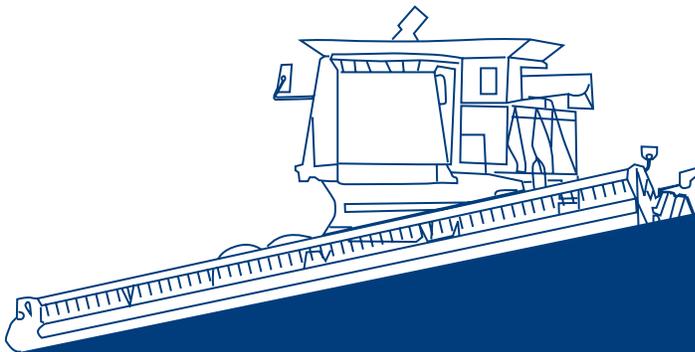




# Operator's Manual

SN 20001-20999



## Model CS7020

### Sidehill Leveling System

D-160302CMA01C  
December, 2019

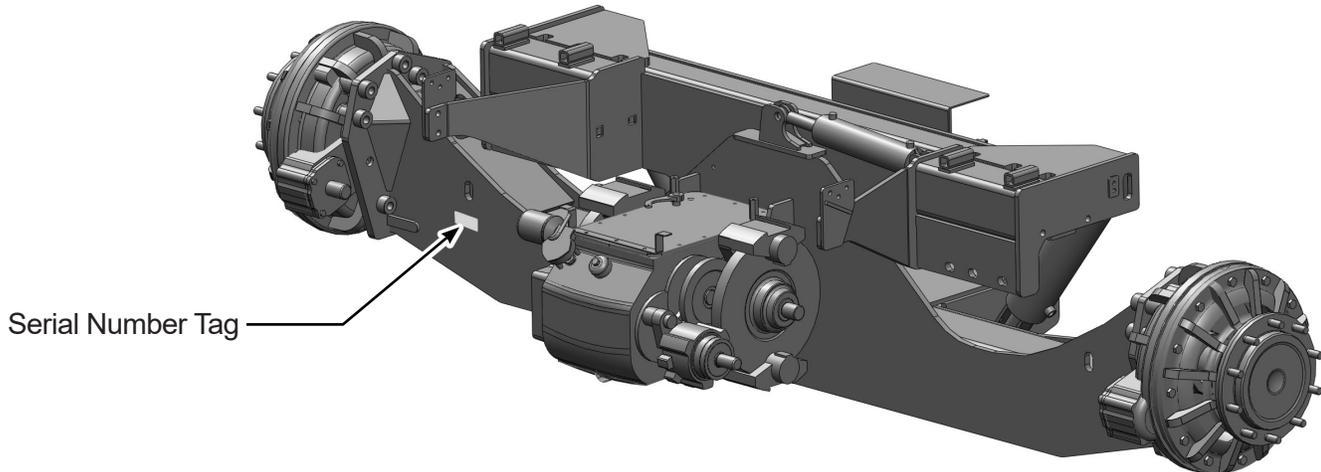
A blue circular icon containing a white silhouette of a person sitting and reading a book or manual.	<p><b>! WARNING</b></p> <p>Read and understand operator's manual prior to operating this equipment.</p> <p>Failure to follow operation instructions could result in personal injury or damage to the equipment.</p>
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## Model and Serial Number



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	CS7020
Leveling System Serial Number	CS7020-
Combine Model Number	
Combine Serial Number	

## Maximum Header Weights

CS7020	8510 lbs
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Hillco does not authorize the use of any non-approved heads or platforms and will not be responsible for any damage to the combine, Leveling System or platform from improper configurations or modifications.

Please call Hillco Technologies if you have any questions regarding the CS7020 or any other header configuration.

## Warranty

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 CS7020 Leveling System to compliment your farming operation. This product has been designed and manufactured to meet the needs of a discriminating buyer for increasing the performance of a combine.

Safe, efficient and trouble free use of your Hillco CS7020 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 (800) 937-2461 and ask for the document number found on the front cover page.



### Hillco Model CS7020 Sidehill Leveling System

This manual covers the Hillco Model CS7020 (for the Case IH 5140, 6140, & 7140 combines) Leveling System. Use the Table of Contents as a guide when searching for specific information.

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 (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 the Model CS7020 leveling system.
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.



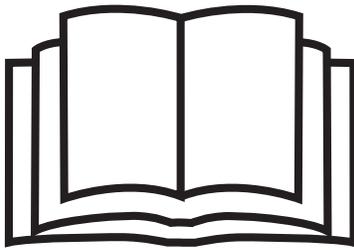
## SERVICING AND MAINTENANCE SAFETY

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.

## READ OPERATOR'S MANUAL SYMBOL

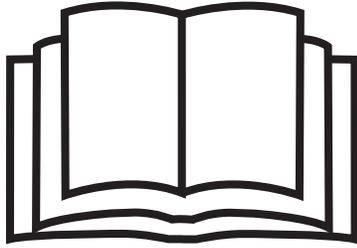


Decals, which display the —Read Operator's Manual symbol, are intended to direct the operator to the Operator's Manual for further information regarding maintenance, adjustments and/or procedures for particular areas of the cob collection system. When a decal displays this symbol refer to the Operator's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

## 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 cob collection 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.

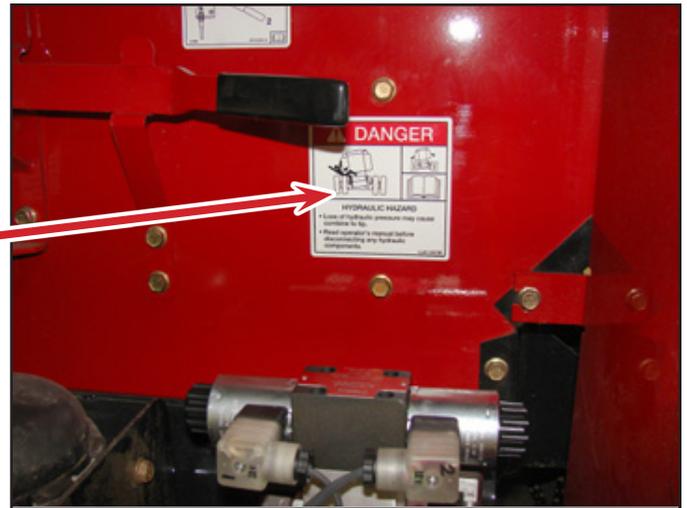
**! DANGER**



**HYDRAULIC HAZARD**

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

LL20-100788



**! CAUTION**



- This machine is equipped with a Leveling System.
- Make sure the Auto/Manual leveling control switch is in the manual position before starting machine.
- Read operator's manual before operating this machine.

LL20-100782



**! 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



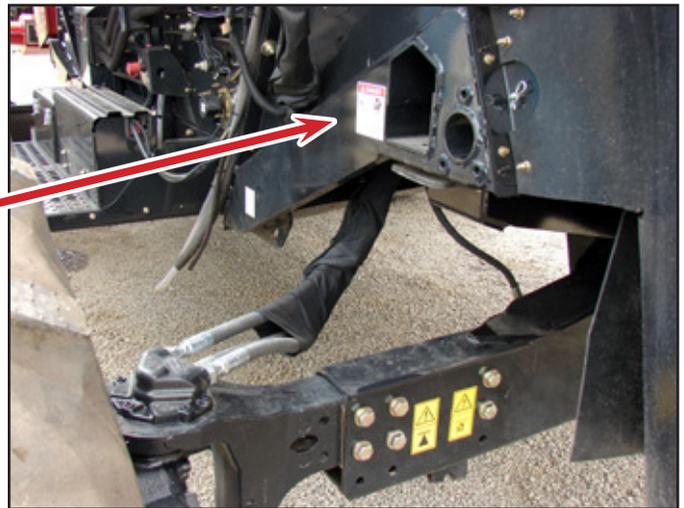
**! DANGER**




**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

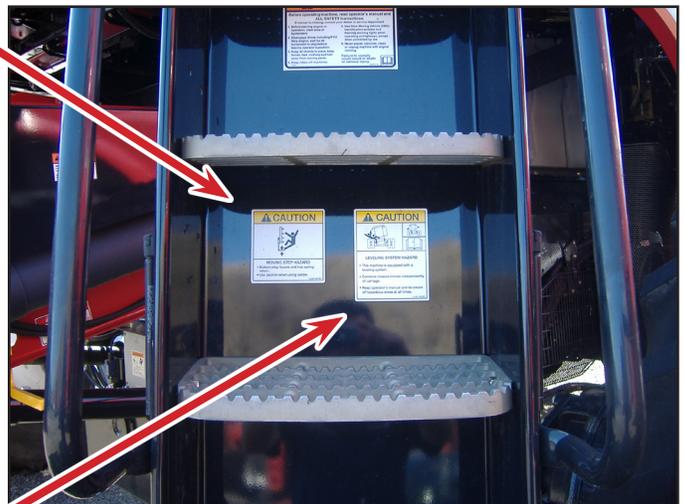


**! CAUTION**

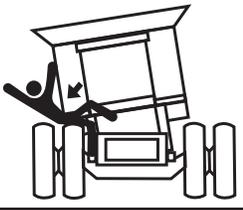
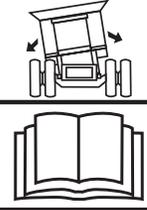


**MOVING STEP HAZARD**  
Bottom step lowers and retracts upward.  
Use caution when using ladder.

LL20-100785



**! CAUTION**

**LEVELING SYSTEM HAZARD**

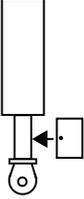
- This machine is equipped with a leveling system.
- Combine chassis moves independent of carriage.
- Read operator's manual and be aware of hazardous areas at all times.

LL20-100787

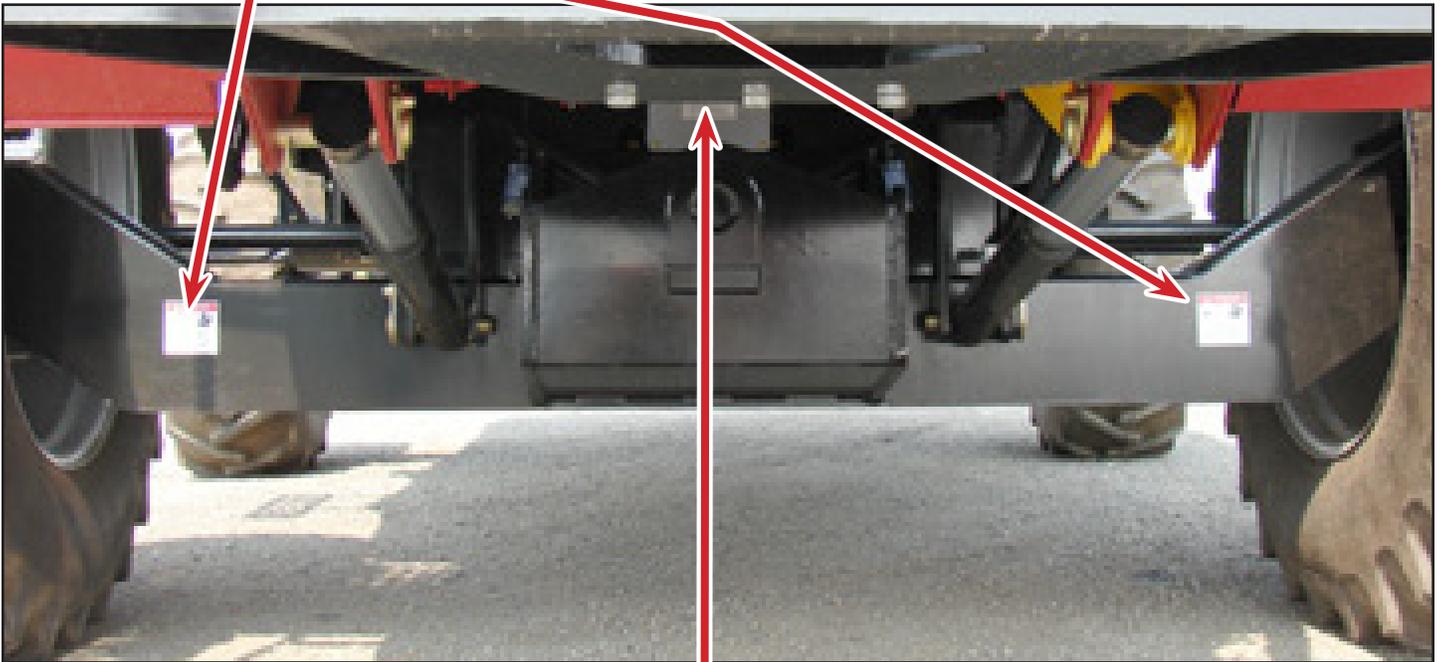
**! DANGER**




**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 chasis.



LL-143621



**! WARNING**

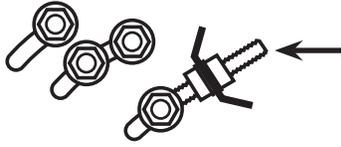



**CRUSHING HAZARD**

- Electric components control combine leveling and header trim.
- Make sure machine is off and header lock is down before making any adjustments to the electrical system.

LL20-100786

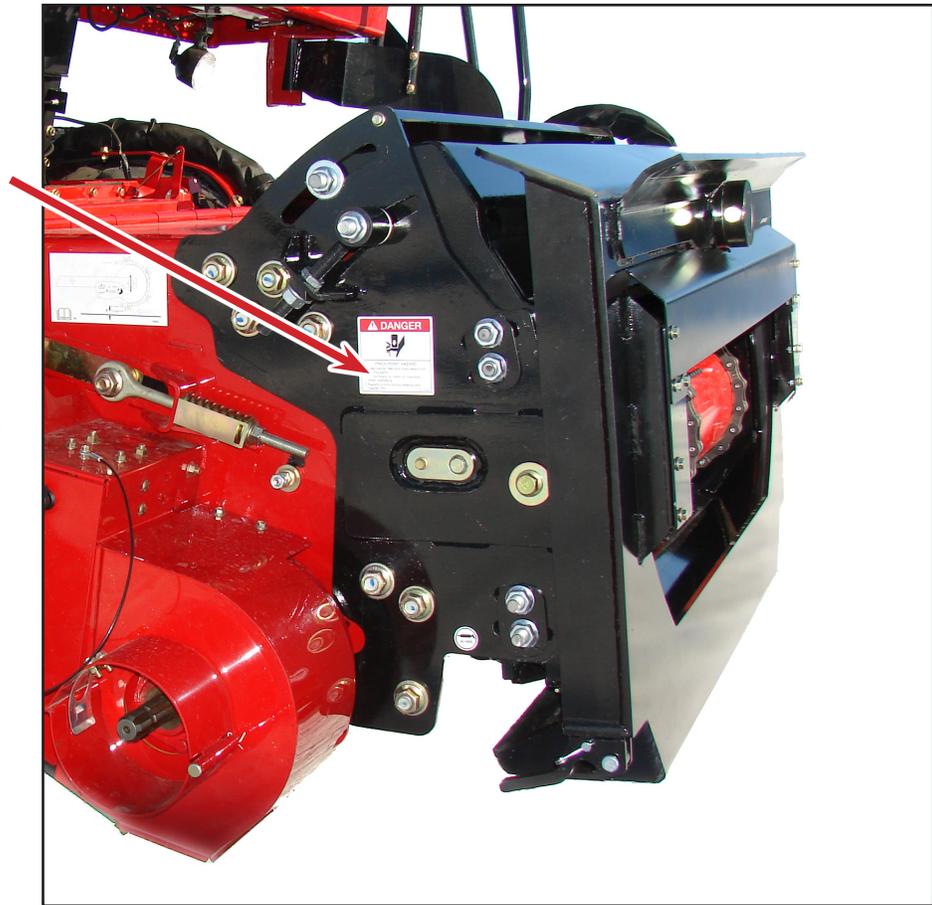
# IMPORTANT



Do Not use Eyebolt to Adjust Header Angle or Threads will Strip.

Refer to Combine Operator's Manual for Adjusting Header Angle.

LL-150681



# Operation, Setup, and Maintenance

## Leveling System Controls

The leveling controls on the main page are shown below. The R/F (Road/Field) button must be in the F (Field) selection for the other buttons to function. If it is in the R (Road) selection then none of the other buttons will function. Pushing the button once will toggle the selection between R & F.

**LEVEL LEFT:** Push down and hold the Manual L (Left) Button.

**LEVEL RIGHT:** Push down and hold the Manual R (Right) Button.

**AUTO:** Pushing the A/M (Auto/Manual) Leveling Button once will toggle between A & M. When the A (Auto) is showing on the display, this means automatic leveling operation is engaged. The automatic leveling controller monitors changes in slope and corrects chassis position to maintain a level chassis position. The Manual Left/Right Leveling Buttons will override the automatic leveling controller while the switch is depressed. Upon release of the switch, the leveling system will return to automatic leveling mode.

**MANUAL:** Push the A/M (Auto/Manual) Leveling Button once to enter the Manual Leveling mode (M will be displayed). In Manual mode the Manual Left/Right leveling switches will level the combine left and right. When the switch is released the combine chassis will maintain its current position.

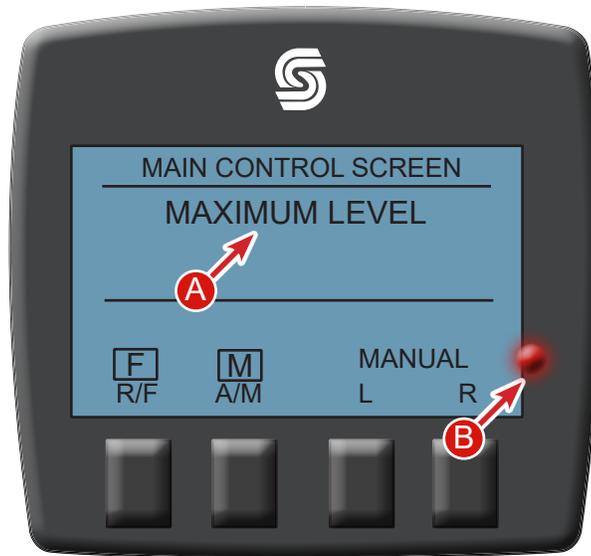


**Remote Leveling Switches:** Located to the right of the armrest control panel. These switches allow for Auto/Manual control and Left/Right leveling.



## Maximum Level

The leveling system is equipped with a maximum level warning indicator on the monitor. On the Main Control Screen MAXIMUM LEVEL will be displayed and the lower right red LED will illuminate. This indicates when the machine has reached its maximum leveling capability. Important tire and tread width restrictions apply to the use of combines equipped with the Model CS7020 Leveling system that are intended for use on slopes exceeding the maximum leveling capability. See the “Slope Restrictions” section of this manual for important details of these restrictions.



A - Maximum Level Indicator  
B - Maximum Level Red LED

## Header Trim Controls

The header trim switch is the four-position header control switch mounted in the combine's SR control lever. It is used to raise and lower the header as well as trim the header left and right.

**TILT LEFT:** Push the switch to the left to tilt the header counterclockwise.

**TILT RIGHT:** Push the switch to the right to tilt the header clockwise



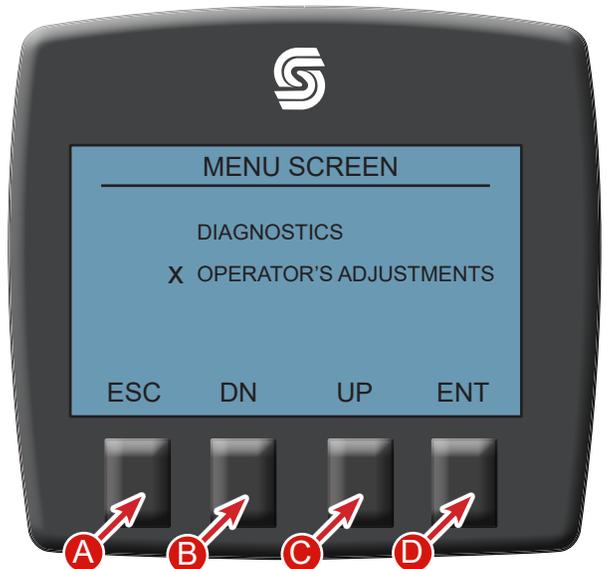
Header Trim Switch

## Operator Adjustments

From the Main Control Screen, Push & Hold the R/F button (A) for two 2 seconds to go the Menu Screen.



Push the UP (C) or DN (B) buttons to move the X to the Operator Adjustments Line and then push the ENT (D) button to go into that Page. Note: Pushing the ESC (A) button will take you back to the Main Control Screen.



## Level Zero Point

From the Operator Adjustments Screen, Push the UP or DN buttons to move the X to the Level Zero Point and push ENT.

Note: Pushing the ESC button will take you back to the Menu Screen.



Once in the Level Zero Point Screen place a level on the cab floor. Manually level the combine to the left (L) or right (R) until the bubble shows level. Push and hold the ENT button for 1 second. This will set the Zero Point for Leveling. This is a one (1) time adjustment unless the clinometer or controller has been replaced. When done push the ESC button to leave the page.

Note: Pushing the ESC button will take you back to the Menu Screen.



### Manual Leveling Speed Adjustment

From the Operator Adjustments Screen, Push the UP or DN buttons to move the X to Manual Leveling Speed and push ENT.

Note: Pushing the ESC button will take you back to the Menu Screen.



Once in the Manual Leveling Speed Screen, push the UP or DN buttons to increase or decrease the manual leveling speed (Default Setting is 13). Once the desired setting is reached on the bar graph, push and hold the ENT button for 1 second. This will lock the new manual leveling speed setting. When done push the ESC button to leave the page.

Note: Pushing the ESC button will take you back to the Operator Adjustment's Screen.



## Monitor Contrast Adjustment

From the Operator Adjustments Screen, Push the UP or DN buttons to move the X to Monitor Contrast and push ENT.

Note: Pushing the ESC button will take you back to the menu Screen.

Once in the Monitor Contrast Screen, push the UP or DN buttons to increase or decrease the contrast (Default Setting is -3). Once the desired setting is reached, push and hold the ENT button for 1 second. This will lock the new monitor contrast setting. When done push the ESC button to leave the page.

Note: Pushing the ESC button will take you back to the Menu Screen.



## Monitor Brightness Adjustment

From the Operator Adjustments Screen, Push the UP or DN buttons to move the X to Monitor Brightness and push ENT.

Note: Pushing the ESC button will take you back to the Menu Screen.



Once in the Monitor Brightness Screen, push the UP or DN buttons to increase or decrease the brightness (Default Setting is 8). Once the desired setting is reached, push and hold the ENT button for 1 second. This will lock the new monitor brightness setting. When done push the ESC button to leave the page.

Note: Pushing the ESC button will take you back to the Menu Screen.



## Monitor Bracket Adjustment

The position of the monitor can be adjusted to suit the operator. To adjust the monitor release the clamp (A) behind the monitor. Reposition the monitor and then tighten the clamp.



## Electrical Settings

### Limit Switches and Maximum Level Lamp

The leveling system is equipped with left and right level limit switches that disable the automatic/manual leveling when the combine reaches its maximum leveling capability in either direction. These switches are preset by the installer at either the maximum leveling capability of the combine or in some cases at a lesser angle to provide for proper tire clearance. It is important to note that in the event of a limit switch failure the combine may continue to level to its maximum capability. Care should be taken to make sure tire clearances are adequate in the maximum level position to prevent damage to the tire or chassis in the event that a limit switch failure should occur. The limit switches also activate maximum level warning indicator that indicates to the operator when the combine has reached its maximum leveling capability. The operator should level the combine daily to its maximum level position, with the bulk tank empty, using the manual leveling switch to insure the limit switches and maximum level lamp are operational. The maximum level indicator will only light when the manual switch is held into the left or right leveling position or the system is in the automatic mode when the combine reaches maximum level.

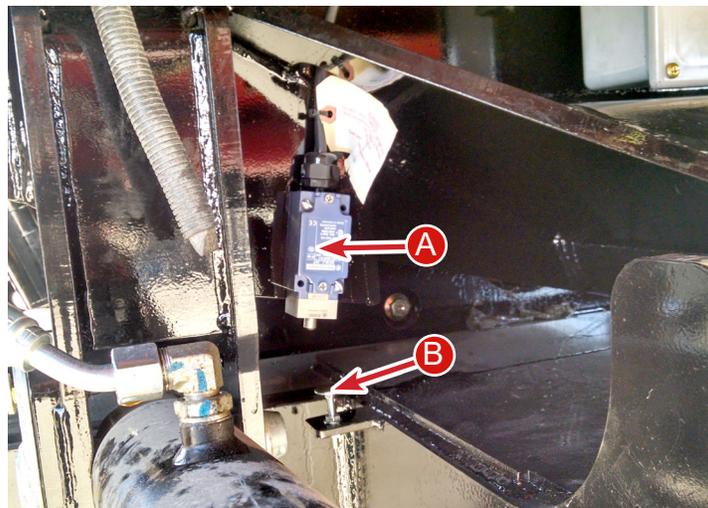


### IMPORTANT

With certain tire selections the limit switches can be used to prevent the need to modify the sheet metal on the left and right side panels of the combine. Installation of level limit stops is recommended to prevent sheet metal damage in the event of a limit switch failure. (See LEVEL LIMIT STOPS on Next Page)

### How to Set Limit Switches

To set the limit switches, park the combine on level ground and set the parking brake. Then raise the feeder spout and drop the header lift cylinder safety stop. Place the auto/manual-leveling switch in the manual position. Lean the combine to the left until either the maximum leveling capabilities of the leveling system are reached or there is approximately one inch of clearance between the tires and any metal that may interfere with them. Next, shut off the machine. The limit switches (A) are located on each side of the gray controller box near the main pivot pin. The limit switches come in contact with an adjustable stop (B). Adjust the left stop up to the point where you can hear the contacts on the limit switch snap and move slightly past this point. Repeat this process for the right limit switch.



If Level Limit Stops are used be sure that the limit switches are set to stop leveling before the level limit stops make contact. Damage to the cylinders or other leveling system components may occur if limit switches aren't set properly.

## Level Limit Stops

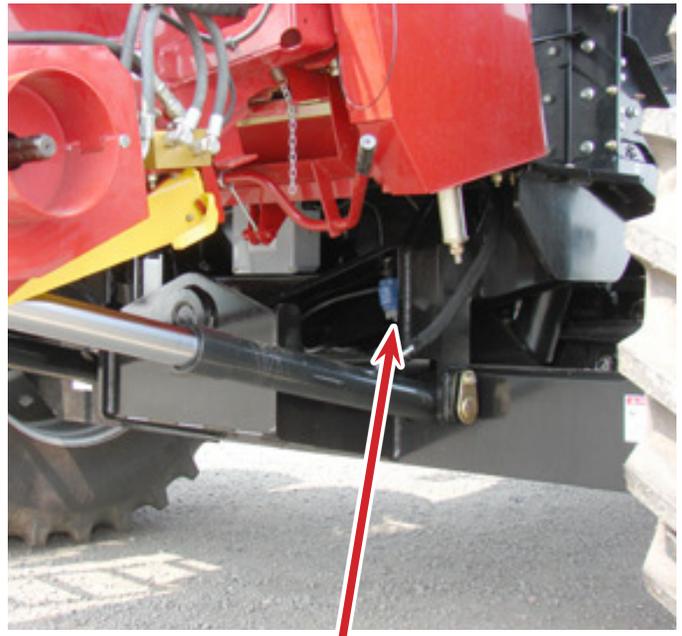
On the Model CS7020 Leveling System a Level Limiting Spacer Kit can be clamped on the main leveling cylinders to mechanically stop leveling if the limit switches were to fail. To determine how many spacers are needed to create a mechanical stop follow these steps:

1. Park the combine on level ground and apply the parking brake.
2. Raise the feeder spout and drop the header lift cylinder safety stop.
3. Place the auto/manual-leveling switch in the manual position and lean the combine to the left until the limit switch that was set previously stops leveling.
4. Shut off the machine and measure the distance between the packing gland on the rod end of the cylinder and the ring that is welded to the rod end.
5. Write down this dimension and repeat the process for the right side. (Both sides must be measured due to the fact that the combine may level further one direction than the other.)
6. The dimensions obtained will determine how many spacers are needed.

There is no additional charge for the level limit stops (Call Hillco with dimensions to order).

## Leveling Controller Function

The Hillco Model CS7020 Leveling System is equipped with a proportional leveling system with manual control and automatic with manual override control. The clinometer, located in the control box, monitors changes in slope and corrects the position of the combine's chassis using proportional leveling. The clinometer maintains leveling accuracy to +/- 1/10th degrees by sending the leveling signal to the proportional leveling control valve on the manifold. As the combine reaches higher degrees of being out of level, the clinometer sends more voltage to the directional control valve's coil and pulls the spool open further to allow oil to flow faster and speed up leveling. As the combine gets closer to +/- 1/10th degrees out of level, less voltage is sent to the coil to slow leveling.



Limit Switches



If Level Limit Stops are used be sure that the limit switches are set to stop leveling before the level limit stops make contact. Damage to the cylinders or other leveling system components may occur if limit switches aren't set properly.

# Mechanical Adjustments

## Tread Width

The Model CS7020 Leveling System is designed around a main undercarriage length of 2550mm (100.5”), which is identical to the combine’s original axle tube length (The Tire Selection Chart shown in the Case IH® combine Operator’s Manual will be a correct guide for adjusting tread width). The final drives can be mounted directly to the undercarriage or the 282mm (11.1”) axle extensions can be used provided the corresponding length drive shafts are used with the extensions.

The minimum allowable tread width for use with the Model CS7020 Leveling System is 137”. Any tread width narrower than this will not allow the combine to level to its maximum capabilities.

The 137” tread width can be achieved by mounting the final drives directly to the under carriage and dishing the stock combine wheels outward. Check the tread width using a tape measure to insure your machine is not operating on less than the minimum 137” tread spacing.

When the 282mm (11.1”) extensions are mounted to the Model CS7020 under carriage, the OEM cross support tie rod can not be used. The cross support tie rod is replaced with two shorter tie rods that are manufactured by Hillco Technologies, Inc.

## Tire Selection



Model CS7020 Single Tires – Combines equipped with the Model CS7020 Leveling System can be equipped with 30.5LR32 170A8 R1 (**5140 Only**); 800/65R32 172A8 R1W; and 900/60R32 176A8 R1, R1W tires. All other single tire options are not allowable due to load rating or tire clearance issues.



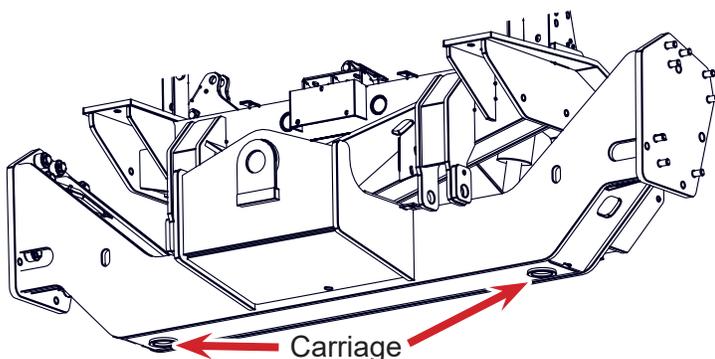
Model CS7020 Dual Tires – Combines equipped with the Model CS7020 Leveling System can be equipped with 18.4R42 LI 153 R1 (**5140 Only**), R1W; 520/85R38 LI155 R1; 520/85R42 LI157 R1, R1W, R2; dual tires. All other dual tire options are not allowable due to tire clearance issues.



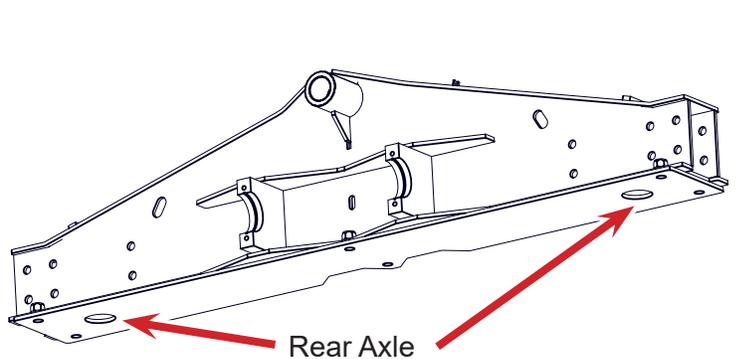
Model CS7020 Steering Tires – Combines equipped with the Model CS7020 Leveling System must be equipped with 480/70R30, 540/65R30, or 600/65R28 steer tires for proper rear side panel and return elevator clearance. The 600/65R28 tire has the highest load carrying capacity.

## Jacking Location

Jack at the locations indicated.



D-160302CMA01C



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January, 2020

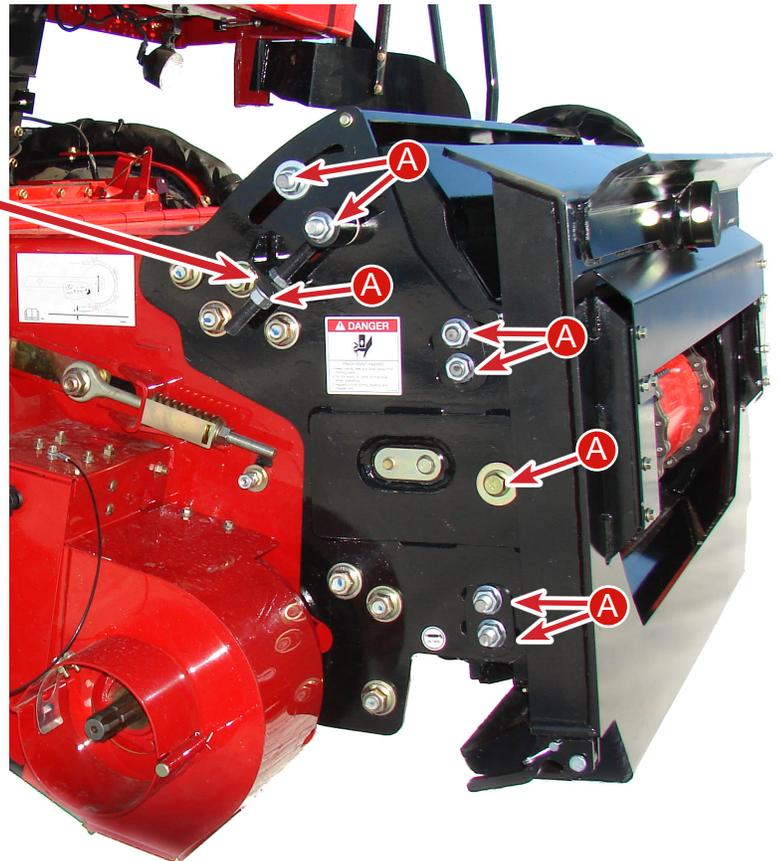
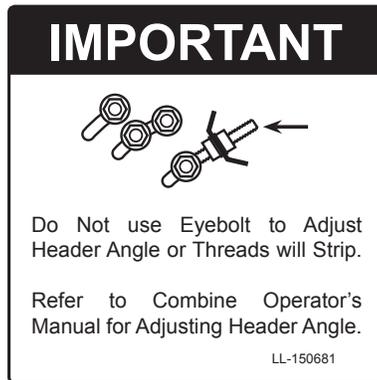
## Feeder Adjustment for Tire Size

Adjust the feeder adapter to obtain the proper header angle and cutter bar height with the following steps:

1. Remove the head
2. Loosen the 8 bolts (A) on each side of the feeder house.
3. Use the adjuster bolt to adjust fore/aft.
4. Push down the flex floor seals on both sides and tighten (2) bolts to retain (B).
5. Tighten remaining bolts

The chart shown in the Case IH® 5150/6150/7150 Operator's Manual will no longer be a correct guide to adjust the feeder adapter due to the height increase created by the leveling system.

NOTE: Changing cradle angle may require feeder chain adjustments. See the Feeder Conveyor Chain Fore/Aft Adjustment section for maximum clearance of feeder chain slat to feeder face.



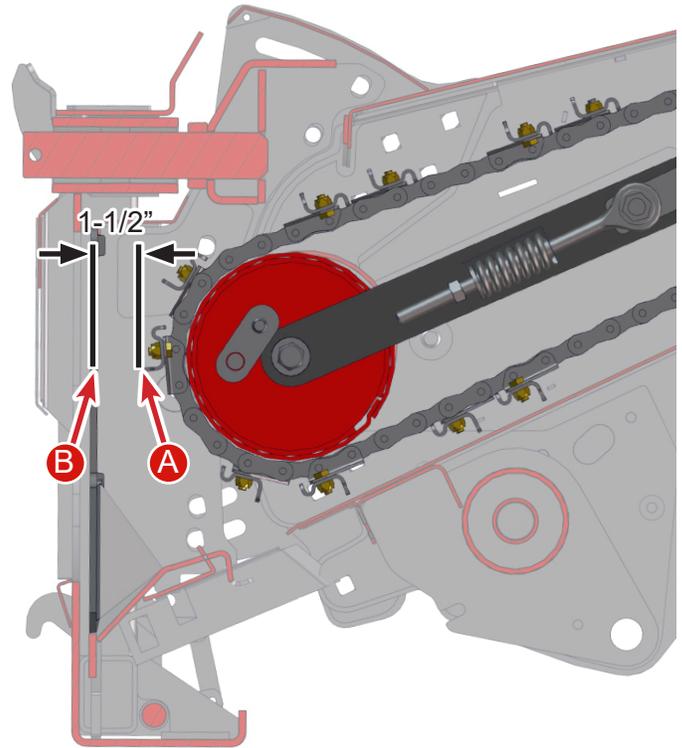
## Feeder Conveyor Chain Adjustment

Refer to the Case IH® combine Operator's Manual for instructions on adjusting the feeder conveyor chain tension.

## Conveyor Drum Fore/Aft Position

The fore/aft position of the conveyor drum must be adjusted correctly to obtain correct feeding of material from the header auger to the feeder. The position of the drum must be adjusted for a maximum clearance of 38 mm (1-1/2 inch) from the conveyor chain slat (A) to the feeder face (B).

Note: It may be necessary to add or remove chain to get the proper feeder drum position.



**IMPORTANT** - Fully rotate the Header Adapter left and right after all adjustments of the feeder conveyor chain have been made to be sure there are no interference points. If not adjusted properly severe damage to the feeder conveyor chain may occur.

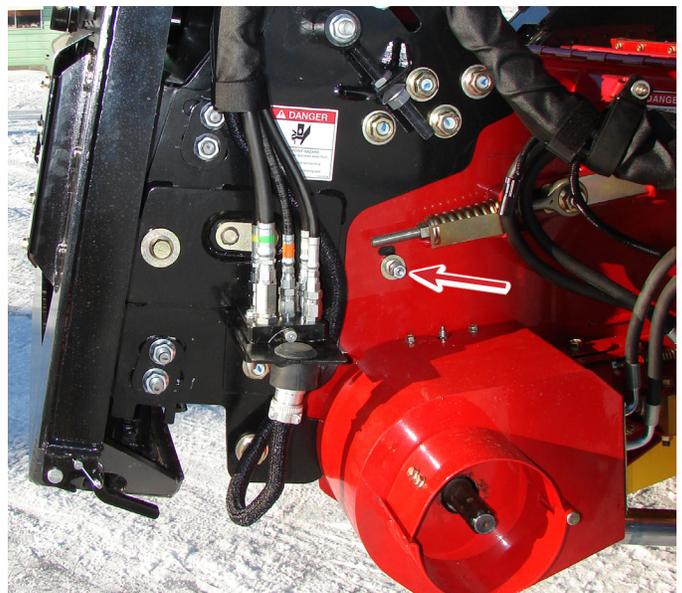
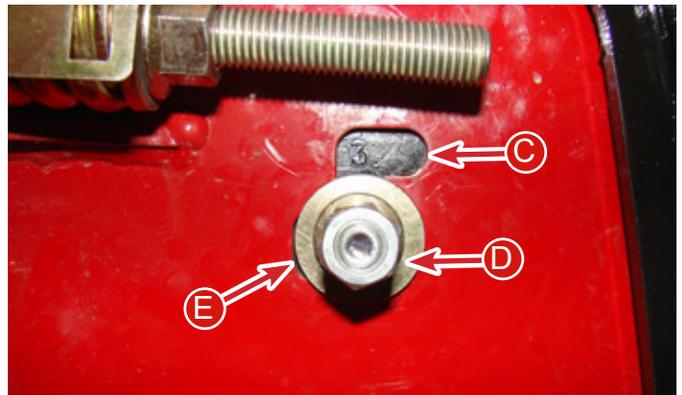
## Conveyor Drum Lower Stop Adjustment

The conveyor drum lower stop has three positions for drum adjustment: upper (C), middle (D) and lower (E). The lower position can no longer be used with the Model CS7020 Leveling System. The original lower stop block has been replaced with a stop block that has four adjustments ranging in 1/8" increments. Each increment is numbered

one through four. The upper position (corn) can only be set in the 1 or 2 positions.

The middle position (small grains) can be set in 1, 2, 3 or 4. To adjust the lower stops, loosen the nuts on the stop bolts. Raise the drum, slide the stop bolts in the slots to the desired position (upper or middle), rotate the stop block to the desired position and tighten the nuts.

Note: Always adjust the lower stops to the same position on both sides of the feeder.



## Header and Combine Connection

Refer to the 5140, 6140, and 7140 Operators Manual for instructions on connecting the header to the combine. All headers require header kits to function properly on the Model CS7020 Leveling System. Contact your dealer for additional information on these kits.

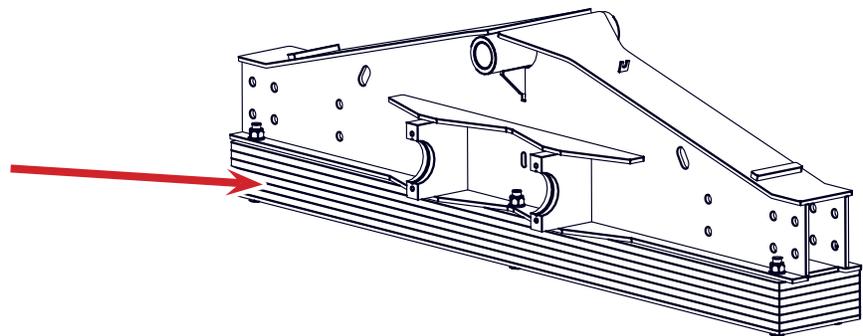
## Rear Axle Weighting

Proper rear axle weighting of a combine equipped with a CS7020 Leveling System is critical to the performance and safety of operation. Rear axle weighting increases the tip angle of the combine to improve down hill maneuvers. The appropriate weighting is dependent on such items as feeder house length, header selection, and tire selection. Consult your authorized Hillco Leveling System dealer for weighting information.

Weight can be added to the rear axle through:

- 1) Calcium Chloride in rear tires
- 2) Hillco Rear Axle Weight Package (Up to 10 weights at 150 lbs per weight)

150 lbs weights can be added to the bottom of the Hillco drop axle. Maximum of 10 weights.



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



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

When first operating the CS7020 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 Case IH NEW Equipment Warranties.

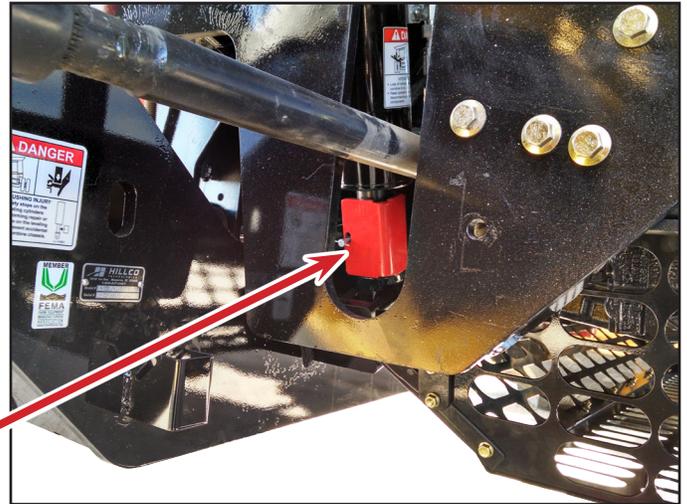
## Rear Axle Toe In

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

## 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 also when hauling the combine. It is recommended that the stops be used during long term storage. When the stops are not being used, they should be stored on the mount next to the leveling cylinder.

Leveling Cylinder Stop



Cylinder Stop Holder



## General Shielding

Before operating the combine all shields must be in place and 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.

## Hydraulic Settings

Refer to the Hydraulic Safety section located on page 6 for precautions regarding the hydraulic system.

The Model CS7020 Leveling System utilizes the existing auxiliary combine hydraulic system for their hydraulic requirements with the exception of the addition of a stand-alone leveling manifold located behind the left shield to the rear of the operator's platform. The hydraulic schematic located in the rear of this manual covers the leveling system circuitry. Consult your combine's operator's manual or contact your Case-IH dealer for diagnostics and maintenance regarding the remainder of the hydraulic system.



**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 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 repaired by replacement. 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 combine's Operators Manual for information regarding hydraulic oil check intervals, and reservoir fluid levels. Leveling and header trim speeds are preset at the factory. If different speeds are desired please contact your Hillco dealer.

## Hydraulic Cylinders



**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.

## DANGER



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.

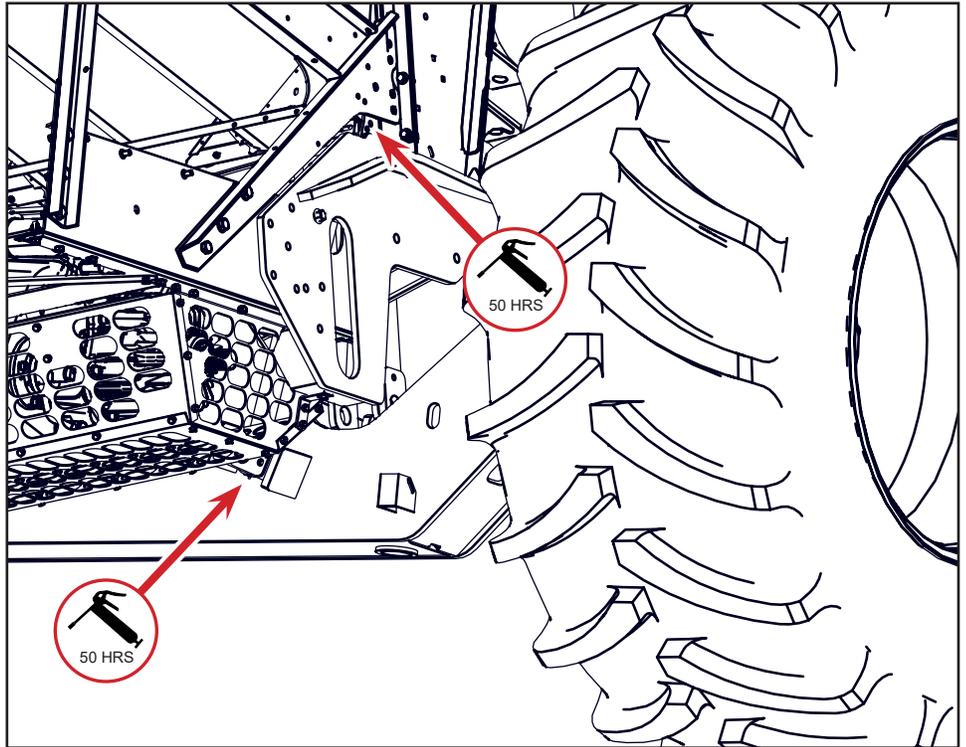
## Grease Locations

Use Case-IH 251H EP or equivalent NLGI #2 Multi-Purpose Lithium Grease.

Master Cylinder  
(Base and Rod)  
50 hrs.  
2 Zerks

Right Leveling Cylinder Base  
50 hrs.  
1 Zerk

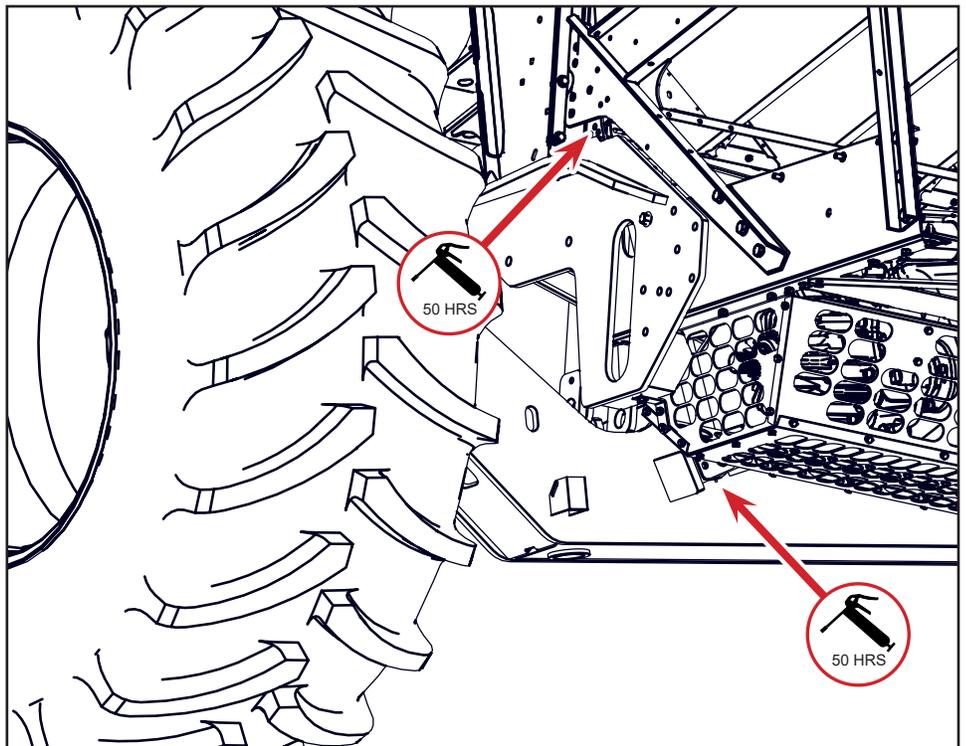
Right Leveling Cylinder Rod  
50 hrs.  
1 Zerk



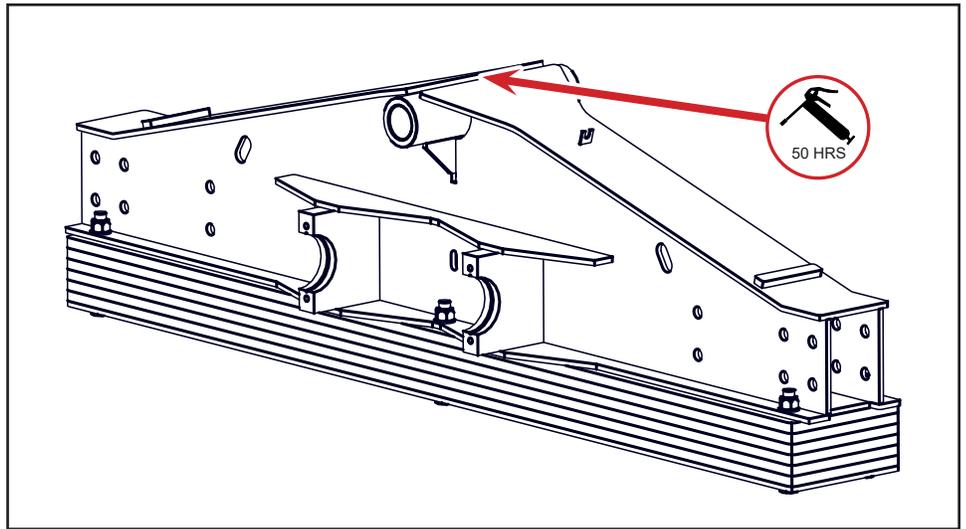
Main Pivot Pin  
50 hrs.  
1 Zerk

Left Leveling Cylinder Base  
50 hrs.  
1 Zerk

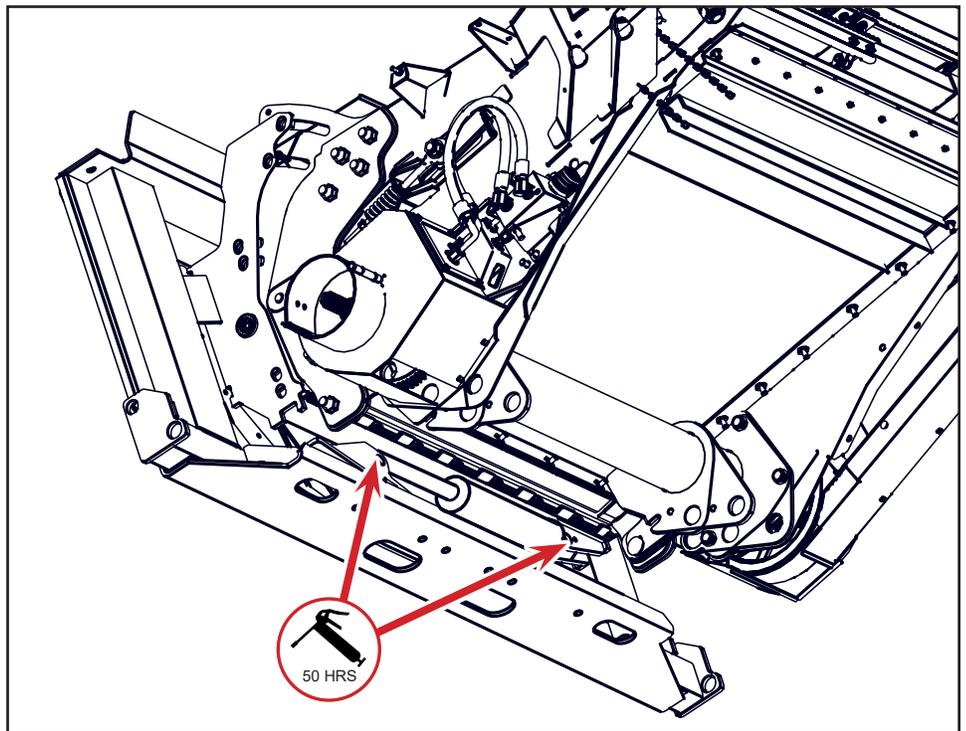
Left Leveling Cylinder Rod  
50 hrs.  
1 Zerk



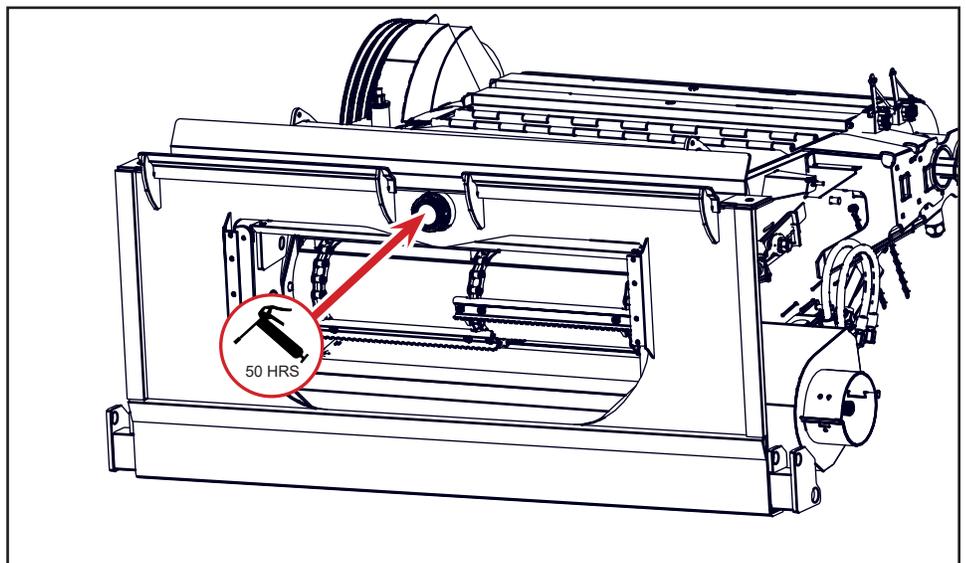
Steering Axle Pivot  
10 hrs.  
1 zerk



Slave Cylinder  
(base and rod ends)  
Below Feeder House  
50 hrs.  
2 Zerks



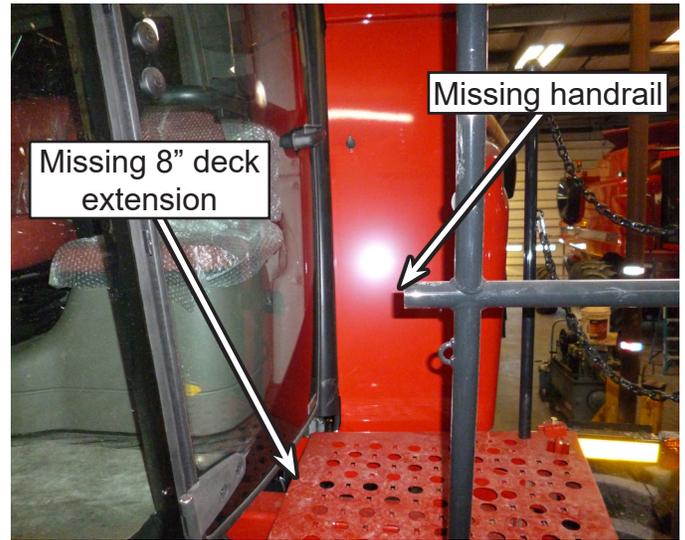
Transition Pivot Pin  
50 hrs.  
1 Zerks



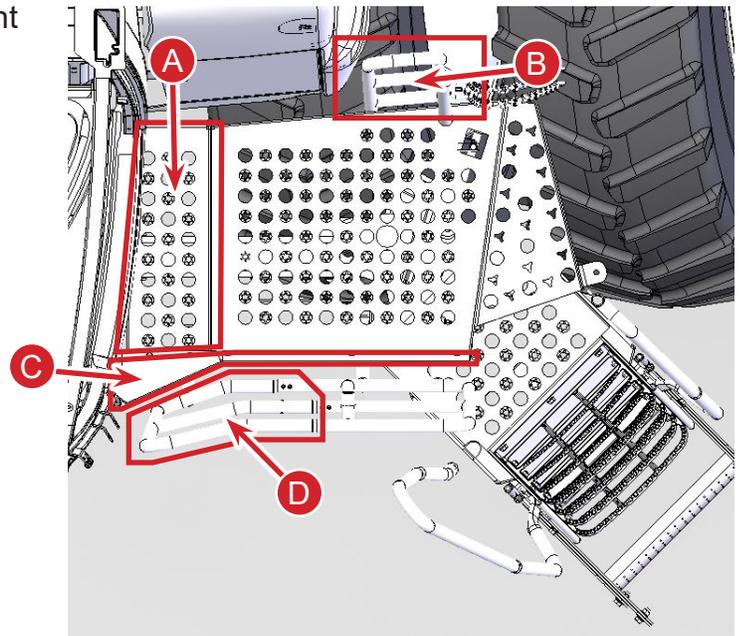
## Ladder Platform Setup

When a new Case-IH combine arrives to the dealer the operator platform is configured as shown.

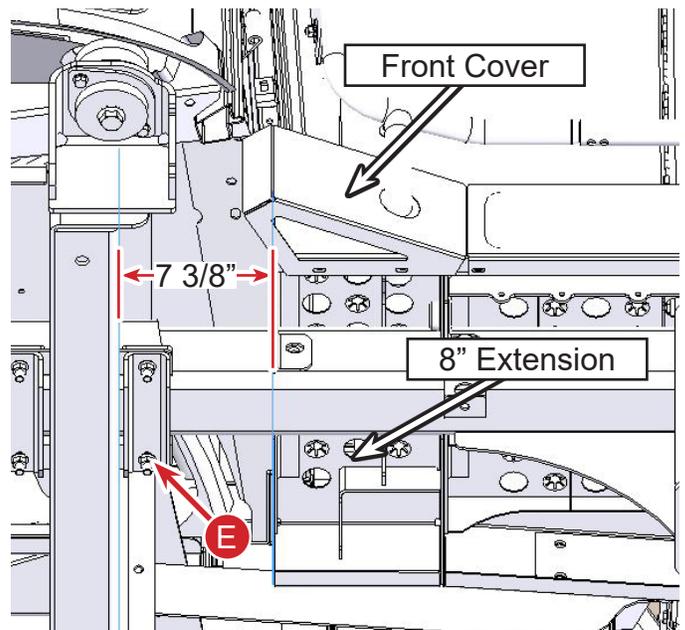
Follow the Operator's Platform Setup Instructions that come with the combine for hardware identification, location & procedure. Use these instructions for proper Hillco Configuration



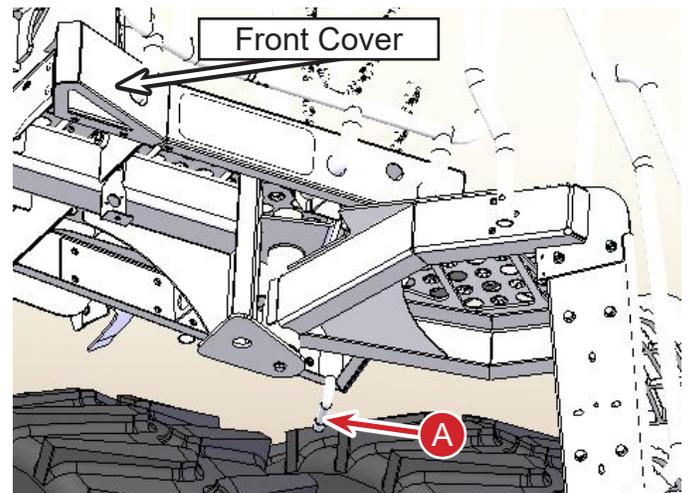
Install the back handrail (B), 8" Extension (A), Front Cover (C) & front handrail (D).



Loosen bolts that secure operator platform (E) so it can be slid out. Slide out the platform until there is 7-3/8" between the cab mounting rail and the 8" extension as shown.



With certain tire sizes the latch (A) that locks the ladder in place may come in contact with the tires. If this occurs cut the handle off and reweld it so that it clears the tire.



## Fasteners

Check Bolt Tightness

After the first 10 hours of operation  
Every season

The following bolts are torqued to special specifications because of the application in which they are used:

Transmission Mounting Bolts: Case IH® torque specifications  
(Medium Strength Loctite is Used on These Bolts, Check for Looseness ONLY)

Final Drive Housing Bolts: Case IH® torque specifications  
(Medium Strength Loctite is Used on These Bolts, Check for Looseness ONLY)

Drive Wheel Hub Bolts: Case IH® torque specifications

Steering Wheel Hub Bolts: Case IH® torque specifications

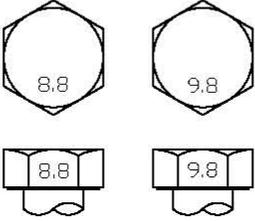
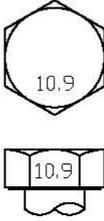
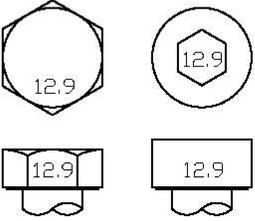
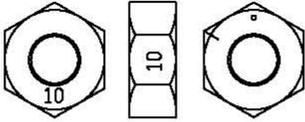
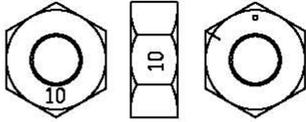
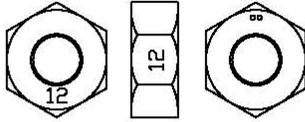
### **Important:**

Consult your Case IH combine's Operators Manual to verify that correct bolts and spacers are used for the Rear Wheel Application.

The following two pages shows torque charts for metric and standard fasteners. Use these charts for checking torques on bolts not shown above.

# Metric Torque Chart

## SI Bolt and Cap Screw Torque Values (For Hillco Leveling Systems Only)

<b>Property Class and Head Markings</b>			
<b>Property Class and Nut Markings</b>			

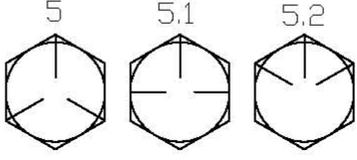
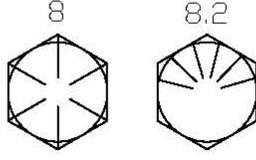
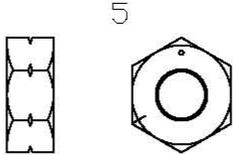
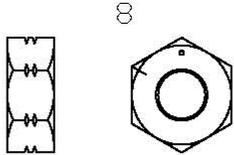
SIZE	Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated(1)		Dry(2)		Lubricated(1)		Dry(2)		Lubricated(1)		Dry(2)	
	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft
M6	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	22	16	28	20	32	24	40	30	37	28	47	35
M10	43	32	55	40	63	47	80	60	75	55	95	70
M12	75	55	95	70	110	80	140	105	130	95	165	120
M14	120	88	150	110	175	130	225	165	205	150	260	190
M16	190	140	240	175	275	200	350	255	320	240	400	300
M18	260	195	330	250	375	275	475	350	440	325	560	410
M20	375	275	475	350	530	400	675	500	625	460	800	580
M22	510	375	650	475	725	540	925	675	850	625	1075	800
M24	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

- (1) "Lubricated" Means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.  
 (2) "Dry" means plain or zinc plated without any lubrication.

## Standard Torque Chart

# Unified Inch Bolt and Cap Screw Torque Values

(For Hillco Leveling Systems Only)

<b>SAE Grade and Head Markings</b>		
<b>SAE Grade and Nut Markings</b>		

SIZE	Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated(1)		Dry(2)		Lubricated(1)		Dry(2)	
	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft	N*m	lb-ft
1/4	9.5	7	12	9	13.5	10	17	12.5
5/16	20	15	25	18	28	21	35	26
3/8	35	26	44	33	50	36	63	46
7/16	55	41	70	52	80	58	100	75
1/2	85	63	110	80	120	90	150	115
9/16	125	90	155	115	175	130	225	160
5/8	170	125	215	160	240	175	300	225
3/4	300	225	375	280	425	310	550	400
7/8	490	360	625	450	700	500	875	650
1	725	540	925	675	1050	750	1300	975
1-1/8	900	675	1150	850	1450	1075	1850	1350
1-1/4	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	1750	1250	2150	1550	2700	2000	3400	2550
1-1/2	2250	1650	2850	2100	3600	2650	4550	3350

(1) "Lubricated" Means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

(2) "Dry" means plain or zinc plated without any lubrication.

## Tire Inflation

Keep the tires properly inflated to the pressures shown in the combine's operator's manual for the front and rear tires. Both under-inflation and over-inflation are detrimental to tire life. Don't re-inflate 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.

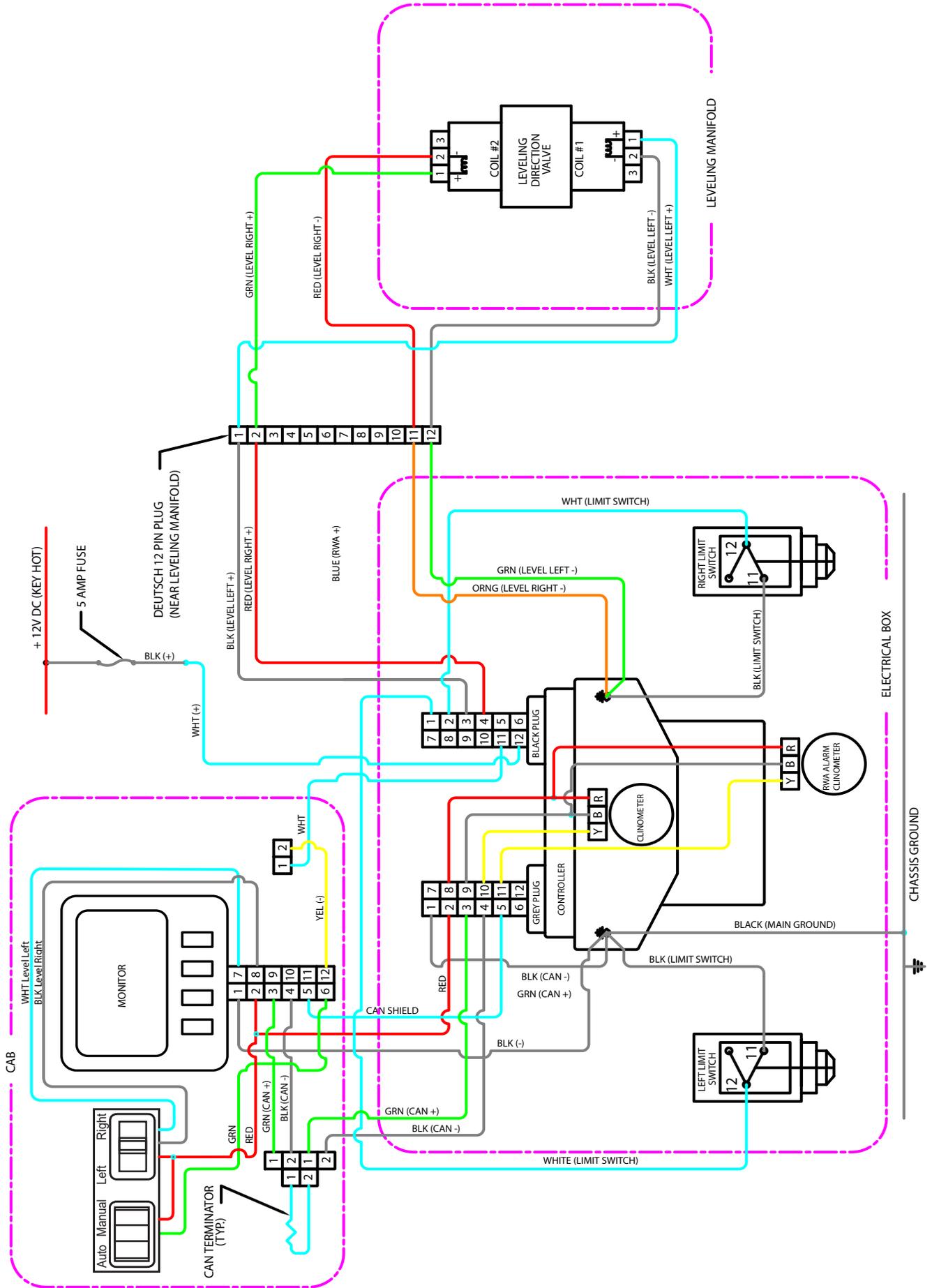


### **WARNING**

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.

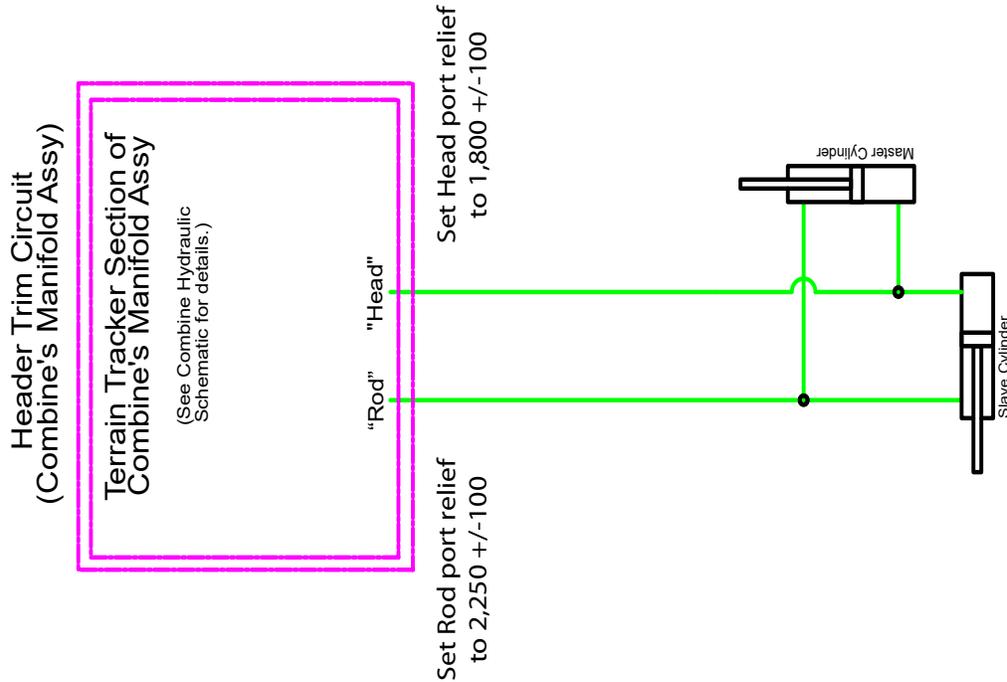
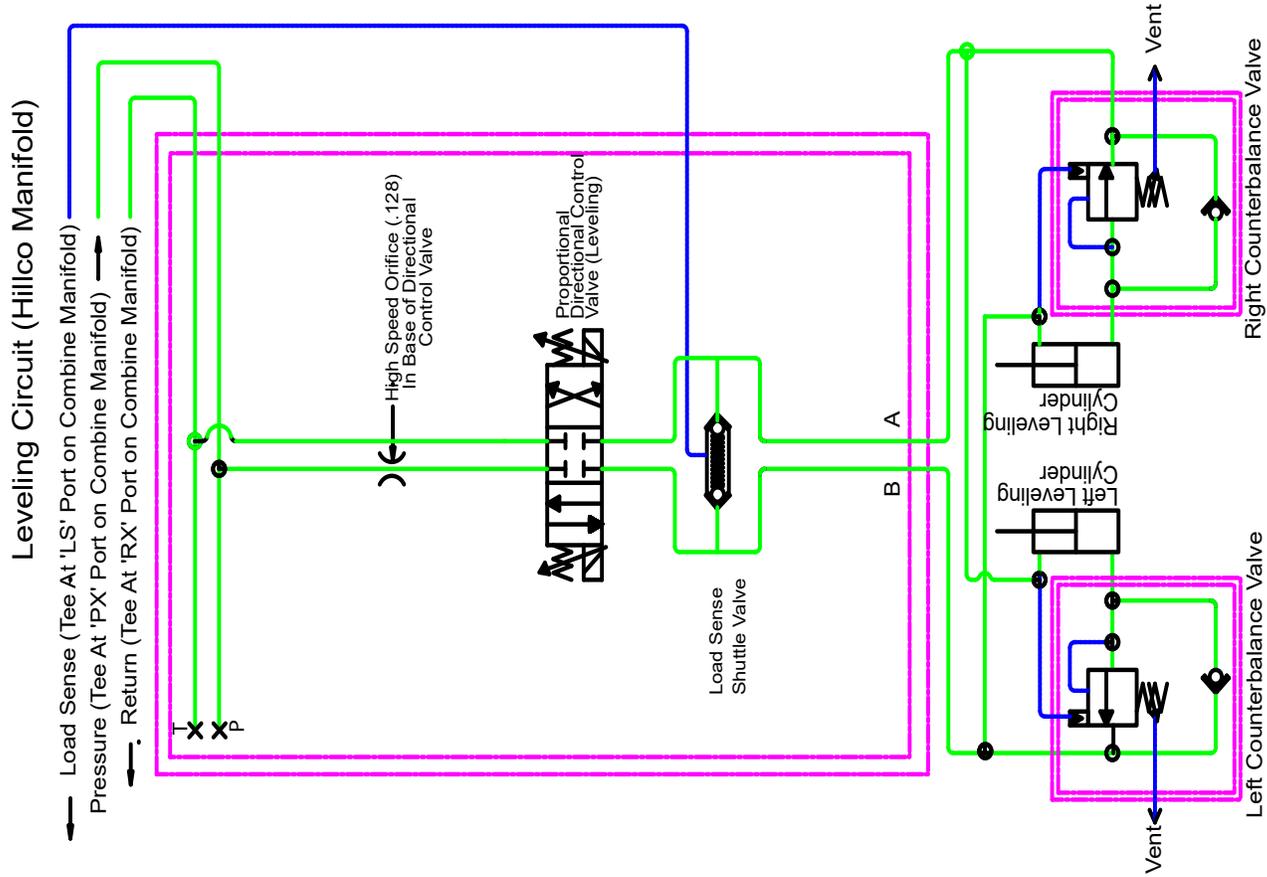
# Model CS7020 Leveling Electrical Circuit Schematic

FOR 5150, 6150, & 7150 CASE COMBINES  
HILLCO S/N 20001 thru 20999



# Model CS7020 Leveling Hydraulic Circuit Schematic

FOR 5150, 6150, & 7150 CASE COMBINES  
HILLCO S/N 20001 thru 20999



## Notes