



Tractor Steering - Section Control - Plough Steering
TWIN Implement Steering - Levelling

R A V E N



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SPECIALISTS IN GPS

Raven, formerly SBG Precision Farming, manufactures advanced GPS steering systems for many different applications in agriculture. SBG was created in the Netherlands in order to produce GPS systems that meet the high expectations of progressive Dutch farmers. A team of specialists, mostly with an agricultural background, are working on the development, production and service of the GPS systems. Staying in close contact with demanding users and intensive analysis of field tests are essential to constantly improve and expand the capabilities of our systems. Ease of use and reliability are key.

SBG has subsidiaries in the Netherlands and Belgium and is represented by importers and dealers in several other European countries. Users are therefore assured of good advice and excellent service and support.

POWERED BY RAVEN

SBG has been acquired by Raven Industries, Inc. in May 2014. Raven manufactures a broad range of precision ag technology including GPS technology and guidance systems to control systems for sprayers, seeders and planters. A significant part of this technology is supplied to manufacturers of agricultural machinery to be installed at the factory.

SBG sells and support the Raven product range. With that SBG resellers and end-users now have direct access to all these products. Meanwhile the development team works on a seamless integration of the two product lines into one.

Team Raven Europe



VIPER® 4+

The Viper 4+ display forms the heart of all SBG products. The large screen gives you a clear view of all functions and enables you to take control with ease. Whether it is tractor steering, TWIN steering, section control or GPS-levelling, all are fully integrated into the Viper 4+ display.

With the Viper 4+ display you can drive straight lines, curves and contours or combinations thereof. The Viper 4+ also has useful features like setting up headlands with different widths and even marking the sprayer tracks with different working widths. The Viper 4+ has many additional options, including an extensive crop registration, recording height maps and a special module to set up trial fields or create grid patterns. (see also page 18).

Convincing advantages:

- Dustproof design
- Anti-reflective touch screen for optimal visibility
- Clear and easy to use
- Rugged magnesium alloy enclosure
- Integrated Wi-Fi module for easy remote support



Detailed crop registration possibilities



Record elevation map during planting or seeding

GLONASS as standard equipment

24 Russian GLONASS satellites also made available to have the best possible signal even under difficult conditions.

Internet

The Viper 4+ has an integrated Wi-Fi module. When using a Smartphone with hot spot this enables exchanging AB-lines or fields, remote support and vehicle tracking are thus possible as well as checking the local weather forecast.

VRA

Up to four background maps can be loaded simultaneously for variable rate application (VRA). You are free to change the rates and settings of the maps manually as you see fit. The Viper 4+ is compatible with most common brands of rate controller.

Data Exchange

Parcel and registration information can be shared in standard formats such as ESRI shapefiles, oogle Earth and IsoXML. Field data from various other brands can be read and used as well.

SmartRemote: everything under control

Various functions of the Viper 4+ can be remotely controlled. The unit is user configurable.



Second GPS antenna

With the optional second antenna implements can be steered accurately as well.

SmartControl

Automate various functions with the SmartControl option of your Viper 4+. From automatic start stop of the tractor to automatic disengage of your implement when reaching the headland.

Remote Support: help is never far away

Every Viper 4+ with an internet connection can benefit from our Remote Support option. Time is always scarce – save it.



SPECIFICATIONS



Rugged magnesium alloy enclosure

GPS RECEIVER	INTEGRATED TWIN RECEIVER OR EXTERNAL 600S™
ANTENNA	G3: GPS, GLONASS, GALILEO, L-BAND
COMMUNICATION	2X RS232, 2X USB, 4X CAN, ETHERNET, WI-FI MODULE
DISPLAY	12,1" (30,5 cm)
TEMPERATURE	0°C TOT +70 °C (OPERATING)
SIZE (CM)	24,5 X 30,5 X 4,5 (H X W X D)
POWER SUPPLY	9-16 V



Mark sprayer tracks with different working widths



Create headlands with different widths



AB-lines are part of the field boundary



Variable rate application with flexible setup for compatibility with a wide range of application controllers

UPGRADABLE GPS SYSTEMS

RAVEN 600S™ ANTENNA

Fertilizer application, spraying or planting require different GPS accuracy levels. The new 600S™ antenna will give you this flexibility and is therefore a great addition to the current product range.



GL1DE

The 600S™ comes with dual frequency, GL1DE and GLONASS at base level. When combined with EGNOS this gives an accuracy of 15 cm (pass-to-pass). Perfectly suitable for section control or fertilizer application. GLONASS ensures optimal performance even under conditions with low satellite visibility.

SATELLITE GS

With the paid Satellite GS correction signal the 600S™ has an absolute accuracy of +/- 5 cm*. The correction signal is satellite delivered so you don't have to rely on GSM coverage or base stations.

RTK

The 600S™ is fully upgradable to RTK accuracy level (+/- 2 cm) with GLONASS. RTK corrections can be delivered by radio by the all new Slingshot Field Hub 2.0 with 4G.

** full accuracy reached around 20 min after start up.*

VIPER® 4+ TWIN

With 3 choices of RTK, there's always one that suits you.

1: NETWORK-RTK

In a growing number of regions and countries Network RTK services are now available, providing nationwide coverage at a high accuracy level. The correction signal is received using a GSM modem: the Field Hub 2.0 modem.

Slingshot Field Hub 2.0 modem

The new Raven Slingshot Field Hub 2.0 modem is designed to work with GPRS (2G), UMTS (3G) and the new LTE (4G) network. This, in combination with two high gain GSM antennas and a special compact data format, correction losses are greatly reduced. Should the signal still ever get interrupted, the system can bridge that interruption up to 3 minutes.



Slingshot® Field Hub 2.0. modem

2: PERMANENT RTK-BASE STATION

A permanent RTK base station guarantees a reliable and - above all - repeatable position accuracy. An RTK base station sends the correction signals via a radio modem. Depending on set up, overall height and landscape a radius between 5-25 km can be covered. An SBG base is characterized by a flexible design, free choice of type of radio modems, antennas and set-up.

3: RTK SMARTBASE

The RTK SmartBase offers the flexibility of a mobile base station, combined with the guaranteed repeatability of a permanent RTK base station.

How it works

The RTK SmartBase can store up to 32 different easily identifiable named station locations. With the user friendly Autobase functionality previously saved locations are selected automatically when the RTK SmartBase is placed at a known position. The RTK SmartBase has an intuitive and clear user interface with touch screen operation.

Field Hub 2.0 advantages:

- Uses 2G, 3G and 4G networks
- 2 GSM Antennas for best performance
- Compact RTK signal



Always a reliable signal available

GPS OPTIONS PER APPLICATION

	EGNOS	GL11DE	SATELLITE GS	RTK	RTK TWIN
ACCURACY	25 CM	15 CM	5 CM	2 CM	2 CM
YEARLY COSTS	NO	NO	YES	YES	YES
VIPER 4+ + 600S	STANDARD	STANDARD	OPTIONAL	OPTIONAL	-
VIPER 4+ TWIN	STANDARD	-	-	OPTIONAL	OPTIONAL



The universal hydraulic valve block is equipped with accurate **proportional valves**.



DynamIQ - The 3D terrain compensation module stays in the vehicle, no repeated calibration necessary.



Unique benefits:

- Automatically steer from a speed of 36 m / hour to 30 km/hour
- Transfer is easy: only display and G3-antenna are moved between vehicles
- Perfect steering behavior; also in reverse, in curves or even with heavy front implements

SBGUIDANCE AUTO

Achieve more

Finally concentrate on the operation rather than on the steering. SBGuidance AUTO will steer your tractor or implement, tirelessly and with unprecedented precision via RTK-DGPS. While adjusting the planting distance of your potato planter, SBGuidance AUTO will maintain a perfect row spacing and remind you that the next pass is a tramline. Especially when time is critical, SBGuidance helps man and machine to perform optimally.

UNIVERSAL APPLICATION

The system consists of robust SBGuidance components that have been proven under severe conditions. Brand independent and compatible with any type of tractor or self-propelled vehicle. The steering is fully integrated into the vehicle. Exchange between vehicles is easy. Only the Viper® 4+ display and the GPS antenna must be transferred - no calibrating or change of settings is needed. Using the GPS on multiple vehicles allows a rapid return on investment.

SBGuidance AUTO is fully compatible with factory-installed GPS-ready systems such as all John Deere AutoTrac Ready tractors, AGCO Auto Guide/Varioguide, Claas Autopilot, New Holland Intellisteer, CASE Accuguide and Deutz Fahr Agrosky.



Steering with heavy front-mounted implements is often challenging. SBGuidance does this job like no one; The specially modified software ensures that the smallest error will immediately be corrected.

SBGUIDANCE AUTO COMPONENTS:

- The universal hydraulic valve block is equipped with an accurate proportional valve and is suitable for both Open Centre as well as for Load Sensing hydraulic systems.
- A contactless steer angle sensor ensures troublefree and accurate measurement. Especially under difficult conditions such as crabbing or operating with front hitched implements the steering outperforms systems lacking this sensor.
- The DynamIQ, the newly developed 3D electronic terrain compensation module determines its orientation thanks to 3 gyro's and 5 other sensors with unprecedented accuracy. The DynamIQ always stays with the vehicle or implement.
- The various components communicate through the proven, flexible CAN bus system. This ensures that SBGuidance AUTO is easily expandable to implement steering or SmartSwitch section control.



The advantages:

- High accuracy with double steering
- Easy to use and setup via one screen
- Very compact with universal Side-Shift adaptor
- Both GPS antennas have their own 3D terrain compensation

SBGUIDANCE TWIN

Double steering, double precision

Varying soil conditions, uneven loads or hilly terrain, such conditions may exercise considerable influence on the implement. Particularly in row cultivation this cannot be corrected by tractor steering. SBG were one of the first manufacturers to recognize the importance of implement steering in these situations and developed the TWIN steering. SBGuidance TWIN enables repeated field operations to be performed with unparalleled accuracy. In high-quality vegetables and organic crops TWIN offers new possibilities. Plant and seeding activities are performed with unparalleled accuracy and subsequent operations like mechanical weed control, ridging or band spraying match up perfectly. Crop damage caused by steering errors or too narrow row spacing are eliminated.

HOW IT WORKS

SBGuidance TWIN is operated via one Viper® 4+ terminal. The position of both the tractor and the implement, however, are each measured with its own GPS antenna. Because the tractor movements often differ from the implement, both are equipped with their own DynamIQ terrain compensation. The tractor is hydraulically controlled. For controlling the implement various steering options such as sideshift steering, drawbar steering, steered rear wheels or disc coulters can be selected. In this way for every situation and implement there's always the optimum steering option available.



Components for drawbar steering



No more unnecessary wide tracks in potato fields: ploughing beds, cutting, destoning and lifting potatoes will all use exactly the same track. Better utilization of land and a higher product quality are the results.

TWIN control can be used for all kinds of implements. Mounted equipment such as ridgers, planters or hoeing machines, but also for towed potato planters or (offset) steering TWIN harvesters is a perfect solution. Often an existing steering cylinder may be used. SBG also has three types of cylinders available for retrofit. The newly developed adaptor frame with Walterscheid catch hooks is the perfect solution when various instruments must be controlled.



Solid adaptor frame with side shift

Excellent on hillsides

TWIN-Disc prevents drifting of the implement. As a result tractor and implement are no longer offset, but remain perfectly aligned and repeated operations will fit perfectly.



Indicator showing the implement steering actions



The advantages:

- Robust disc coulters, proven design
- Perfect correction on slopes
- Strong reduction of drift

SBGUIDANCE TWIN-DISC

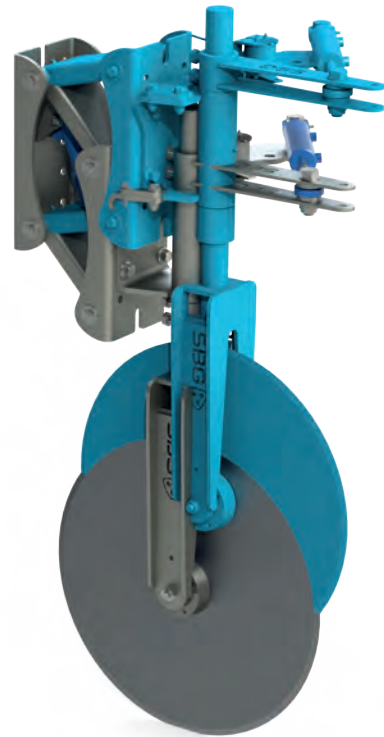
A unique way of implement control

The SBGuidance TWIN version with disc coulters is often the best choice to steer an implement. SBG has extensive experience with this type of steering and can legitimately be called a specialist in this area. The entire disk steering has been extensively proven in practice. The disc coulters are available in two different sizes, normal (Ø 45 cm) and XL (Ø 60 cm).

Depending on the size and type of implement, one or more discs coulters are installed behind the implement. For light drills and implements one disc coulters is often sufficient. Heavier and larger machines require two or more steering discs, that are connected by means of a rod. For folding implements the rod is replaced by two interconnected hydraulic cylinders.

EXCELLENT ON HILLSIDES

TWIN-Disc prevents drifting of the implement. As a result tractor and implement are no longer offset, but remain perfectly aligned and repeated operations will it perfectly.



The hydraulic obstacle protection enables the steering discs to retract whenever it hits a stone. Additional benefit is the discs may easily be lifted when the implement is detached.



High accurate mechanical weeding can be performed in row crops. Especially in organic farming, labor costs per hectare are thereby greatly reduced.



Plough steering is completely integrated and easy to operate



Unique advantages:

- Straight and level ploughing optimizes all of the following operations
- Full control via the Viper® 4+ display
- Perfect ploughing on curves and wedges

SBGUIDANCE AUTO PLOUGH

The best crops are built on solid foundations

Straight and smooth surfaced ploughing isn't only a pretty sight, but the best preparation for the new season. A smooth seed-bed makes sure every plant has the perfect start at the same time. A level seedbed ensures a uniform emergence and thus makes weed control easier and more successful, especially hoeing for organic farmers. AutoPlough makes ploughing a less demanding job. Fewer problems due to different kinds of soil and slope changes, and no more fighting the plough through tough spots, or running on turned land to straighten your mark. AutoPlough adjusts the plough width cylinder and keeps it continually on the required width.

AutoPlough will automatically widen and narrow the plough to cancel out any deviations from a straight furrow in every circumstance. This provides fewer changes in traction, more constant ploughing depth which means saving fuel, and a consistent, level finish. AutoPlough is a useful expansion of your SBGuidance Auto steering system.

Experience has proved that machine auto steer works more effectively during spring cultivations when the driving lines are exactly the same as the plough lines. Implement deviation will be reduced appreciably.



On-land ploughing with high accuracy using TWIN steering. GPS antenna will turn when the plough turns.



AutoPlough is operated through the Viper® 4+ display making it easy to use. During ploughing all necessary information is shown in one screen. Settings such as working width, steering speed and steering boundaries are readily adjustable. The system can then measure the off-track distance, process it, and adjust the plough width accordingly. It is even possible to plough wedged or curved fields.

AutoPlough is brand independent and easy to install. The plough width is adjusted by the existing plough width cylinder. The cylinder is operated by an electro-hydraulic valve or by using one of the tractor's electro-hydraulic valves. (Fendt, John Deere, Valtra). For ease of operation additional optional sensors can be mounted to automate (dis)engagement of the system.





switchbox for
up to 32 sections



Unique advantages:

- Immediate stop when driving in reverse
- Treat headlands last not first
- Adjustable overlap distance for critical chemical treatment
- Mark out no-spray zones

SBG SMARTSWITCH

More yield, lower costs

SBG SmartSwitch is an expansion that fits on the Viper® 4+ terminal. It's the ideal assistant ensuring that every corner of your field is planted or sprayed perfectly without overlaps or skips. SBG SmartSwitch is accurate and reliable and it makes the job easy.

INTEGRATED

SBG SmartSwitch is fully integrated into the Viper® 4+ terminal, which makes for convenient operation. The number of sections, the headlands and overlap percentages are set easily into the clear menu.

PERFECTION IN EVERY DETAIL

SBG SmartSwitch distinguishes itself from other suppliers in the market with several additional functions. The SmartSwitch turns off immediately when driving in reverse. Double spraying in corners of the field is thus avoided. SBG SmartSwitch ensures that no treatment is ever applied outside the field boundary. With the special headland function it is possible to skip one or more passes along the field boundary to sow or spray as the last action in the field. In SBG SmartSwitch you can set not only an overlap percentage, but also an overlap distance.

This overlap distance ensures that critical chemical treatments are always applied a little further to remove any risk of missing critical areas. A unique feature is to mark out no-spray zones by manually marking them once with the sections. Resulting in lower use of chemicals.

COMPATIBLE

SBG SmartSwitch works with many brands and types of sprayers and seed drills. SBG SmartSwitch operates up to 32 sections simultaneously via the ControlBox or up to 104 sections through CAN-bus.



Easy operation through Viper 4+ display

SMARTSWITCH IS COMPATIBLE WITH:



Amatron+ / Amatron3



Amaspray+



Mueller basic TOP



Mueller comfort



Hardi HC5500 - 6500



Teejet 8xx familie



Sulky Vision



Bogalle Zurf



Monosem-Dickey John



Müller Spray Control



TRIAL FIELD MODULE

For the specific work at breeding companies SBG has developed a trial field module. The seeding and planting job can now be performed much more quickly, easily and accurately SBG Trial Field Module enables the rapid creation of: angled headlands; plots fields of the correct length; correct interval spacing; driving paths in both axes; spray paths. The intensive and time consuming stake out can be omitted, as the trial field module keeps track of it all for you.



GRID MODULE

This module allows a fixed grid pattern to be selected. At a grid point, an action can be triggered: giving an alarm, a light signal or starting a drill or punch holes. The grid module enables you to plant trees at the correct distance in a square or triangular grid, or set poles for fruit trees, The manual stake out is no longer necessary.



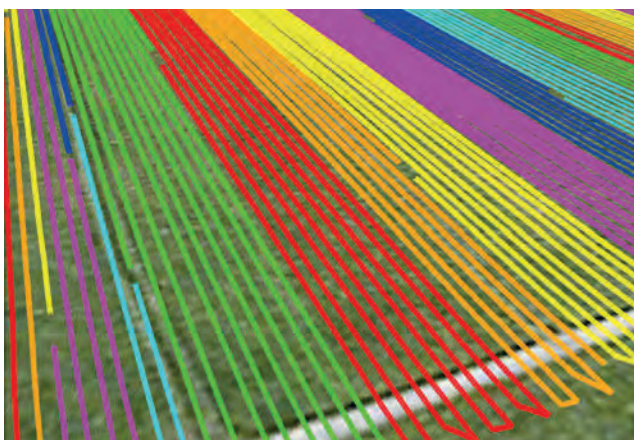
SOFTWARE MODULES

SBG systems and Viper® 4+ terminal together form a flexible platform. This makes it possible to implement specific software solutions for special applications. SBG has several software modules available, as well as the possibility for future expansion of the electronics or hardware.



SMARTPROFILER - LEVELLING MODULE

Well-drained fields are essential for a successful crop. The SBG SmartProfiler helps you to get your fields in perfect shape. The first step is to record a height map of the field. Next is to set up the desired slopes and their orientation. The design is now carefully carried out by the levelling software, taking care that the scraper is always held at exactly the right depth. On the Viper 4+ display the user has a perfect overview of the progress made and can always manually override the height control of the scraper.



CROP REGISTRATION MODULE

The crop registration module is the ideal assistant to capture in detail the location and size of different crop species and varieties. The crop registration module comes with the office suite Field Manager. This allows the collected data to be easily processed and exported to Google Earth (.kml) or spreadsheet files (.csv).



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