

Truesight - Lexion Autopilot

**Install Manual
09050501f**



HEADSIGHT INC.
HARVESTING SOLUTIONS



About Headsight

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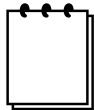
Technical Assistance

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.



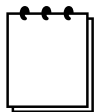
This icon designates an important instruction.

Disclaimers

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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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1. Quick-Start Guide



Note: Follow the steps in order in this Quick-Start section when installing the system for the first time.

1.1. Identify the components

1. Interface Module

- AR- TS-CA50-IM -Module for 400-500 series
- AR- TS-IHRG-IM -Module for 700 series



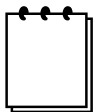
2. Module Adapter harness

- 1- TS-ALL-CAAP -Adapter harness for CAT



3. Crop sensor assembly

- 1- HT2670 -Crop sensor asm



For parts breakdown see appendix



4. Crop whiskers

- 2- HT2695 -Arm TrueSight



5. Crop sensor mounting kit

- o May vary based on header

- 1- B2713 -Mounting kit
- 1- HT2713-Bracket
- 2- 08200124 -Bolt M10x25
- 2- 08200134 -Bolt FI 5/16" x .75"
- 2- 08200133 -Washer 5/16"
- AR- 08200107 -Screws
- AR- 08100101 -Cable clamp small
- AR- 08100102 -Cable clamp large
- AR- 08300102 -Zip ties



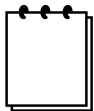
6. Trusight Crop Sensor Extension Harness

- 1- HT2808 Not shown

1.2. Install the system

Install the system following the instructions described in the Installation section of this manual.

Do NOT connect the Adapter to the VS3 plug until instructed.



Note: All directions and locations including left, right, front, and rear are oriented with respect to the operator when sitting in the driver's seat.

1.3. Use Truesight/AutoPilot

After the initial calibration – all settings and adjustments are made following the Lexion operational instructions. See the “Calibration”, “Operation”, and “Settings” sections of this manual.

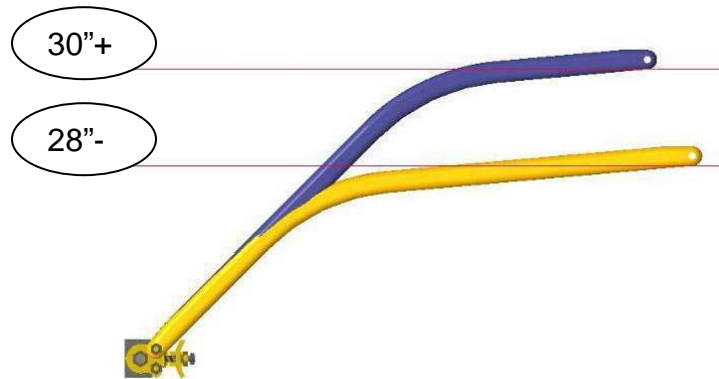
2. Installation

2.1. Crop sensor installation

2.1.1. Sensor assembly

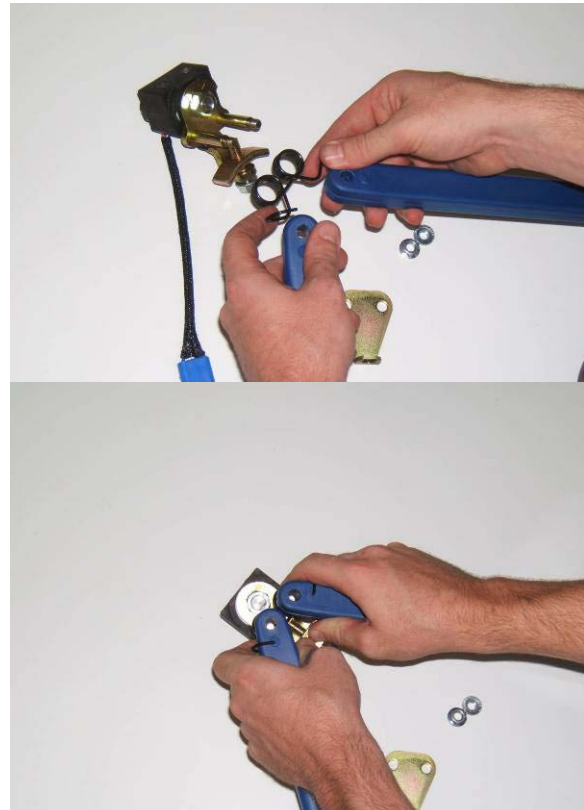
1. Choose your headers row spacing range.

- For row spacings 30" and above use the arm position shown by the blue arm.
- For row spacings less than 30" use the arm position shown by the yellow arm.



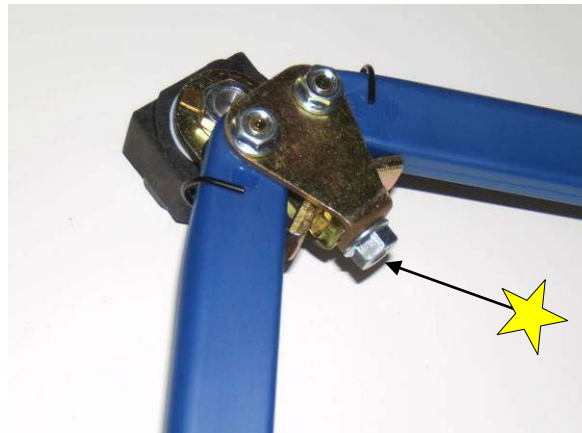
2. Install the arms on the crop sensor.

- Remove the crop sensor lower shield.
- Hold the arms and spring as shown – slide the spring hooks over both arms – then the arms over the pivot posts of the sensor.
- Replace the lower shield.



2.1.2. Width adjustment

3. Loosen the jamb nut indicated.
4. Turn arm adjustment screen using a hex (allen) wrench.
 - Adjust arm width to row spacing plus 2 inches (e.g. adjust to 32" for 30" row spacing)
5. Tighten jamb nut



2.1.3. Safety reminder



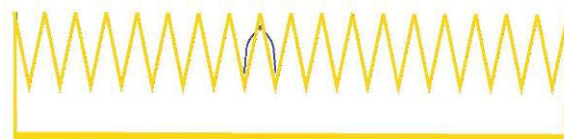
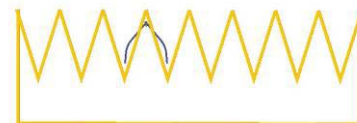
Before working under the header always:

6. Perform all combine and header manufacturer safety precautions for servicing header.
7. Insert stop to prevent movement of header.
8. Turn off combine and remove key from ignition.
9. Set combine parking brake.
10. Disconnect all drive shafts from the header.



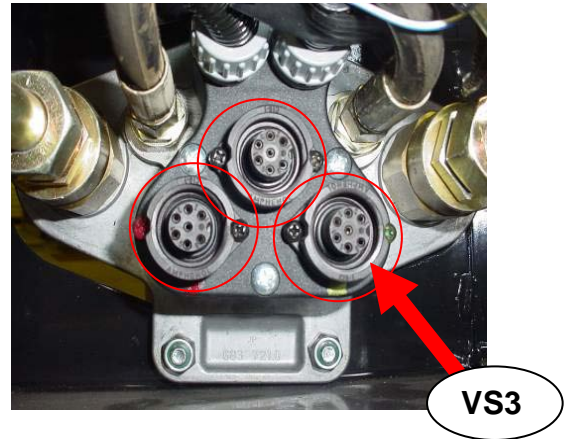
2.1.4. Snout choice

1. Choose which snout of the header to mount the crop sensor.
 - If there is no header height sensor on the center snout the crop sensor may be mounted there.
 - For most headers, mount the sensor one snout to the left of center.
 - Specific sensor mounting instructions for headers and snouts are included with the sensor mounting bracket kit for that header.



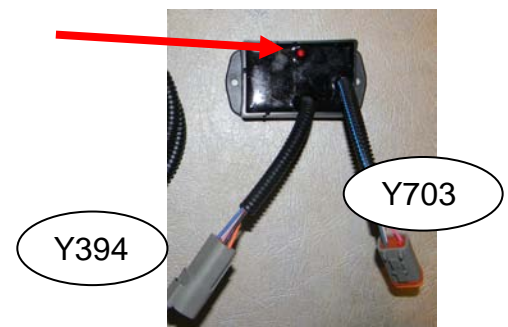
2.2. Multilink Block Identification

1. Identify your multilink block style.
 - If the multilink has 3 plugs as shown, you have an OEM Lexion multilink, and must follow the instructions in **A4** to test the power supplied to the autopilot connector VS3
 - If the multilink does not have VS3 installed, you must follow the instructions in **A6** to add the autopilot connector to the multilink.
 - If the multilink has only 2 plugs, one of which is VS3, continue with the Interface module installation—you have a Trusight ready block, and do not have to test the voltage on VS3 as shown in **A4**.

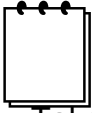


2.3. Interface module installation

1. Mount the interface module on the rear of the header in this general area (near back side of the header multilink).
2. Connect Y703 on the Module to the Sensor Harness.
3. Connect VS3 plug on the Adapter harness to VS3 on the Multilink block.
4. **DO NOT CONNECT Y393 to Y394** until following instructions in **2.2** above. Only connect after testing as in **A4** (if necessary).
5. On folding Geringhoff heads, connect the ground wire to a chassis bolt in the multilink housing.
6. Make sure the red LED is on when the combine is running.



3. Settings



Properly adjustment is essential to having responsive steering.
Take time to try different settings.

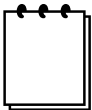
3.1. **Combine Settings: 400, 500 series only**

1. On Cebis, chose Tachometer.
2. Under Steering Input type, choose Touch Arm input.
3. Refer to the CAT Owners manual. You must perform the Zero Point Center calibration. (For early combines, these settings are screwdriver adjustments on the front of the AutoPilot Module)
4. Adjust the Sensitivity and Response as desired during operation. A suggested starting point is 70% sensitivity.

3.2. **Combine Settings: 700 series only**

1. On Cebis, chose Steering.
2. Turn on the Master Switch.
3. Under Steering Input type, choose Touch Arms.
4. Refer to the CAT Owners manual. Perform the Learning Steps in Cebis.
5. Adjust the Sensitivity and Centering as desired during operation.

4. Operation



Operate the Trusight system exactly like you would use a Lexion system. Details may be found in the combine operator's manual.

1. Engage header and separator clutch
2. Engage Autosteer

A Technical Information

1 Theory of Operation

A review of the following points will help the service technician to understand the complete system which will help when diagnosing specific problems.

1. A TruSight sensor returns a variable voltage depending on its swing, with center being approx. 2.5V. This is similar to an OEM laser system.
 - To Left = high voltage (approximately 4.7 volts)
 - To Right = low voltage (approximately 0.3 volt)
 - Signal **must** be centered at 2.5V volts.
2. The sensor has 3 wires
 - red = 5V power
 - black = ground
 - white = signal return, varies between approximately 0.3 and 4.7 volts
3. For the 400/500 series combines, the interface module “creates” and sends a left and right sensor signal similar to the voltages from OEM Lexion touch arms for those combines
 - When the crop sensor is centered , both the left and right inputs to the combine should read about 2.5V.
 - With the sensor pressed to the left, the left input should increase toward 3.0 V. The right should remain about 2.5V.
 - With the sensor pressed to the right, the right input should decrease toward 2.0V. The left should remain about 2.5V
4. For the 700 series combines, the interface module “creates” and sends a left and right sensor signal similar to the voltages from OEM Lexion touch arms for those combines.
 - When the crop sensor is centered , both the left and right inputs to the combine should read about 0.6V.
 - With the sensor pressed to the left, the left input should increase toward 3.5 V. The right should remain about 0.6V
 - With the sensor pressed to the right, the right input should increase toward 3.5 V. The left should remain about 0.6V

2 Troubleshooting

1. Problem – The power LED is not on
 - Solution – the pink wire in the Y393 connector is not 5V, or the Black wire is not ground. Check for 5V between pins 1 & 3 in the adapter harness. Start the combine engine and recheck. See A4.
 - Solution – the sensor harness is shorted to ground. Unplug Y703 and see if the light comes on

3 Module Identification

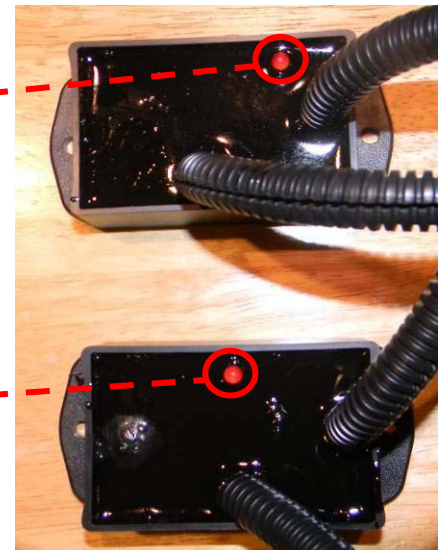
The Interface Modules for Lexion combines are shown in the picture below. They should be labeled on the reverse side, but should the labeling peel or rub away, the following tip will help identify the module easily.

1. TS-CA50-IM

- a. Used only for Lexion 400/500 combines
- b. LED is near one end of the box

2. TS-IHRG-IM

- a. Lexion 700 combines
- b. All CNH combines with Row Guide
- c. LED is centered along one side of the box



4 Testing OEM Lexion Multilinks



Testing the multilink is not required for Multilinks purchased from Headsight®. If you have an OEM Multilink (Lexion or Geringhoff heads), complete the test below to determine if you need to modify the block.



Do NOT connect the adapter TS-ALL-CAAP plug Y793 to the Interface Module Y794 until the voltage is tested.

Lexion header multilink blocks use different internal wiring schematics for autopilot. Blocks designed for Laserpilot systems use +12V on pin 1 of the VS3 plug. Corn heads normally have +5V on pin 1 for finger sensing. To operate a +5V Headsight sensor on the OEM Lexion multilink, the following test must be made.

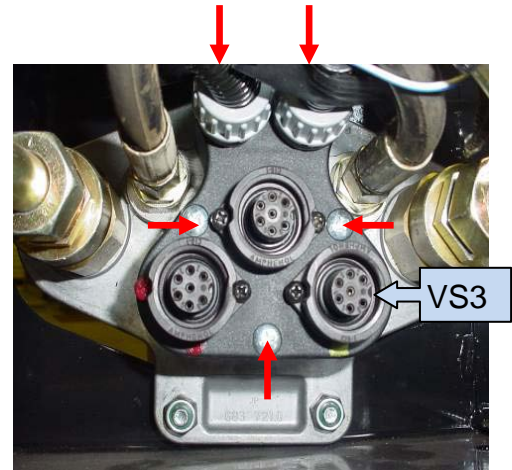
1. Connect the combine multilink and start the combine engine.
2. For 700 series combines, the thresher must also be engaged.
3. Connect the TS-ALL-CAAP harness to the VS3 receptacle on the Multilink (but NOT to the Interface Module).
4. Using a voltmeter, measure DC voltage on pin3 of Y793 (Pink wire). The voltage can be measured to a chassis ground or to pin 1 of Y793 (Black wire).
 - If voltage is +5V DC—Return to the installation portion of the manual. The steps in section **A5** are not needed.
 - IF voltage is +12V, (or no voltage) you must follow the steps in **A5** to switch to the 5V power wire in the Multilink Header Block.



The Multilink layout drawing and wiring shown in **A7** is very helpful in locating the plugs and positions needed.

5 Modifying a OEM 12V Multilink

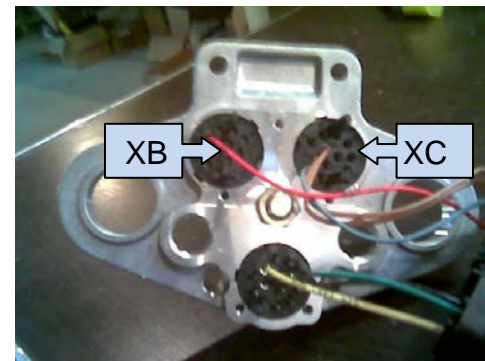
1. Clean the block thoroughly and remove the 5 screws holding the back cover onto the box. (You may need to disconnect harnesses or hoses to have adequate working room. If so, first carefully mark all components for reassembly.)
2. Carefully pull the plastic housing away from the metal of the multilink until you can reach the wiring and plugs inside.



3. Disconnect the current 12V source. Pin 1 of VS3 will be connected to XB pin 9 (Lexion heads), or XB 13 (Geringhoff folding) possibly along with some other wires. The drawing in A6 may help identify plugs.

FOR LEXION HEADERS

- Cut the wire coming from VS3 pin 1 free from any other wires and from pin 9, XB, and crimp a new CAT multilink pin (PN 213 603.0) onto the end of the wire from VS3 pin 1.

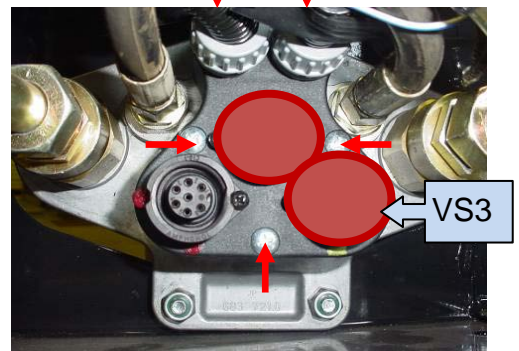


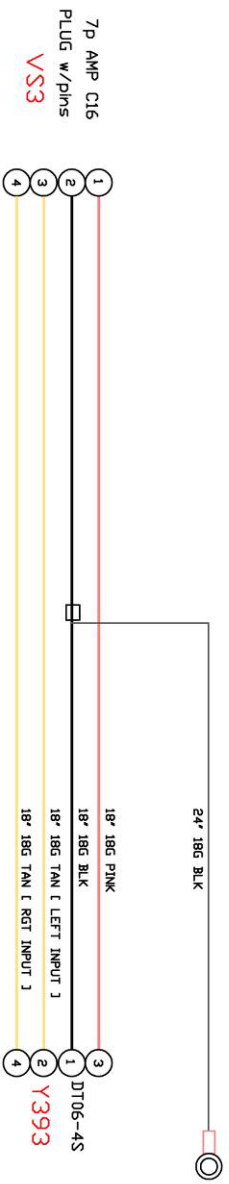
FOR FOLDING GERINGHOFF HEADERS

- Press the XB connection assembly back out of the multilink metal housing.
 - Gently pry the 2 halves of the assembly apart 1 notch.
 - Remove the pin from XB pin 13.
 - Snap the XB holder assembly back fully together.
 - Reinsert XB into the multilink housing.
4. 5V power is picked up at pin 8 of the XC connection.
 - Press the XC connection assembly back out of the multilink metal housing.
 - Gently pry the 2 halves of the assembly apart 1 notch.
 - Insert the LARGE pin into pin 8
 - Snap the XC holder assembly back fully together.
 - Reinsert XC into the multilink housing.
 5. CAREFULLY reassemble the multilink, making sure not to pinch wires between the housings.

6 Adding Autopilot to an early Headsight Multilink

1. Make sure you have the Multilink Autopilot update kit, which includes a 7 pin plug with 4 wires w/ terminals, and 2 small screws. If not already ordered, please call Headsight® to order one.
2. Clean the block thoroughly and remove the 5 screws holding the back cover onto the box. (You may need to disconnect harnesses or hoses to have adequate working room. Mark all components for reassembly.)
3. Loosen the compression nut on the lights harness, then carefully pull the plastic housing away from the metal of the multilink until you can reach the wiring and plugs inside.
4. Remove the cap from the VS3 location and insert the four large pins thru the hole from the outside of the cap.
5. The wires must go to the correct locations in the XC plug.
 - Press the XC connection assembly back out of the multilink metal housing.
 - Use a small screwdriver to snap the 2 halves of the assembly apart 1 notch.
 - Insert the large pin on the PINK wire into pin 8
 - Insert the large pin on the BLUE wire into pin 9
 - Insert the large pin on the WHITE wire marked LEFT into pin 10
 - Insert the large pin on the WHITE wire marked RIGHT into pin 11
 - Snap the holder assembly back fully together.
 - Reinsert XC into the multilink housing.
6. CAREFULLY reassemble the multilink, making sure not to pinch wires between the housings.
7. Coil the wires for the Autopilot plug down into the housing and secure the new connection into place with the two screws provided.





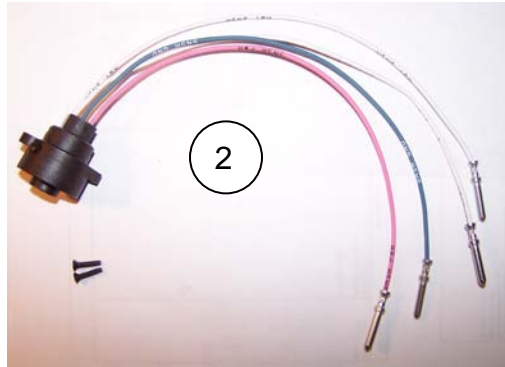
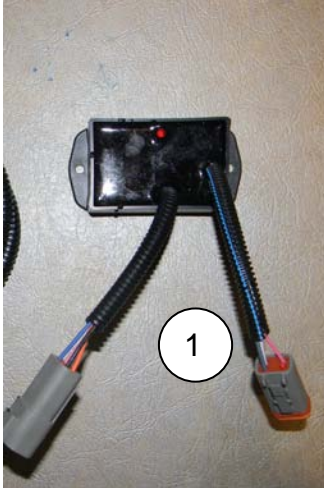
FDR USE WITH TS-IHRG-1M

REVISIONS				WORK ORDER NO. HEADSIGHT			
NUMBER	DESCRIPTION	DATE	APPROVED	DESCRIPTION	SIZE	DATE	SHEET
				TRUSIGHT CONV. HARNESS			
				CAT-AP/TS-IHRG ADAPTER			
				TS-ALL-CAAP			

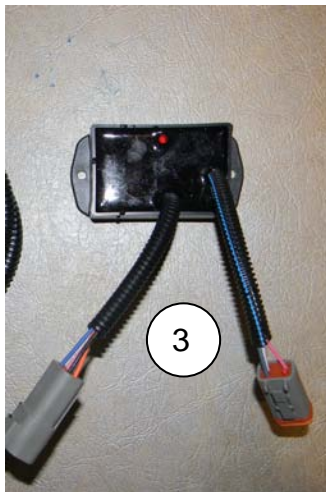
FOR: MAM Industries

DATE: 06-16-11

B Parts



<u>Key#</u>	<u>Part#</u>	<u>Description</u>	<u>Qty</u>	<u>Notes</u>
1	TS-CA50-IM	ADAPTER	AR	400-500 only
2	CAML-UPDATE	WIRING UPDATE	AR	Updates early multilink blocks to autopilot



<u>Key#</u>	<u>Part#</u>	<u>Description</u>	<u>Qty</u>	<u>Notes</u>
3	TS-IHRG-IM	INTERFACE MODULE	AR	700 only
4	TS-ALL-CAAP	ADAPTER HARNESS—ALL	1	

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