



HARVESTING SOLUTIONS

HEADSIGHT INC.



Combine Manual
09010102d

w/insight

JD D-A-M

About Headsight

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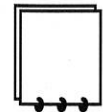
Technical Assistance

Phone: 574-220-5511

About this Manual

How to use this manual

For new installations, follow all applicable instructions in each of the numbered sections (1, 2, etc) in the order that they are presented in this manual. The information in the lettered appendices (A, B, etc) is for service or advanced settings which you will not need for most installations, but may want to reference in the future.



This icon designates information of which you should take note.



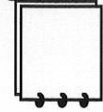
This icon designates an important instruction.

Disclaimers

Headsight, Insight, Foresight, Feathersight and TrueSight are trademarks of Headsight, Inc. All other trademarks are property of their respective owners.

Suggestions

If you have any suggestions to improve this manual – please call 574-546-5022 or email info@headsight.com.



Portions of this product are protected by US Patents 6202395, 6833299, 7310931, and other US and international patents, issued and pending.

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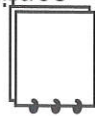
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1. Installation

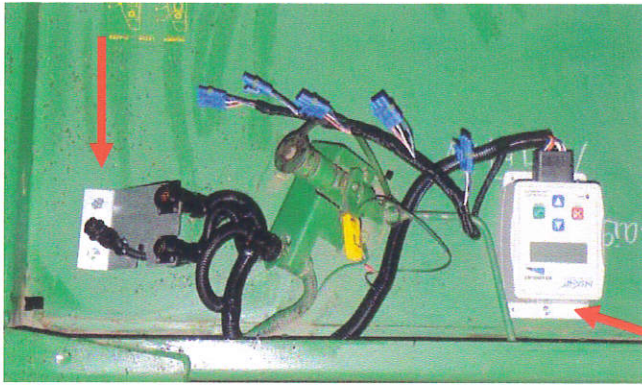


Complete the installation portion of the header manual before continuing.

1.1.

Insight Box Mounting

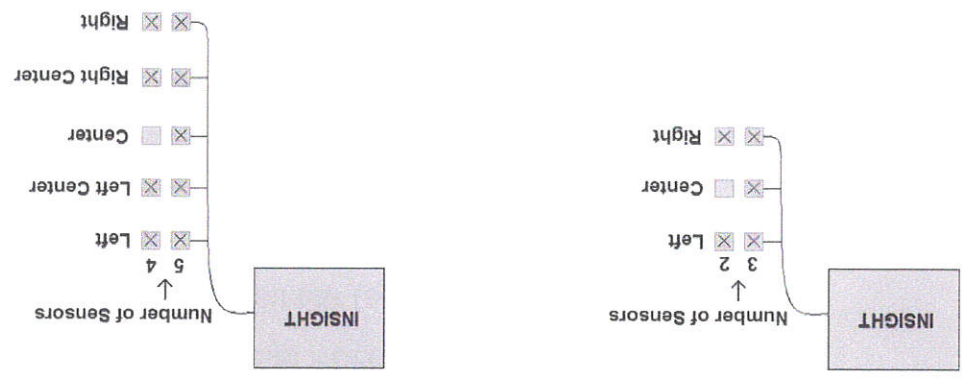
1. Hold box at rear of header within reach of feederhouse electrical connection on combine and mark mounting hole locations.



2. Drill mounting holes using 1/4" drill bit.
3. Secure box to header
 - Use provided the straps or 1/4" bolts.
 - Box must be within reach of the header electrical connector.

4. Secure box to header using provided the straps or optional 1/4" bolts.
5. Attach connector mounting plate to header within reach of combine electrical connector. Drill holes as necessary. Bolt to header.
6. Connect individual sensor wiring to the control box as described below.
 - Connect the left sensor to the input nearest the control box.
 - Connect the right sensor to the input farthest from the control box.
 - Connect remaining sensors in order from left to right using the remaining inputs.

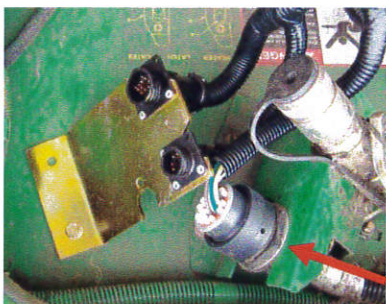
Note: 2 and 4 sensor systems have no center sensor.



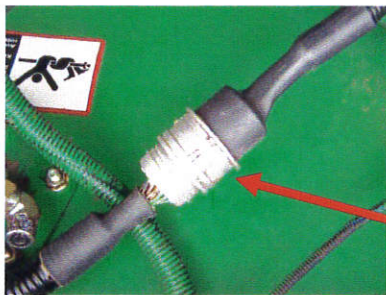
7. For early 900 series heads, connect the 16 pin header connector to the header for lights.



8. For 900F platforms and late 900 model prewired corn heads, connect 31 pin header connector to the header.



9. For 600 series heads, remove the OEM header connector from the single point and press the two zip ties to prevent separation.



10. Attach black ground wire to header frame.

Required for all combines model 1990 and earlier.

11. Connect the 24 pin rectangular plug to the bottom of the Insight box.

12. Mate remaining connectors to combine and header

16pin OEM Header connector (early heads)

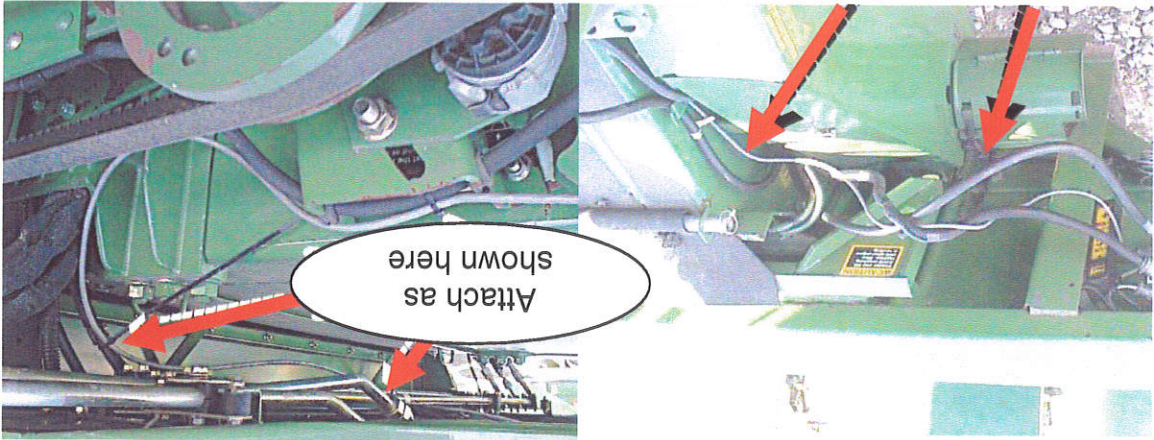
9 pin Light bar (see 1.2)

1.2. Light Bar

1. Route the light bar wiring up the left hand side of the feederhouse. (For '89-90 combines, you may wish to route the power wire at the same time. See 2.1.2).

- Make sure you leave sufficient slack to connect to the header connector plate.

- Secure away from moving parts.



2. From the top of the feederhouse route the wiring:

- Under the ladder

- Through the cab door

- Under the floormat

- To the right hand side of the cab.

3. Mount the light bar to the dash within easy reach of the operator.



2. Calibration

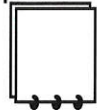


Before working under the header always:



1. Perform all combine and header manufacturer safety precautions for servicing header.
2. Insert stop to prevent movement of header.
3. Set combine parking brake.
4. Disconnect all drive shafts from the header.

2.1. Combine Activation



To "power" the Insight Box for setup and calibration, different combines require different procedures. Please follow the correct procedure for your year combine.

2.1.1. Standard Activation: '91-up DAM (see note)

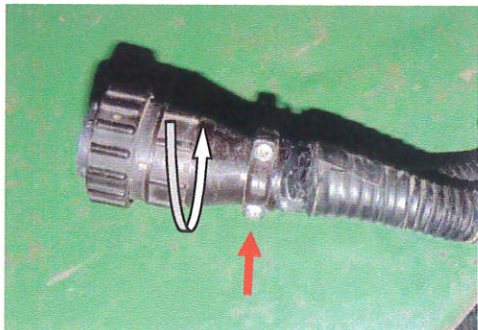


This procedure also applies to earlier combines that have had header stubble lights wiring added to the OEM header connection.

1. Make sure all connectors and harnessing is installed.
2. Turn the Dial-A-Matic switch OFF to prevent DAM activation.
3. Start the engine.
4. Turn on the header stubble lights if the combine is equipped.
- This allows the Insight box to receive power without requiring the header and separator to be engaged.
5. The LCD display should now be active on the Insight box.

2.1.2. Activation: '89-'90 DAM (except as above)

1. Install the power bypass harness PFI-JD10-P on the feeder.
 - Disassemble the shell on the back of the OEM combine header plug.



- Insert the loose socket thru the back shell and into cavity 15 on the OEM Header plug. (Where the Brown wire is shown in the picture).



- Route the Power wire up the feeder, around the pivot, and forward under the cab.
- Connect the 2 pin plug to the plug shown next to the horn under the cab.



2. Make sure all other connectors and harnessing is installed.

3. Power the Insight box.

- Turn the Dial-A-Matic switch OFF.
- Start the engine.

- The LCD display should now be active on the Insight box.

4. The power bypass harness can remain connected during operation. Connecting the combine to a newer head with Stubble lights will mean the lights will be on whenever the combine key is on—this should not be a problem.

2.1.3. Activation: '83-'89 xx20 w/DAM

- 1. Clean and disconnect the booster box plug on the sidewall of the grain tank next to the hydraulic tank.

- 2. Install the 9-16 pin adapter harness on the OEM header connection.

- 3. Make sure all other connectors and harnessing is installed.

- 4. Power the Insight box.

- Turn the Dial-A-Matic switch ON.

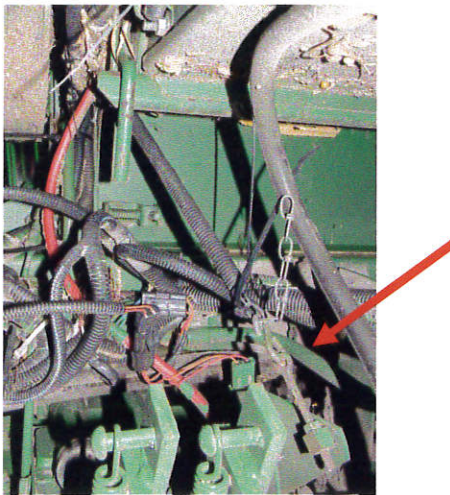
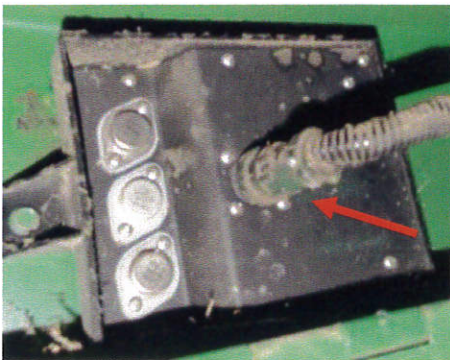
- Start the engine.

- Manually lower the header until the header sensors are 6-8" clear of the ground (12-18" clearance for flex conversions).

- Adjust the chain switch until the switch is on.

- The LCD display should now be active on the Insight box.

- 5. After completing all calibration steps, reconnect the Booster box.



2.1.4. Activation: pre-'83 w/AHC

- 1. Disconnect the electric valve solenoids electric connections above the left front tire

- 2. Install the 3-16 pin adapter harness on the header connection.

- 3. Connect the ground wire to a clean bolt on the feederhouse.

- 4. Make sure all other connectors and harnessing is installed.



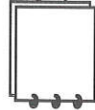
- 5. Power the Insight box.

- Turn the AHC switch ON.

- Start the engine.

1. Choose Language
2. On the Insight box,
 - Choose "John Deere"
 - Choose "9x00/10 & xx20 DAM"
3. Choose the number of height sensors
 - For JD flex head conversion, choose 3
 - For other heads, enter the number of ground sensors.
4. Choose Header Type (if needed)
 - Choose the appropriate Header type
 - ONLY chose Flex if the head is to be operated in flex mode, not locked up in rigid mode.

Read the Insight Overview section of the appendix for basic information about how to use the Insight box.

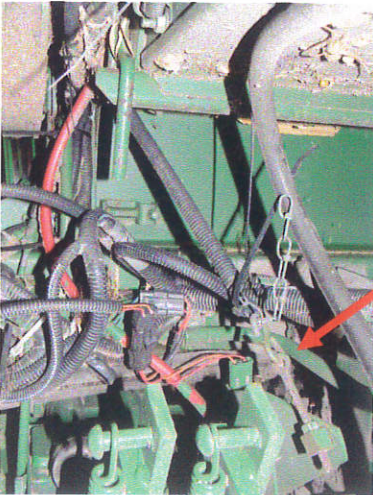


These steps must be performed the first time the Insight box is powered up and each time it is reset. They do not need to be redone each time the Insight box is calibrated.



2.2. Initialize Insight

- Manually lower the header until the header sensors are 6-8" clear of the ground (12-18" clearance for flex conversions).
- Adjust the chain switch until the switch is on.
- The LCD display should now be active on the Insight box.
6. After completing all calibration steps, reconnect the valve connectors.



2.3. Calibrate Insight







When you initialize Insight, you will be led directly to this calibration routine. If you wish to recalibrate at any other time – choose “>>Perform Calibration” on the Insight main menu.

2.3.1. Sensor Calibration

1. Park the combine on a level and smooth surface – preferably a cement driveway or shop floor.

2. Follow on-screen instructions.

- “Raise Header” - Press  Enter
- Raise the head high enough that NO sensors touch the ground: Press  Enter

- “Lower Header” - Press  Enter
- Lower the head ALL the way down onto the skids. Make sure that both ends of the header are flat on the ground. Use blocks if necessary. Press  Enter



If an error appears on the Insight box – see the Diagnostics section of this manual.

Forensight Calibration

2.3.2.



Forensight is an optional module to improve the performance of corn systems very near the ground. Each Insight comes with a 5 hour free trial of Forensight. For more information contact your dealer or Headsight.

1. Park the combine on a level and smooth surface – preferably a cement driveway or shop floor.

2. If you are unwilling or unable to find a smooth and level surface, disable Forensight and perform the standard calibration.

3. Adjust the snouts tip height.

- The snouts should be level across the head and touch the ground at the same time.

- The snouts should touch the ground when the header frame (or stalk rolls) are approximately 4-6" off of the ground for most heads.

4. Enable Forensight™ on Insight™ Box

- Go to >>Setup>>Optional Modules>>Forensight>>Enable Forensight



If you would like to purchase Forensight - contact Headsight.

5. Set the Forensight Gain

- >>Setup>>Optional Modules>>Forensight>>Set Forensight Gain in the Insight™ box.

- The initial gain setting depends on header dimensions. Below are example settings for use on JD heads





Headsight Sensors	
Gain	
Position 1 (Shortest) - 3.5	
Position 2 - 3.1	
Position 3 - 2.8	
Position 4 (Longest) - 2.5	

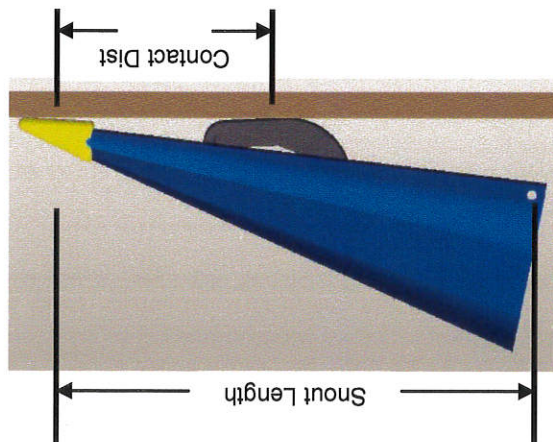
6. For other headers and/or sensor combinations, the proper setting may be determined by:

$$\text{Gain} = \frac{\text{Snout_Length}}{\text{Contact_Dist}}$$

If an error appears on the Insight box – see the Diagnostics section of this manual.



- Lower the head ALL the way down onto the skids.
- 10. "Lower Header" - Press  Enter
- All snouts with height sensors must be touching the ground.
- Lower the head until the snout tips just barely touch the ground.
- 9. "Put snout tips on ground" - Press  Enter
- Raise the head high enough that NO sensors touch the ground.
- 8. "Raise Header" - Press  Enter
- Select >>Calibration - Follow on-screen instructions.
- 7. Return to the main menu by pressing  **Esc** three times
- Setting Hints
 - Increase the gain for greater responsiveness near the ground.
 - Decrease the gain if the header seems jumpy near the ground ONLY.
 - If the header is jumpy with the points in the air, the combine needs readjusted NOT Foresight.



Combine Contour-Master Calibration

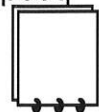


This calibration should be done each time a combine equipped with Contour-Master has been used on another header with a minimum of once per season. This calibration allows the combine to learn how to level the head.

1. Complete the sensor calibration procedure above.
2. Start the engine and attach the header.
3. Engage the header clutch.
4. Turn off the Contour-Master switch on the armrest.
5. Lower header to the ground (on a level surface) for 2 seconds.
6. Press header raise button.
7. Turn on the Contour-Master switch after the sensors have left the ground (while continuing to raise the header).
8. If the header does not run level, retry the calibration.

3. Settings

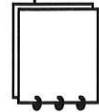
3.1. Combine Settings



Properly setting the combine is essential to having responsive header control. You should become very familiar with the steps in this section.



Set the automatic drop rate as high as you like without causing head "hunting". If the head "hunts", decrease the automatic drop rate.

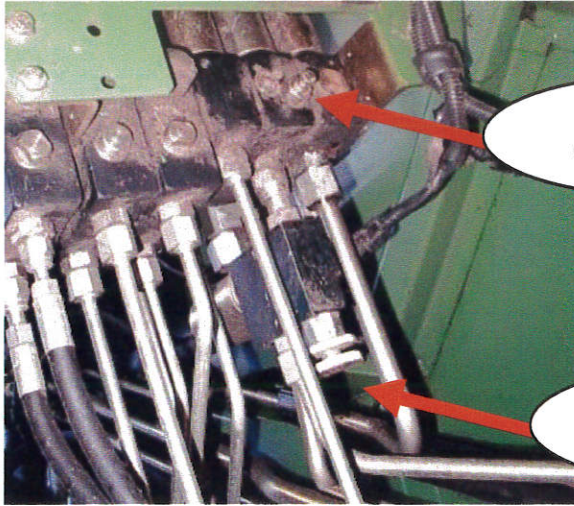


For 20 series combines see owners manual for location of drop rate valve and accumulator – 9000-9010 series are shown.

3.1.1.

Automatic drop rate

1. Use the automatic drop rate valve adjustment knob on the main valve block.
 - Turn in all the way then out 1/2 turn for initial guess.
 - If the speed is to fast – hunting will occur.
 - If the speed is to slow – the system will not be responsive enough.
2. Common range is 6-8 seconds from header full up to full down in automatic mode.



Manual drop rate valve

Auto drop rate valve



The maximum automatic drop rate is limited by the manual drop

3.1.2. Hydraulic accumulator

1. Close the accumulator valve all the way
 2. Open the accumulator valve 1 full turn (from closed position).
- Opening the accumulator to far will give sloppy response.
 - Not opening the accumulator far enough will give a jerky response.



Accumulator valve

3.2. Insight Settings

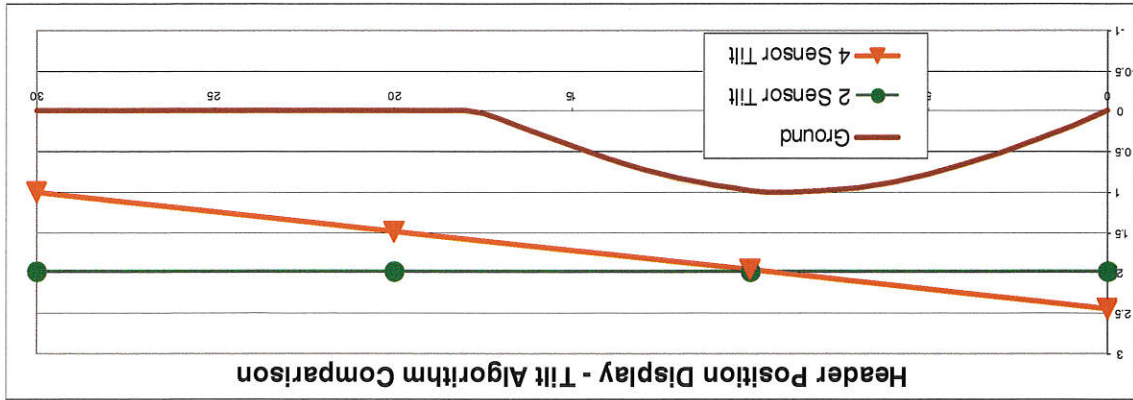
3.2.1. Tilt Algorithm Selection

Headsight offers two algorithm choices for controlling lateral tilt. The choice of tilt algorithms is only available for 4 and 5 sensor systems. To change this setting go to <>Setup>>Tilt Options in the Insight™ menu. The choices are as follows:

- Use 4 sensor tilt for fields with
- Cutting with terraces
- Ditches
- Irrigation tracks
- Etc

If the head is too jumpy from side to side – decrease sensitivity. If you would like the head to be more responsive – increase sensitivity. To change this setting go to <<Settings>>Tilt Sensitivity in the Insight™ box. The range is from 5 to 95 with a default setting of 50.

3.2.2. Tilt Sensitivity



- Use 2 sensor tilt for
 - Cutting across terraces
 - Most conditions
 - "All others"
- Outer 2 sensor tilt (Default)
 - Outer sensor on each side controls lateral tilt
 - Keeps the outer two sensors the same distance from the ground
 - All sensors control height
 - Any 1 can raise, all need to agree to lower
 - Keeps the header's highest point closer to the ground but header may be higher on average
- Outer 4 sensor tilt
 - Outer TWO sensors on EACH side control lateral tilt
 - Keeps the closest of each outer pair of sensors the same distance from the ground
 - All sensors control height
 - Any 1 can raise, all need to agree to lower
 - Keeps the header closer to the ground on average but may have one end higher

4. Operation

4.1. Enabling height control

4.1.1. 9x00 and 9x10 series



1. Turn Dial-a-Matic switch ON



2. Engage header clutch



3. Press header lower button.

4. On all 9x00 and 9x10 John Deere combines, the manual raise switch should ALWAYS override/shutoff auto height control. If not, test / replace the D-A-M control board in the combine.

4.1.2.

4400 - 8820 II with AHC / DAM



Adjust the chain length on DAM switch under the cab to turn on header control above the height at which the header first contacts the ground.

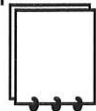
1. Turn Auto/Dial-a-Matic switch ON.

2. Lower header until height control engages (adjust chain if necessary).

3. Make sure AHC/DAM turns off when head is raised up (adjust chain if necessary).

4.2.

Adjusting header height



If a Light Bar is not connected, preset raise and lower points are used, allowing basic operation at one midrange height.

- 1. Turn the height position knob on the light bar with header control engaged.

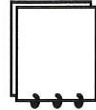
○ Clockwise = higher

○ Counter-clockwise = lower



Height position knob

Height sensitivity knob



Because the Headsight box is designed to work with many OEM sensors, it may be possible for the operator to choose a height that is "too low" for operation – meaning that the sensors would never send a raise signal. To test if the height you have chosen is too low, engage the system, then tap the lower button on the hydro handle. If the header bounces back up to its original position, the chosen height is fine. If the header stays in the new position, the height chosen on the light bar is too low – do not operate header control at or below this height.









4.3. Adjusting height sensitivity

- 1. Increase height sensitivity (turn CW) for more responsive performance.
- 1. Decrease height sensitivity (turn CCW) to reduce hunting.

○ You MUST set the drop rate and accumulator before adjusting sensitivity knob.

A Insight Overview

1 Rules of menu navigation

- When in a menu (selection arrow appears to left side)
 -  Enter chooses the selected menu choice
 -  Esc backs up one menu level
 -  Up moves up within the menu choices displayed
 -  Down moves down within the menu choices displayed
- When in a screen which allows setting of parameters
 -  Enter backs up to last menu level AFTER saving
 -  Esc backs up to last menu level WITHOUT saving
 -  Up increases the value
 -  Down decreases the value







2 Meaning of the status light

- Solid Green
- System is operating
- No errors detected
- Solid Red
- System is NOT operating
- No height or tilt signals are sent to combine
- You have changed settings which require re-calibration of Insight™, are currently in a menu which will force a re-calibration if you make any changes, or are in calibration mode
- Solid Green with Flashing Red
- System is operating
- An error has been detected
- Repair problem then clear errors
- Flashing Red
- System is operating
- A sensor has been ignored
- See note in Troubleshooting by Error - ER16
- Repair system – Recalibrate Insight™

- Request updated software by email from info@headsight.com
- 4. If you do not have the new files you may
 - DO NOT change the file names
 - For example - E:\insight and NOT E:\my_folder\insight
- Place insight and insightf in the root directory of the SD card
- 3. Load SD card with new software files
 - Small Allen wrench or screwdriver
 - A pre-loaded SD card from Headsight
 - A computer with USB drive and a USB to SD card adapter
 - A computer with an SD memory card drive
 - Means of loading SD memory card either
 - SD memory card
- 2. You will need:
 - Updating software may cause the Foresight option to be disabled.
 - If you have purchased Foresight, contact Headsight before updating software.



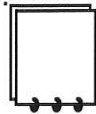
5 Updating Insight Software

- Hold both for 5 seconds
- Press and hold **Enter** while holding **Esc**
- Press and hold **Esc** then
- To reset ALL settings  +  for 5 seconds
- 4 **Resetting Insight™ to defaults**
 - Press and hold **Esc**
 - Press **Down** to decrease contrast (while holding **Esc**)
 - To decrease contrast:  + 
 - Press **Up** to increase contrast (while holding **Esc**)
 - Press and hold **Esc**
 - To increase contrast:  + 
- 3 **Screen contrast adjustment**

- Download updated software from www.headsight.com (when available)
- Request pre-loaded SD card from Headsight, Inc
- 5. Disconnect all header connections from the combine
- 6. Remove 4 screws from the rear of the Insight™ box – remove rear cover
- 7. Insert programmed SD card into SD card slot on rear of board
- 8. Power Insight™
 - Connect all wiring to combine
 - Turn on keyswitch
- 9. Wait for software to download
 - Yellow light on connector will blink while download is in progress
 - Green light will turn on solid when download is complete
- 10. Verify update is successful
 - Go to >>About Insight>>Software Version and read software version number
- 11. Remove power from Insight™
 - Turn off key
- 12. Remove SD card
- 13. Reinstall rear cover
- 14. Fasten with screws

B Advanced Information

6 Changing Tilt Orifices



The purpose of changing the orifices is to decrease/increase the maximum speed that the Contour-Master can tilt. The factory configuration will be satisfactory for most conditions. However, wide headers may need to adjust the orifices. Only change orifices if the system cannot be set properly by using the sensitivity adjustment on the contour-master card.

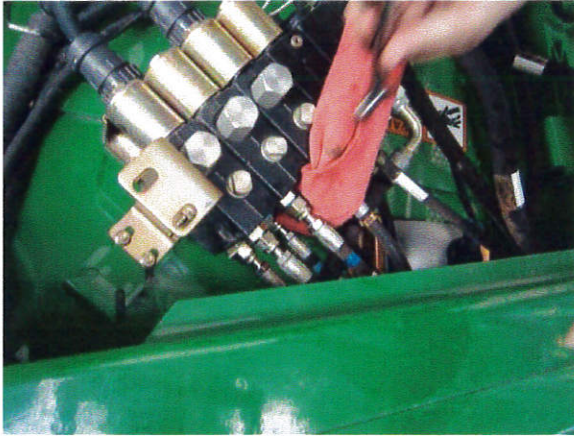
The target tilt speed is 5-8 seconds from full right to full left for most machines.

1. Using 1/8" allen wrench – remove original orifice from valve block in tilt cylinder supply lines.

o Keep orifice in secure location for later use if needed.

2. If tilt speed is too fast – install an orifice that is smaller than the original orifice removed.

3. If tilt speed is too slow – install an orifice that is larger than the original orifice removed, or remove orifice completely





1 Theory of Operation

All JD Dial-a-Matic (20/00/10 series) combines height control systems work in a similar way. A review of the following points will help the service technician to understand the complete system which will help when diagnosing specific problems.

1. Each sensor returns a variable voltage to the control box at the rear of the header depending on its height.
 - high height = high voltage (approximately 4 volts)
 - low height = low voltage (approximately 1 volt)
2. Each sensor has 3 wires
 - 5V power
 - ground
 - signal returned to the control box (varies between approximately 1.0 and 4.0 volts)

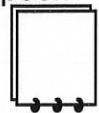
3. The Insight box compares the lowest (most smashed) sensor to the desired height chosen on the light bar in the cab.
 - If any one sensor has a lower voltage (is nearer the ground) than the height setpoint voltage – the box sends a raise signal to the combine on pin #5 of the 16 pin header connector.
 - This means that any one sensor can raise the head.
 - If all sensors have a higher voltage (are farther from the ground) than the height setpoint voltage plus the deadband chosen by the sensitivity knob – the box sends a lower signal to the combine on pin #3 of the 16 pin header connector.
 - This means that all sensors must agree to lower the head.
4. The sensitivity knob on the light bar adjusts the size of the deadband.
 - The deadband is a small area where the system will neither raise nor lower.
 - This helps prevent hunting of the header.
5. The lights on the light bar are visual indicators of head position to the operator.

The following symbols are used in the troubleshooting guide:

-  **Denotes a problem or symptom.** Read through the problems and select the one that most closely represents your problem.
-  **?** A question or condition needed for the following steps that the technician must answer. Read through the possible options and select the one that most closely represents your problem.
- ★** A possible answer to the previous question or problem. Evaluate each possible answer to determine the cause of the problem. Answers are given in order from most to least likely.
- Gives further explanation or testing instructions.

6. The left and right sensor signals are scaled to the correct range (0.5-4V) then sent on to the combine on pins 7 and 9 respectively for Contour-Master operation.

If a Light Bar is not connected, preset raise and lower points are used, allowing basic operation at one midrange height.



- LED #1 is a power light
- LEDs #2-#5 will progressively light as the head lowers to the ground.

2 Troubleshooting.....by symptom

Header is too jumpy or responds too slowly

- ★ Combine is improperly set.
- See Settings section – adjust drop rate and accumulator.

★ Sensors need to be recalibrated.

○ See Calibration section.

Header is not level with Contour-Master enabled.

? If the header tilts completely to one side:

- ★ Verify that the individual sensor wiring is connected to the main wiring harness at the rear of the header properly.

○ This symptom will occur if the Left and Right sensor wiring are in the incorrect position.

○ See Installation section for details.

★ Check individual sensors

? If the header is slightly out of level but functions correctly:

- ★ Verify that all sensors can move freely through the entire range.

★ Verify that all sensors are connected, functioning and calibrated as per the Calibration section of this manual.

★ Recalibrate combine Contour-Master. -See Calibration section.

Height control works but Contour-Master does not

★ Mate all connectors and engage system.

★ Keep one person in the seat and all connectors mated (remove back shell and probe through rear of connector).

? Under >>Diagnostics>>Detailed Diagnostics>>Left & Right

Outputs should be 0.5-4 volts and change as the sensors are moved.

○ Service combine.

? If outputs are not as described above

○ Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs

★ Combine not receiving raise signal.

○ Rotate knob CW until head raises.

★ Height position knob on light bar set too low

Head drops all the way to ground.



★ Suspect defective Insight or main harness.

○ Follow steps in "Troubleshooting.....common combine problems" below

connector.

★ Combine does not supply 12V on pin 4 of the header

frame (combines -90).

★ Ensure black ground wire is securely attached to the header

? If Insight is NOT powered (no lights):

diagnostics below.

○ Test Headsight system by following raise/lower

★ Suspect defective Insight™ system.

○ Test / repair booster box

★ Combine D-A-M booster box defective ('20 series only).

be <5 Ohms (short circuit).

○ Unplug 16 pin header plug and measure continuity across Pins 4 & 11 in the Headsight™ half. Pins must

★ D-A-M "loop" not wired in Headsight™ harness (9000-'10)

? If Insight is powered and Green Light is on:

enable.

○ See Operation section for instructions about how to

★ Header control is not enabled with cab controls.



★ Wiring is not connected properly

No automatic operation - height or tilt



○ Reset or replace Insight.

○ Recalibrate sensors

- Contact Headlight
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Set the height position knob on the Light bar at MAX. When the head is fully on the ground, Raise should be ON.
 - ★ Height position knob on light bar set too high.
 - Rotate knob CCW until head lowers.
 - ★ Sensor stuck up under head. – remove obstruction.
 - ★ Insight LED flashing Green/Red or Red
 - Defective sensor or harness (any sensor signal < 1V).
 - Troubleshoot sensor
 - ★ Combine not receiving lower signal.
 - Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs
 - Set the height position knob on the Light bar at MIN. With the head raised up, Lower should be ON.
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Contact Headlight
- Head raises all the way to top.** 
- ★ Height position knob on light bar set too high.
 - Rotate knob CCW until head lowers.
 - ★ Sensor stuck up under head. – remove obstruction.
 - ★ Insight LED flashing Green/Red or Red
 - Defective sensor or harness (any sensor signal < 1V).
 - Troubleshoot sensor
 - ★ Combine not receiving lower signal.
 - Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs
 - Set the height position knob on the Light bar at MIN. With the head raised up, Lower should be ON.
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Contact Headlight
- Head raises over obstacle but does not lower.** 
- ★ Height position knob on light bar set too high.
 - Rotate knob CCW until head lowers.
 - ★ Height sensitivity knob on the light bar set too low.
 - Rotate knob CW to narrow deadband.
 - ★ Sensor stuck up under head. – remove obstruction.
 - ★ Feederhouse position chain mis-adjusted ('00-'20 series).

- Contact Headsight
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Set the height position knob on the Light bar at MIN. With the head raised up, Lower should be ON.
 - Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs
 - ★ Combine not receiving lower signal.
 - Set the height position knob on the Light bar at MAX. When the head is fully on the ground, Raise should be ON.
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Contact Headsight
- Head lowers to selected height but does not raise over obstacles.** ✘
- ★ Height position knob on light bar set too low
 - Rotate knob CW until head raises.
 - ★ Height sensitivity knob on light bar set too low.
 - Rotate CW to narrow dead band.
 - ★ Defective sensor or harness
 - Any single sensor defective or disconnected will cause the head to not raise over an obstacle seen only by that sensor. Other sensors should function normally.
 - ★ Combine not receiving lower signal.
 - Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs
 - Set the height position knob on the Light bar at MIN. With the head raised up, Lower should be ON.
 - If above is true, but head does not move, check Combine for connection/operation issues.
 - Contact Headsight

3 Troubleshooting.....common combine problems

 **Unopened or discharged accumulator - Head jumps and jerks whole combine.**

- ★ Test accumulator as described in combine owner's manual
- ★ Replace or recharge as necessary

 **No 12 Volts available on the header plug.**

- ★ Check OEM harness on feeder house for damaged wires.
- ★ For JD9x00-9x10 series test with

One person on the seat in the cab

DAM switch in position 1,2, or 3.

Header clutch engaged.

If still no 12V -

Replace DAM relay in armrest.

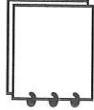
Test/Replace DAM switch.

★ For xx00-xx20 series test as above and also:


Make sure feeder house position chain is properly

adjusted to pull rocker free of switch under cab.

Check switch for proper operation.



The John Deere D-A-M combines only provide power to the Height Control system when the Feeder House Switch is engaged and the D-A-M rotary Switch is NOT "OFF". If these switches are on and Pin 4 of the combine header connector is not 11-14 Volts, have the combine serviced.

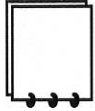
 **Manual raise switch does not disengage auto height.**

★ Replace relays on D-A-M controller board in combine.



On all 9000 and 9010 John Deere combines, the manual raise switch should ALWAYS override/shutoff auto height control. If not, test / replace the relays on the D-A-M control board in the combine. This is not a Headsight™ problem.

Adjust sensor until maximum voltage is less than 4.7V according to sensor calibration instructions
 High voltage is with the header fully raised for standard polarity – on the ground for reversed polarity
 Calibrate Headsight Box
 Calibrate Combine
 Sensor failure
 See sensor test instructions



This error will be displayed if a sensor that is enabled becomes temporarily disconnected for hardware version 1

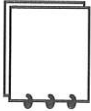
✖ ER12 – Sensor 1 (left) signal greater than 4.7V

Sensor 1 out of adjustment
 See sensor test instructions
 Sensor failure
 Check sensor harness for pinched/broken wiring
 Wiring short
 Calibrate Combine
 Calibrate Headsight Box
 reversed
 Low voltage is with the header on the ground for standard polarity – fully raised polarity is reversed
 Adjust sensor until minimum voltage is greater than 0.3V according to sensor calibration instructions
 Low voltage is with the header on the ground for standard polarity – fully raised polarity is reversed
 Sensor 1 out of adjustment or temporarily disconnected.

✖ ER11 – Sensor 1 (left) signal less than 0.3V

4 Troubleshooting by Insight error codes

Manual lower switch does not engage auto height.
 Test Headsight™ system as described in “No operation”
 Test combine 12 V supply as above.
 If all systems appear to be working, with both raise and lower signals sent to the combine.
 Check OEM raise/lower wiring
 Test D-A-M controller board in combine.

- ER13 – Sensor 1 (left) swing less than 0.6V** ✘
- ★ Sensor 1 mechanical range is restricted
 - Verify sensor is not obstructed in swing
 - Verify sensor can collapse fully with header lowered
 - Adjust upstop to allow greater range
 - ★ Sensor failure
 - See sensor test instructions
- ER16 – Sensor 1 (left) expected but not detected** ✘
- Verify harness is connected to sensor 1
 - Verify harness is connected properly to control box
 - Verify that signal wire (Pin B white wire of sensor cable) is connected to PIN7 of connector Y101 (Headlight box)
 - ★ Incorrect number of sensors selected in setup
 - Go to >>Initial Setup>>Num Sensors and choose the correct number of sensors
 - ★ Sensor failure
 - See sensor troubleshooting instructions
 - ★ Control box/wiring failure
 - Contact Headsight
- ER17 – Sensor 1 (left) detected but not expected** ✘
- Insight will effectively 'smash' the affected sensor – causing the header to raise
 - You may temporarily ignore the affected sensor WITHOUT repairing it by clearing the error codes (Diagnostics>Clear Error Codes)
 - Height control will function using the unaffected sensors
 - Tilt control will function if the affected sensor is NOT used for determining tilt position
 - If the sensor is used for tilt – you will need to disable the lateral tilt function of the combine
 - If you repair the problem THEN clear the error, the affected sensor will not be ignored
 - After repairing the problem, you MUST recalibrate insight to re-enable the ignored sensor
- If any of these errors (ERx6) occurs during operation
- 

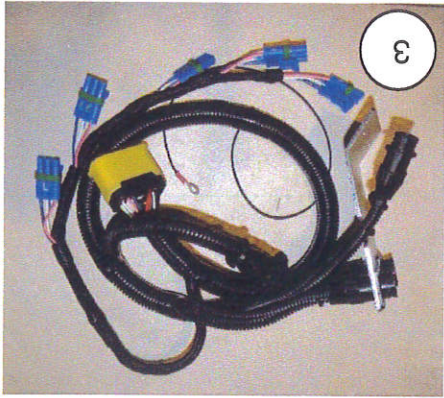
★ Incorrect number of sensors selected in setup

- Go to <>Setup>>System Select and choose the correct number of sensors
- ★ Harness wiring error
- Verify that no wires contact PIN7 of connector Y101
- ★ Control box/wiring failure
- Contact Headsight
- ✘ ER21 – Sensor 2 (left-center) signal less than 0.3V
 - ★ Follow procedures of ER11, substitute sensor 2 for sensor 1
- ✘ ER22 – Sensor 2 (left-center) signal greater than 4.7V
 - ★ Follow procedures of ER12, substitute sensor 2 for sensor 1
- ✘ ER23 – Sensor 2 (left-center) swing less than 0.6V
 - ★ Follow procedures of ER13, substitute sensor 2 for sensor 1
- ✘ ER26 – Sensor 2 (left-center) expected but not detected
 - ★ Follow procedures of ER16, substitute sensor 2 for sensor 1
 - ★ Substitute PIN13 for PIN7
- ✘ ER27 – Sensor 2 (left-center) detected but not expected
 - ★ Follow procedures of ER17, substitute sensor 2 for sensor 1
 - ★ Substitute PIN13 for PIN7
- ✘ ER31 – Sensor 3 (center) signal less than 0.3V
 - ★ Follow procedures of ER11, substitute sensor 3 for sensor 1
- ✘ ER32 – Sensor 3 (center) signal greater than 4.7V
 - ★ Follow procedures of ER12, substitute sensor 3 for sensor 1
- ✘ ER33 – Sensor 3 (center) swing less than 0.6V
 - ★ Follow procedures of ER12, substitute sensor 3 for sensor 1
- ✘ ER36 – Sensor 3 (center) expected but not detected
 - ★ Follow procedures of ER16, substitute sensor 3 for sensor 1
 - ★ Substitute PIN8 for PIN7
- ✘ ER37 – Sensor 3 (center) detected but not expected
 - ★ Follow procedures of ER17, substitute sensor 3 for sensor 1
 - ★ Substitute PIN8 for PIN7
- ✘ ER41 – Sensor 4 (right-center) signal less than 0.3V
 - ★ Follow procedures of ER11, substitute sensor 4 for sensor 1
 - ★ Substitute PIN8 for PIN7
- ✘ ER42 – Sensor 4 (right-center) signal greater than 4.7V
 - ★ Follow procedures of ER12, substitute sensor 4 for sensor 1
- ✘ ER43 – Sensor 4 (right-center) swing less than 0.6V
 - ★ Follow procedures of ER13, substitute sensor 4 for sensor 1
- ✘ ER46 – Sensor 4 (right-center) expected but not detected
 - ★ Follow procedures of ER16, substitute sensor 4 for sensor 1
 - ★ Substitute PIN14 for PIN7
- ✘ ER47 – Sensor 4 (right-center) detected but not expected

- Sensor # = n.nnV
 - # = which sensor 1=L, 3=C, 5 = R etc
 - N.NN = signal from sensor in volts
 - Max = n.nnV
 - N.NN = the maximum voltage from this sensor after calibration
 - Min = n.nnV
 - N.NN = the minimum voltage from this sensor after calibration
 - Enabled = x
 - x = is this sensor enabled to control height? Yes or No
 - SetH = n.nnV
 - N.NN = the "raised" voltage set-point recorded during calibration
 - SetL = n.nnV
 - N.NN = the "lowered" voltage set-point recorded during calibration
 - Reversed = x
 - X = is the polarity of this sensor reversed? Yes or No

Sensor 1 = 2.52V
 Max= 3.91V SetH= 3.93V
 Min= 1.02V SetL=1.21V
 Enabled=Y Reversed=Y

D Parts



Key# Part# Description Qty Notes

1	HT999LB-07	LIGHTBAR	1	2 knobs
2	INSIGHT	CONTROL BOX	1	Control unit
3	QJ5-JD10-XX	HARNESS	AR	JD corn heads- unwired
	QC3-JD10-XX	HARNESS	AR	JD Rigid heads-Grain sensors
	QC0-JD10-31J	HARNESS	AR	Prewired JD corn heads for 50 series combines
	QC0-JD10-31Q	HARNESS	AR	Prewired JD corn heads for 60 series combines
	QP0-JD10-31J	HARNESS	AR	Conversion for 900F heads
	QP0-JD10-31Q	HARNESS	AR	Conversion for 600F heads

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