LAN84209NE Installation Instructions

Single Point Hydraulic Kit for 00 and 10 Series Combines. NO ELECTRICAL.

This kit allows combine to function with either single point or multipoint connection headers

LANKOTA®

270 West Park Avenue

Huron, SD 57350

866-526-5682

Numerical Parts List

Part Numbers	Description	Quantity
LANH201368	Single Point Hydraulic Cover	1
LANAH206280 *	Auto Header Height Bracket	1
LANH202240	Seal Strip	2
LANAH206278	Single Point Mount Bracket	1
LANAH204601	Hose Cover Mount Bracket	1
LANH204885	Hose Cover	1
LAN3PLK-0-5AFC	Combine Half of Single Point	1
LAN84209HK	Hose Kit	1
	LANAH206658, yellow, reel drive hose	1
	LANAH206659, red, reel return hose	1
	LANAH206660, light blue, reel fore hose	1
	LANAH206661, dark blue, reel aft hose	1
	LANAH206662, green, reel lift hose	1
	LANAH208408, no color, variable speed hose	1
	LANFS6602-10, “T” fitting	2
	LANFS6602-6, “T” fitting	2
	LANFS6602-4, “T” fitting	1
LAN6FF	Hydraulic Cap	2
LANH175881	Internal Snap Ring	1
LANH135618	Hyd. Line Bracket Extension	1
RED-TRC-TAPE	Anti-Skid Tape, 10”	1
LAN84207/9BH	Bag of Hardware	1
LAN3718 *	3/8’ – 16 Serrated Flange Lock Nut	2
LAN18A *	3/8"-16 x 1.0 Carriage bolt	2
	M10 X 20 Flange Head Bolt	2
	M10 Serrated Flange Lock Nut	2
	M8 X 15 Flange Head Bolt	4
	M8 Serrated Flange Lock Nut	2
* *used only with optional LANHBO-JD10-31Q kit*	M8 X 15 Self Tapping Bolt	5

Pictorial Parts List

 LAN18A (2) * LAN3718 (2) *	 LANAH206280 *	 M10 X 20 Flange Head Bolt (2)	 LANAH206278 (1)	 LANH202240 (2)	 LANAH206661
 LAN3PLK-0-5AFC	 LANH204885	 LANH201368	 M8 X 15 Flange Head Bolt (4)	 M10 Serrated Flange Lock Nut (2)	 LANAH208408
 M8 Serrated Flange Lock Nut (2)	 M8 X 15 Self Tapping Screw (5)	 LANAH204601	 LAN6FF (2)	 LANFS6602-4 (1)	 LANAH206660
 LANH175881	 LANFS6602-6 (2) LANFS6602-10 (2)	 LANH135618	 RED-TRC-TAPE (1) 10”	 LANAH206659 LANAH206662 	 LANAH206658

1. Preparation

1.1 Park combine on clean level surface. Lower feeder house to 12” – 20” off the ground.
1.2 Shut off engine, remove key.
1.3 Set parking brake.

2. Removing Shields

Refer to Figure 2.1

2.1 Remove front feeder house shield and upper variable drive shield on LH side of combine.
2.2 Contour Master™ combines only:
Remove black rubber flap on top of feeder house. Remove mounting tube also.

Figure 2.1

3. Drain Hydraulic Oil

Refer to Figure 3.1

3.1 Install (original JD equipment) D15032NU vacuum pump on hydraulic reservoir. This will allow the removal of hydraulic hoses without draining the reservoir.
3.2 If vacuum pump is not available, drain reservoir.
3.3 Remove cap just aft of hydraulic oil filter on LH side of combine.
3.4 Funnel hydraulic oil into clean container. You can refill reservoir with this oil when procedure is complete.

NOTE: 5 – 10 gallons of oil will drain out.

Figure 3.1

4. Locating and Drilling Mounting Holes

Refer to Figure(s) 4.1, 4.2, 4.3 & 4.4

4.1 If equipped WITH CONTOUR MASTER™: Position multi-coupler bracket (LANAH206278) over curtain hanger mount as shown in Figure 4.1 and proceed to step 4.3.

4.2 Combines WITHOUT CONTOUR MASTER™: Measure from the feeder house pivot casting edge (A) to the edge of multi-coupler bracket (B) a distance of 37-3/8".

4.3 Mark holes on the feeder house. Use bracket as a template for marking 4mounting holes. Use a center punch to center holes before drilling.

Figure 4.1

Figure 4.3

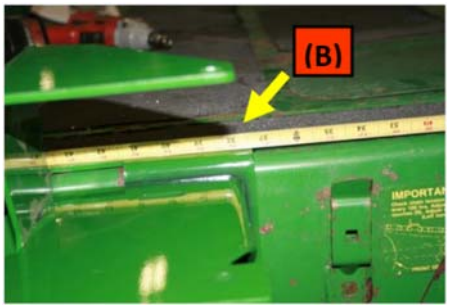


Figure 4.2

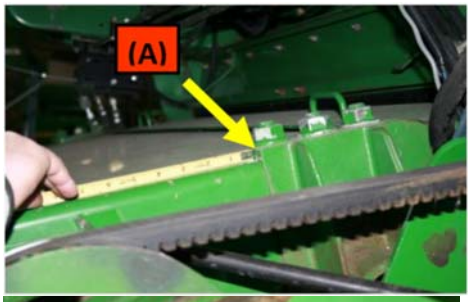
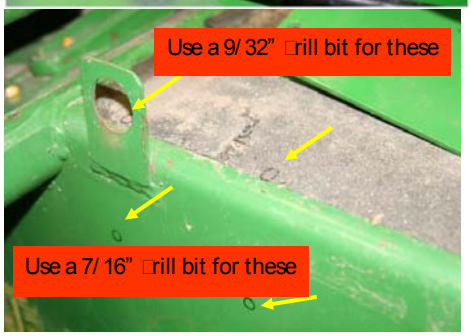


Figure 4.4



Refer to Figure(s) 4.5, 4.6, & 4.7

4.4 Open access door on top of feeder house to install bolts and retain using lock nuts. Use (2) M10X20 flange head bolts on outside of feeder house and (2) M10 serrated flange lock nuts on inside of feeder house. Do not tighten at this time. Use (2) (LANM8X15) self-tapping screws to attach mount on the top of the feeder house. Tighten all bolts and screws at this time. See Figure 4.6 & 4.7.

4.5 *(this step is only when utilizing the optional LANHBO-JD10-31Q)* Attach Auto Header Height Bracket to main bracket using (2) carriage bolts (LAN18A) and (2) lock nuts (LAN3718). Tighten hardware at this time. This is where the LANHBO-JD10-31Q will mount. See Figure 4.7

Figure 4.5

Figure 4.6

Figure 4.7

Refer to Figure(s) 4.8, & 4.9

***If equipped with* Contour Master™ install pipe through rubber flap indicator and retain using quick lock pin as earlier removed in "Removing Shields" section of these instructions.

4.6 Locate Hose Cover Bracket (LANAH204601). Measure a distance of 3 15/16" from the feeder house pivot casting edge (A) forward towards the front of the combine. Mark point. Position the bracket 11/16" in from the edge of the feeder house and place against marked point.

4.7 Use bracket as template to mark holes on feeder house. Use a center punch to center holes before drilling. See figures 4.8 & 4.9.

4.8 Drill two 9/32" holes on located marks. Retain bracket to feeder house using 2 self tapping screws (LANM8X15).

Figure 4.8

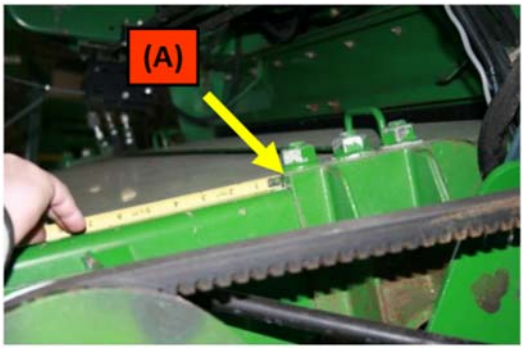


Figure 4.9

5. Installation of Hydraulic Hoses & Fittings

Refer to Figure(s) 5.1, & 5.2

5.1 Under cab on left side of feeder house, remove hydraulic line holder bracket, hardware and spacer blocks to allow for installation of the hydraulic "T" fittings in the next few steps. Retain hardware and spacer blocks later in these instructions.

5.2 Under cab on right side of feeder house, loosen the six bolts and nuts shown through the black clamping blocks in Figure 5.2. This will allow easier installation of the hydraulic "T" fittings in the next few steps.

Figure 5.1

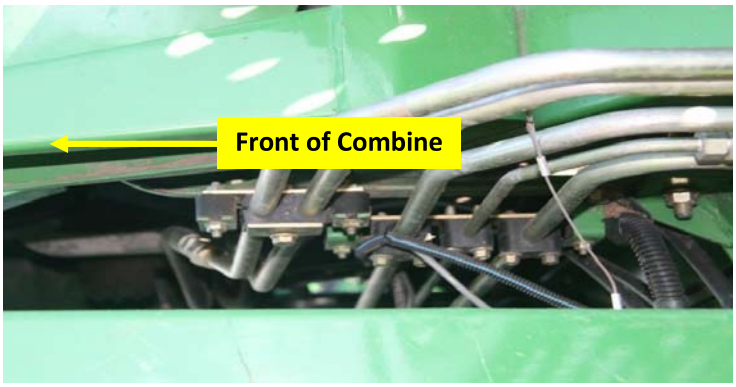
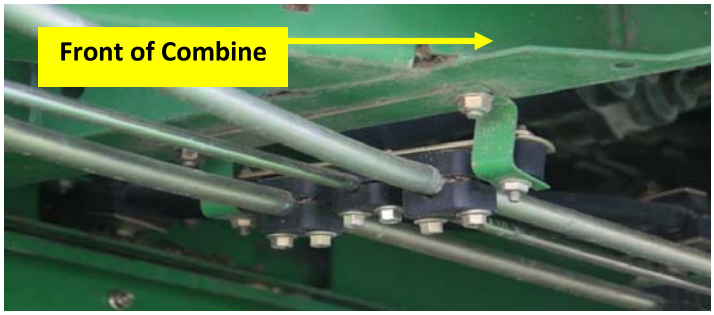


Figure 5.2



Refer to Figure 5.3

Locate rigid hydraulic lines just forward and below the cab door.

5.3 Loosen reel aft line i*f equipped*, reel lift line, reel drive supply line, reel fore line *if equipped* and reel drive return line. See Figure 7C.

**Note: *If combine does not have the reel fore & aft function, you will not have line A & D as shown in Figure 5.3.*

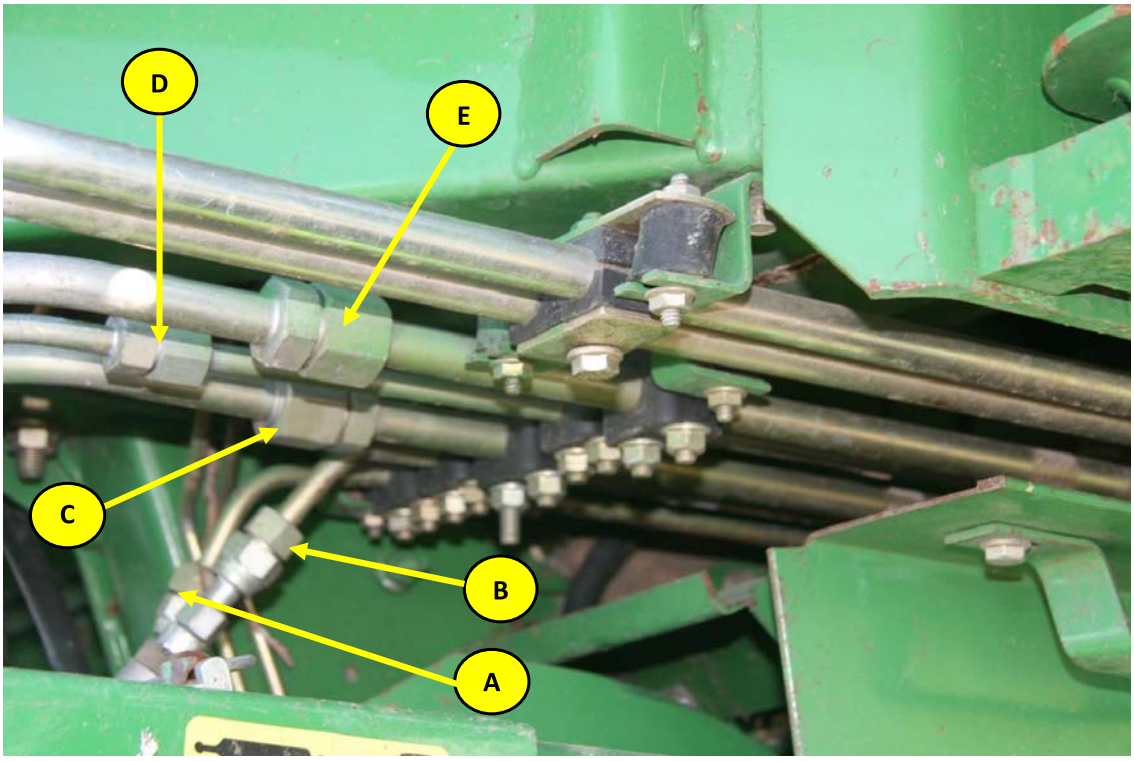
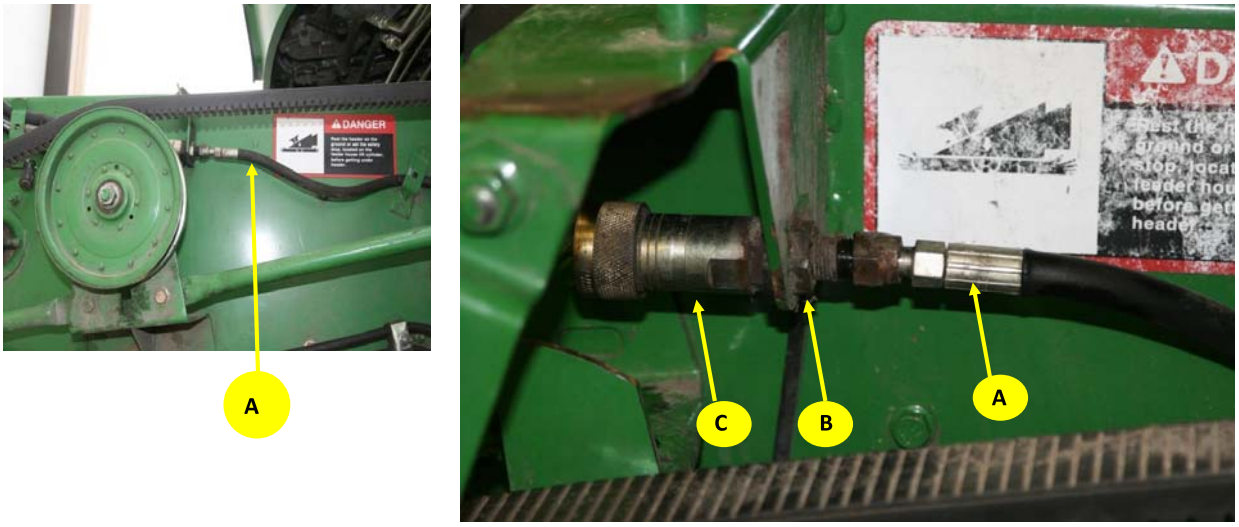


Figure 5.3

Refer to Figure 5.5

5.4 Loosen and remove hydraulic hose (A). Remove nut (B) from hydraulic quick coupler (C) and retain quick coupler.

Figure 5.5



Refer to Figure(s) 5.6, 5.7, & 5.8

5.5 Remove and retain fitting from hydraulic quick coupler. Quick coupler will no longer be used. See Figure 5.6. Do not damage o-ring as it will be reused shortly.

5.6 Connect upper variable speed hydraulic hose removed in Figure 5.5 to new hose extension LANAH208408.

5.7 Remove and discard plug from single point hookup (LAN3PLK-0-5AFC). See Figure 5.7.

5.8 Install previously removed fitting with o-ring in single point hookup. Tighten. See Figure 5.8.

Figure 5.6

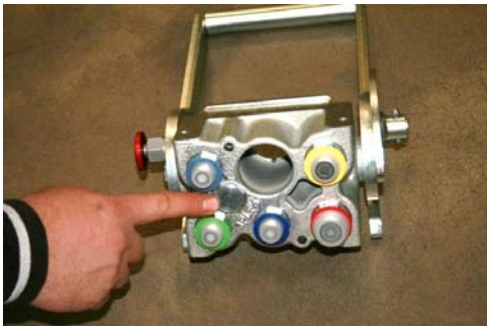


Figure 5.7

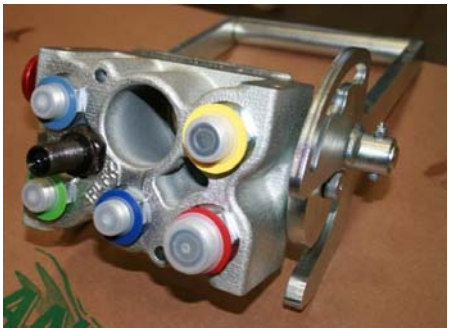


Figure 5.8

Refer to Figure 5.9

5.9 If combine is not equipped with reel fore & aft, install hydraulic caps (LAN6FF) on the dark & light blue ports on the back side of single point hook up (LAN3PLK-0-5-AFC) to prevent foreign material from entering the hydraulic system. Tighten caps.

5.10 Install reel fore hose (light blue) *if equipped,* reel drive supply hose with shut off valve (yellow), reel lift hose (green), reel aft hose (dark blue) *if equipped,* reel drive return hose (red) and upper variable speed extension hose to single point hook up as shown below in Figure 5.9.5.11 Do not tighten hoses at this time as to allow hoses to swivel and prevent binding during installation.

Figure 5.9

Refer to Figure 5.10

5.11 Install (2) of the LANFS6602-10, (2) of the LANFS6602-6 and (1) of the LANFS6602-4 hydraulic "T" fittings supplied in hose kit as show in Figure 5.4.

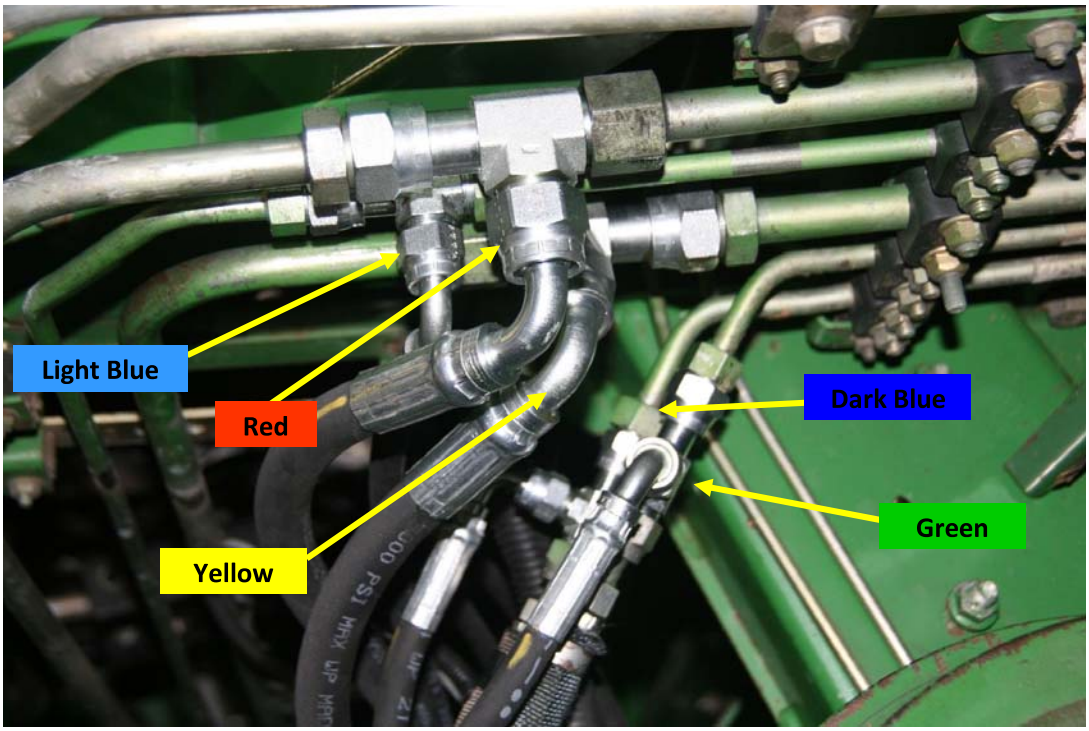
**Note: *There are no metal* caps on supplied "T" fi□ings in ki□

Figure 5.10

Refer to Figure 5.11

5.12 Attach color coded hoses as shown below to indicated “T” fittings (See Figure 5.10).

Figure 5.11



Refer to Figure(s) 5.12 & 5.13

5.13 Position single point hookup as it would be when installed.

5.14 Mount single point hookup to feeder house bracket and retain with (4) (LANM8X15) screws as shown in Figure 5.15. Tighten all hoses.

5.16 Remove D15032NU vacuum pump from hydraulic reservoir if installed.

5.17 Install oil cap if removed in earlier steps to drain hydraulic oil. Refill hydraulic reservoir to proper level. See combine owner's *manual for proper hydraulic reservoir oil level.*

5.18 Install hose shield (LANH204885) over hydraulic hoses. Retain with (2) M8 lock nuts (See Figure 5.12).

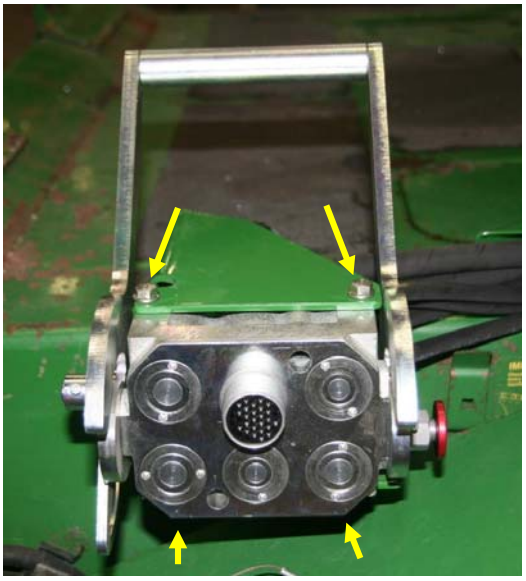


Figure 5.12

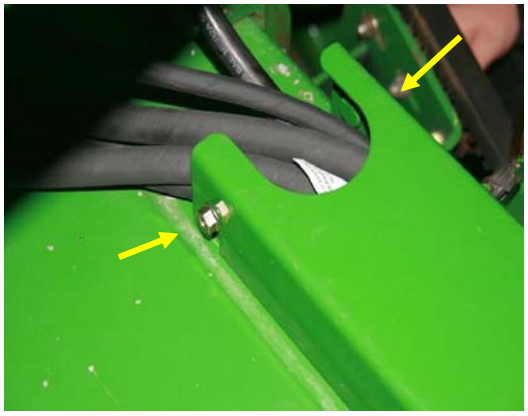


Figure 5.13

6. Hose cover

Refer to Figure(s) 6.1 & 6.2

6.1 Use hole in end of bracket as a template for marking mounting hole. Use center punch to center hole for drilling. Drill a 9/32" hole where indicated. Retain bracket to feeder house using (1) M8X15 self tapping screws (See Figure 6.1).

6.2 Install anti-slip adhesive pads RED-TRC-TAPE as shown in figure 6.2. Make sure surface is clean and dry before installing adhesive pads to the bracket.

Figure 6.1

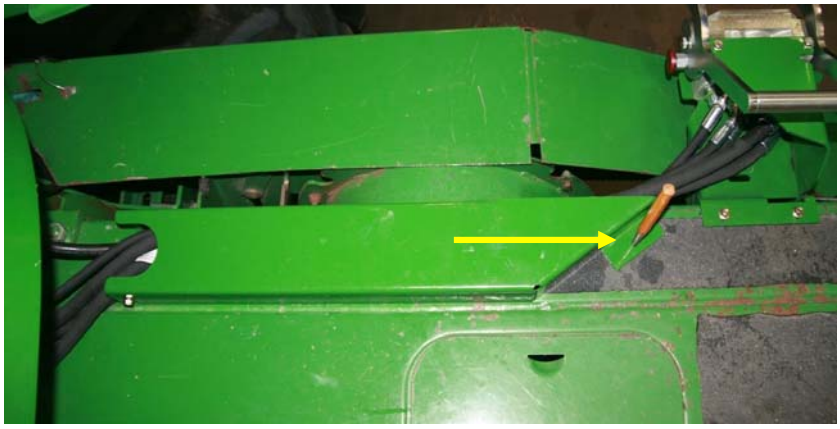


Figure 6.2

Refer to Figure(s) 6.3 & 6.4

6.3 Install 2 rubber seals (LAN202240) into groove on inside of dust cap (LANH201368) as shown in figure 6.3.

6.4 Install dust cap on single point hookup as shown in figure 647.

Figure 6.3

Figure 6.4

Refer to Figure(s) 6.5, 6.6, & 6.7

6.5 Using retained hardware and spacer blocks removed in figure 5.1, install new extended bracket LANH135618 as shown in the three figures below.

6.6 Tighten all brackets & hardware loosened in Figure 5.1.

Figure 6.5

Figure 6.6

Note: *When a platform header equipped with single point hydraulics is used on combine, the large male and female coupler hoses on the right side of feeder house must be uncoupled for proper operation. The handle valve on the reel drive pressure (yellow hose) must be in the open position.*

Note: *When utilizing header with multiple hose connections keep cover over single point block to protect block face from foreign debris. The handle valve on the reel drive pressure (yellow hose) must be in the closed position.*

Note: *When utilizing single point header, in order to change header and/or feeder house speed, header single point block must be uncoupled from combine single point block.*

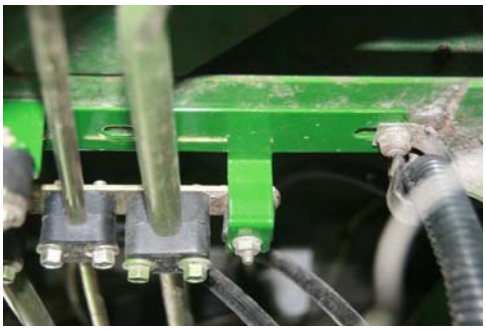


Figure 6.7

(Optional)

JD 9000 - 600F Conversion

Combine Manual
09040114a

HEADSIGHT INC.
HARVESTING SOLUTIONS

About Headsight

Headsight Contact Info

Headsight, Inc
Bremen, IN 46506
Phone:574-546-5022
Fax: 574-546-5760
Email: info@headsight.com
Web: www.headsight.com

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

Suggestions

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

Table of Contents

1.1. Installing Auto Header Height Control (LANHBO-JD10-31Q)

1. Attach Headsight®Insight®box to mount as shown in Figure 1.1 using supplied hardware.
2. Install smaller black box as shown in Figure 1.1 using supplied hardware.
3. Attach supplied wiring harnesses to mount as shown in Figure 1.2 using supplied Hardware.
4. Attach main wiring harness to larger white box and smaller white box. Install single point wiring harness end into hydraulic block and secure with snap ring (LAN175881).
5. Attach combine wiring harness as shown in Figure 1.3. Attach operator's station control box wiring harness as shown in Figure 1.3. Run wiring harness to cab as per Headsight®kit instructions.

Figure 1.1

Figure 1.2

Figure 1.3

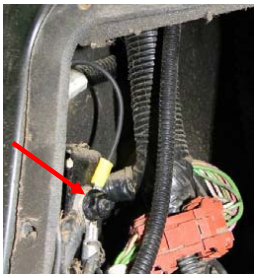
1.2. HydraFlex Light Bar

1. Mount the HydraFlex Light Bar on the right cab window in the general area shown, near the corner post display
2. Connect the Cab Harness to the back of the light bar

3. Unbolt the electrical access panel from the rear right corner of the cab.
4. Measure 2 ¼" from top and right side of access panel and drill a new 7/8"-1" access hole in the panel. A step drill or hole saw is preferred. Make sure to move wiring away from behind the drill.

5. From inside the cab, route the 9 pin round connector on the cab harness back thru the rear corner access hole and out to the access panel.

6. Remove the bolt holding the connector clip and insert the 9 pin connector under the clip. Reinstall the connector clip.

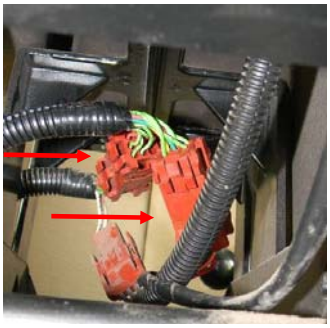


7. Install the ground terminal onto the OEM ground bolt just inside the access panel. Install it under the large OEM ring terminal for best results. Retighten ground terminal.
8. Reinstall the access panel and bolts.

9. Disconnect the OEM hydro handle connectors under the cab console. This is a 9 or 6 pin connector as shown.

10. If your combine has the 6 pin (early) Hydro connector, see App. A for information on switching these connectors before proceeding.

11. Tee the Headsight cab harness connectors into the OEM Hydro connectors.



1.3. Feeder Harness

1. Connect either end of the Cab harness to to newly installed 9 pin connector in the access panel
2. Route the feeder harness to the front of the feeder
   - Under the cab following pipes
   - Down thru the pivot point with OEM feeder harness
   - Follow OEM feeder harness to front of feeder, next to OEM header plug.

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 (Insight only)

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

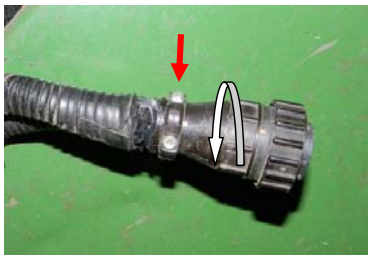
2.1.1. Standard Activation: ’91-up DAM (see note)

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

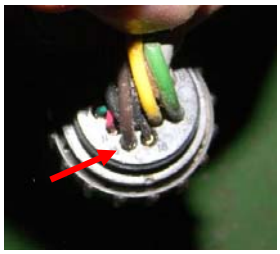
1. Make sure all connectors and harnessing is installed.
2. Turn the Dial-A-Matic switch OFF to prevent DAM activation.
3. Start the engine.
4. Turn on the header stubble lights if the combine is equipped.
    - This allows the Insight box to receive power without requiring the header and separator to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

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

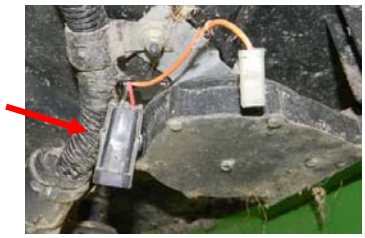
1. Install the power bypass harness PFI-JD10-P on the feeder.
    - Disassemble the shell on the back of the OEM combine header plug.



    - 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.

2.2. Initialize Insight

☐ 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.

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

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)
   - Chose the appropriate Header type
   - ONLY chose Flex if the head is to be operated in flex mode, not locked up in rigid mode.

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.

2.4. 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

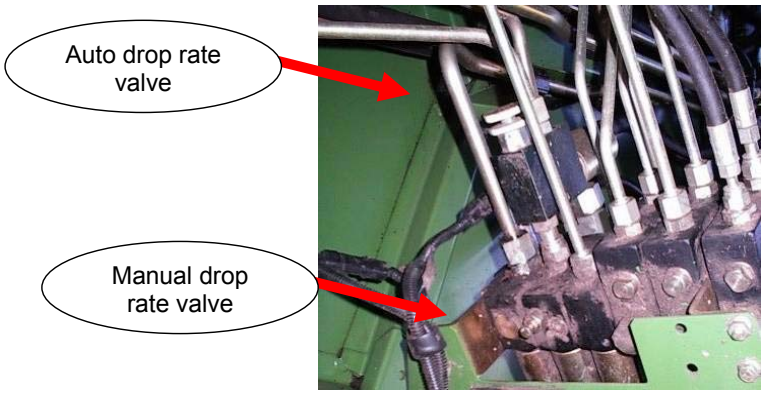
☐ Properly setting the combine is essential to having responsive header control. You should become very familiar with the steps in this section.

☐ 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

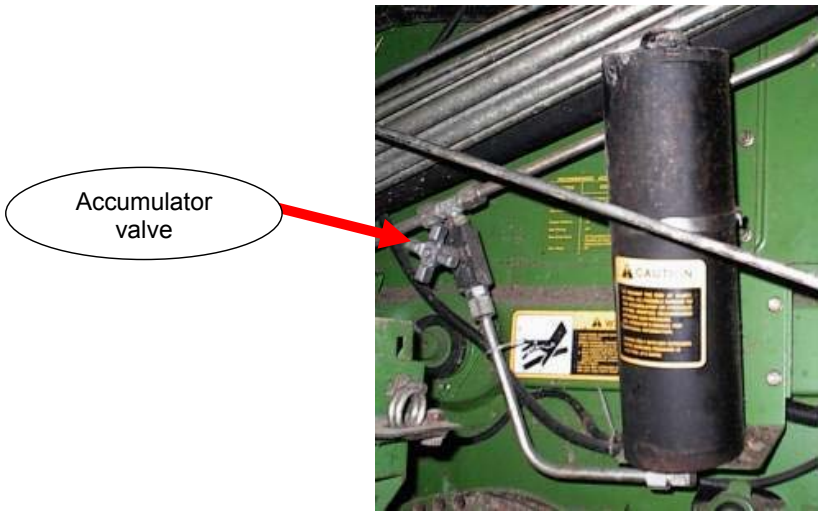
1. Use the automatic drop rate valve adjustment knob on the main valve block.
    - Turn in all the way then out ½ turn for initial guess.
    - If the speed is to fast – hunting will occur.
    - If the speed is to slow – the system will not be responsive enough.
2. Common range is 6-8 seconds from header full up to full down in automatic mode.



☐ The maximum automatic drop rate is limited by the manual drop rate.

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.



4. Operation

4.1. Enabling height control

4.1.1. 9x00 and 9x10 series

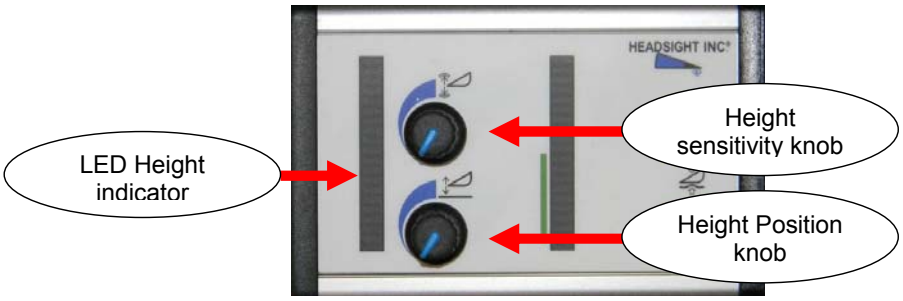
1. Turn Dial-a-Matic switch ON  .
2. Engage header clutch  .
3. Press header lower button. 

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.

4.2. 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



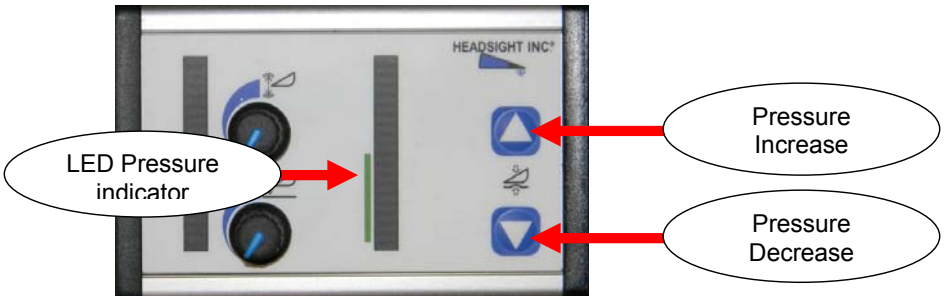
Because the Headsight box is designed to work with many OEM sensors, it may be possible for the operator to choose a height that is “too low” for operation – meaning that the sensors would never send a raise signal. To test if the height you have chosen is too low, engage the system, then tap the lower 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.
2. Decrease height sensitivity (turn CCW) to reduce hunting.
    - You MUST set the drop rate and accumulator before adjusting sensitivity knob.

4.4. Adjusting Float Pressure

The pressure changes fairly slowly. Hold the Increase or decrease button for 5-10 seconds to see if pressure changes.



1. To increase the pressure, press and hold the Increase pressure button.
2. To decrease the pressure, press and hold the Decrease pressure button.
3. The LED pressure indicator shows the approximate pressure in the float system. The green bar show the normal operating range of the header in flex mode.
    - Running near the bottom of the green area means MORE ground pressure (less hydraulic pressure holding up the cutterbar). Use this area for dry, hard conditions.
    - Running near the top of the green area means LESS ground pressure (more hydraulic pressure holding up the cutterbar). Use this area for wet, soft conditions.
    - Raising the pressure all the way up should “lock up” the cutterbar for rigid mode. You may need to increase system pressure in older combines to do so.
4. The LED pressure indicator will also show the deck plate position on a corn head if the header is equipped with a Headsight conversion and deck plate sensor.

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™

3 Screen contrast adjustment

- To increase contrast:  +
  - Press and hold **Esc**
  - Press **Up** to increase contrast (while holding **Esc**)
- To decrease contrast:  +
  - Press and hold **Esc**
  - Press **Down** to decrease contrast (while holding **Esc**)

4 Resetting Insight™ to defaults

- To reset ALL settings  + for 5 seconds
  - Press and hold **Esc** then
  - Press and hold **Enter** while holding **Esc**
  - Hold both for 5 seconds

5 Updating Insight Software

Updating software may cause the Foresight option to be disabled. If you have purchased Foresight, contact Headsight before updating software.

5. You will need:

- SD memory card
- Means of loading SD memory card either
  - A computer with an SD memory card drive
  - A computer with USB drive and a USB to SD card adapter
  - A pre-loaded SD card from Headsight
- Small Allen wrench or screwdriver

6. Load SD card with new software files

- Place insighte and insightf in the root directory of the SD card
  - For example - E:\insighte and NOT E:\my_folder\insighte
  - DO NOT change the file names

7. If you do not have the new files you may

- Request updated software by email from info@headsight.com

- Download updated software from www.headsight.com (when available)
- Request pre-loaded SD card from Headsight, Inc

8. Disconnect all header connections from the combine

9. Remove 4 screws from the rear of the Insight™ box – remove rear cover

10. Insert programmed SD card into SD card slot on rear of board

11. Power Insight™

- Connect all wiring to combine
- Turn on keyswitch

12. 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

13. Verify update is successful

- Go to >>About Insight>>Software Version and read software version number

14. Remove power from Insight™

- Turn off key

15. Remove SD card

16. Reinstall rear cover

17. Fasten with screws

B Advanced Information

1 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.

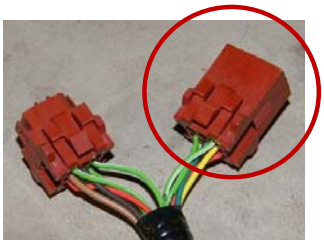
The target tilt speed is 5-8 seconds from full right to full left for most machines.

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

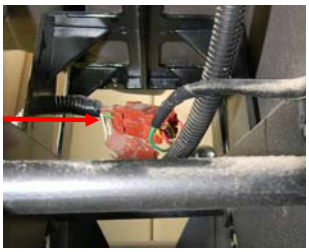
2 Connecting the 9 pin T to a 6pin combine Hydro Handle connector

Early model 9000 series level-land combines had a 6 pin connector on the Hydro handle. This must be change to allow connection of the 9 pin T connection.

1. Tools Needed: An Amp Multimate pin removal tool.
2. Identify the correct connector on the Headsight Cab harness T.
   - 9 pin Orange Female receptacle with Male pins.



3. Remove pins 6 & 7 from this connector
   - These pins are not reinstalled.
   - Fold them back and tape them.
   - Removing these first lessens confusion among multiple lt. green wires.
4. Remove pins 1-5 from this connector
   - These pins will be reinstalled in the same # cavity on the 6 pin connector later.
5. Disconnect the OEM Hydro handle plug under the Control Panel.
6. Identify the correct connector on the OEM Hydro handle connector set. See arrow.
   - 6 pin Orange female receptacle with Male pins.
   - On harness to main wiring, not cable to hydro handle.



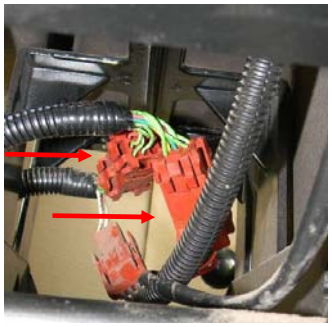
7. Remove 1 pin at a time from this connector, and reinstall in the same cavity on the 9 pin removed in step 4 above. Doing them one at a time will prevent confusion.
   - Pin 1, 6p (wire # 015) to pin 1, 9p
   - Pin 2, 6p (wire # 437) to pin 2, 9p
   - Pin 3, 6p (wire # 425) to pin 3, 9p
   - Pin 4, 6p (wire # 408) to pin 4, 9p
   - Pin 5, 6p (wire # 409) to pin 5, 9p

8. Reinstall the 5 wires on the Headsight T into the same cavity on the 6 pin removed in step 7 above. Doing them one at a time will prevent confusion.

- Red wire # 015A to pin 1, 6p
- Lt. Green wire # 437A to pin 2, 6p
- Lt. Green wire # 425A to pin 3, 6p
- Yellow wire to pin 4, 6p
- Dk. Green wire to pin 5, 6p

9. Tee the Headsight cab harness connectors into the OEM Hydro connectors.

- 6 pin on Hydro handle cable to 6 pin newly installed on Headsight T
- 9 pin newly installed on OEM cab wiring to 9 pin on Headsight T.



C Diagnostics

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 Iterface box compares the center input (cutterbar) sensor to the desired height chosen on the light bar in the cab.
    - If the height 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.
    - If the height sensor has 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.
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.

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

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.

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.

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
      - Recalibrate sensors
      - Reset or replace Insight.
- **No automatic operation - height or tilt**
    - Wiring is not connected properly
    - Header control is not enabled with cab controls.
      - See Operation section for instructions about how to enable.
  - If Insight is powered and Green Light is on:
    - D-A-M “loop” not wired in Headsight™ harness (9000-’10)

- Unplug 16 pin header plug and measure continuity across Pins 4 & 11 in the Headsight™ half. Pins must be <5 Ohms (short circuit).

- Combine D-A-M booster box defective (’20 series only).
  - Test / repair booster box
- Suspect defective Insight™ system.
  - Test Headsight system by following raise/lower diagnostics below.

- If Insight is NOT powered (no lights):
  - Ensure black ground wire is securely attached to the header frame (combines –‘90).
  - Combine does not supply 12V on pin 4 of the header connector.
    - Follow steps in “Troubleshooting…..common combine problems” below
  - Suspect defective Insight or main harness.

☐ **Head drops all the way to ground.**

- Height position knob on light bar set too low
  - Rotate knob CW until head raises.
- Combine not receiving raise signal.
  - Under >>Diagnostics>>Detailed Diagnostics>>D-A-M Outputs
    - 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 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 Headsight

☐ **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).
  - 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

☐ **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 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

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.

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.

4 Troubleshooting by Insight error codes

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

- Sensor 1 out of adjustment or temporarily disconnected.
  - 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
  - Calibrate Headsight Box
  - Calibrate Combine
- Wiring short
  - Check sensor harness for pinched/broken wiring
- Sensor failure

- See sensor test instructions

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

- Sensor 1 out of adjustment

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

- 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

☐ **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**

- Sensor 1 not properly connected
  - Verify harness is connected to sensor 1
  - Verify harness is connected properly to control box harness
    - Verify that signal wire (Pin B white wire of sensor cable) is connected to PIN7 of connector Y101 (Headsight 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

☐ If any of these errors (ERx6) occurs during operation

- 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

☐ **ER17 – Sensor 1 (left) detected but not expected**
- 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 ER13, 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
- ☐ **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**
  - Follow procedures of ER17, substitute sensor 4 for sensor 1
  - Substitute PIN14 for PIN7
- ☐ **ER51 – Sensor 5 (right) signal less than 0.3V**
  - Follow procedures of ER11, substitute sensor 5 for sensor 1
- ☐ **ER52 – Sensor 5 (right) signal greater than 4.7V**
  - Follow procedures of ER12, substitute sensor 5 for sensor 1
- ☐ **ER53 – Sensor 5 (right) swing less than 0.6V**
  - Follow procedures of ER13, substitute sensor 5 for sensor 1
- ☐ **ER56 – Sensor 5 (right) expected but not detected**
  - Follow procedures of ER16, substitute sensor 5 for sensor 1
  - Substitute PIN9 for PIN7
- ☐ **ER57 – Sensor 5 (right) detected but not expected**
  - Follow procedures of ER17, substitute sensor 5 for sensor 1
  - Substitute PIN9 for PIN7
- ☐ **ER61 – Sensor 6 (aux sensor) signal less than 0.3V**
  - Follow procedures of ER11, substitute sensor 6 for sensor 1
- ☐ **ER62 – Sensor 6 (aux sensor) signal greater than 4.7V**
  - Follow procedures of ER12, substitute sensor 6 for sensor 1
- ☐ **ER63 – Sensor 6 (aux sensor) swing less than 0.6V**
  - Follow procedures of ER13, substitute sensor 6 for sensor 1
- ☐ **ER66 – Sensor 6 (aux sensor) expected but not detected**
  - Follow procedures of ER16, substitute sensor 6 for sensor 1
  - Substitute PIN15 for PIN7
- ☐ **ER67 – Sensor 6 (aux sensor) detected but not expected**
  - Follow procedures of ER17, substitute sensor 6 for sensor 1
  - Substitute PIN15 for PIN7

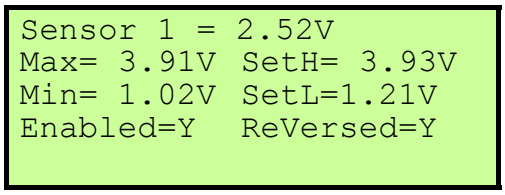
5 Reading voltages on the Insight box

7. From the main menu, go to >> Diagnostics>>Disp Sensor Voltages

- This shows real-time the voltage coming from each sensor.

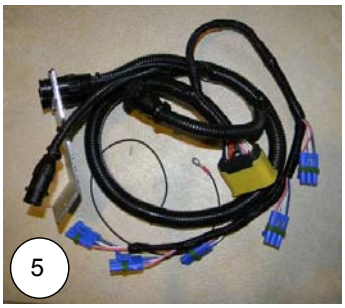
8. For more information about the sensor history and status see >>Diagnostics>>Detailed Diagnostics>>(choose the item of interest)

- The information found in the detailed diagnostics menu is in most cases simple and straightforward. The sensor detailed diagnostic screens contain a lot of information – as described below:



- 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

D Parts



Key#	Part#	Description	Qty	Notes
1	HT999LB-07	HYDRA LIGHTBAR	1	2 knobs
2	HT9801-CAB	CAB HARNESS	1	Hyrdaflex conversion harness
3	HT9801-FH	FEEDER HARNESS	1	Hydraflex Feedr harness
4	INSIGHT	CONTROL BOX	1A	Insight Control unit
5	QP0-JD10-31Q	HARNESS	1A	Insight adapter conversion for 600F heads
6	HP0-JD10-31Q	BLACK BOX	1B	Black box conversion complete w/ harness (not shown) replaces 4 & 5)

HEADSIGHT INC.
HARVESTING SOLUTIONS

3529 Fir Rd. Bremen, IN 46506
Ph: 574-546-5022 Fax: 574-546-5760
info@headsight.com www.headsight.com