

AutoBoom Firmware Release Notes

Version 5.02.04

1. Corrected alarm processing and UI presentation.
2. Corrected CAN message processing so no messages get starved.
3. Fixed PGN request data fields for SWID and ECUID for the Raven CAN bus.
4. Corrected processing of UI messages to the application.
5. Several machine tunesets added and several machine tunesets had gain set changes.
6. Increased delay for memory access timeout to help with delayed memory responses.
7. Included new slant control algorithm.
8. Production test R3 external gyro input test corrected.

Version 5.00.08

1. Removed StandardPG tuneset from machine selection list to prevent confusion on how to select PG+ mode of operation.
2. Improved control loop gain initialization and setup for PG+ mode to prevent use of UG control loop gains in PG+ mode.
3. Removed output of left and right boom messages when machine selection mask was present to prevent moving to the calibration screen apriori.
4. Changed output of software version and bootloader version to be a string on the system information screen (allows full xx.xx.xx notation) which the numeric version didn't.
5. Changes added to fix standalone loading of a machine database file from the Raven Service Tool "LoadHex" button.
6. Added machine database field to allow the roll rate at which XT control will be started to be set for each machine (tunesets can now be made "terrain specific").
7. Fixed issue with loading of 5.00.00 and later and then backdating to pre-version 5.00.00 or earlier.
8. Fixed accumulator output "on state" to stay on if the center rack or either boom is enabled.
9. Major upgrade to support AutoBoom machine database for machine specific gain selections and other control system tuning.
10. Fixed "loss of cal" on power down/power up cycle by making sure EEPROM shadow RAM over which the checksum is calculated is not accessed/modified by interrupt handlers or other code while checksum is being computed/compared.
11. Refactored several major modules and fixed at least 2 array bounds access issues.
12. Implemented the Raven J1939/11783 CAN stack for the Raven and ISO CAN bus providing memory access, transport protocol and pgn request functionality to support the Raven Service Tool and other various operations including debug outputs and performance monitoring outputs.
13. Implemented support for Keil simulation interface to the CAN peripheral sim and created a serial EEPROM simulator implemented as a file under the Windows OS and file system handling.

Version 4.00

1. Improvements to the center rack control algorithm to reduce the movement frequency.
2. Fixed issue that would prevent or prolong the calibration sequence.
3. Improvements to the digital center sensor filtering.
4. Added diagnostics for high current and logic voltages where available.
5. Added hour meters for software version and total for hardware.
6. Added statistics numbers for left and right booms.
7. Provisions for XT control for compatible hardware.
8. Provisions for Mid ultrasonic sensors for compatible hardware.

Version 3.40

1. Improved center sensor filtering to reduce erratic height readings.

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2. Fix to allow return to spray function when outer or inner height offset values are entered.
3. Booms will no longer enable when they have been manually disabled and center rack control is enabled.
4. Fix for issue of pressure or height units changing to metric undesirably.

Version 3.30

1. Determine and set the PWM Frequency to either 60Hz or 250Hz based on proportional cartridge current draw during calibration sequence.
2. Minimum Pressure % setting is retained when Resetting defaults and after re-calibrating.
3. Boom sense logic provisions for sprayers with a 6 bank Fasse valve.
4. Modifications to improve the logic used to determine if the load sense valve needs to be controlled when lowering the center rack.
5. Fixed glitch that could potentially cause to right boom to control slower than the left boom.
6. Increased size of buffer than holds variables requiring a save.
7. Mask left and right boom disable and return to spray messages when center rack control is enabled and controlling the center rack.
8. Minimum Pressure value is only dynamically set for Speed settings greater than 100.
9. Added the ability to read an additional analog input for rate of tilt change and to control center slant cylinders on the center rack.

Version 3.20

1. Fixed issue of center rack not lowering while returning to spray when center sensor was higher than 76".
2. Max Speed setting increased to 250. Added more Speed setting functionality tailored to machines that do not react as needed with previous release.
Speed settings:
1-100 react similar to previous release for use with most machines
101-200 react much faster up and also faster down for machines with slower hydraulics
201-250 react much faster down and slightly faster up for machines that need to lower at very low pressures
3. Fixed bug in PowerGlide+ mode that would potentially not control well to the desired pressures selected.
4. Raise and lower center rack buttons on the console/field computer now disable and enable center rack control, return to spray, and return to transport.
5. Removed delay in Calibrating message being displayed on console/field computer noticed when starting calibration.
6. Fixed issue of default set height not being displayed correctly on AutoBoom console when reset to defaults is selected.
7. Added logic to control load sense valve for center rack control.
8. Stop CAN message transmission if CAN heartbeat is lost and restore transmission if heartbeat is re-acquired.
9. Static duty cycle is saved when booms are disabled.

10. Fixed bug that would allow calibration even when boom heights were not within 10" of target height.
11. Removed third center up tap functions and now fourth up tap will return to full transport height and disable control.
12. Calibration is no longer required when Enable Outer Sensors setting is toggled On to Off or Off to On.
13. High sensor alarm changed to 100" for booms if using digital sensor on booms.
14. Max sensor height setting increased to 80".
15. Max PWM frequency increased to 250.
16. Manual up and down speeds fixed to 0.
17. Improvements to Stability control and Minimum Pressure control.
18. Improvements to return to spray to reduce the number of times the center rack must stop to raise the booms up.
19. Provisions for Bootloader v3.00.
20. Provisions for Terragator boom sense input logic.

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Version 3.10

1. Removed limitation that static duty cycle would not integrate if machine speed is less than 2 mph which could cause booms to hang in the air when machine is stopped.
2. Removed limitation that would not integrate static duty cycle when sensor height was above 70" or below 10" which could cause booms to hang in the air at machine start.
3. Reduced diagnostic screen CAN communication to Viper 2.
4. Default Min Pressure % is now 65 and made improvements to Min Pressure control.
5. Improved the response time of the digital ultrasonic sensor.
6. Stability setting of 1 correlates to a setting of 10 and also uses the faster down speed table. A setting of 0 still disables stability control and uses the faster down speed table.
7. Made improvements to the center rack control algorithm to remove excess delay.
8. Fixed issue of right side static duty cycle not following left side on Powerglide+ systems with only 1 proportional cartridge.
9. Speed and Sensitivity settings are ground speed compensated when the speed is available through CAN.
10. Changed digital ultrasonic sensor pulse period to 25ms.

Version 3.00

1. Fixed issues with losing calibration after powerdown.
2. Fixed issue of right side setting the duty cycle to 0% when enabled after first calibration.
3. Improved stability control to not raise booms as high above target while trying to keep them stable.
4. Fixed the boom sense inputs for Fasse valves so a down tap on the center rack input no longer enables both booms.
5. Reduced unnecessary CAN communication with the controller.
6. Fixed issue of height offset display not toggling between cm and in when toggling this setting.
7. Duty cycle in minimum pressure mode will only increment to 60% instead of 100%.
8. When the manual up/down speeds are set to 0, the console manual up/down boom functions use manual down of 0% and manual up of 60% if Autoboom is not calibrated or use manual down of 10% below static duty cycle and manual up of 10% above static duty cycle if Autoboom is calibrated.
9. Manual up and manual down speeds each disable independently when set to 0.
10. If center sensor is connected, booms will not enable if center sensor is above 60" and when booms are already enabled will disable after 5 seconds of center sensor above 60".
11. Right proportional cartridge is now sensed during calibration if connected in Powerglide+ systems and will allow for independent left and right boom control.
12. Fixed right boom manual control so that it works on systems with only 1 proportional cartridge.
13. On Powerglide+ systems with only 1 proportional cartridge, a double up tap will raise the opposite boom for 1 additional second.
14. A left or right joystick down tap will not disable the boom. The boom will disable when held down.
15. Manual boom control through the Autoboom hydraulic block will be set to 0% for down and 60% for up anytime Autoboom is not calibrated and the manual up/down speed settings are non-zero values.
16. Calibration for each side is completely independent.
17. Provisions for return to spray, return to transport, and center rack control when hardware becomes available.
18. Provisions for digital ultrasonic sensor for future use.
19. For machines that do not require stability control, setting the Stability Factor to 0 increases the down speeds in the control and disables the stability control.
20. The static duty cycle is not integrated when the machine speed is less than 2 mph when the speed is available.

Version 2.51

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1. Improved boom stability control by reducing the lag time of booms hanging above target height when they should be lowering.

Version 2.50

1. Drop duty cycle to 0 for each proportional cartridge when boom is disabled for open center systems.
2. PowerGlide Plus mode has closed loop pressure control.
3. Consoles can set either down speed or pressure for PowerGlide Plus mode.
4. Reduced Low Pressure Alarm to 70% of static and value doesn't need to be adjusted with console.
5. Removed Heaviest and Lightest settings from PowerGlide Plus mode.
6. Diagnostic screen messages showing joystick button inputs, proximity switches, sensor heights, pressures, duty cycles, double blocker status
7. Center, Inner, and Outer sensor heights, offset settings from -20 to 20 inches.
8. Turn off/on outer sensors through consoles for combo booms with both inner and outer sensors.
9. Minimum pressure control % setting to limit pressures of each boom from dropping below a set value.
10. For machines equipped, proximity switch inputs that only allow AutoBoom to be enabled when switch is closed and disables when switch opens for 5 seconds.
11. Ultrasonic sensor high alarm delay changed to 10 seconds.
12. Ultrasonic sensor high alarm is not sent if boom is disabled.
13. Metric conversion set through consoles to convert heights to cm and pressures to kPa.
14. Joystick inputs will recognize PWM signals to enable/disable booms.
15. Fasse valves with only 3 coils for boom control can be recognized with joystick inputs to enable/disable booms.
16. Stability parameter to fine tune control for sprayers with loose center racks to prevent boom oscillation.
17. Refined calibration to more quickly and accurately establish static duty cycle.
18. Manual boom raise/lower functions with adjustable speeds based on the static duty cycle so manual functions run through AutoBoom hydraulics if desired.
19. Ability to manually raise/lower booms with consoles.
20. Double down tap in PowerGlide Plus mode lowers boom to the ground, overriding the down speed setting.
21. Double up tap in PowerGlide Plus mode raises boom into the air to lift the wheel off of the ground.
22. Inner sensor is more reactive to height changes.
23. Improved down speed control.
24. Slowed down increment/decrement rate of parameters when being changed through Viper.

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