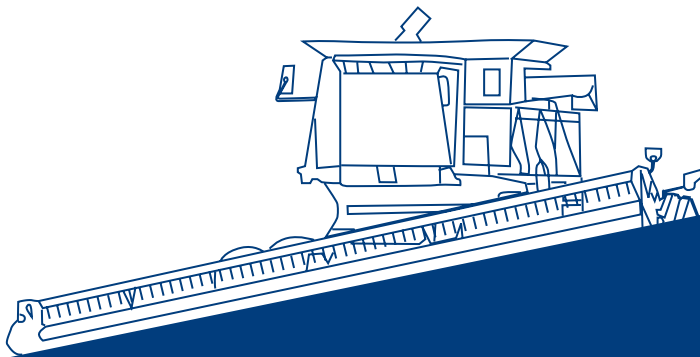




# Operator's Manual

(SN15001-15999)



## Model 2965H

### Hillside Leveling System

9660 WTS

D-141203CMA01  
December, 2015

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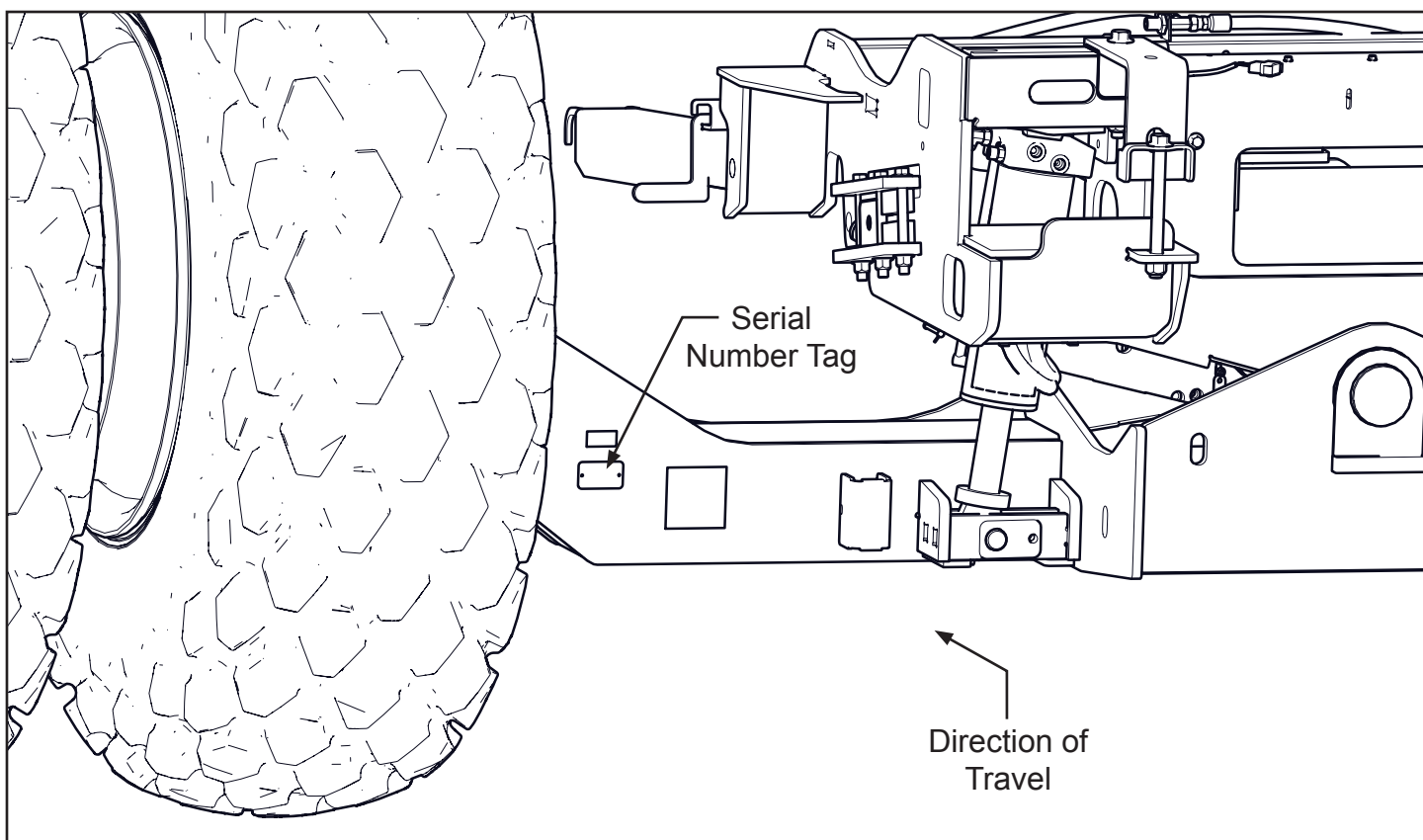
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## Model and Serial Number



The serial number tag is located on the left side of the undercarriage facing the rear of the combine. Write the serial number and the model number of the leveling system and combine on the lines provided. It is important to reference these numbers when ordering parts or requesting technical support. We suggest that you give the leveling system serial number to your John Deere dealer to be kept with their combine serial number records.

Leveling System Model Number	2965H
Leveling System Serial Number	2965H-
Combine Model Number	
Combine Serial Number	

## Maximum Header Weights

2965H	6,500 lbs
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Hillco does not guarantee any non-John Deere header applications and will not be responsible for any damage incurred from improper header configurations.

Please call Hillco Technologies if you have any questions regarding the 2965H or any other header configuration.

## Warranty Information

### **Warranty Void if not Registered!**

The product is to be registered by the purchasing dealership.

MAINTENANCE SERVICE- The operator's manual furnished to you with the equipment at the time of delivery contains important maintenance and service information. You should read the manual carefully and follow all maintenance and service recommendations. Doing so will result in greater satisfaction with your equipment and help to avoid service and warranty problems. Please remember that failures due to improper maintenance of your equipment are not covered by warranty.

# Warranty Policy



## **Statement of Limited Warranty** **(North American Harvest Products)**

Hillco Technologies, Inc. (Hillco) warrants its new products to be free from defects in material and workmanship for a period of twelve (12) consecutive months following the warranty start date.

The warranty start date for Hillco products invoiced by Hillco from October 1<sup>st</sup> through May 31<sup>st</sup> is the first day of June following the Hillco invoice date, or the first date of use, whichever is earliest. For Hillco products invoiced by Hillco from June 1<sup>st</sup> through September 30<sup>th</sup> the warranty start date is the date of invoice. Once the warranty period has begun, it cannot be stopped or interrupted.

Hillco's obligation under this warranty shall be limited to repairing or replacing, free of charge to the original purchaser, any part that, in Hillco's judgment, shows evidence of such defect. Hillco additionally agrees to repair, at no cost to the original purchaser, any physical damage to the product to which the Hillco product is directly attached provided that the damage is directly attributable to a defect in the design or manufacture of the Hillco product, as determined by Hillco, and that the damage occurs during the effective warranty period of the Hillco product.

Hillco warrants genuine Hillco replacement parts and components to be free from defects in material and workmanship for a period of ninety (90) consecutive days following the Hillco invoice date, or the remainder of the original equipment warranty period, whichever is longer.

### **Limitations to Warranty**

This warranty does not cover:

- 1) Any product damaged by accident, abuse, misuse, negligence, or improper maintenance.
- 2) Any unauthorized product alteration or modification.
- 3) Any unauthorized repairs made with parts other than genuine Hillco parts unless specifically authorized by Hillco.
- 4) Any repairs performed by anyone other than Hillco or an authorized Hillco dealer unless specifically authorized by Hillco.
- 5) Any claims directly resulting from improper installation, except those installations performed by Hillco.

### **Warranty Procedure**

A Hillco Warranty Registration Form must be fully completed and returned to Hillco within 30 days of sale of the product to the retail customer or the first day of use, whichever is earlier.

All warranty claims must be submitted on a fully completed Hillco Warranty Claim Form.

All warranty work must be performed, and claims submitted, within thirty (30) days of the occurrence of the claim and within the warranty period.

All parts removed during warranty repair should be held for a period of sixty (60) days after the warranty claim has been submitted to Hillco.

Hillco reserves the right to either inspect the product at the original retail purchaser's location, or the authorized Hillco dealer's location; or require it to be returned to Hillco, transportation charges prepaid, for inspection.

### **Limitation of Liability**

Hillco makes no express warranties other than those, which are specifically described herein. Any description of the goods sold hereunder, including any reference to buyer's specifications and any descriptions in circulars and other media published by Hillco is for the sole purpose of identifying such goods and shall not create an express warranty that the goods shall conform to such description.

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED.** There are no implied warranties of merchantability or fitness for a particular purpose. This warranty states Hillco's entire and exclusive liability and buyer's exclusive remedy for any claim for damages in connection with the sale or furnishing of Hillco products, their design, suitability for use, installation, operation, or for any claimed defects herein. **HILLCO WILL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, NOR FOR ANY SUM IN EXCESS OF THE PRICE RECEIVED FOR THE GOODS FOR WHICH LIABILITY IS CLAIMED.**

No representative of Hillco nor any dealer associated with Hillco has the authority to change the items of this warranty in any manner whatsoever, and no assistance to purchaser by Hillco in the repair or operation of any Hillco product shall constitute a waiver of the conditions of this warranty, nor shall such assistance extend or revive it.

Hillco reserves the right to make improvements in design or changes in specifications at any time, without incurring any obligation to owners of units previously sold.

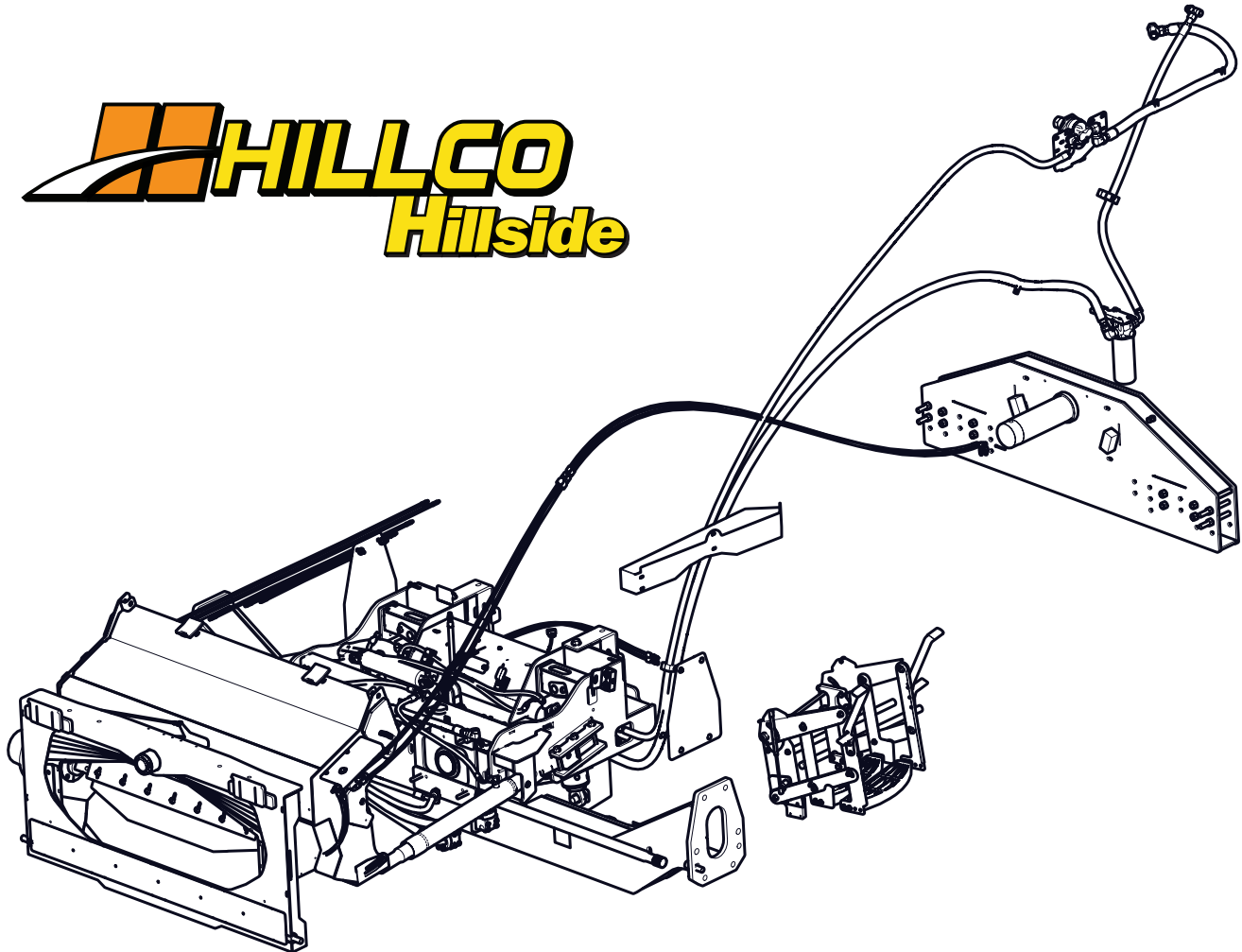
D-041201LJH01

## Introduction

Thank you for choosing the Hillco Technologies' Hillside Leveling System to compliment your farming operation. This product has been designed and manufactured to meet the needs of farmers wanting to increase the performance of John Deere WTS combines.

Safe, efficient and trouble free use of your Hillside Leveling System requires that you, and anyone else who will be operating or maintaining the leveling system, read and understand the safety, operation, and maintenance information contained in the Operator's Manual.

If extra copies of the operator's manual are needed, contact Hillco at 1-800-937-2461 or download it from Hillco Technologies' website at [www.hillcotechologies.com](http://www.hillcotechologies.com)



Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Hillco dealer or Hillco if you need assistance or information at 1-800-937-2461.

**OPERATOR ORIENTATION** – The directions left, right, front, and rear, as mentioned throughout this manual, are as seen from the combine operator's seat and facing in the direction of forward travel.

### SAFETY ALERT SYMBOL



This Safety Alert symbol means  
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

The Safety Alert symbol identifies important safety messages on the Hillco Leveling System and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

### Signal Words

Note the use of the signal words DANGER, WARNING, and CAUTION with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

**DANGER** - An immediate and specific hazard, which WILL result in severe personal injury or death if the proper precautions are not taken.

**WARNING** - A specific hazard or unsafe practice, which COULD result in severe personal injury or death if proper precautions are not taken.

**CAUTION** - Unsafe practices which COULD result in personal injury if proper practices are not taken, or as a reminder of good safety practices.



## Operation Safety

1. Read and understand the Operator's Manual and all safety labels before operating the leveling system.
2. Make sure that all controls are in the manual position before starting the combine.
3. Clear the area of all bystanders, especially children, before starting the leveling system and during operation.
4. Make sure all safety shields are in place before operating the combine. Never operate the machine with the shields removed.
5. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
6. Stay seated in the cab during operation.
7. Operate controls only when sitting in the seat of the combine.
8. To avoid engine damage, do not run the machine for extended periods of time when it is in the leveled over position.
9. Always travel at a safe speed. Use caution when making turns or traversing ditches.
10. The leveling system is equipped with a maximum level warning lamp. This lamp indicates when the machine has reached its maximum leveling capability. There are restrictions as to tread width and tire selection for combines used in harvesting slopes greater than the maximum leveling capability of the leveling system.
11. The use of after-market grain tank extensions is prohibited from use on combines equipped with Hillco Leveling Systems.
12. Level Limit Stops should be used on combines that rely on the limit switches to stop the leveling prematurely to prevent sheet metal damage.

## Hydraulic Safety

1. Do not search for high-pressure hydraulic leaks without hand and face protection. A tiny, almost invisible leak can penetrate skin, thereby requiring immediate medical attention.
2. Use cardboard or wood to detect leaks – never your hands!
3. Before inspecting the hydraulic system of the leveling system, install the safety stops.
4. Before operating the leveling system, ensure that there are no obstructions between the chassis and the carriage.
5. Maintain proper hydraulic fluid levels.
6. Ensure all fittings and hoses are in good repair.
7. Do not make any repairs to the leveling system hydraulic system including: valves, hydraulic hoses, adapters, pumps, manifolds, or reservoirs without first contacting your authorized Hillco dealer.



## **Service and Maintenance Safety**

1. Review the Operator's Manual and all safety items before servicing or maintaining the leveling system.
2. Place the Auto/Off/Manual leveling switch in the "Off" position, stop the combine engine, wait for any moving parts to stop, block the tires, the header, and the cylinder areas before servicing, repairing, adjusting, or maintaining the leveling system.
3. Hydraulic oil is under pressure. Use caution when dealing with the hydraulic system.
4. Keep hands, feet, clothing and hair away from all moving and/or rotating parts.
5. Clear the area of bystanders, especially children, when carrying out any maintenance, repairs or making any adjustments.

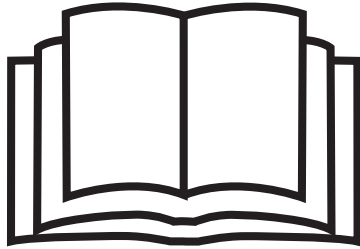
## **Highway Operation and Transport Safety**

1. Check with local authorities regarding combine transport on public roads. Obey all applicable regulations and laws.
2. Check clearance, elevations and widths of combine for travel near power lines, bridges, trees, etc.
3. Make sure the Auto/Off/Manual leveling toggle switch is in the "Off" position for all transport and highway travel situations.
4. Always travel at a safe speed. Use caution when making corners or meeting traffic.

## Safety Labels

Familiarize yourself with the location of all safety labels. Read them carefully to understand the safe operation of your machine.

### READ OPERATOR'S MANUAL SYMBOL



Decals, which display the Read Operator's Manual symbol, are intended to direct the operator to the Operator's Manual for further information regarding maintenance, adjustments and/or procedures for particular areas of the Leveling System. When a decal displays this symbol refer to the Operator's Manual for further instructions.

### TO APPLY NEW OR REPLACEMENT LABELS

1. Make sure the label area is smooth by removing any debris such as dirt or old labels.
2. Wash the area with soap and water and then dry it thoroughly.
3. After the area has completely dried, peel the backing off the safety label and place it onto the cleaned area.
4. Make sure all areas of the label have adhered to the machine by pressing down on the entire face of the label, including the corners.

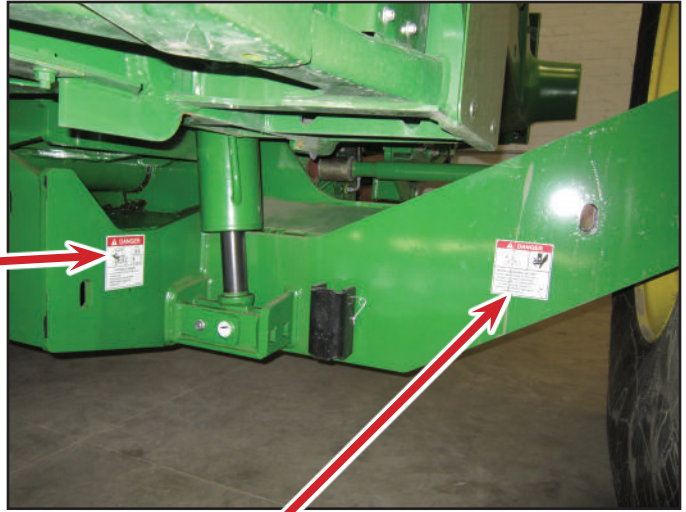
**! DANGER**



**HYDRAULIC HAZARD**

- Loss of hydraulic pressure may cause combine to tip.
- Read operator's manual before disconnecting any hydraulic components.

LL20-100788



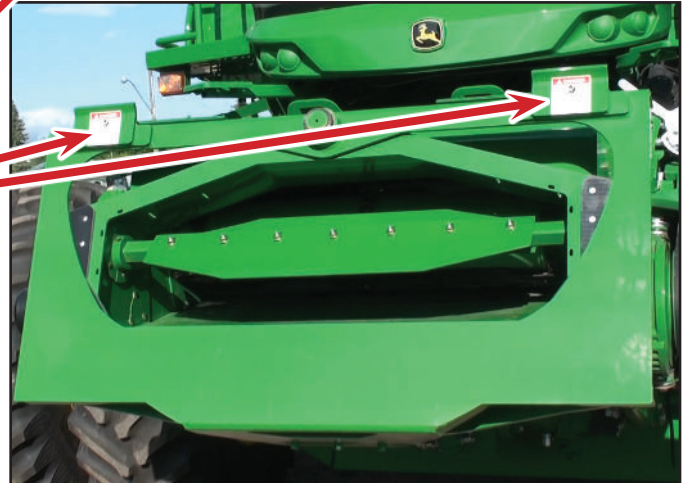
**! DANGER**



**PINCH POINT HAZARD**

- Keep hands, feet and body away from moving parts.
- Do not stand or climb on machine when operating.
- Hazard occurs during leveling and header trim.

LL20-100784



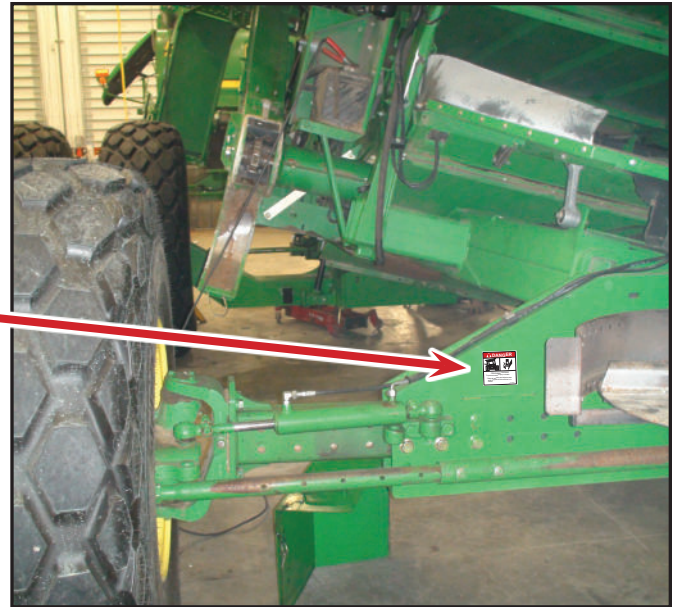
**! DANGER**



**CRUSHING HAZARD**  
To prevent serious injury or death:

- Keep all persons and objects clear while any part of this machine is in motion.

LL20-100783



**! CAUTION**

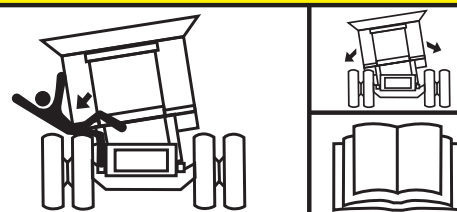


**MOVING STEP HAZARD**  
Bottom step lowers and retracts upward.  
Use caution when using ladder.

LL20-100785



**! CAUTION**



**LEVELING SYSTEM HAZARD**

- This machine is equipped with a leveling system.
- Combine chassis moves independent of carriage.
- Read operator's manual and be aware of hazardous areas at all times.

LL20-100787

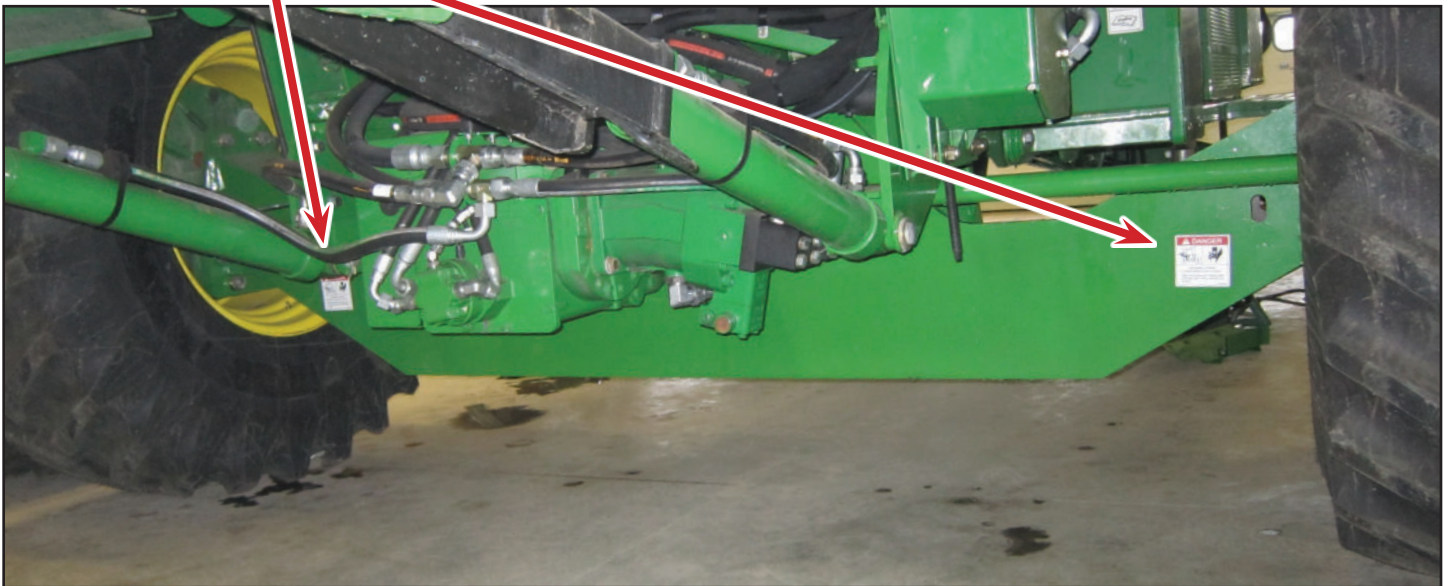
**! DANGER**



**AVOID CRUSHING INJURY**  
 Install safety stops on the main leveling cylinders before performing repair or maintenance on the leveling system to prevent accidental tipping of combine chassis.



LL-143621



## Product Description



The Hillco Hillside Leveling System is designed for John Deere WTS Series combines. Hillco designed the Hillside Leveling System to maintain the combine's thrashing capacity and harvesting efficiency on contours of slopes up to 27%. This leveling system is designed to be installed with little modification to the combine.

The Hillside Leveling System tilts the combine's chassis laterally, automatically compensating for slopes up to 27% as it moves across sloping terrain. The thrashing platform remains level and allows both the combine and the operator to perform at maximum efficiency.

The leveling system uses a clinometer to sense the combine's chassis position in relation to "level". As the combine moves onto a slope, the chassis leans out of level and the clinometer senses the deviation and sends a signal to the controller. The controller opens the appropriate leveling valve. The leveling valve allows hydraulic oil to flow into the leveling cylinders. The cylinders tilt the combine's chassis to correct for the tilt, bringing the chassis back to level.

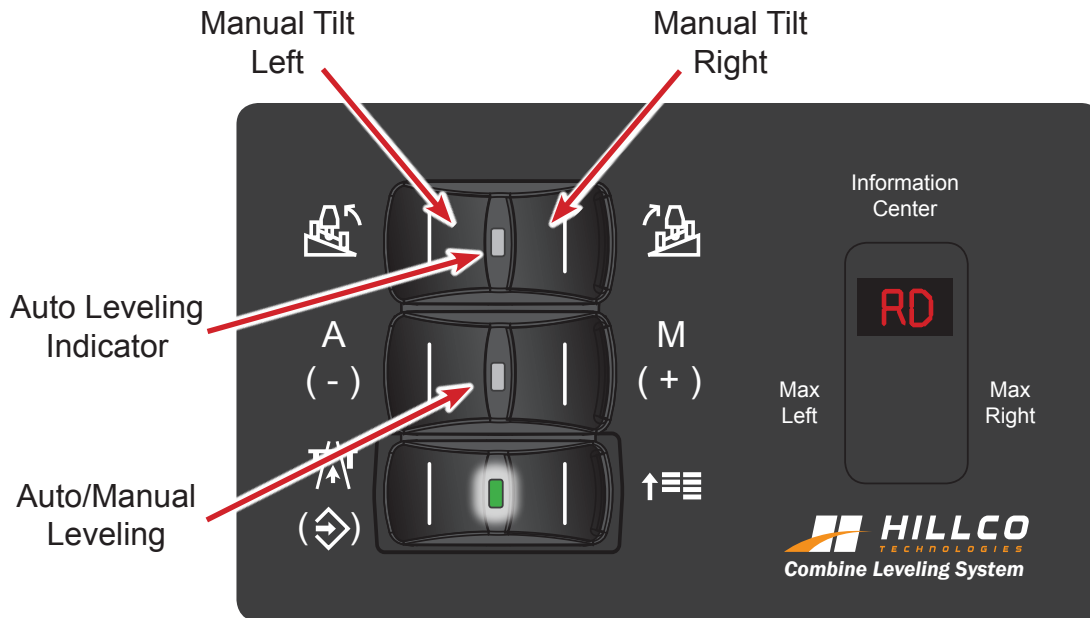
As the combine's chassis levels, the master header tilt cylinder displaces hydraulic oil to the header tilt cylinder, which counter-rotates the header to keep it parallel to the ground. The operator can manually adjust the header's position or, alternately, may use the combine's original lateral tilt electronics and sensor-equipped header to automatically compensate for varying ground contours.

## Controls and Components

### Leveling Control Switches

See the Operation section or Adjustments Section for more information regarding operation.

The leveling control switches are located on the control box mounted to the right window corner post.

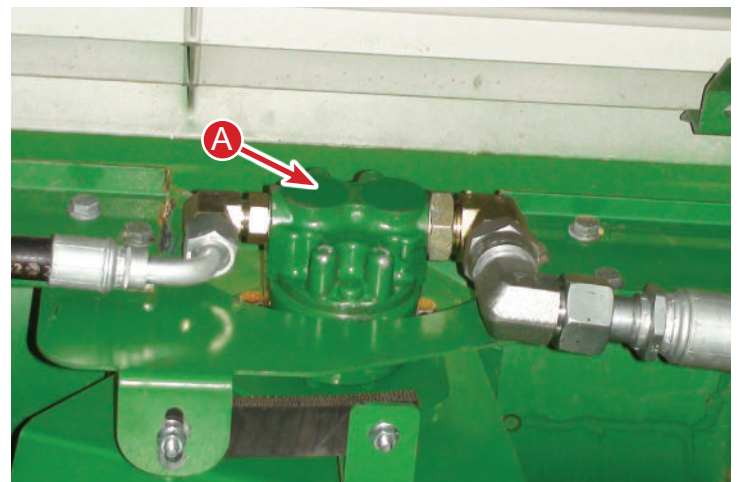


**Auto/Manual Leveling** — The Auto/Manual leveling button is used to toggle between the Automatic and Manual Modes. In Manual Mode the chassis will not rotate until initiated by the operator. In Automatic Mode, rotation of the chassis is initiated by the controller as dictated by changes in the slope. The operator can momentarily override the controller using the Manual Left and Right Buttons. The combine will return to level once the button is released.

**Manual Tilt Left and Manual Tilt Right** — These buttons allow the operator to rotate the chassis to the left or right as desired.

### Hydraulic Gear Pump

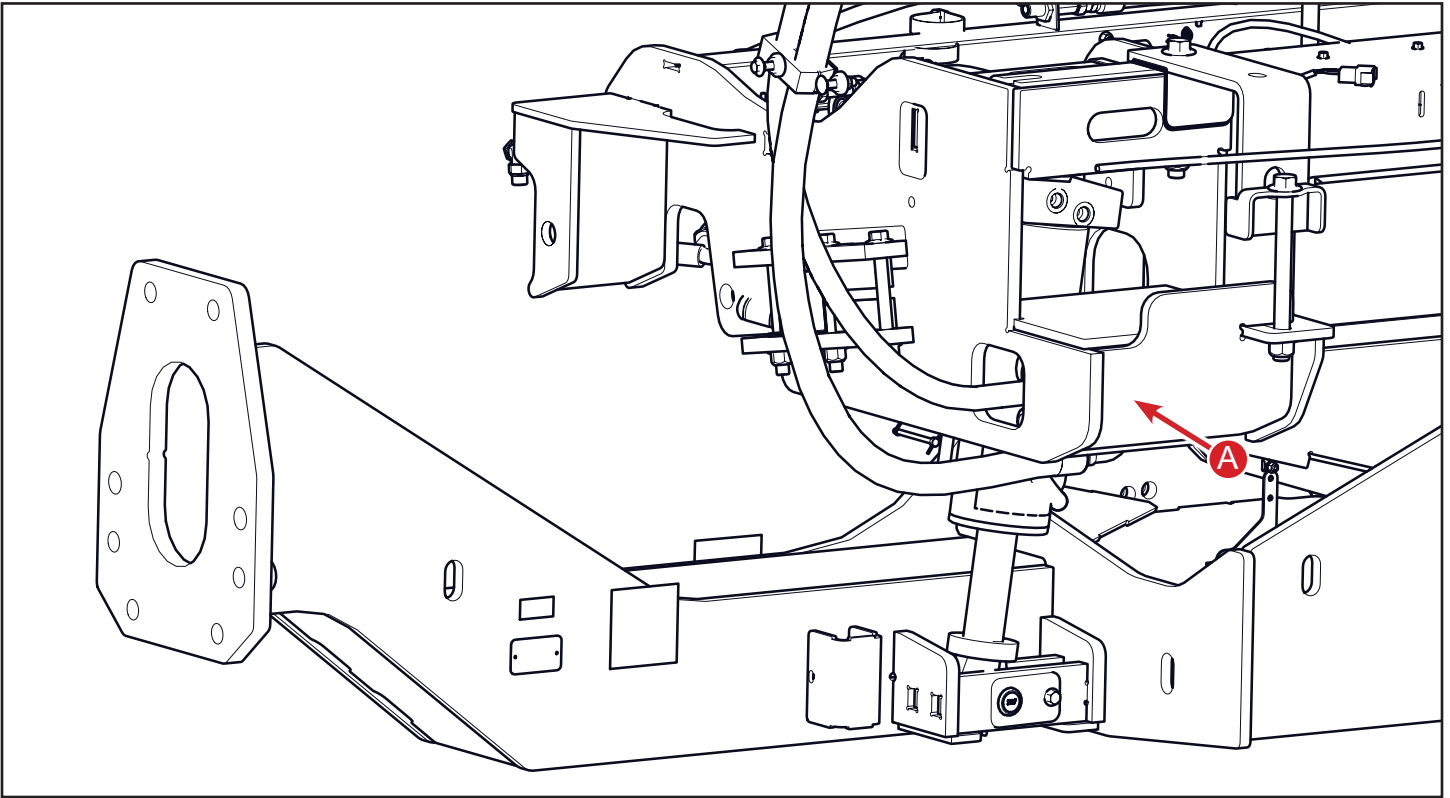
The 2965H has a Hydraulic Gear Pump (A) that is mounted directly to the output shaft of the combine's rear engine housing. It provides the necessary hydraulic flow to operate the leveling system's functions. The gear pump isolates the leveling system's hydraulic flow from the remaining combine's hydraulics.



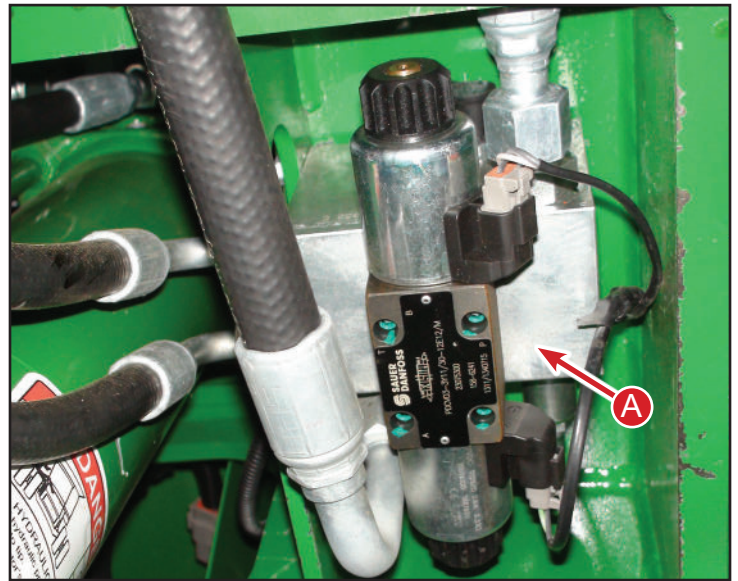
A - Gear Pump



## Leveling Manifold

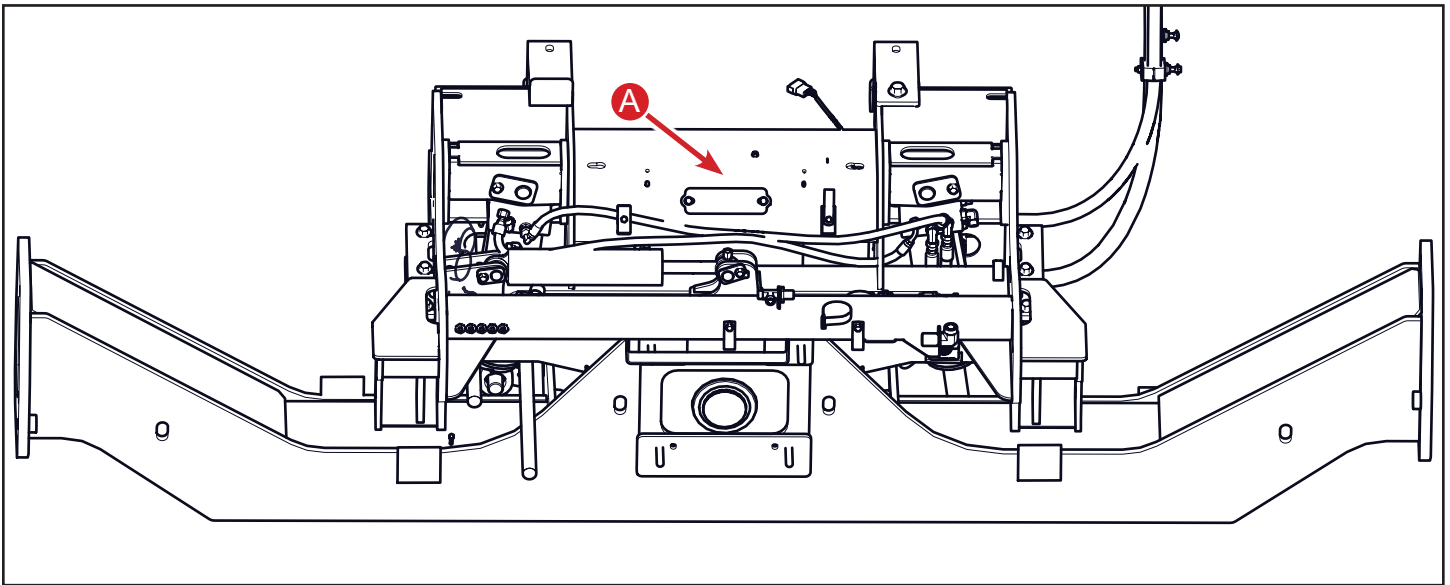


The leveling manifold (A) is located on the left side of the overcarriage. The operator electronically activates the manifold by either pushing the manual leveling buttons or having it in automatic mode. The manifold diverts hydraulic flow to the corresponding leveling cylinders to rotate the chassis.



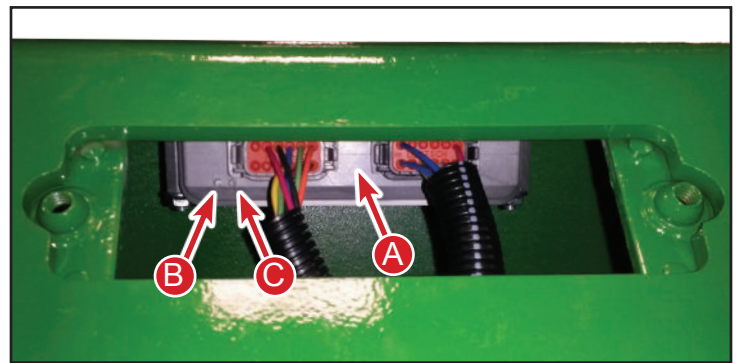
B - Leveling Manifold

## Leveling Controller



The electronic leveling controller (A) is located on the overcarriage of the leveling system behind an access door. The controller processes slope information and outputs signals to the hydraulic leveling valve. When auto leveling is activated the leveling controller levels the chassis up to a maximum slope of 27%.

There are two lights on the controller. When the green light (B) is on the system has power. The system is key hot and gets it's power from the power strip in the cab. The other light is a red light (C). If it is blinking controller is experiencing a fault. Contact Hillco if the red light is blinking.



C - Leveling Controller



## Overcarriage Position Indicator

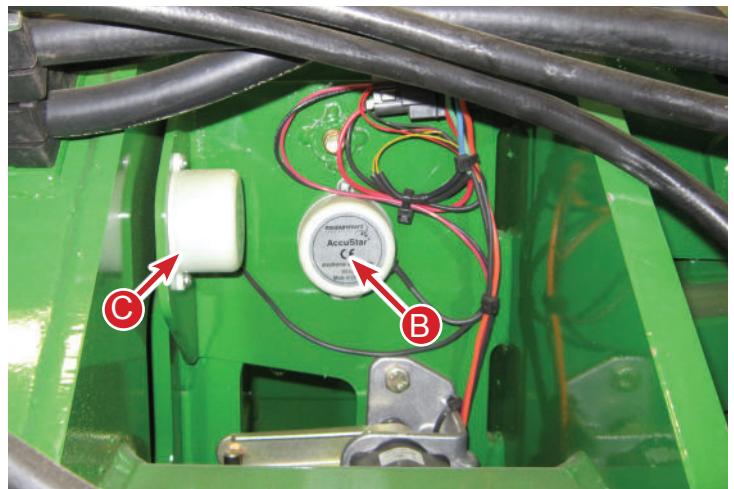
Attached to the overcarriage and undercarriage is the position indicator (A). The position indicator outputs a signal to the controller of the overcarriage position relative to the undercarriage. This also acts as a maximum level indicator. When the combine is nearing maximum level the controller reduces the amps to the leveling valve decreasing the hydraulic flow. This provides for smooth leveling when achieving maximum level.



A - Overcarriage Position Sensor

## Slope Sensing Clinometer

Located on the overcarriage near the Overcarriage Position Indicator is the Slope Sensing Clinometer (B). This clinometer outputs a signal to the controller. This output is a value that tells the controller the chassis' position relative to level.



B - Side to Side Clinometer  
C - For/Aft Clinometer

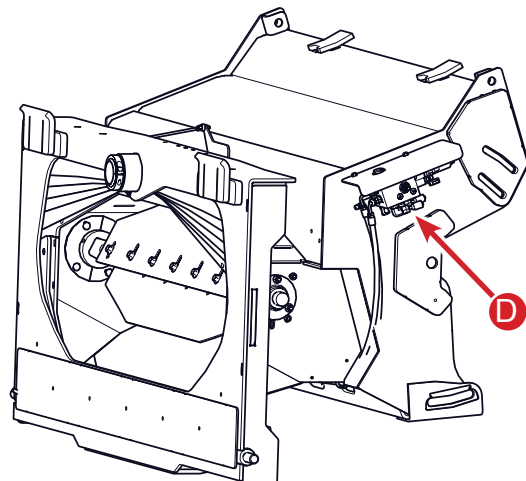
## Rear Wheel Assist Clinometer

Located by the side to side slope sensing clinometer is a for/aft slope sensing clinometer (C). This clinometer signals an alarm that is displayed on the monitor when the combine is pointed down a hill that is greater than 20% and the rear wheel assist is engaged.

## Header Tilt Manifold

Located on the left side of the feeder house is the lateral tilt manifold (D). This manifold diverts flow to the cylinder in the feeder house pivoting the header. The hydraulic valve fully integrates with the combine's electronics to provide auto lateral tilt. If the combine was originally equipped with Contour Master then the stock valve is used to control the header tilt.

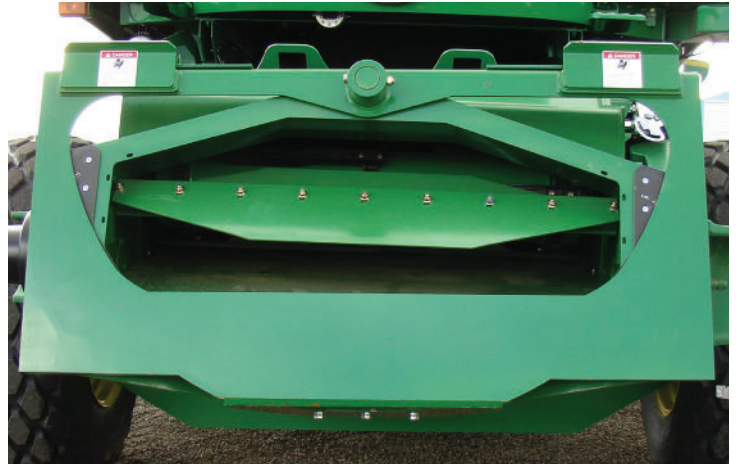
Refer to the Lateral Tilt Flow Control Adjustment for adjusting the rotation speed.



D - Header Trim Manifold

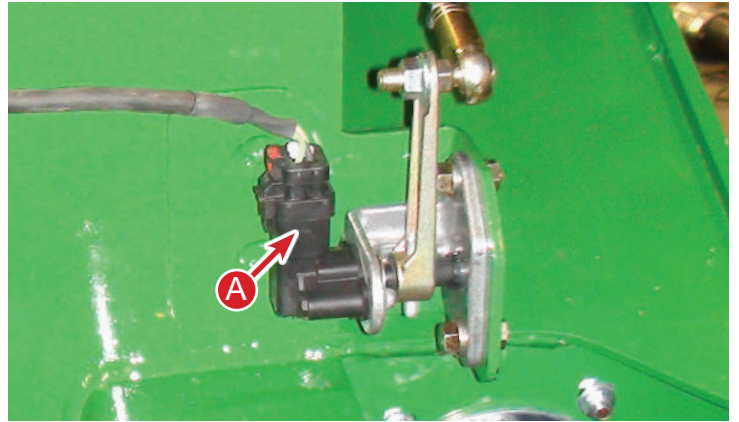
## Transition

The transition is added to the front of the feeder house to pivot the header and allow it to follow the contour of the ground.



## Header Position Sensor

Located on the right side of the transition is the header position indicator. It utilizes a linkage between the face plate and the transition to indicate the header position relative to the combine. The position is then displayed in the corner post of the cab.



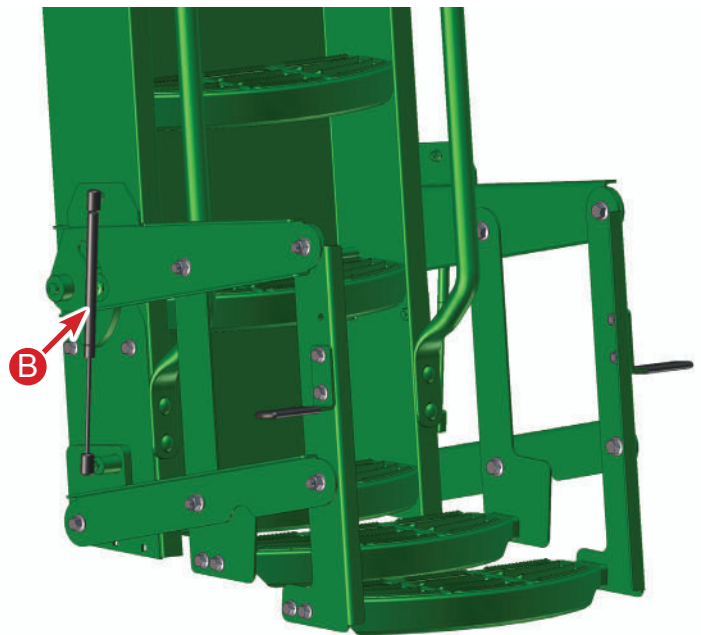
A - Transition Position Indicator

## Retractable Ladder Step

All Hillside combines are equipped with retractable bottom steps.

If the ladder does not extend and retract properly check the fasteners in all of the pivot locations and make sure they are not over tightened. Over tightening of these fasteners will cause the ladder to bind.

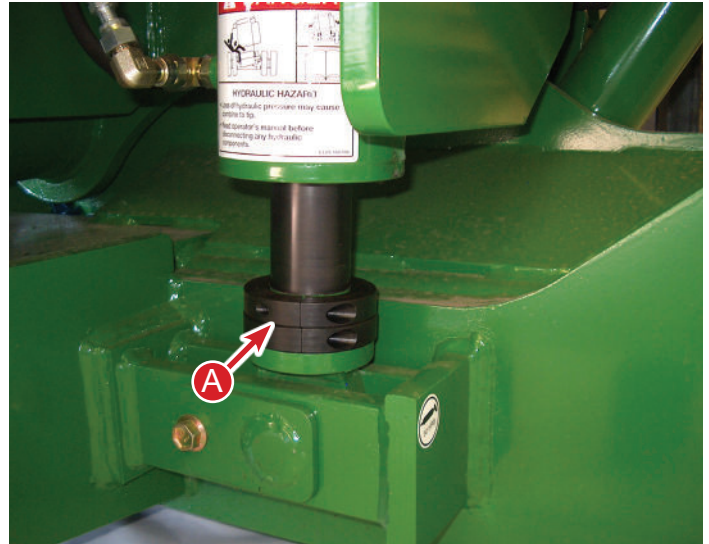
Make sure that the gas-charged struts (B) keep the ladder fully retracted. Replace the struts if they appear to be weak. If the ladder does not fully retract, permanent damage may occur during field operation.



B - Gas-charged Struts

## Mechanical Leveling Cylinder Stops

Some tire configurations may come into contact with the side panel when the combine is leveled over. The maximum leveling calibration must be properly set and cylinder stops inserted to fill the distance on the cylinder from max level to the collar. This will prevent damage in the event of hydraulic or electrical failure. To set the stops level the combine over both directions until there is 1" between the tire and the closest contact point. Add cylinder stops to prevent the cylinder from over-leveling the combine. Contact Hillco for these cylinder stops.



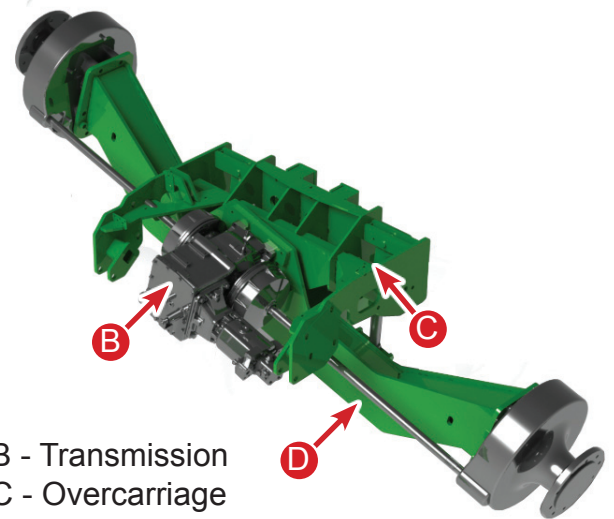
A - Mechanical Leveling Cylinder Stops  
5/8 inch - Part # MC-137251  
1/8 inch - Part # MC-137501

## Carriage

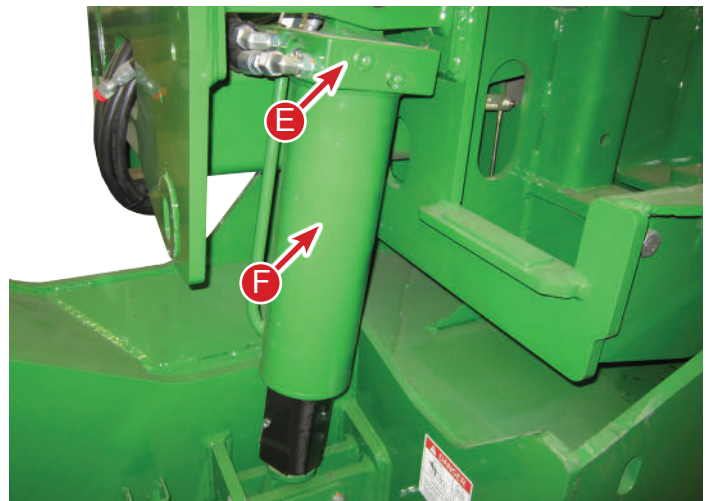
The carriage is designed to support the combine's chassis while allowing the combine to rotate through full range of motion. It consists of an undercarriage and an overcarriage. The drive wheels, final drives, and transmission are mounted to the undercarriage. The overcarriage bolts to the combine's axle and chassis. The leveling cylinders connect to the overcarriage and the undercarriage. The carriage raises the combine chassis eight inches to prevent the tires from coming into contact with the side panels.

## Hydraulic Leveling Cylinders and Counter-Balance Valves

There are two leveling cylinders located on the rearward side of the leveling system's carriage. These cylinders are pressurized by the leveling hydraulic valve to tilt the combine chassis to correct for slope changes. Both leveling cylinders are equipped with built in hydraulic counter-balance valves that positively lock the oil into the cylinders until a pressure signal is sent from the hydraulic leveling valve. These counter-balance valves lock the chassis position in the event of hydraulic hose failure. The counter-balance valves can be adjusted if needed.



B - Transmission  
C - Overcarriage  
D - Undercarriage  
E - Counter-Balance Valve  
F - Leveling Cylinders



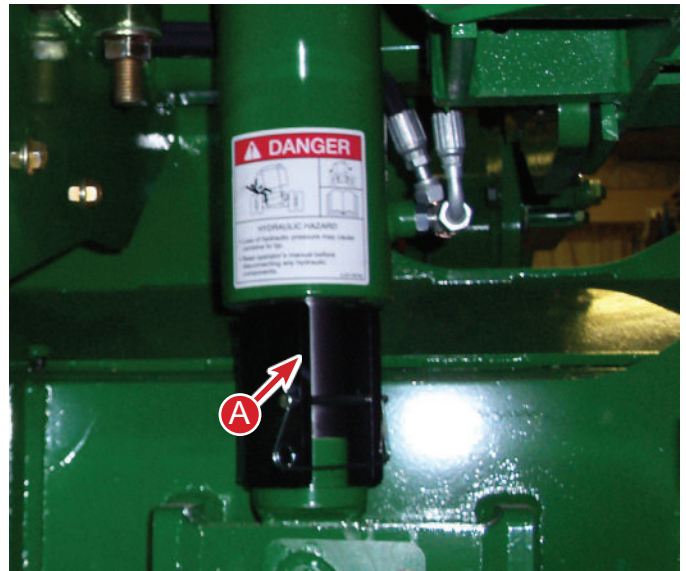
## Leveling Cylinder Safety Stops

When the leveling cylinder safety stops are installed on the leveling cylinders, the carriage cannot rotate. The stops must be installed before working on or around the leveling system and when hauling the combine. It is recommended that the stops be inserted during long-term storage. When the stops are not being used, they should be stored on the mount next to the leveling cylinder.

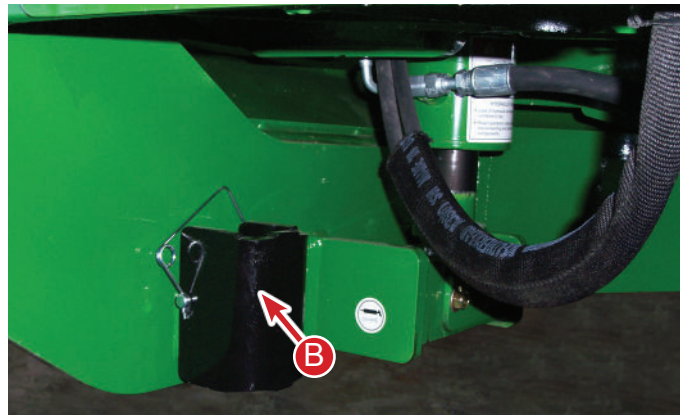


### WARNING!

Install the cylinder stops before working on or around the leveling system. Failure to install the cylinder stops before working on or around the leveling system may result in sudden chassis rotation.



A - Cylinder Safety Stops  
B - Cylinder Safety Stop Holder



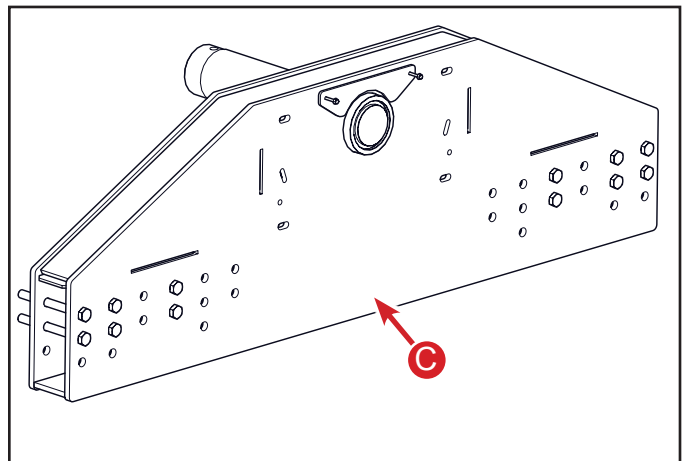
## Drop Axle

The drop axle (C) raises the rear of chassis to match the height change due to the leveling carriage. The drop axle allows the rear axle to match the carriage's range of motion.



### IMPORTANT!

Because of the increased rotation of the rear axle it is necessary to space the rear wheels out to avoid interference with shields.



C - Drop Axle

# Header Tilt Controls and Components

## Header Tilt Control Switches

The manual header tilt switch is located in the hydro handle and is used to manually control the header tilt angle. Consult your John Deere Operator's Manual for explanation of the Contour Master operation.

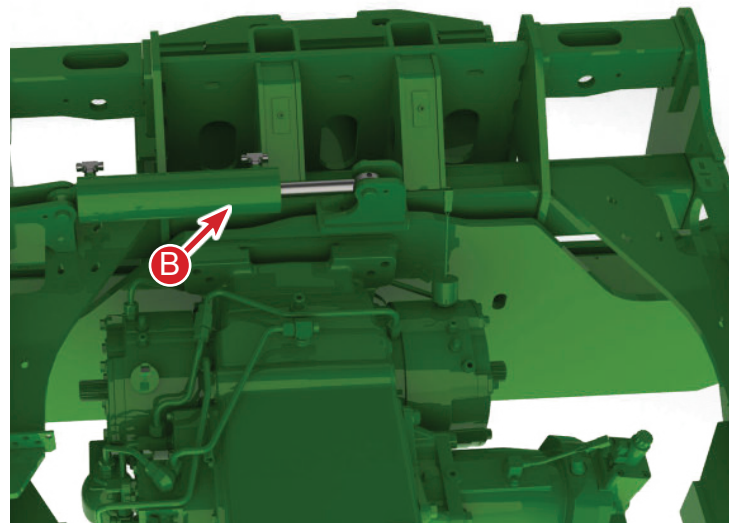


A - Header Trim Switch  
B - Master Cylinder

## Header Tilt System

The header tilt hydraulic system consists of the header tilt control valve, master cylinder, slave cylinder, flow control, and relief valve. As the combine levels, the carriage extends or retracts the master cylinder, which sends oil to the slave cylinder. The slave cylinder counter-rotates the header. No electronic function is required for this action to occur.

The operator can manually trim the header angle with the header trim switch on the hydro control handle. In the Contour Master mode, the header angle is automatically trimmed by activating the lateral tilt valve, which is coupled to the master/slave circuit. In case the header contacts the ground, a relief valve prevents damage to the header and feeder house.



C - Slave Cylinder

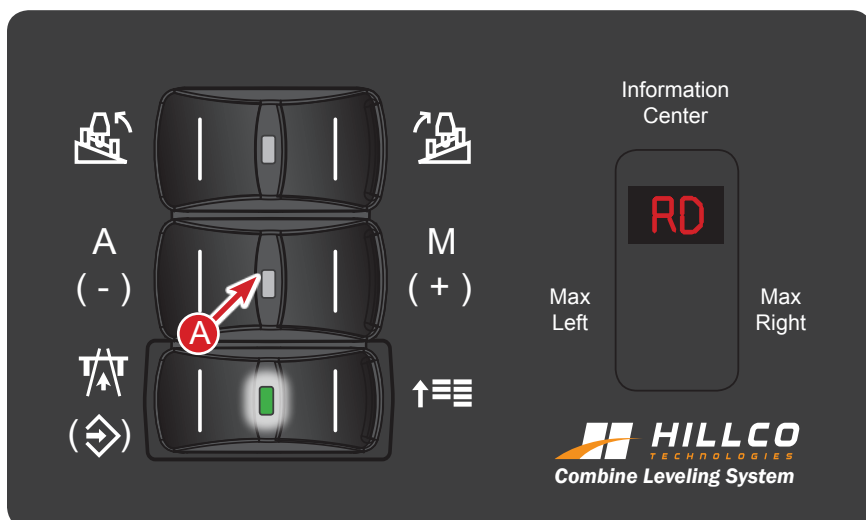
## Operation



### CAUTION!


Before operating the leveling system, ensure that the leveling cylinder safety stops are not installed on the leveling cylinder. Operating the system with the safety stops installed may cause damage to the carriage, leveling cylinders, or stops.

## Leveling System Controls



### CAUTION!

Do not unload grain from the combine while operating the Leveling System in Automatic Mode. The chassis may tilt unexpectedly and cause damage to the unloading auger.

**ROAD MODE:** Whenever the system powers up it defaults to Road Mode. RD is displayed in the Information center readout. To exit Road mode hold the  button for 3 seconds. When in Field mode and you want to enter Road Mode hold the same button for three seconds.

**AUTOMATIC MODE:** Pushing the Auto/Manual Leveling switch (A) to the left will enter Auto Mode. The green light shows when the leveling system is in Auto Leveling Mode. An A will appear in the Information Center readout when in Auto mode.

When in Auto Mode controller monitors changes in slope and corrects chassis position to maintain a level chassis position. The Manual Tilt Left/Manual Tilt Right Leveling Buttons will override the automatic leveling controller while the switch is being pressed. Upon release of the switch, the leveling system will return to automatic leveling mode and search for level.

**MANUAL MODE:** Pushing the Auto/Manual Leveling Button to the right will enter Manual Mode. An M will appear in the Information Center readout. In Manual mode the Manual Tilt Left/Manual Tilt Right leveling switch will level the combine left and right. When the switch is released the combine chassis will maintain the current chassis position.

Refert to the Adjustments section for changing the max levels, level zero point, manual leveling speed and electrical diagnostics.



## Lateral Header Tilt / Contour Master

To tilt the header manually, depress the header tilt switch (A) on the left for tilt left, or on the right side for tilt right. The Hillco leveling system is fully compatible with John Deere's Contour Master lateral tilt electronics. To run the Contour Master functions refer to your combine operator's manual.



## Storage

When storing the combine between seasons, Hillco strongly recommends that the leveling cylinder safety stops are installed on the leveling cylinders. This will ensure that the combine does not settle during storage.

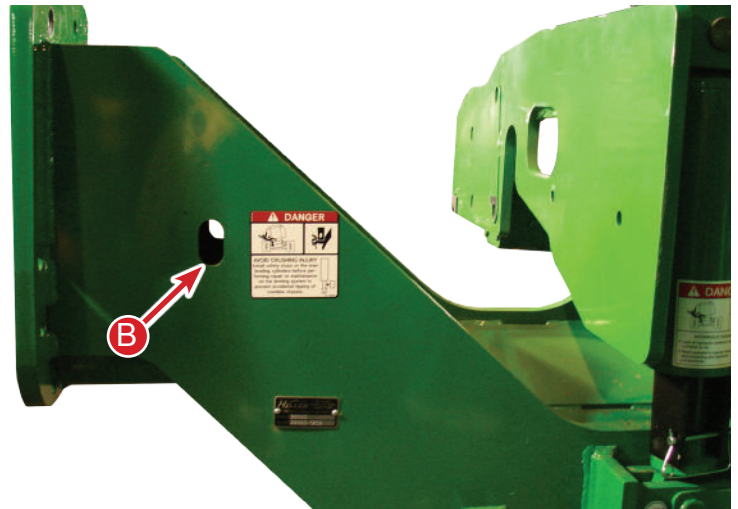


### CAUTION!

Before driving the combine into a building, ensure that the leveling system is in the road transport mode. This will ensure that the combine does not unexpectedly level. Unexpectedly leveling may cause damage to the building or the combine.

## Transporting Combine on a Trailer

Before loading the combine, switch the leveling system into manual mode and install the cylinder stops. This will ensure that there are not any unexpected weight shifts during the loading process. In addition to the Tie Down locations on the combine, Hillco provides T-hook slots (B) on the undercarriage for securing combine to the trailer.



### CAUTION!

Do not operate the leveling system with the ladder in the extended or 90° position otherwise ladder damage may result.

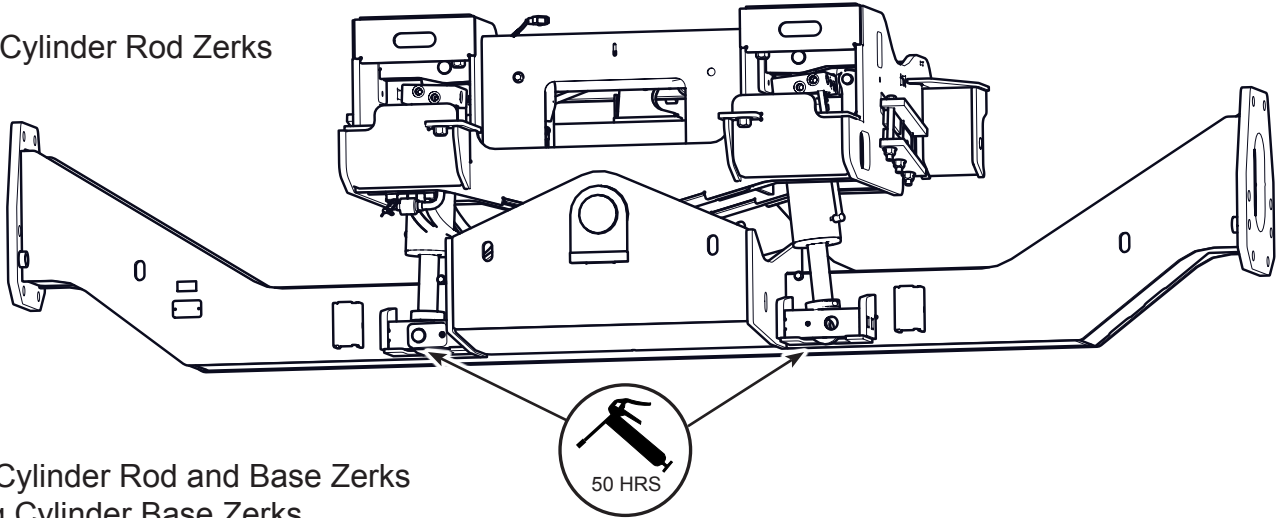
## Ladder Position

Operating the leveler with the ladder in the 90° position will damage the ladder. To provide increased operator access, Hillco has provided an alternative ladder position and installed a ladder stop. The ladder stop prevents the ladder from rotating into the extended or 90° position.

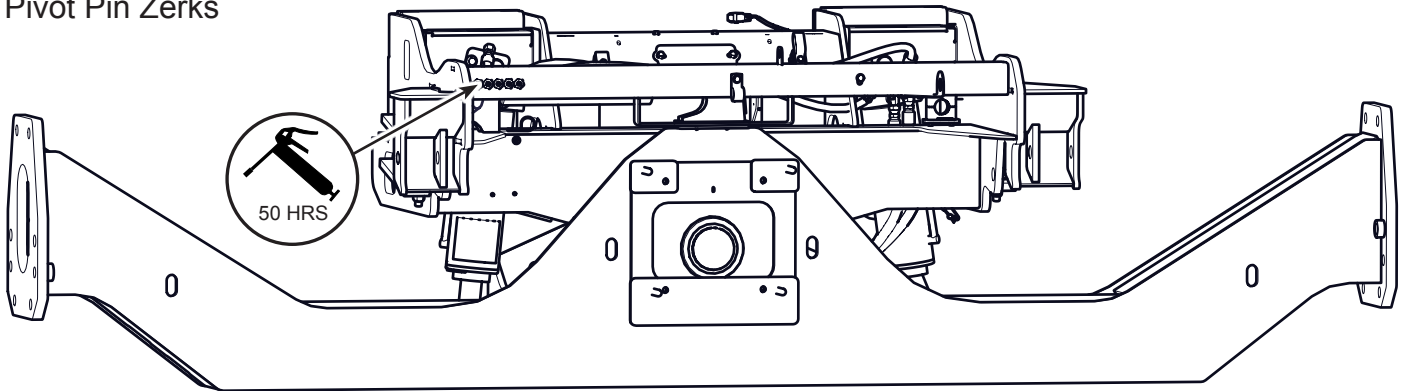
# Maintenance

Recommended Grease: NLGI Multi Purpose Grease

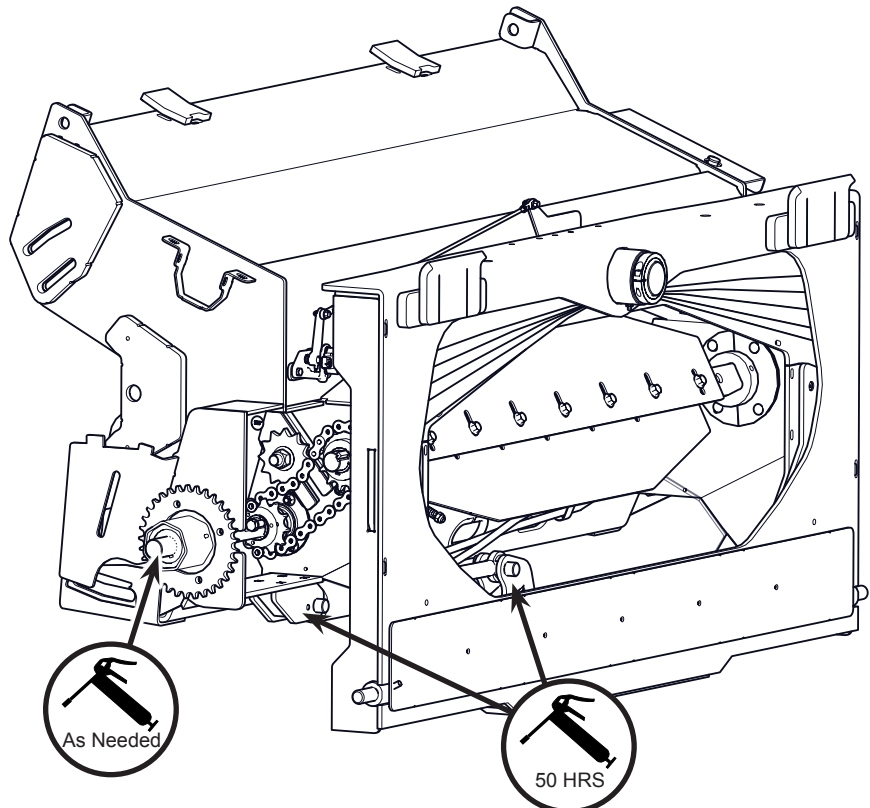
Leveling Cylinder Rod Zerks



Master Cylinder Rod and Base Zerks  
Leveling Cylinder Base Zerks  
Pivot Pin Zerks



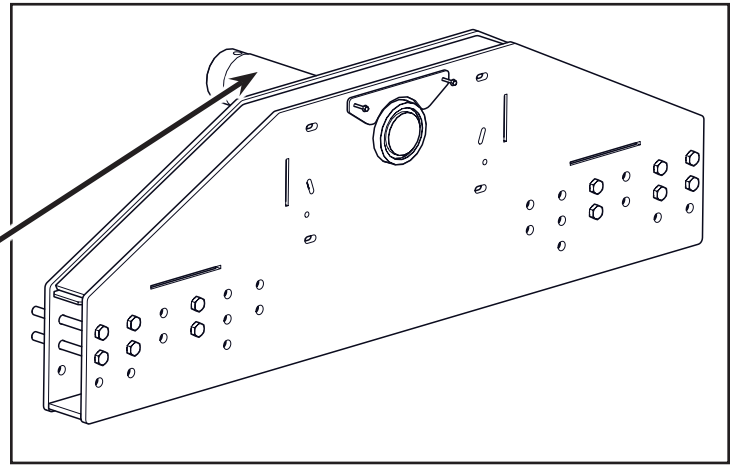
Paddle Beater Slip Clutch Zerks  
Slave Cylinder Base and Rod Zerks



**! IMPORTANT!**

It important to grease the paddle beater slip clutch frequently. It is a radial pin clutch and the grease lubricates the pins preventing damage.

Rear Axle Pivot (Refer to John Deere Operator's Manual for Service Interval). Grease using same zerk as was used with original axle.

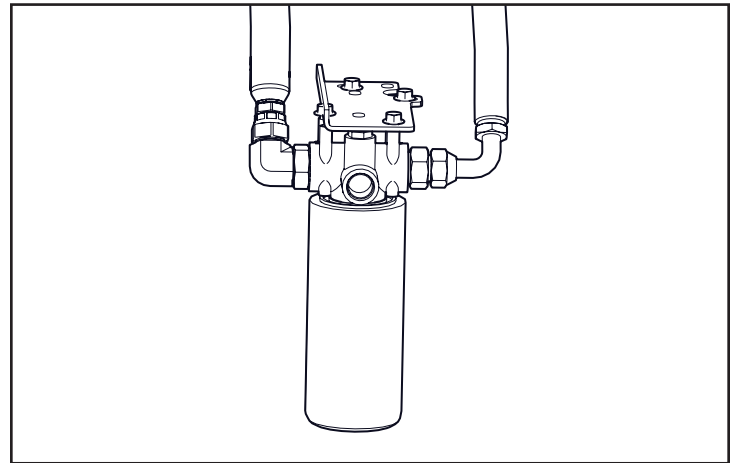


## Hydraulic Oil Filter

Located on the left side of the combine below the engine.

Replace the hydraulic oil filter every 400 hours. Replace with John Deere Filter Part Number AH128449.

Coat seal on new filter with oil. Hand tighten, then tighten 1/2 turn more.



## Driveline Maintenance

Standard PTO Style Drive Shafts - These drive shafts utilize a single cross at each end of the drive shafts. Grease zerks on both crosses and the zerk on the outer profile tube (at the slip joint) should be greased on 50-hour intervals.

Constant Velocity Drive Shafts - See the Constant Velocity Driveline Maintenance Guide at the end of this manual. Greasing CV drivelines at the correct time intervals is very important.



## 100 Hour - Annual Maintenance

### Inspect the following areas:

#### REAR AXLE

- Torque rear wheel bolts (Refer to Combine Operator's Manual)
- Steering hoses are properly routed and allow for rear axle rotation
- On combines equipped with a vertical chaff spreader they are adjusted so the spreader does not come in contact with the steering tie rods when leveling.

#### OVERCARRIAGE / UNDERCARRIAGE

- Torque all mounting bolts properly
- Hydro hoses routed properly
- Brakes are adjusted properly and pedals should depress no more than 1/2 way
- Brake lines are routed properly, secured and free of pinch and abrasion points

Mounting Bolt Location	Torque
Carriage to Chassis	M16 @ 235lb-ft M20 @ 175lb-ft
Drive Wheels	Refer to Combine Operator's Manual
Final Drive Mounting Bolts	475 lb-ft (oiled)
Transmission Mounting Bolts	235 lb-ft

#### HYDRAULICS

- Hoses cleanly and securely routed with no pinch or abrasion points
- Hydraulic Reservoir & Main Engine Gear Case are filled to the proper level
- Hydrostatic hose 4-bolt flange cap screws are tightened to proper torque
- No leaks in the hydraulic system
- Torque gear pump coupler to 130lb-ft
- Header lift hoses do not come in contact with the header lift mounts

Hose Size	Cap Screws Torque
-16	68lb-ft
-20	111lb-ft

#### ELECTRICAL

- Harnesses are cleanly and properly routed and secured without pinch or abrasion points
- Calibrate Maximum Leveling so that there is no less than 1" clearance around the drive tires
- Mechanical Leveling Stops are set so that there is no less than 1" clearance around the drive tires

#### TRANSITION

- Transition drive chains are properly tightened and sprockets are aligned.

#### FUNCTION CHECKS

- Combine responds properly to manual leveling switch (leveling direction matches button)
- Automatic Leveling System responds properly to changes in slope
- Clinometer has been zeroed and the combine returns to level in automatic mode
- Automatic Header Tilt system keeps the transition parallel to ground as the combine levels
- Manual Header Tilt system responds properly to switch and cycle time is set to 14 seconds Ladder pivots and locks into place
- Moving step retracts fully and operates smoothly
- Rear Wheels are properly spaced



## WARNING!

Failure to conduct these inspections may result in serious damage to the combine, leveling system or could result in injury.

## Adjustments

### Rear Axle Spacing

Bolt the axle extensions into the 2965H axle at the desired tread width.

### Transition Fore/Aft Adjustment Procedure

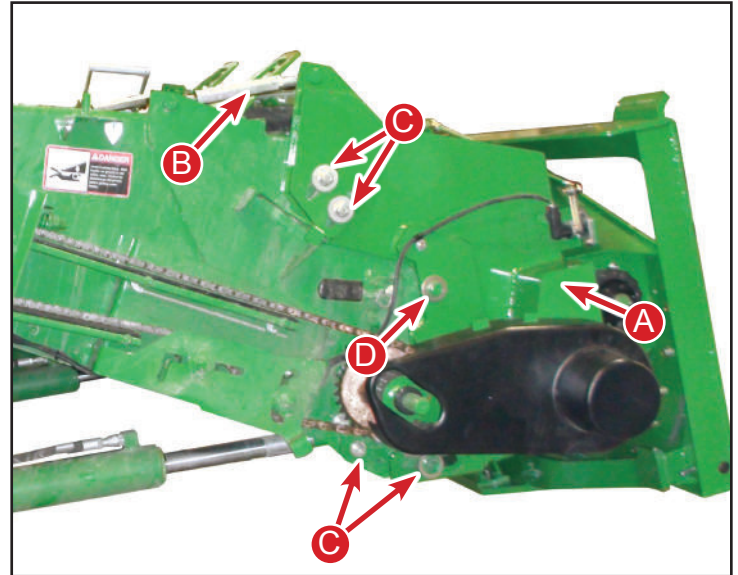
1. Loosen the clamping bolts and the pivot bolt on each side of the feeder house.
2. Loosen the jam nuts on the turnbuckles.
3. Loosen the chain tightener on the transition drive chain.
4. Adjust the turnbuckles until the desired header angle is achieved.
5. Tighten the jam nuts.
6. Tighten the clamping and pivot bolts to 153 lb-ft of torque.



**IMPORTANT**—Do not adjust the tilt frame with the header on the combine. Shut the engine off, set parking brake and remove key.



**IMPORTANT**—Failure to tighten the clamping bolts and pivot bolts to proper torque may cause damage to the turnbuckle mounts.



A - Transition  
B - Turnbuckle  
C - Clamping Bolts  
D - Pivot Bolts

### Lower Feeder Drum Stop Adjustment

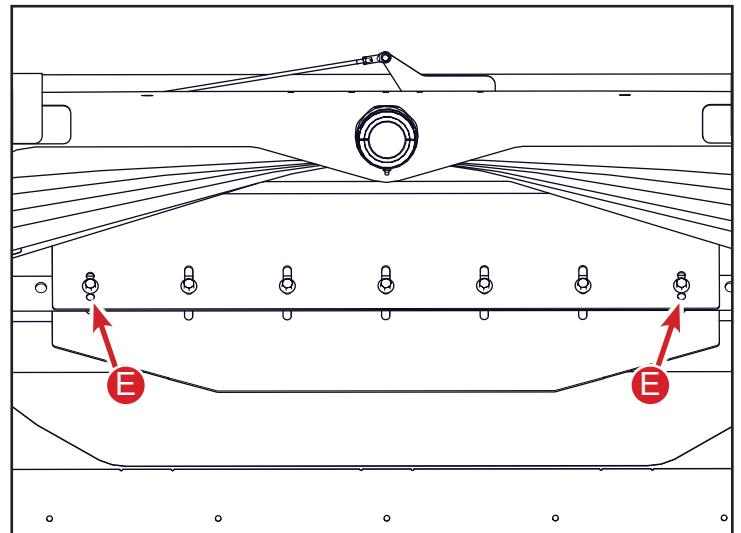
The Hillco leveling system does not change the feeder drum stop adjustment. Refer to the John Deere Operator's Manual for your combine for the feeder drum stop adjustment.



**IMPORTANT**—When adjusting the Fore/Aft tilt be sure to release the tension on the transition drive chain. Failure to release the tension may cause damage to the sprockets or chain.

### Paddle Beater Adjustment

The paddle beater paddles can be adjusted up and down depending on crop conditions. In thin crops the paddles should be in the down position. In thick heavy crops the paddles should be in the up position. To adjust, remove the two outside bolts (E). The inside 5 bolts are slotted so they just need to be loosened.



## Transition Drive Chain

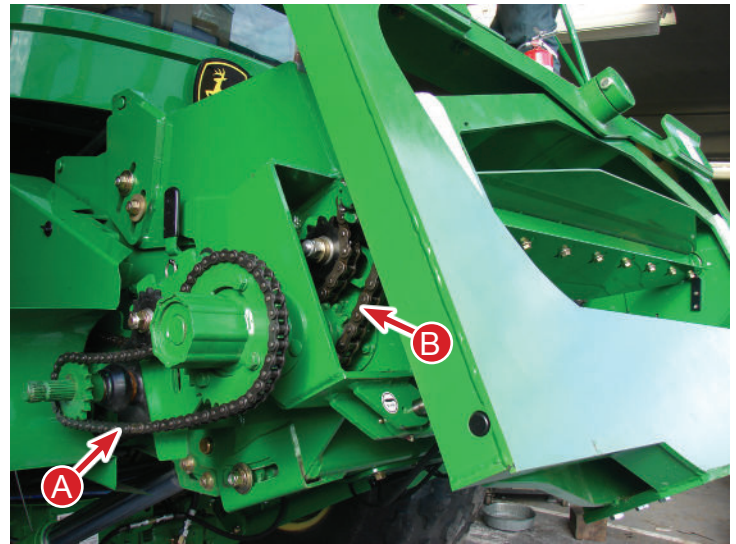
Tension transition drive chain so there is 1/2 inch deflection at A and B locations. Chain tension is maintained on both the 60-pitch (A) and 80-pitch (B) chains with idler sprockets. Both are located on the right side of the transition.

Check that the sprockets are all in proper alignment. Misalignment of these sprockets will cause premature wear of the sprockets and chain.

## Transition Slip Clutch

The transition slip clutch is preset at the factory so that damage will not occur to any of the transition drive components; it cannot be adjusted and will never require any adjustment.

In tough conditions if slip clutch is slipping additional grease may be required.



## Feeder House Removal

Refer to the John Deere WTS Technical Manual for steps on how to remove and re-install the feeder house.



## WARNING!

When removing the feeder house disconnect the hydraulic lines for the header tilt at the top of the feederhouse. Make sure feeder house is properly locked in the up position when disconnecting the hoses. Connect these hoses together if the combine will be leveled without the feeder house. If this is not done and the lines are just capped oil from the master cylinder has no place to go when the combine is leveled and failure will occur.

## Lateral Tilt Flow Control Adjustment

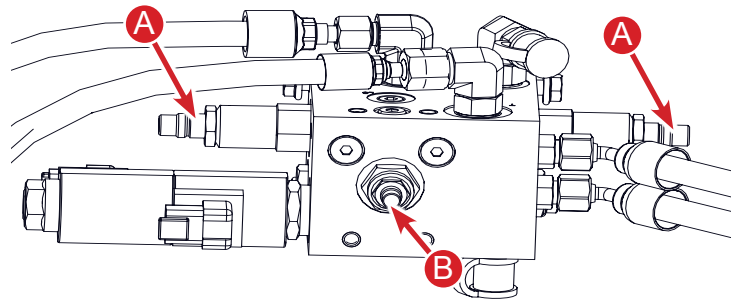
For 2965H Leveling Systems the lateral tilt flow control valve adjusts the speed at which the header rotates. The header should rotate at the chassis' rotation rate. The tilt speed is a compromise between manual tilt mode and automatic tilt mode. The rotation rate is set at the factory; however with larger header configurations it may be necessary to adjust the header's rotational rate.

To test the header rotation rate, push the tilt button to the left until the tilt frame is rotated to the left limit. Push the tilt button to the right until the tilt frame reaches its right limit. The cycle time should meet the specification of 22 seconds.

### Specification

*Left-to-Right Cycle Time-22 seconds*

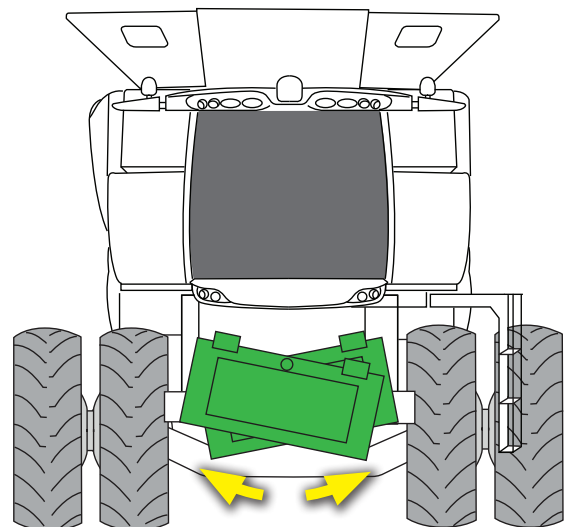
If the cycle time is shorter than the specification, turn the flow control set screw clockwise a quarter turn at a time until the cycle time meets the specification. If the cycle time is longer than the specification, turn the flow control screw counterclockwise a quarter turn at a time until the cycle time meets the specification. This specification ensures that tilt speed is adequate for manual operation. With some header configurations this tilt speed may cause the automatic mode to be unstable. Hillco recommends adjusting the Contour Master's sensitivity until it becomes stable. Refer to the combine's operators manual for Contour Master adjustments.



Located on left side of transition

A - Relief Ports

B - Flow Control



22 second rotation time from one side to other



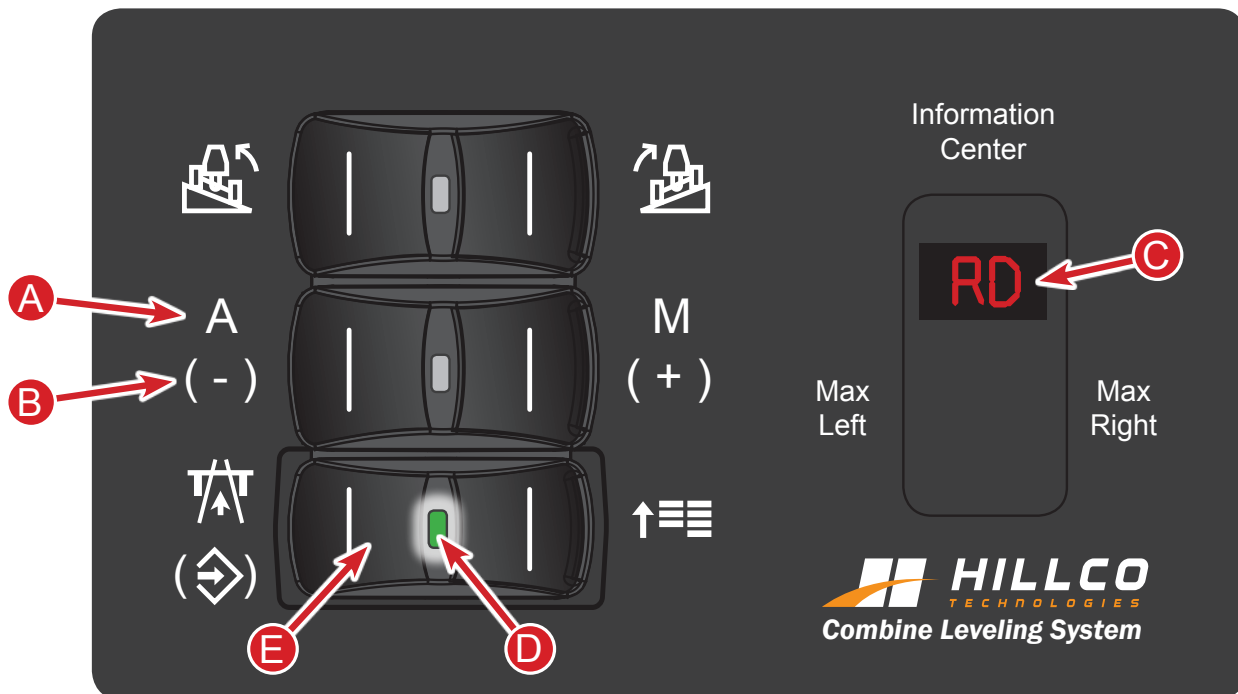
### IMPORTANT!

The pressure relief valve is pre-set at the factory. Changing the setting may cause damage to the tilt frame or hydraulic system. However, in very large header configurations, it may be necessary to change the setting. Contact your dealer to reset the relief valve.

## Electrical Adjustments

The controller allows for the operator to make adjustments and view electrical diagnostics. You can adjust the max level left and right, and level zero point. For diagnostics you can view the amps going to each leveling coil.

The control system consists of a CAN enabled switch panel and a 2 digit display. The switches have two modes, control and menu. The control mode functions (A) are shown by the upper icon to the side of the switch while the menu function (B) is shown in parentheses.

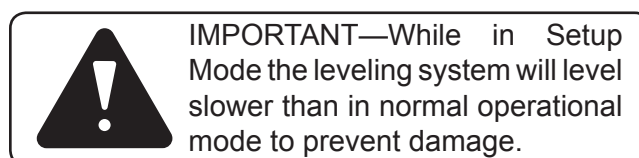


The two digit display (C) is used for the following:

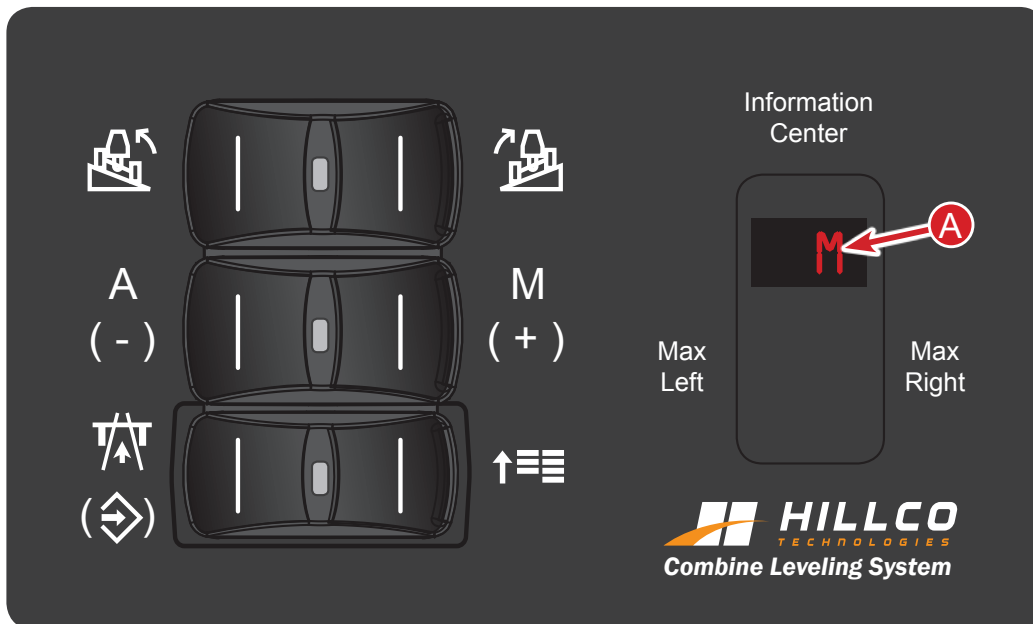
- Setup
- Diagnostics
- Error Notification

### Exiting Road Mode

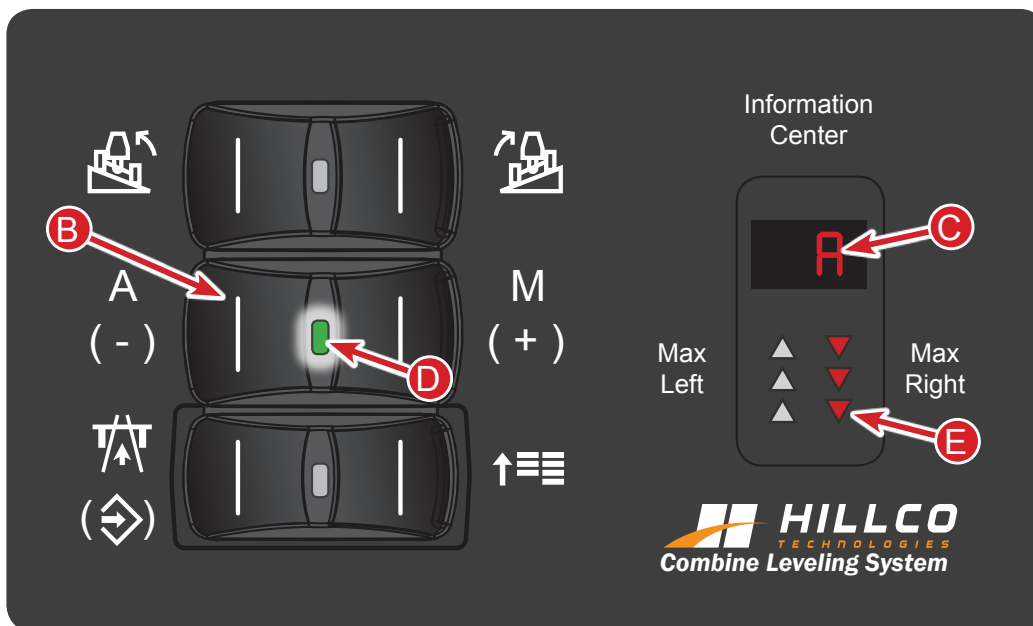
When the system first starts up it will automatically be in **ROAD MODE**. In road mode all function of the leveling system is disabled. Road mode is indicated by and “RD” displayed in the information center while a green light is shown on the bottom switch (D). To exit road mode press and hold the bottom switch (E) to the left until the status icon changes and green light turns off (About 3 seconds).







When Road mode has been disabled the system will be in manual mode. This mode is indicated by an "M" on the information center (A). At this point no LEDs should be illuminated and the leveling system can function in manual mode only.

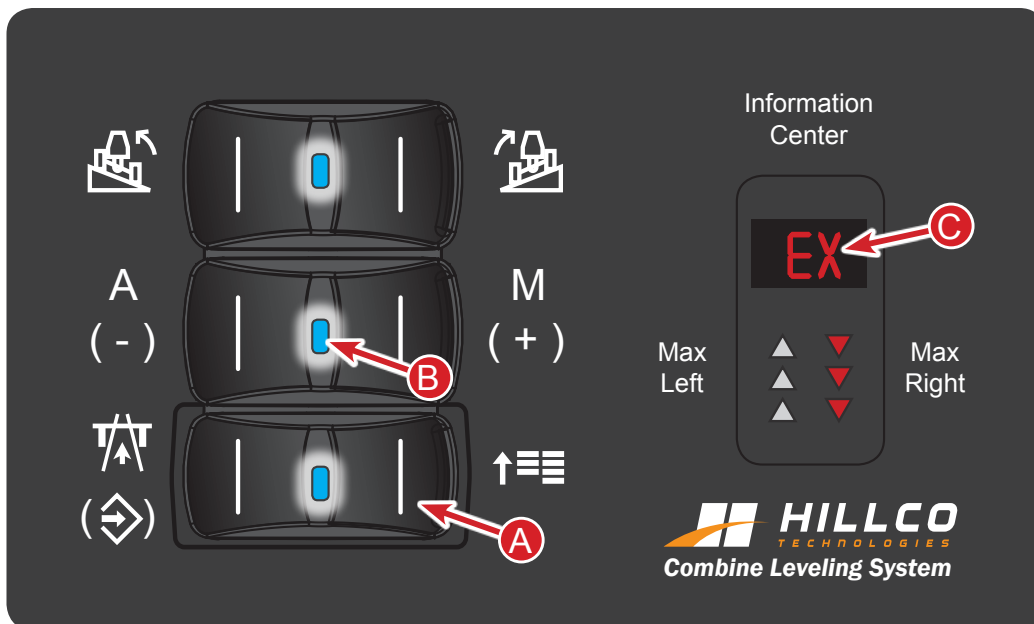


### Auto Mode









Auto mode can be activated by pressing the center switch to the left (B) and releasing it. Auto mode allows for full automatic leveling of the combine (Manual mode will override the auto mode but as soon as the manual switch is released the leveler will automatically respond again). Auto mode is indicated by an "A" on the information center (C) and a green light on the center switch (D).

### Max Level

If the leveling system is maxed out then three triangles will illuminate for the corresponding side below the information center (E). This will occur if the leveler is in manual or auto mode. (The limit switches will not function if the menu is active to allow for setting of the system limits).



To access the system menu press and hold the bottom button (A) to the right until all three switch lights turn blue (B). Once in the menu and “EX” (C) will appear on the information center. The menu structure is outlined below:

Menu Position	Function	Information Center Code	Description
1	<b>Exit</b>	EX	Exit Menu when bottom button is pressed in either direction
2	<b>Manual Leveling Speed</b>	Mn	Manual leveling speed (Press the enter button  once to access the option and use the center button (- or +) to change the speed. The set value appears as the right digit on the display) Press the enter button  to accept the change and the menu button  to return to the menu. The right digit is the setting (0-9)
3	<b>Level Zero Point</b>	S1	Calibrate the level position of the chassis. Use the level left and level right button to adjust the combine. Place a level on the floor of the cab. (Press the enter button  to set the values)
4	<b>Max Left Level</b>	S2	Set the left limit position (manually level the combine to the left limit point and press the enter button  to set the value). If the cylinder bottoms out and stops leveling back off the leveling so that 1/8” of cylinder is showing when setting max level.
5	<b>Max Right Level</b>	S3	Set the right limit position (manually level the combine to the right limit point and press the enter button  to set the value). If the cylinder bottoms out and stops leveling back off the leveling so that 1/8” of cylinder is showing when setting max level.
6	<b>Left Level Diagnostic</b>	D1	Diagnostic feedback for Left leveling valve (Press the enter button  to read the feedback, the feedback returns the current in Amps X 10, ie. 1.5 amps reads as 15. Press the menu button to return to the menu
7	<b>Right Level Diagnostic</b>	D2	Diagnostic feedback for Right leveling valve (Press the enter button  to read the feedback, the feedback returns the current in Amps X 10, ie. 1.5 amps reads as 15. Press the menu button to return to the menu

## Tread Width

The Model 2965H Leveling Systems are designed around a main undercarriage length of 132". With the final drives mounted directly to the undercarriage, the tread spacing is 138"-198" which allows for the maximum leveling capability of the combine or 27%.

## Tire Selection

The 2965H is designed around the 24.5R32 Drive tires. These tires all for full 27% leveling. If any other sized tires are installed contact Hillco for cylinder stops to prevent damage from the tires potentially contacting the chassis, ladder or side panels of the combine.

**Model 2965H Drive Tires** – Combines equipped with the Model 2965H Leveling System are required to use 24.5R-32, 6-Star, R1 (Tractor Lug) or the 24.5R-32, 6- Star, R3 (Diamond Tread) dual drive wheels & tires. This is the only wheel and tire combination approved for use on the 2965H Leveling Systems that complies with the Tire & Rim Association standards.

**Model 2965H Steering Tires** – Combines equipped with the Model 2965H Leveling System must be equipped with 28LR-26, 165A8, R1W (Tractor Lug) or the 28LR- 26, 174A8, R3 (Diamond Tread) steer tires. This is the only wheel and tire combination approved for use on the 2965H Leveling Systems that complies with the Tire & Rim Association standards.

## Feeder Adjustment For Tire Size

Adjust the feeder adapter to obtain the proper header angle and cutter bar height as shown in the John Deere® STS Operator's Manual. The chart shown in those manuals will no longer be a correct guide to adjust the feeder adapter due to the height increase created by the leveling system.

## Tire Inflation

Tire	Load Index	PSI
Drive (24.5R-32) R1 or R3 Tread	6*	46
Steer (28LR-26) R1 Tractor Tread	165A8	36
Steer (28LR-26) R3 Diamond Tread	174A8	36

All Hillside combines are required to follow the Wheel and Tire Association Standards which states that the tire pressure must be such that the tire has adequate load carrying capability for the maximum possible weight (counting head weight and full grain tank). Both under-inflation and over-inflation are detrimental to tire life. Don't reinflate a tire that has been run flat or when there is obvious or suspected damage to the tire or wheel components. Check the tire pressure weekly or after 50 hours of operation.

### **WARNING**

When inflating tires, use a clip on air chuck and extension hose long enough to allow you to stand to one side and NOT in front or over the tire assembly. Use a safety cage if available.

### **WARNING**

A tire can explode during inflation and cause serious injury or death. Never increase air pressure beyond 35 PSI to seat the bead on the rim. Replace a tire if it has a defect. Replace a wheel rim, which has cracks, wear or severe rust. Make sure that all the air is removed from a tire before removing the tire from the rim. Never use force on an inflated or partially inflated tire. Make sure the tire is correctly seated before inflating.

When first operating the Model 2965H Leveling System in hillside conditions, begin operation on gradual slopes and work up to more severe slopes only after you have determined that rear axle weighting is appropriate for downhill maneuvers. The first indication of insufficient rear axle weighting is sluggish or unresponsive steering while traveling down hill. This effect will worsen if the operator decelerates. Make sure rear axle weighting is sufficient for safe down hill maneuvers, under normal deceleration, in your most severe down hill conditions.

## **IMPORTANT**

Use of grain tank extensions other than those provided by the combine manufacturer is strictly forbidden. Use of such extensions voids both the Hillco and John Deere NEW Equipment Warranties.

### **Rear Axle Toe In**

If the rear tire and wheel size changed after the proper sized rear tires were installed the toe in should be checked. Consult your John Deere combine operator's manual on the correct toe in for your tire and wheel size.

### **General Shielding**

Before operating the combine all shields must be in place and be in working condition. Shield to tire clearance needs to be checked once the correct tires are installed on the combine. Check to see if the clearance is correct by having someone watch the tire and shields as the operator leans the combine to the far right and far left. Some tire selections require limit switches to be set slightly early to allow enough tire clearance between the left and right front side panels.

### **Drive Shaft and Couplers**

## **DANGER**

Worn drive shafts and couplers may fail suddenly leaving the operator without brakes or drive. Check drive shafts and couplers annually for wear.

### **Rear Axle Weighting**

The Hillco Models 2965H Leveling Systems are designed to transfer enough weight to the rear axle of the combine for proper balance such that no additional weight is needed. If the operator determines that additional weight is needed on the rear axle to ensure optimal down hill performance it can be accomplished by adding:

1. Calcium Chloride in Rear Tires
2. John Deere® Rear Wheel Weights

Use caution when using individual turning brakes. Installation of a Hillco Leveling System transfers additional weight to the rear axle of the combine. Excessive braking to turn can damage your combine chassis.

## **CAUTION**

The responsibility for making the final determination of appropriate rear axle weighting lies with the operator.

## Hydraulic Settings

Refer to the Hydraulic Safety section for precautions regarding the hydraulic system. The Model 2965H Leveling System uses an auxiliary gear pump and single-station manifold for its leveling and a separate header trim manifold. A separate manifold is installed to control the header tilt.



### IMPORTANT

All adjustments on the hydraulic system are preset at the factory for optimal leveling and header trim performance. Do not make any adjustments to these settings without first contacting your authorized Hillco Dealer.

## Hydraulic Hoses

Inspect the hydraulic system for leaks, damaged hoses, improper routing, and loose fittings. Hydraulic hoses that are not routed correctly could become worn from working against abrasive edges or moving parts. If abrasions or holes do occur, the hydraulic hoses can only be replaced, not repaired. Do not attempt repairs with tape or cements. High pressure will burst such repairs and cause system failure and possible injury.

Hydraulic Hose Connections – When tightening loose hoses on the cylinders, pump, etc., always use one wrench to keep the hose from twisting and another wrench to tighten the union. Excessive twisting will shorten hose life and allow the fitting to loosen during operation. Do not over-tighten fittings or adapters.

Refer to the John Deere® Combine's Operators Manual for information regarding hydraulic oil, check intervals, and reservoir fluid levels. High speed leveling, low speed leveling and header trim speeds are preset at the factory. If different speeds are desired please contact your Hillco dealer.

## Hydraulic Cylinder



IMPORTANT—Each leveling cylinder is equipped with a safety valve (counterbalance valve) that is in place to prevent unintentional leak down of the cylinder. These safety valves are preset at the factory, and should not be adjusted.

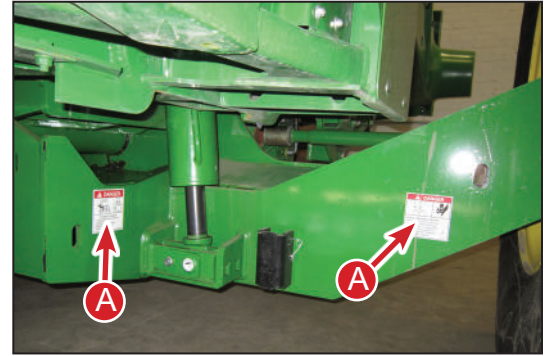


### WARNING

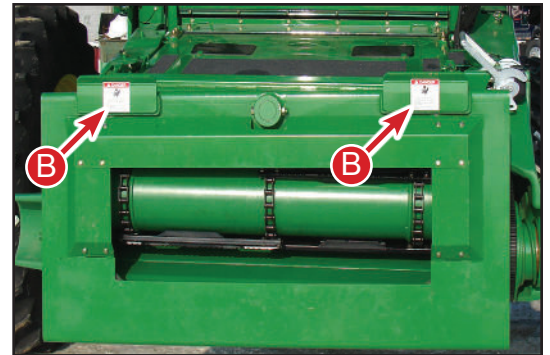
Do not make any repairs to the cylinders, disconnect valves, or disconnect any hoses connected to the cylinders, counterbalance valves, bulkhead mount or manifold without first contacting your authorized Hillco dealer. These hydraulic components stabilize the chassis of the combine. Improper repair or replacement of these components could lead to uncontrolled leveling of the combine's chassis. The leveling cylinder safety stops can be used to prevent accidental tipping of the combine during repair.

# Decal Placement

A - Front of undercarriage and rear drop axle (left and right sides)



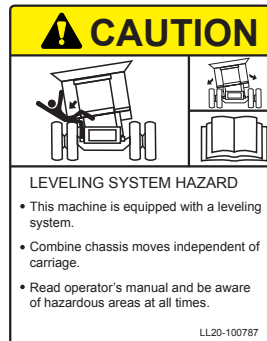
B - Transition header hooks



C - Leveling System Hazard  
(Located between the second and third step)



D - Moving Step Hazard  
(Located between the second and third step)



E - Side panel of combine  
(left and right)



## Leveling System Specifications

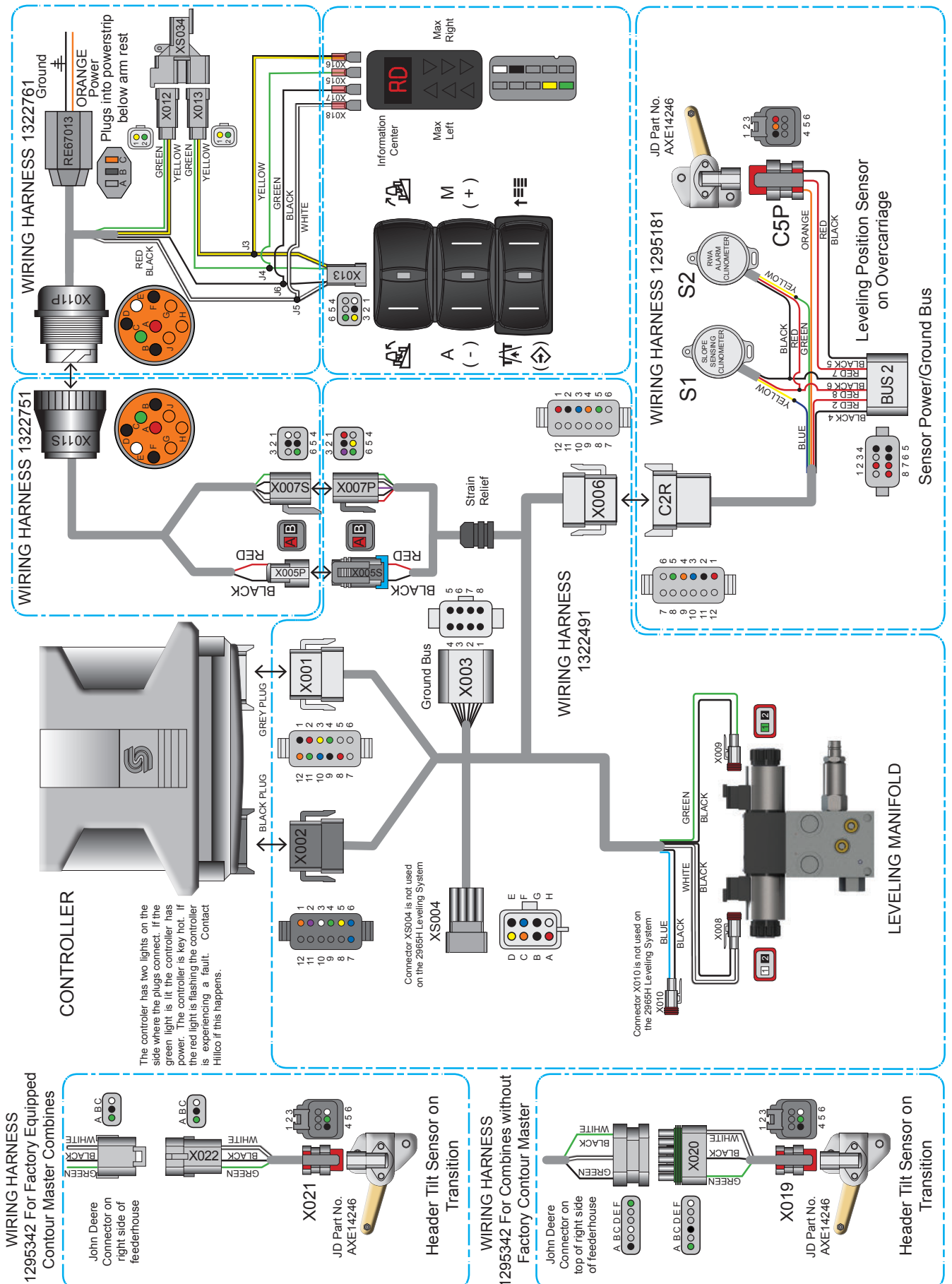
*NOTE: Dimensions are approximate and subject to change without notice.*

John Deere Model	9660 WTS
Slope Compensation	27%
Leveling Controller	Clinometer (Accuracy +/- 3/4°)
Leveling Speed	Proportional Control with Auto / Manual
Leveling Hydraulic System	Pressure Flow Compensating
Header Lateral Tilt Control	Hydraulic Master / Slave Cylinder w/ Auto / Manual Override
Feeder Transition	Paddle Beater
Increase in Feeder Length	15 inches
<sup>A</sup> Undercarriage Width with Final Drives Mounted	168 inches
Distance Front Axle Moves Forward from Stock	12 inches
Increase in Combine Height	12 inches

# Electrical Schematics

\*See following pages for information regarding each plug and receptacle.

2965H Electrical Leveling Schematic  
SN 15001-15999





2965H Electrical Leveling Schematic  
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Bus 2 Postion Sensor Bus			To	
Pin	Wire Color	Description	Connector	Pin
1	-	-	-	-
2	Red	Sensor Power	C2R	1
3	-	-	-	-
4	Black	Sensor Ground	C2R	2
5	Black	Sensor Ground	C5P	1
6	Black	Sensor Ground	S1 Black/ S1 Black	
7	Red	Sensor Power	C5P	3
8	Red	Sensor Power	S1 Red/ S1 Red	

C2R Position Sensor and Clinometers			To	
Pin	Wire Color	Description	Connector	Pin
1	Red	Sensor Power	Bus 2	2
2	Black	Sensor Ground	Bus 2	4
3	Blue	Left/Right Clinometer	S1	Yellow
4	Green	Fore/Aft Clinometer	S2	Yellow
5	Orange	OC Potentionmeter	C5P	2
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-

C5P Overcarriage Position Sensor			To	
Pin	Wire Color	Description	Connector	Pin
1	BLACK	Sensor Ground	Bus 2	5
2	ORANGE	OC Potentionmeter	C2R	4
3	RED	Sensor Power	Bus 2	7
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-

X001 Controller Grey Plug					To	
Pin	Wire Color	Description	Connector	Pin	Connector	Pin
1	Black	Controller Ground	X003	2		
2	Red	Controller Power	X005	A		
3	Yellow	Can High	X007	6		
4	Green	Can Low	X007	2		
5	-	-	-	-		
6	-	-	-	-		
7	-	-	-	-		
8	Red	Sensor Power	X006	1		
9	Black	Sensor Ground	X006	2		
10	Blue	Clinometer Left Right	X006	3		
11	Green	Clinometer Fore/Aft	X006	5		
12	Orange	Overcarriage Position Sens	X006	4		

X002 Controller Black Plug					To	
Pin	Wire Color	Description	Connector	Pin	Connector	Pin
1	Orange	Transition Sensor	X004	C		
2	Purple	RWA Signal	X007	3		
3	White	Level Left Valve Power	X008	1		
4	Green	Level Right Valve Power	X009	1		
5	Yellow	Transition Left Valve Powe	X004	D		
6	Blue	Transition Right Valve Pow	X004	F		
7	Blue	Dump Valve Power	X010	2		
8	-	-	-	-		
9	-	-	-	-		
10	-	-	-	-		
11	-	-	-	-		
12	Red	Control Panel Power	X007	1		

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X003 Ground Bus			To	
Pin	Wire Color	Description	Connector	Pin
1	Black	Primary Ground	X005	B
2	Black	Controller Ground	X001	1
3	Black	Control Panel Ground	X007	2
4	Black	Left Level Valve Ground	X008	2
5	Black	Right Level Valve Ground	X009	2
6	Black	Left Transition Valve Ground	X004	E
7	Black	Right Transition Valve Ground	X004	G
8	Black	Dump Valve Ground	X010	2

XS004 Transition Expansion			To	
Pin	Wire Color	Description	Connector	Pin
A	Red	Sensor Power	J1	
B	Black	Sensor Ground	J2	
C	Orange	Transition Sensor	X002	1
D	Yellow	Left Transition Valve Power	X002	5
E	Black	Left Transition Valve Ground	X003	6
F	Blue	Right Transition Valve Power	X002	6
G	Black	Right Transition Valve Ground	X003	7
H	-	-	-	-

X005P Power & Ground			To	
Pin	Wire Color	Description	Connector	Pin
A	Red	Controller Power	X001	2
B	Black	Controller Ground	X003	1

X005S Power & Ground			To	
Pin	Wire Color	Description	Connector	Pin
A	Red	Controller Power	X001	2
B	Black	Controller Ground	X003	1

X006 Sensor Package					To	
Pin	Wire Color	Description	Connector	Pin	Connector	Pin
1	Red	Sensor Power	X001	8		
2	Black	Sensor Ground	X001	9		
3	Blue	Clinometer Left/Right	X001	10		
4	Orange	Overcarriage Sensor	X001	12		
5	Green	Clinometer Fore/Aft	X001	11		
6	-	-	-	-		
7	-	-	-	-		
8	-	-	-	-		
9	-	-	-	-		
10	-	-	-	-		
11	-	-	-	-		
12	-	-	-	-		

X007P Cab Control					To	
Pin	Wire Color	Description	Connector	Pin	Connector	Pin
1	Red	Control Panel Power	X002	12		
2	Black	Control Panel Ground	X003	3		
3	Purple	RWA Signal	X002	2		
4	-	-	-	-		
5	Yellow	Can High	X001	3		
6	Green	Can Low	X001	4		

X007S Cab Control					To	
Pin	Wire Color	Description	Connector	Pin	Connector	Pin
1	White	Control Panel Power	X011	E		
2	Black	Control Panel Ground	X011	F		
3	-	-	-	-		
4	-	-	-	-		
5	Black	Can High	X011	D		
6	Green	Can Low	X011	C		

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X008 Left Leveling Valve			To	
Pin	Wire Color	Description	Connector	Pin
1	White	Level Left Valve Power	X002	3
2	Black	Level Left Valve Ground	X003	4

X009 Right Leveling Valve			To	
Pin	Wire Color	Description	Connector	Pin
1	Green	Level Right Valve Power	X002	4
2	Black	Level Right Valve Ground	X003	5

X010 Dump Valve			To	
Pin	Wire Color	Description	Connector	Pin
1	Blue	Dump Valve Power	X002	7
2	Black	Dump Valve Ground	X003	8

X011P Cab Bulkhead			To	
Pin	Wire Color	Description	Connector	Pin
A	Orange	Primary Power	RE67013	C
B	Black	Primary Ground	RE67013	B
C	Green	Can Low	X013	2
D	Yellow	Can High	X013	1
E	White	Switch Power	X014	1
F	Black	Switch Ground	X014	2
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-

X011S Cab Bulkhead			To	
Pin	Wire Color	Description	Connector	Pin
A	Red	Primary Power	X007	1
B	Black	Primary Ground	X007	2
C	Green	Can Low	X007	6
D	Black	Can High	X007	5
E	White	Switch Power	X005	A
F	Black	Switch Ground	X005	B
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-

X012 Can Tee			To	
Pin	Wire Color	Description	Connector	Pin
1	Yellow	Can High	X011	D
2	Green	Can Low	X011	C

X013 Can Tee			To	
Pin	Wire Color	Description	Connector	Pin
1	Yellow	Switch Module Can High	X014	3
2	Green	Switch Module Can Low	X014	4

X014 Switch Module			To	
Pin	Wire Color	Description	Connector	Pin
1	White	Switch Module Power	X011	E
2	Black	Switch Module Ground	X011	F
3	Yellow	Switch Module Can High	X012	1
4	Green	Switch Module Can Low	X012	2
5	-	-	-	-
6	-	-	-	-

X0115 EVU Can Low			To	
Pin	Wire Color	Description	Connector	Pin
1	Green	EVU Can Low	J4	

X0116 EVU Can High			To	
Pin	Wire Color	Description	Connector	Pin
1	Yellow	EVU Can High	J3	

X0117 EVU Ground			To	
Pin	Wire Color	Description	Connector	Pin
1	Black	EVU Ground	J6	

X0118 EVU Power			To	
Pin	Wire Color	Description	Connector	Pin
1	White	EVU Power	J5	

2965H Electrical Leveling Schematic  
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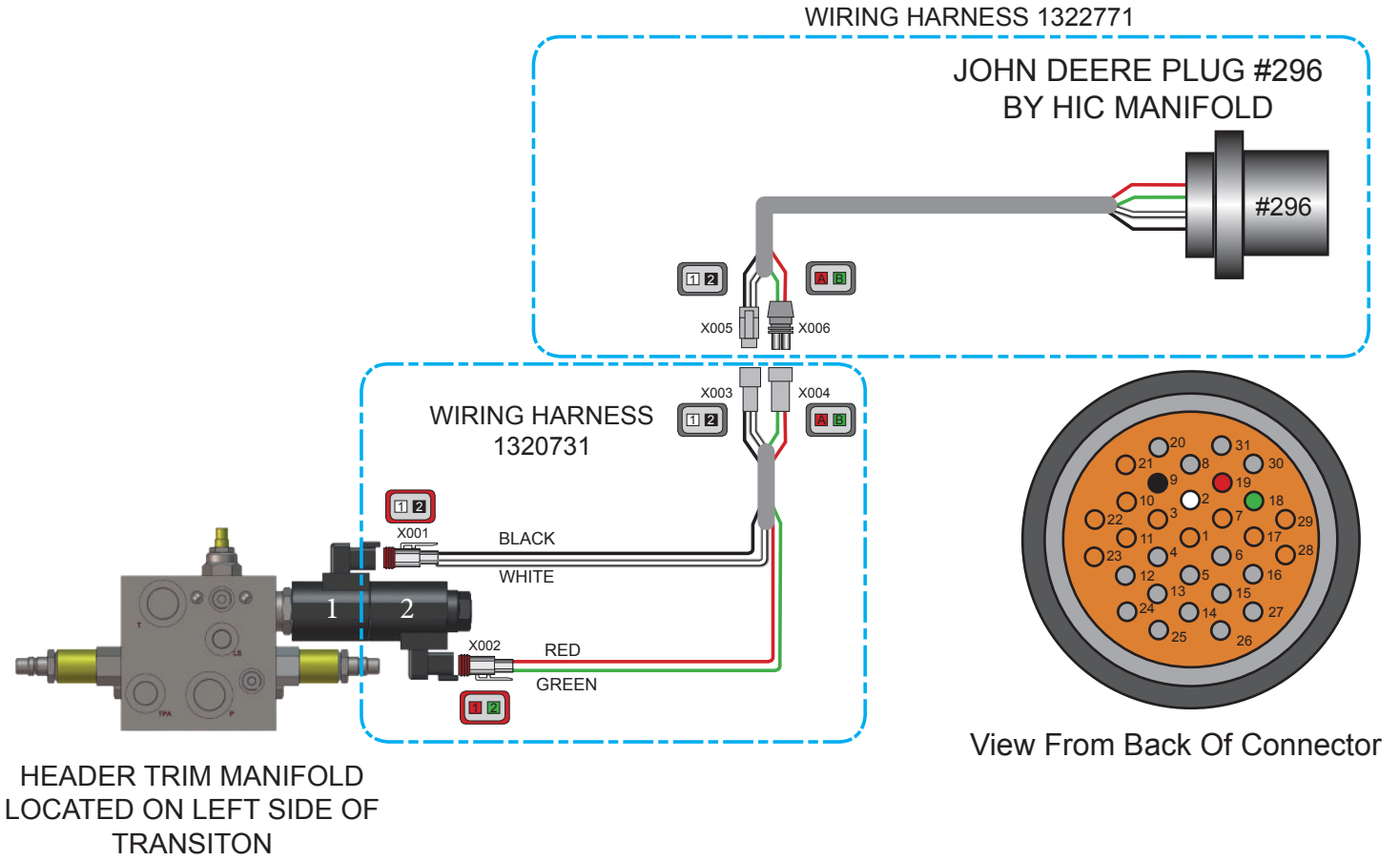
X0119 Tilt Sensor (Non CM)				To	
Pin	Wire Color	Description	Connector	Pin	
1	-	-	-	-	
2	-	-	-	-	
3	-	-	-	-	
4	Black	Sensor Ground	X020	C	
5	Green	TA Potentionmeter	X020	A	
6	White	Sensor Power	X020	F	

X0120 Tilt Sensor (Non CM)				To	
Pin	Wire Color	Description	Connector	Pin	
A	Green	TA Potentionmeter	X019	5	
B	-	-	-	-	
C	Black	Sensor Ground	X019	4	
D	-	-	-	-	
E	-	-	-	-	
F	White	Sensor Power	X019	3	

X0121 Tilt Sensor (With CM)				To	
Pin	Wire Color	Description	Connector	Pin	
1	-	-	-	-	
2	-	-	-	-	
3	-	-	-	-	
4	Black	Sensor Ground	X022	B	
5	Green	TA Potentionmeter	X022	A	
6	White	Sensor Power	X022	C	

X0122 Tilt Sensor (With CM)				To	
Pin	Wire Color	Description	Connector	Pin	
1	Green	TA Potentionmeter	X021	5	
2	Black	Sensor Ground	X021	4	
3	White	Sensor Power	X021	6	

## 2965H Header Trim Electrical Schematic SN 15001-15999



X001			To	
PIN	Wire Color	Description	Connector	Pin
1	WHITE	Trim Left Power	X003	1
2	BLACK	Trim Left Ground	X003	2

X002			To	
PIN	Wire Color	Description	Connector	Pin
1	RED	Trim Right Ground	X004	A
2	GREEN	Trim Right Power	X004	B

X003			To	
PIN	Wire Color	Description	Connector	Pin
1	WHITE	Trim Left Power	X001	1
2	BLACK	Trim Left Ground	X001	2

X004			To	
PIN	Wire Color	Description	Connector	Pin
A	RED	Trim Right Ground	X001	1
B	GREEN	Trim Right Power	X001	2

X005			To	
PIN	Wire Color	Description	Connector	Pin
1	WHITE	Trim Left Power	#296	2
2	BLACK	Trim Left Ground	#296	9

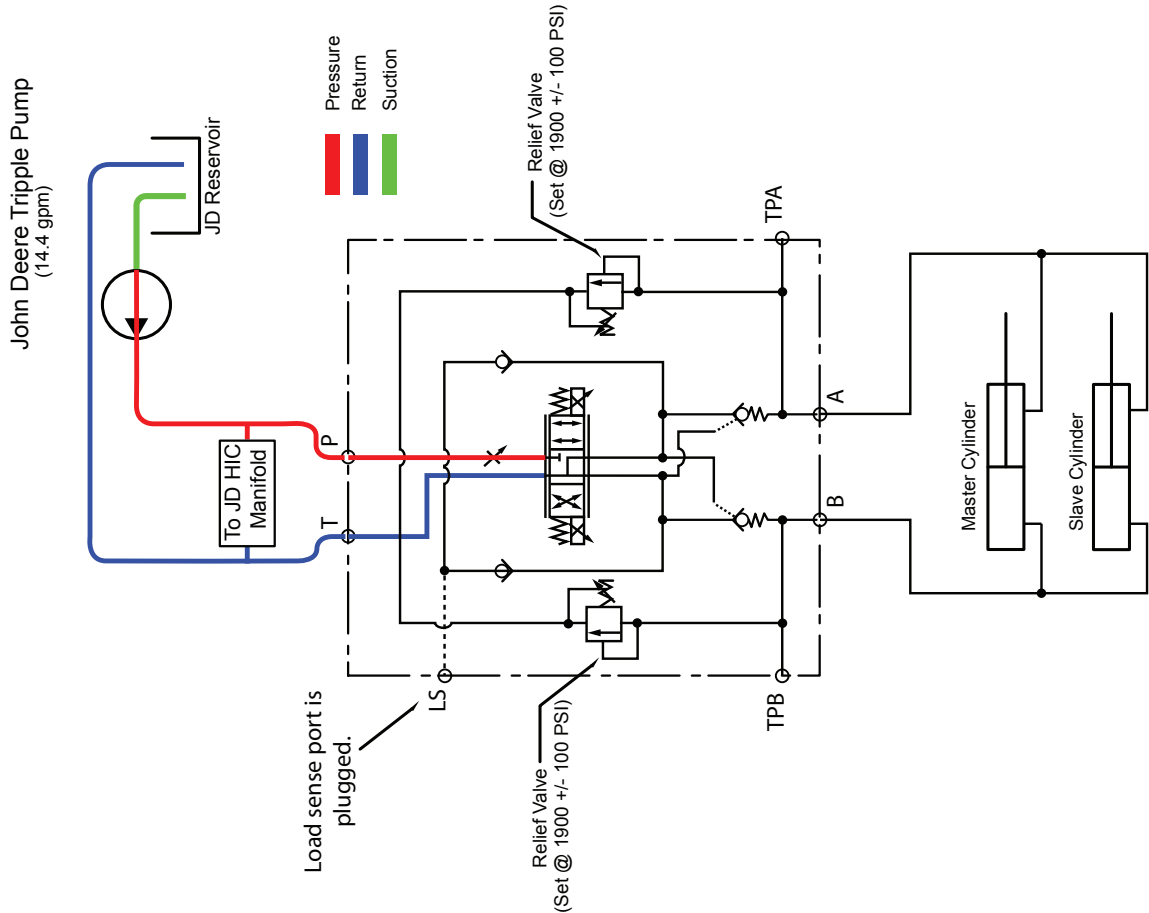
X006			To	
PIN	Wire Color	Description	Connector	Pin
A	RED	Trim Right Ground	#296	19
B	GREEN	Trim Right Power	#296	18

#296			To	
PIN	Wire Color	Description	Connector	Pin
2	WHITE	Trim Left Power	X005	1
9	BLACK	Trim Left Ground	X005	2
18	GREEN	Trim Right Power	X006	18
19	RED	Trim Right Ground	X006	19

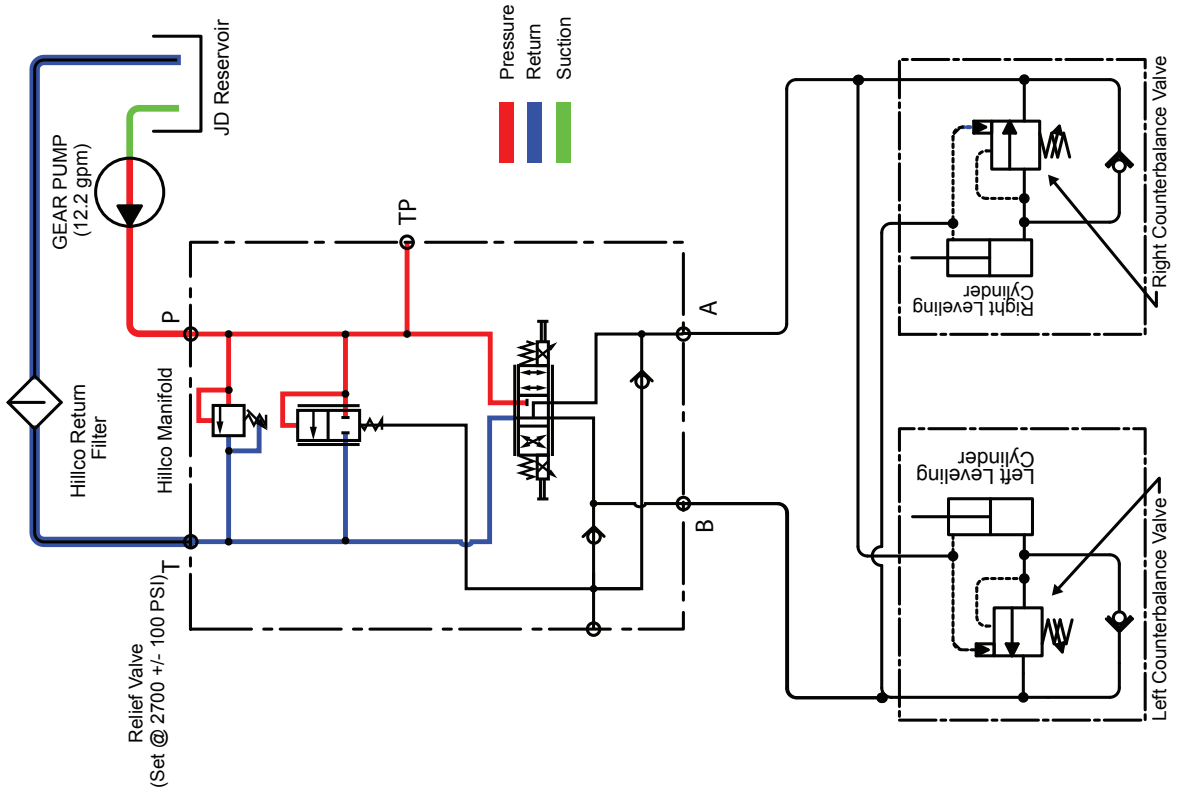
# Hydraulic Schematics

2965H Hydraulic Leveling and Header Tilt Circuit  
SN 15001-15999

## Header Trim Circuit



## Leveling Circuit



## Notes