

John Deere Active Implement Guidance QUICK REFERENCE GUIDE

Active Implement Guidance – Set Up

Start-Up Settings Guidelines

Select SCV Control Type

Under the SCV that will control the implement steering mechanism, select desired control type (Off, Implement Steering, or Implement Shifting).

If using an external valve, select SCV1 or SCV3 to match the label on the angle sensor connector.

Control Selection	
SCV1 Control Type	
Implement Steering	▲▼
SCV3 Control Type	
Off	▲▼
Back	←

Tune SCV Threshold

Note: SCV Threshold Setup not used for external valves.
See External Valve Setup.

SCV Threshold Setup	
SCV1 Threshold Setup	▲▼
Wheel Angle Sensor Voltage	-1933 0.0
Extend Threshold	250
Retract Threshold	250
Valve Test Off	▲▼

If the implement steers significantly faster in one direction, under steers, or over steers, Active Implement Guidance may not perform as expected due to hydraulic limitations.

This speed difference makes it difficult for Active Implement Guidance to maintain an off-track error of 0.

While driving greater than 0.5 kph (0.3 mph) and SCV is in "AC/Auto", adjust each THRESHOLD Value to lowest possible setting that still produces a steady, consistent motion.

Note: AutoTrac is not to be engaged at this step.

Set Wheel Angle Sensitivity

This is a coarse adjustment to indicate the size of the steering cylinder. A smaller number indicates that a less aggressive hydraulic flow will be used to adjust the cylinder position (a smaller cylinder needs less hydraulic flow than a large cylinder to react). The recommended settings below are starting points based on cylinder size. Additional fine tuning may be required to achieve the desired performance.

Small Cylinder = 500
Large Cylinder = 5000

Wheel Angle Sensitivity	2500
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Adjust SCV Flow



Note: SCV Threshold Setup not used for external valves.
See External Valve Setup.

Select SCV # and Turn flow knob on tractor right hand display (RHD) to adjust (Range 0.1 to 10).

Turn SCV flow up on tractor RHD until steer mechanism is unstable or banging. From this point back flow off until steer mechanism stabilizes.

External Valve Setup

This adjustment takes the place of the SCV Flow adjustment when using external valves. Set this value before tuning the other sensitivities. Adjust SCV1 or SCV3 Max Flow (%) to a value that provides the desired manual control over the implement's steering cylinder. Small cylinders may require a low value to achieve the desired manual control. This will also set the maximum speed the cylinder will move when Active Implement Guidance is engaged.

External Valve Setup	
SCV 1 Max Flow (%)	100
SCV 3 Max Flow (%)	100

Calibration Guidelines

Calibrate wheel angle sensor voltage:

Manually move steered implement to the steered right limit and select SET MAX RIGHT POSITION.

Manually move steered implement to the steered left limit and select SET MAX LEFT POSITION.

Set Max Right Position
Set Max Left Position
Set Center Position

Manually move steered implement to center position and select SET CENTER POSITION.

The voltages can range from just less than 5 volts down to just more than 0.1 volts. The voltages should vary equally above and below the center voltage. (If the voltages ranges is less than 1 voltage up and down consider changing the angle sensor installation to give it a more exaggerated range of movement).

Important that center position is properly calibrated. Will have an effect on the system's ability to track on a line.

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Active Implement Guidance – Set Up (cont)

Recommended Starting Settings

These recommended settings are a good starting point for most vehicles. Each setting can be adjusted to optimize performance. SCV flow may have to be adjusted.

Control Type	Line Sensitivity Tracking	Line Sensitivity Accumulated	SCV Flow (Ext. Valve)
Implement Steering	3000	300	3.0 (30%)
Implement Shifting	3000	NA	3.0 (30%)

Implement Receiver Setup

Implement receiver TCM must be turned ON and calibrated for Active Implement Guidance to achieve the desired performance. TCM calibration pages have images to guide operators through calibration procedure. Use the implement axle as the calibration point. The height and fore/aft settings must also be entered on the Implement Receiver's StarFire page. Use a value of zero for the fore/aft setting and measure the height from the ground to the StarFire where the yellow dome connects to the green cover. Make sure that the implement is in the ground at its working height while taking this measurement. See the StarFire owner's manual for additional information.

Implement Receiver Lateral Offset

On equipment where the implement receiver cannot be mounted in the center line of the implement, a Lateral Offset can be entered to account for the shifted location.

Implement GPS Offset	
Position Shifted Left	▲▼
Left/Right Shift (in)	0.0

Operating Guidelines

Setup guidance lines on GreenStar Display and turn Steer ON.

Detent SCV forward:

Should transition from "EC" to "AC" or from "AUTO" to "AUTO" on RHD.

	Tractor Series	Manual	Auto
Tractor Valve	30 Series*	EC	AC
	R Series	AUTO	AUTO
Ext. Valve	All	Tractor SCV Not AUTO	OK

*30 Series and older (00/10/20/30 Series)

Press AT resume switch to engage system. Machine and Implement should steer to line.

NOTE: AutoTrac in reverse will disengage after 45 seconds.

Follow Mode

Follow Mode sets the implement guidance path in the same path as the machine receiver. This allows Active Implement Guidance to operate without a guidance line defined and the operator driving the machine.

This is especially useful during the first pass through a field when the guidance line is being defined.

Tractor Follow Off ▲▼

Sensitivity Adjustments

Line Sensitivity Tracking:

Line Sensitivity can be set in range of 10 to 10000.

Typically 1500 to 5000.

Line Sensitivity Accumulated:

Line Sensitivity can be set in range of 10 to 1000.

Typically 150 to 500.

Implement Steer Main	
Implement Steering Status	SCV1 No GPS
Track Error (in)	0
Wheel Angle	-1830
Line Sensitivity Tracking	3000
Line Sensitivity Accumulated	300
Tractor Follow Off ▲▼	

Optimizing Active Implement Guidance Performance

Step 1 – Tune tractor SCV flow or External Valve Max Flow

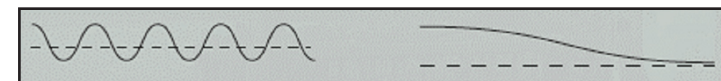
SCV: Turn SCV flow up on tractor RHD until steer mechanism is unstable or banging. From this point, back flow off until steer mechanism stabilizes.

Ext. Valve: Adjust SCV1 or SCV3 Max Flow (%) to a value that provides the desired manual control over the implement's steering cylinder.

Step 2 – Tune Line Sensitivity Tracking

Determines how aggressively the vehicle acquires the track.

This setting affects performance while acquiring the track only.



Sensitivity too High

Sensitivity too Low

Step 3 – Tune Line Sensitivity Accumulated

Determines how aggressively Active Implement Guidance responds to tracking errors while the vehicle is on the track.

This setting affects performance while on track only. See pictures below.

Sensitivity too Low on steep slopes when implement doesn't track on line.



Sensitivity too Low

Sensitivity too High

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Active Implement Guidance – Diagnostic

Information on Active Implement Guidance can be found under the status line

Implement Steer Main Implement Steering SCV1 Status No GPS	Status Code	Description	Indicates
	No GPS	No GPS visible on system at location specified in control selection area for this SCV.	Change control selection for GPS to correct location or Install GPS.
	Cycle Power	Controller needs to be restarted to communicate with new function.	Turn tractor off and on again.
	No RTK	No RTK correction seen on selected GPS or RTK not currently available or no SF2 with Shared Signal.	No RTK activation on implement GPS and/or machine GPS or update software on both tractor and implement sf 3000's.
	Update GPS SW	Incompatible software loaded.	Software needs to be updated on GPS receiver for it to be compatible.
	OK	System is ready to be operated. Any faults still occurring are likely to be independent of Active Implement Guidance control system and on tractor or implement itself.	System is working properly.

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Active Implement Guidance – Troubleshooting

Symptom	Problem	Solution
Monitor screen not readable on hook up to machine.	No communications with machine control unit.	Must turn power off, check connections and power up to reboot system. Check 4-pin Deutsch connector at back of ISO implement connector on tractor for cleanliness and proper attachment.
Implement steers away from line when AT resume button is pressed.	SCV hoses are reversed. Implement Steer calibration was done reversing right and left. Wheel angle sensor is connected to the wrong SCV feedback source.	Switch hoses in SCV outlets. Perform implement steer calibration the opposite of first calibration. Manually steer implement and make sure wheel angle or sensor voltage changes on display. Switch wheel angle sensor connection to proper SCV feedback connector if necessary.
Steering mechanism steers significantly faster in one direction than the other, or steers in the wrong direction.	Active Implement Guidance may not perform as expected due to hydraulic limitations.	Move the hydraulics from SCV3 to SCV1, with an oil flow setting of 5.0 observe if the time taken to manually cycle equal distances in each direction. If they are more similar than on SCV3 you could use SCV1 for Active Implement Guidance, perform SCV threshold setup or have your dealer recalibrate the SCV as per service advisor guidelines. If the steering mechanism still takes different times to travel in each direction verify steering mechanism is functioning properly.