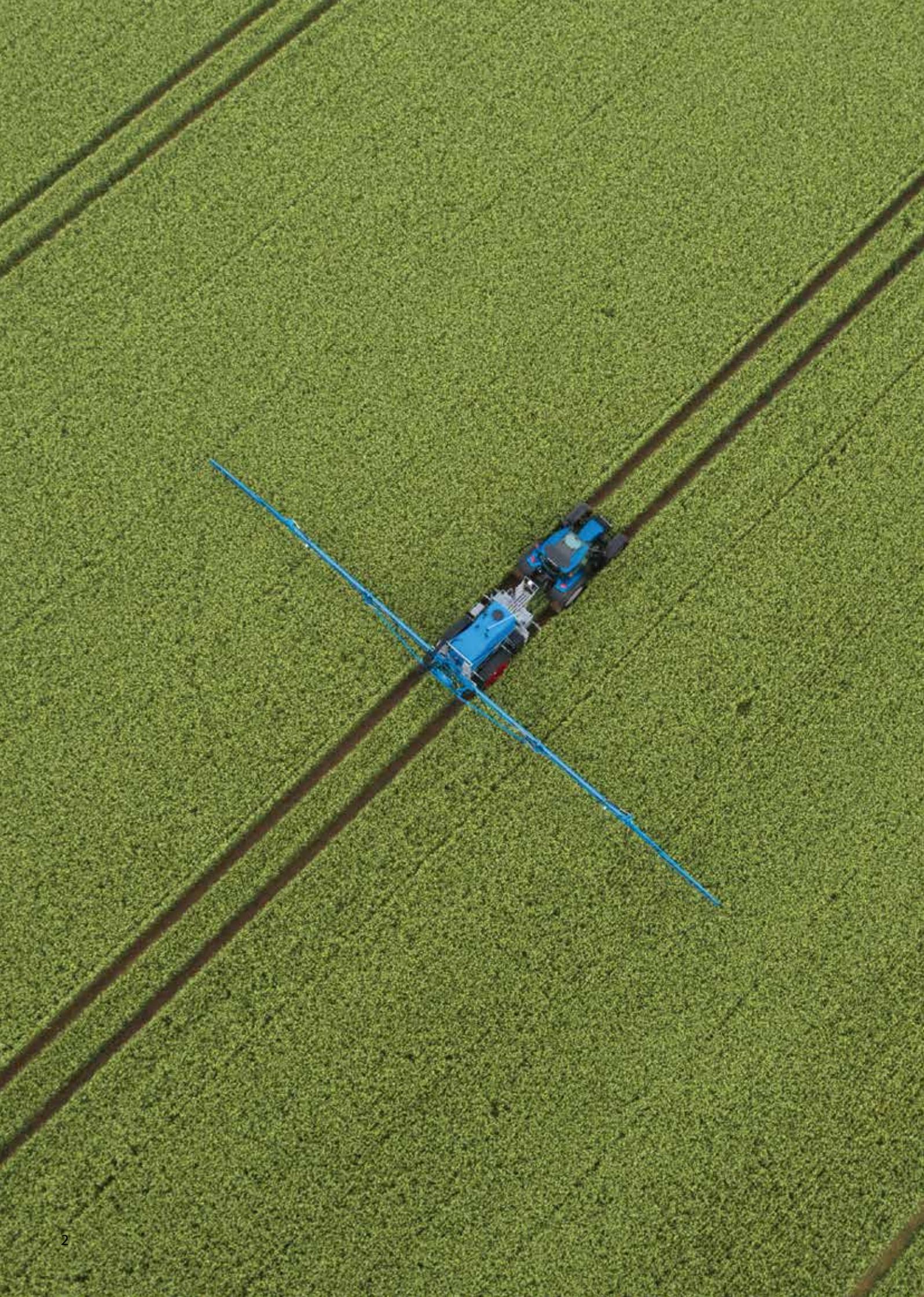


TRAILED FIELD SPRAYER  
**PRIMUS**







## We look after your crops!

The crops on our fields form the basis of our food. As a farmer, your success therefore depends on healthy crops, and this is why you implement sustainable, efficient and environmentally friendly crop cultivation practices. LEMKEN have the machines and expertise available to support you with all your cultivation and crop protection requirements. Our range of powerful field sprayers are specially designed for the needs of your crops and farm to ensure that it is not only your crops but also your profits that yield healthy growth.

### **LEMKEN Primus – optimal care for any requirements**

With its large capacity and outstanding quality in all areas, the Primus trailed field sprayer from LEMKEN addresses, in particular, the market grain company's need for an excellent combination of professional plant protection with greater area capacity and maximum efficiency. This is achieved through a conscious concentration on the necessary functions required for spraying, and the thereby reducing the number of different versions required. The spreading of liquid fertilizer and mixtures of plant protection agents and liquid fertilizer is part of the LEMKEN Primus performance spectrum.



# Compact design, agility and economy!



With its range of practical equipment variants, the Primus is the ideal entry-level model for trailed crop care technology. Its compact design delivers optimal agility and manoeuvrability. The Primus makes for professional, economic crop care.

The centrepiece of the Primus is its GRP tank, which is perfectly smooth inside and therefore easy to clean. The tank is available in volumes from 2300 to 4200 litres. There are also separate external clean water tanks.

Stable Z-profile booms with working widths from 15 to 30 metres and a wide variety of folding and width section variants allow the implement to be deployed in any crop farming conditions. Hoses and width section valves are protected by being located within the boom framework.

The boom support height can be easily adjusted using a transport support system, allowing it to be adapted to various tyre and wheel sizes. This ensures that the booms maintains an optimal centre of gravity position.

The Primus sets new benchmarks – not least in terms of operating comfort. All adjustments of both intake and output functions can be made easily, clearly and without any risk of confusion.

With numerous practical functions, including a folding tray with measuring beaker holder next to the inductor and a storage compartment for utensils and small parts, the Primus proves its user-friendliness down to the last detail.

# Model range at a glance

## Primus 10

- MesoSpray – basic operating system for field sprayer control
- GRP tank with a choice of actual volumes of 2300, 3200 or 4200 litres
- Primus10/2500 and 3500 tanks with one P200 piston diaphragm pump; Primus 10/4500 tank with two P200 piston diaphragm pumps
- 320 litre external PE fresh water tank
- Boom widths from 15 to 30 metres
- Maximum of 9 width sections
- Optional equipment: EES electronic tank display Pack 1, CCI.Command SC automatic width section control and CCI.Command PT parallel tracking system



## Primus 12

- MesoSprayISO – ISOBUS-compatible field sprayer control
- GRP tank with a choice of actual volumes of 2300, 3200 or 4200 litres
- Primus12/2500 and 3500 with one P200 piston diaphragm pump; Primus 12/4500 with two P200 piston diaphragm pumps
- 320 litre external PE fresh water tank
- Boom widths from 15 to 30 metres
- Maximum of 13 width sections
- Optional equipment: TankControl electronic tank display, CCI.Command SC automatic width section control and CCI.Command PT parallel tracking system, DistanceControl automatic boom height control, electronic EES-Pack 1 to 4 water system, electrically switchable boundary and extension nozzles



# Attaching and driving



## Variable hitch

The Primus features a flexible drawbar that is suitable for top and bottom hitch configurations.

- A hole matrix enables the operator to change the drawbar height and adjust to the tractor's hitch. The drawbar eye also offers two mounting positions.
- The towing ring can be replaced, which enables a variety of different hitches to be connected.
- This means that the Primus hitch height can be easily and quickly adapted to suit any tractor.



## Drawbar spring suspension

A suspension between the flexible drawbar and Primus chassis is available as an option.

- This reduces jolts being transmitted between the sprayer and tractor during road transport. Combined with large-volume wheels, this delivers overall good suspension comfort.
- If the brakes are suddenly applied at a high transport speed and with a filled tank, the frame and drawbar are protected from damage.





### **Axles for every track width and optimum convenience**

The Primus field sprayer features an unsprung rigid axle as standard. Depending on size and version, fixed track widths are possible between 1.50 m and 2.25 m.

- Air-suspended axles are optionally available for the Primus 10/12 4500 from 1.80 m track width upwards. Load-dependent suspension ensures maximum ride comfort. With this axle, the air brake is also controlled in keeping with applicable loads.



### **Large ground clearance and a wide selection of tyres**

The smooth underside of the LEMKEN Primus favours work in tall-standing crops.

- The large number of available tyre variations ensures optimal soil conservation and efficient crop protection.
- The pumps are positioned to achieve an uninterrupted ground clearance of about 70 cm to protect crops.



### **Compact and safe en route**

The compact dimensions of the Primus make transportation easier, even on overgrown tracks and in confined areas.

- The spraying boom is folded close to the tank so that even overhanging trees do not become an obstacle.
- The boom transport height can be adjusted to different tyre sizes by means of slots at the front and rear. The boom is therefore stowed at the lowest possible centre of gravity for transportation by road, thereby greatly increasing driving stability.



# Operation made easy



## Control centre

The Primus controls on the left-side of the implement are clearly arranged and easily accessible for operation.

- Selection valve (1) for drawing in external liquids or spray agent.
- Selection valve (2) for drawing in spray agent or clean water.
- Distribution valve (3) for induction, spraying, internal cleaning and purging of residue
- Manual agitation control (4)
- Proportional valves (5) for hopper rinse, agitator, canister cleaning and external cleaning connection
- Proportional valve (6) for the inductor's extraction injector
- Adjustable self-cleaning filter (7) in the pressure line



## Powerful induction hopper

A spring-supported mechanism quickly moves the large inductor in the Primus into its working position to speed up the induction of crop care products.

- A mist-free hopper rinse system and powerful agitator ensure that crop care products are dissolved thoroughly and inducted without residue.
- The efficient canister rinsing jet, which can be swivelled upwards, thoroughly cleans canisters of all sizes.
- The folding measuring beaker holder prevents accidental spillage of crop care products.
- A cleaning gun for external cleaning is available as an option.
- There is a separate hand wash canister at the front of the platform.



## Electrohydraulic control

The Primus 12 is available with electrohydraulic controls to allow additional functions such as DistanceControl to be controlled.

- The tractor then only needs a single-acting spool valve and an unpressurised return or load sensing.
- The hydraulic functions are electrically controlled from the operating unit.



### Basic operation for Primus 10

The Primus 10 is equipped with the CCI-50 terminal with width section box as standard, delivering an intuitive user interface in combination with the MesoSpray software.

- The field sprayer is supplied with power via a battery kit or a three-phase in-cab power supply.
- If required, the terminal can be fitted with a DGPS receiver or tractor-based DGPS signal connection harness.
- When using the terminal with a DGPS signal, automatic width section switching (CCI.Command SC) and parallel tracking assistance (CCI.Command PT) are available via CCI.Apps.



### ISOBUS operation for Primus 12

ISOBUS technology gives access to a greater range of functionality in the Primus 12 field sprayer. It can be controlled via a CCI-50, a CCI-200 or a CCI-1200 terminal or any AEF-certified ISOBUS terminal. The electrical connection to the implement is provided via the ISOBUS implement socket on the tractor. ISOBUS technology supports numerous functions, e.g.:

- Automatic width section control can be operated either via a CCI terminal (CCI.Command SC) or via the section control on the tractor (TC-SC).
- When using a CCI terminal, parallel tracking assistance is also available (CCI.Command PT).



- Job processing (CCI.Control) is available in combination with various field files. (TC-Bas & TC-Geo)
- ISOBUS-compatible auxiliary controls such as the LEMKEN multi-function lever, joystick box, width section box or a tractor multi-function joystick can be easily integrated. (AUX-N)
- All CCI terminals allow the connection of up to two cameras (CCI.Cam).
- This allows the CCI terminals to be used for several implements, e.g. field sprayer, seed drill, fertiliser spreader etc.

### Accessories



DGPS antenna  
Primus 10/12



Width section box  
Primus 12

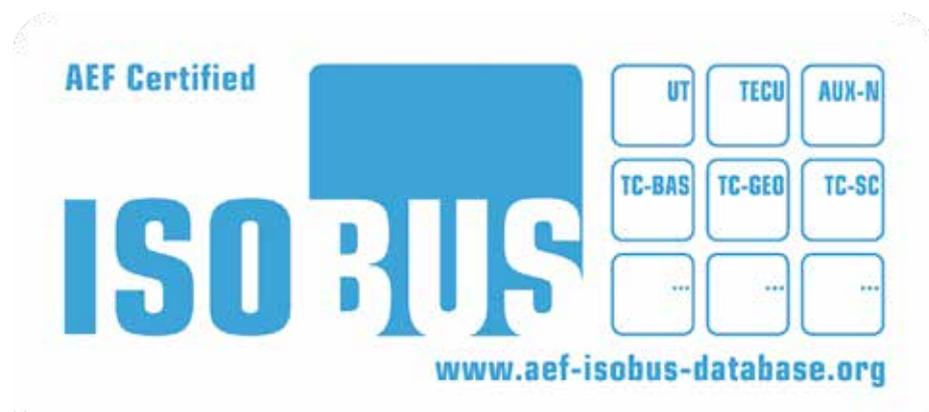


Joystick box  
Primus 12



Multi-function lever  
Primus 12

# ISOBUS functionalities



## Agricultural Industry Electronics Foundation

The Agricultural Industry Electronics Foundation was established in October 2008 by seven international manufacturers of agricultural implements and two associations. The initiative is an independent international organisation. It is a user platform that provides resources and expertise for the increased utilisation of electronic and electrical systems in agriculture.

Electronic systems make agricultural implements safer, more powerful, more precise and more efficient. However, individual manufacturers previously developed their own, proprietary solutions, which resulted in specific adjustments being necessary for each tractor/implement combination. ISOBUS is designed as a simpler approach that provides a non-proprietary “plug and play” solution. AEF Guidelines ensure that signals such as speed, lower link position, PTO speed etc. are made available in a standardised form by all implements. Communications between implements and field data are standardised and therefore simplified by means of the ISO-XML format. ISOBUS is one of the core tasks of the AEF.

### AEF certification label

The new AEF certification label confirms that ISOBUS components have been independently tested and comply with both the ISO 11783 standard and the supplementary AEF Guidelines. All LEMKEN ISOBUS implements are currently certified under the AEF Guidelines when they go into series production. The AEF database provides valuable information regarding the ISOBUS compatibility of tractors and implements used on farms.

**UT** **Universal terminal** Provides the ability to control an implement using any terminal or alternatively the ability to use a single terminal for controlling various implements.

**Tractor Electronic Control Unit** The tractor’s job computer can be used to supply essential tractor data for the implement via ISOBUS, including speed, PTO speed and linkage height, among others. This data can then be used for controlling the implement.

**TECU**

**AUX-0** **Auxiliary Control old** Auxiliary control elements according to the old standard

**Auxiliary Control new** Auxiliary control elements according to the new standard are freely programmable. The “old” and “new” standards are not compatible with each other; LEMKEN implements work under the AUX-N standard.

**AUX-N**

**TC-BAS** **Task Controller basic** Documents total values that are helpful for providing an overview of the work done. The relevant values are obtained from the implement.

**Task Controller geo-based** Additionally provides the ability to collect location-specific data or plan location-specific jobs, for example using application cards.

**TC-GEO**

**TC-SC** **Task Controller Section Control** Automatic width section control depending on the GPS location and required degree of overlap.

## Competence Center ISOBUS

“One for All, All for One”

That was the motto under which the Competence Center ISOBUS e.V. was established by the companies AMAZON, GRIMME, KRONE, KUHN, LEMKEN and RAUCH in 2009 in order to give concrete shape to their idea of collaboration between various manufacturers. More than five years of collaborative development of innovative agricultural electronics have delivered sound proof that teamwork works.

CCI terminals are developed by professionals for professional practice. Implements can be controlled regardless of their manufacturer, without needing to switch terminals. A wide range of CCI.Apps allows functions to be extended and optimally adapted to your needs.

## CCI – Apps



**CCI.Command** comprises the GPS-based PT parallel tracking assistance and the automatic SC width section control. PT supports precise pass alignment even with poor visibility or on fields without tramlines. The distance to a straight or curved reference line is calculated using GPS and visualised for the driver. SC switches the part width sections of the implement automatically based on its GPS position. This prevents double passes across areas, ensures that farm inputs are used economically and lastingly reduces driver strain.



**CCI. Control** is your job management tool and forms the interface between the farm management software and the implement control on the CCI terminal. This allows not only the data recorded by your machine to be transferred to other devices or computers, but even entire workflows to be easily controlled and documented. When combined with a GPS signal, jobs can be planned and documented for specific locations, and application maps can be used for width section-specific application. These maps can be imported in either standard ISOXML or Shape format.



**CCI.Courier** permits wireless data exchange, e.g. via email or online access. For this function, the terminal requires an additional GSM modem including an aerial and SIM card. CCI.Courier is only available for the CCI-200.



**CCI.TECU** Many tractors are not yet ISOBUS-ready, but have a signal connector instead. CCI.TECU works with this socket to collect a wide range of tractor data such as speed of travel, PTO speed and linkage position and then shares this data with other bus participants.



**CCI.Cam** transmits the images recorded by various cameras directly to your terminal, ensuring that you always have an excellent overview of your machine.



# Boom with 'Z' profile



## Central pendulum suspension

The boom is attached in the centre with pendulum suspension. It is automatically aligned horizontally, irrespective of the position of the running gear.

- On slopes spring stabilisers support the adjustment of the boom to the gradient.
- They also prevent the boom from plunging inwards on the headland.



## The Z profile – torsion-resistant protection

The design of the Z profile boom delivers optimal protection against damage.

- All supply lines as well as the section width valves are protected in the boom frame.
- The Z-profile enables corrosion-resistant spray lines to be routed inside the boom structure.



## Bumper

To prevent damage to the nozzles and the boom, the Primus is equipped with a bumper.

- The boom bumper guard is equipped with a circumferential guard rail and a guard plate for the valves.

## Boom with nozzle array and folding points

Designation – working width/symmetrically reduced – No. of width sections – Weight (kg)

Width section distribution

FS15/00 - 7 - B27 - 571,5		1/2/3x3/2/1
FS18/00 - 7 - B27 - 597 FS18/00 - 9 - B27 - 597		1,5/5x3/1,5 1/2/1,5/3x3/1,5/2/1
FS21/15 - 7 - B21 - 748 FS21/15 - 9 - B21 - 748		7x3 1/2/5x3/2/1
FS21/18 - 9 - B27 - 771		1/2/5x3/2/1
FS24/18 - 9 - B27 - 794 FS24/18 - 9 - B27 - 794 FS24/18 - 11 - B27 - 796		2/3/2,5/3x3/2,5/3/2 1/2/3,5/4/3/4/3,5/2/1 2/3/2,5/3x3/2,5/3/2 1/2x2/2,5/3x3/2,5/2x2/1



## Working on a slope

To ensure parallel adjustment to the terrain, each spraying boom features a slope balancer which is actuated from the operator console in the tractor cab. Automatic boom guidance is optionally available for the Primus 12.

- Slope compensation is controlled electronically. If DistanceControl is selected, the function is performed hydraulically.

- Slope compensation responds to shifts in the boom's centre of gravity. The boom retains its full pendulum range even in this adjusted position.
- Slope compensation is operated via a potentiometer; in the Primus 12 with an electrohydraulic system, slope compensation can optionally also be controlled via DistanceControl.



## DistanceControl

DistanceControl automatic boom height control makes spraying in hilly or very uneven terrains substantially easier.

- In very hilly terrain and in case of widely spaced rows it is recommended to use 2 distance sensors per boom side.
- When using double flat jet spray nozzles, it is useful to have the distance sensors attached to extended brackets in front of the boom, as this minimises the effect of spray mist.

### Designation – working width/symmetrically reduced – No. of width sections – Weight (kg)

### Width section distribution

FS24/20 - 9 - B30 - 825 FS24/20 - 11 - B30 - 827		2/2x2,5/3,5/3/3,5/2x2,5/2 1/2x2/2,5/3x3/2,5/2x2/1
FS27/18 - 9 - B27 - 833 FS27/18 - 11 - B27 - 835 FS27/18 - 13 - B27 - 837		1,5/3/3,5/4/3/4/3,5/3/1,5 1/2/7x3/2/1 1/2/2x1,5/5x3/2x1,5/2/1
FS27/20 - 9 - B30 - 925 FS27/20 - 11 - B30 - 927		1/3x2,5/3,5/3/3,5/3x2,5/1
FS28/20 - 9 - B30 - 952 FS28/20 - 11 - B30 - 954 FS28/20 - 13 - B30 - 956		2x2/4/4,5/3/4,5/4/2x2 1/3x3/2,5/3/2,5/3x3/1 2x1/2/2x3/2,5/3/2,5/2x3/2/2x1
FS30/20 - 9 - B30 - 967 FS3030/20 - 13 - B30 - 971		2x2,5/4/4,5/3/4,5/4/2x2,5 1/2x2/2x3/2,5/3/2,5/2x3/2x2/1

# The tank – a clean solution



## Tank as smooth as a mirror and easy to clean

The LEMKEN Primus tank is made of highly tear-resistant, stable glass fibre-reinforced plastic (GRP). A platform for accessing the domed lid is available as an optional extra.

- Extremely smooth inner surfaces reduce the deposition of spray agents and enable the interior to be cleaned quickly and easily
- The shape and location of the tank favours optimum weight distribution in all filling states.
- The tank shape in particular is designed to support the highly efficient volume agitator. This design effectively prevents foaming.





### Mechanical or electronic fill level indicator

The two fill level indicators can be read easily both on the implement and from the tractor cab.

- The fill level is measured at the centre of the tank so that the result is largely unaffected if the sprayer is on a slope.
- The electronic fill level indicator is exceedingly useful for precise fill volumes and minimal residues.
- An automatic fill stop can be implemented in combination with an electronic fill level indicator.



### Low amounts of residue

The bypass collector, which collects all fluids from up to seven return lines and then transfers them directly to the agitator via a collection line is a unique feature of this implement. No power is lost. Any power not used for spraying is used for agitation.

- The number of hoses and supply lines and therefore also the number of required tank connections are reduced to a minimum.
- Technical residue is thereby reduced considerably.



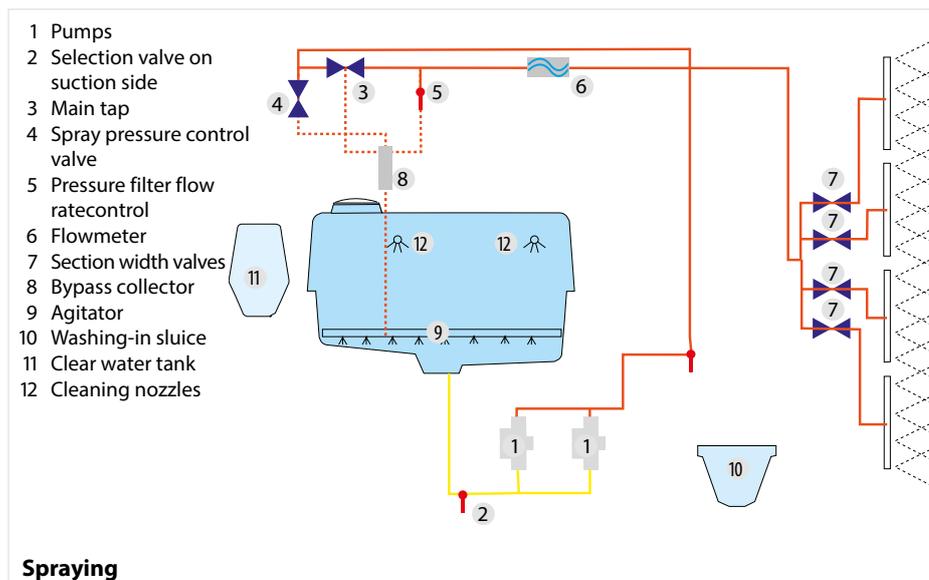
### Efficient agitator

A powerful agitator inside the tank intensively mixes the spray agent and prevents the deposit of any residue. The bypass collector line is connected directly to the agitator line installed in a longitudinal direction in the bottom of the tank.

- This system enables the entire pump capacity to be concentrated on the agitator.
- The powerful hydraulic return agitator has a foam-reducing effect and guarantees a homogeneous spray agent throughout the spraying process.
- The intensity of agitation is infinitely variable via an easy-to-use control device.



# From filling to cleaning



## Environmentally friendly Enhanced Sprayer Pack (EES Pack)

The EES Pack comprises equipment packages that make the implement future-ready in terms of user safety and environmental protection. The direct control of cleaning processes from the closed cab provides optimal user protection and ensures that the tank can be quickly and easily cleaned internally while still on the field.

### The circulation line

The optimised liquid route for the Primus trailed field sprayer from LEMKEN guarantees efficient spreading of all plant protection agents.

- Large-size lines also enable larger spreading rates or high travel speeds.
- The quantity control valve has a wide control range, which enables variable quantities to be spread.

- With a nozzle pipe with 2-mm stainless-steel walls, the nozzle holders are fitted securely.
- The Primus features a circulation line as standard that reliably delivers homogeneous spray fluid across the full boom width as soon as the nozzles are activated.

### EES Pack variants

Primus 10/Primus 12	EES Pack 1	TankControl electronic fill level indicator
Primus 12	EES Pack 2	TankControl electronic fill level indicator Electrical switching from spray fluid to clean water and vice versa Electrical switching of internal tank cleaning (on/off)
	EES Pack 3	TankControl electronic fill level indicator Electrical switching from spray fluid to clean water and vice versa Electrical switching of internal tank cleaning (on/off) Electrical agitator deactivation
	EES Pack 4	TankControl electronic fill level indicator Electrical switching from spray fluid to clean water and vice versa Electrical switching of internal tank cleaning (on/off) Electrical agitator deactivation Automatic stop of the pump intake connection



## Pumps

The high pump capacity ensures rapid filling, powerful mixing of the spray fluid and thorough implement cleaning.

- The pumps are driven directly via the PTO at a maximum speed of 540 rpm. This results in a maximum fill time of 10 to 15 minutes.
- The piston diaphragm pumps are resistant to liquid fertiliser through the use of corrosion-proof materials.



## Filters

The Primus filters are easily accessible.

- The Primus models with 2300 l and 3200 l tanks are equipped with a suction filter. The Primus with a 4200 l tank is equipped with two suction filters (50 mesh per inch). Non-return valves integrated in the suction filters allow the filters to be cleaned even when the main tank is full, without spray fluid escaping from the tank.
- The filter in the pressure line is selfcleaning and features an 80-mesh insert which eliminates the need for nozzle prefilters when nozzles greater or equal to bore 025 are used..



## Internal cleaning

The Primus trailed field sprayer tank is extremely smooth on the inside and therefore ideally equipped for residue-free internal cleaning.

- The two optimally positioned stainless-steel rotation nozzles in the upper tank section ensure reliable and thorough cleaning of all areas inside the tank.
- Optimised line routing results in a tank that has almost no pipes on the inside to make internal cleaning much easier.
- Control devices, lines, width section valves and pumps can be cleaned even if the tank is partially filled.



# Technical data

Primus 10 & 12	Main tank		Clean water tank	Hand wash canister	Weight
	Nominal volume	Actual volume	(litres)	(litres)	(kg, without boom)
2500	2,300	2,450	320	12	2,420
3500	3,200	3,400	320	12	2,520
4500	4,200	4,410	320	12	2,820

## Transport dimensions (mm)

Primus 10 & 12	With boom	Length (L) (to the rear edge of the centre section)		Width (W)		Height (H) (to the upper edge of the power chain)	
		Min.	Max.	Min.	Max.	Min.	Max.
2500	FS21	5,300	5,600	2,600	2,900	3,300	3,600
	FS27	5,600	5,900	2,600	2,900	3,300	3,600
	FS30	5,600	5,900	2,600	2,900	3,300	3,600
3500	FS21	5,300	5,600	2,600	2,900	3,300	3,600
	FS27	5,600	5,900	2,600	2,900	3,300	3,600
	FS30	5,600	5,900	2,600	2,900	3,300	3,600
4500	FS21	5,700	6,000	2,600	3,000	3,300	3,700
	FS27	6,000	6,300	2,600	3,000	3,300	3,700
	FS30	6,000	6,300	2,600	3,000	3,300	3,700

## Standard equipment:

### Primus 10:

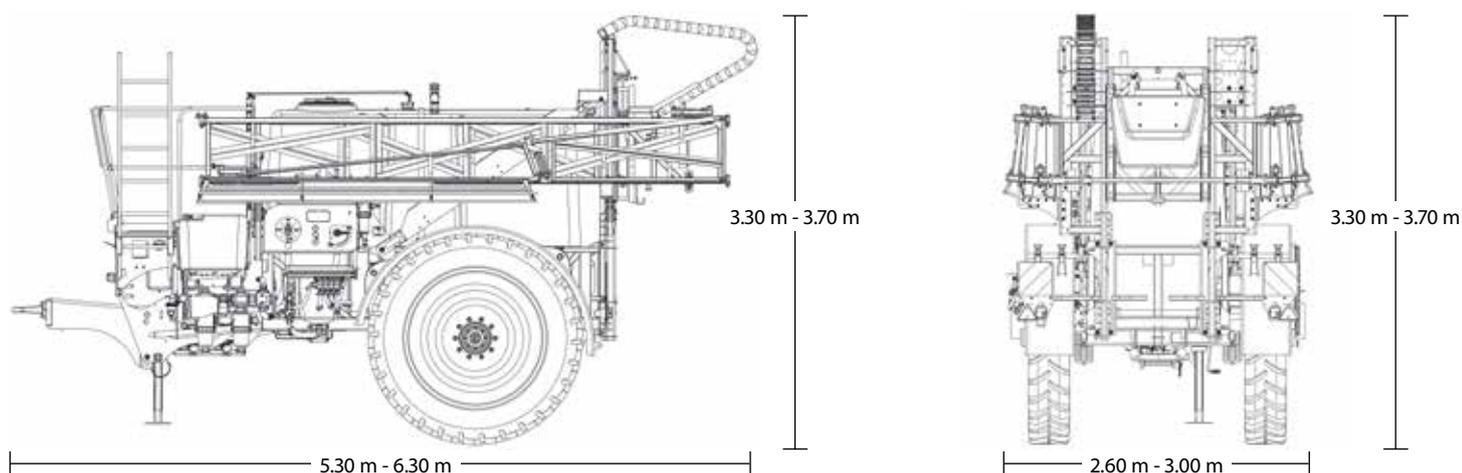
Electronic operation and automatic control via the LEMKEN CCI-50 terminal, width section box and basic tractor equipment

### Primus 12:

Electronic operation and automatic control with ISOBUS without terminal and auxiliary control element

### Primus 10 & 12:

Basic FS spraying boom operation: hydraulic height adjustment with 1 single-action spool valve, folding into the transport or working position via hydraulic sequential control with 1 double-action spool valve, electric slope compensation with optical centre display and potentiometer • Vertical suspension for spraying booms • Piston diaphragm pump, 1 x 260 litres in the Primus 10 & 12/2500 and 10 & 12/3500, 2 x 200 litres in the Primus 10 & 12/4500 • 300/95 R 46 tyres in the Primus 10 & 12/2500 and 10 & 12/3500, 340/85 R 48 tyres in the Primus 10 & 12/4500 • Dual-line air brakes • Single-lever operation in the distribution section • Indirect fill level indicator • 2 rotating stainless-steel internal tank cleaning nozzles • Manual agitator control • Spring-supported inductor and folding tray with measuring beaker holder • 2" Kamlok intake connection • 2 x 160 litre external clean water tanks • Hand wash canister • Drawbar, top hitch (bottom hitch as an option) • Height-adjustable drawbar eye, Ø 40 mm rigid • Cardan shaft • 1 set of TeeJet AIXRVP nozzles, free choice of size • Device test for 1 set of nozzles incl. official test label • Mudguards incl. lighting equipment • Without platform



# Service decides



When you have bought a machine from LEMKEN, the well-known, almost proverbial LEMKEN service starts. 18 customer-oriented factory branches and outdoor storage areas in Germany as well as our own sales companies and importers in more than 40 countries, and a strong dealer network, ensure that machines and spare parts are supplied quickly.

If a part is not in stock, it can be delivered to the customer within 24 hours via the LEMKEN logistics centre which is manned round-the-clock 365 days a year.

## **Knowledge from the LEMKEN specialist**

Well trained customer service technicians are available to farmers, contractors and trade, who are using machinery for

the first time, as well as for professional maintenance and repairs. Thanks to regular training courses, LEMKEN customer service is always up to date with the latest LEMKEN technology.

## **Original spare parts from LEMKEN**

LEMKEN wearing parts are designed for a maximum service life. High-quality materials, the latest production methods, and an intensive quality control ensure a long service life. Therefore, all original spare parts bear a unique identification with the registered LEMKEN trademark. Original spare parts can be ordered at any time online on the Internet via the LEMKEN information and ordering system.



LEMKEN GmbH & Co. KG  
Weseler Straße 5  
46519 Alpen, Germany  
Phone +49 2802 81-0  
info@lemken.com  
lemken.com

Your LEMKEN dealer:

Blank white box for dealer information.

