

Model 2955S-70S
Sidehill Leveling System
Operator's Manual

D-040820CLA02A



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. It is suggested 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 2955S 2970S (Circle One)

Leveling System Serial Number _____ - _____

Combine Model Number _____

Combine Serial Number _____

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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 1st through May 31st 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 1st through September 30th 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

Warranty Registration

Fill out the Warranty Registration Card that accompanies this Operator's Manual and mail it to: Hillco Technologies
107 1st Ave.
Nezperce, Id 83543

 HILLCO TECHNOLOGIES Warranty Registration		
IMPORTANT!! This card must be fully completed and returned to Hillco Technologies within thirty (30) days of purchase by retail customer to validate the product warranty.		
Customer Information:		
Name: _____	Phone: (____) ____-____ Fax: (____) ____-____	
Address: _____	City: _____ State: _____ Zip Code: _____	
Hillco Product Information:		
Product Purchased: _____	Date of Purchase: ____/____/____	
Model #: _____	Serial #: _____	
Combine & Header Information:		
Combine:	Brand: _____ Model #: _____ Serial #: _____	
Header:	(1) Brand: _____ Model #: _____ Width/Rows: _____	
	(2) Brand: _____ Model #: _____ Width/Rows: _____	
	(3) Brand: _____ Model #: _____ Width/Rows: _____	
Dealer Information:	Customer Signature:	
Dealer Name: _____	I certify that the above information is correct and I have received and read the Operator's Manual.	
City: _____ State: _____		Date: _____
Salesman (opt.): _____		Signature: _____

Owner's Obligation

Warranty Registration – You must complete the Warranty Registrations Card and submit it to Hillco Technologies, Inc. within thirty (30) days of the date of the delivery to register the new equipment under Hillco's Warranty Policy.

Warranty Void if Not Registered!

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 leveling system will not be covered under Hillco's Statement of Limited Warranty.

INTRODUCTION

Thank you for choosing the Hillco Technologies' Sidehill 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 John Deere STS combines.

Safe, efficient and trouble free use of your Sidehill 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

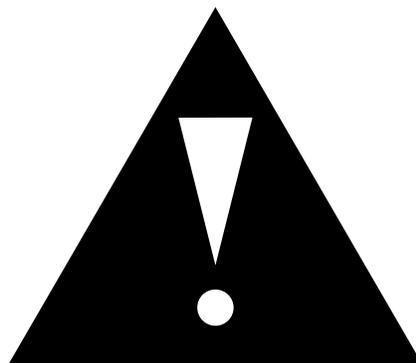


Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Hillco dealer or Hillco if you need assistance or information at 1-800-937-2461.

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

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 2000 Series 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 equipped combine 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 combine for extended periods of time when it is in an out-of-level position.
9. Always travel at a safe speed. Use caution when making turns or traversing ditches.
10. Leveling Cylinder Stops should be used on combines that rely on the limit switches to stop the leveling prematurely to prevent sheet metal damage.
11. The use of after-market grain tank extensions is prohibited from use on combines equipped with the Model 2955S-70S leveling systems.
12. Do not operate the leveling system with the ladder in the 90° position. Leveling the combine in the ladder in the 90° will cause damage to the ladder.

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. Gangrene may set in, in as few as 3 hours!
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: cylinders, valves, hydraulic hoses, adapters, pumps, manifolds, or reservoirs 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.



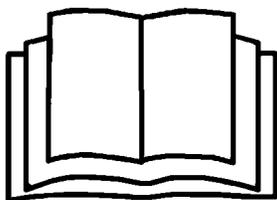
SERVICING AND MAINTENANCE SAFETY

1. Review the Operator's Manual and all safety items before servicing or maintaining the leveling system.
2. Place the leveling system in the "Manual" mode (Auto/Manual Indicator not lit), 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 Leveling Indicator is in "Manual" mode (not lit) 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 leveling system. When a decal displays this symbol refer to the Operator's Manual for further instructions.

SAFETY LABEL LOCATIONS

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

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.

Right Cab Window



Leveling Cylinder And Manifold



Leveling Controller



Leveling System Hazard (Located In the Second Step)



Front of Carriage and Rear Drop Axle (Left and right sides)



Transition Adapter



PRODUCT DESCRIPTION

The Hillco Sidehill Leveling system designed for John Deere STS combines. Hillco designed to maintain the STS combine's thrashing capacity and efficiency on contours of up to slopes of 18%. We designed this leveling system to be installed with little modification to the combine.

This leveling system tilts combine chassis laterally, compensating for slopes up to 18% automatically as it moves across sloping terrain. So the thrashing platform remains level and at its maximum efficiency. The operator also stays at their maximum efficiency.



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

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

CONTROLS & COMPONENTS

LEVELING CONTROLS AND COMPONENTS

Leveling Control Switches

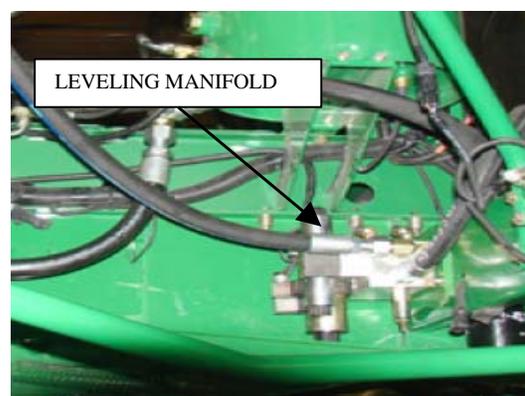
The leveling switches are located in the armrest console.

- A- Road Transport Disconnect Switch**
- B- Road Transport Disconnect Indicator Light**
- C- Automatic Leveling Control Switch**
- D- Automatic Leveling Indicator Light**
- E- Manual Leveling Control Switch**



Leveling Control Manifold

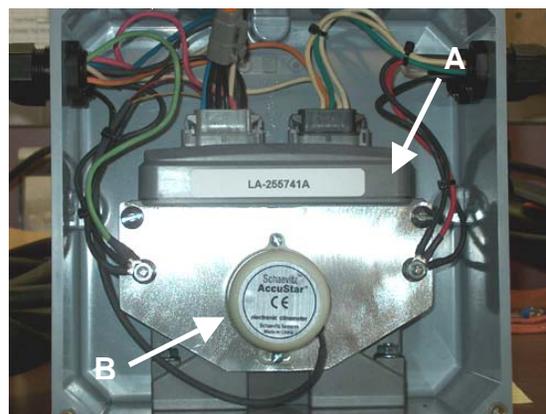
The leveling control manifold is located below the hydraulic reservoir on the left side of the combine. The operator electronically activates it by either the automatic leveling controller or by manual override.



Leveling Controller

The electronic leveling controller consists of a clinometer for slope sensing and a control module to process that information and output signals to the hydraulic leveling valve. When auto leveling is activated the leveling controller levels the chassis up to a maximum slope of 18%.

- A- Leveling Control Module**
- B- Clinometer Slope Sensor**



Limit Switches

When the combine reaches maximum leveling, the limit switch shuts off the leveling signal. The limit switch lights the maximum level indicator on the steering column.

A- Limit Switches



Leveling Cylinder Stops

In some tire configurations; the leveling system can tilt to the point where the wheels contact the gull wing doors. Although the limit switch will prevent contact, Hillco strongly recommends installing leveling cylinder stops to prevent damage in the event of hydraulic or electrical failure.

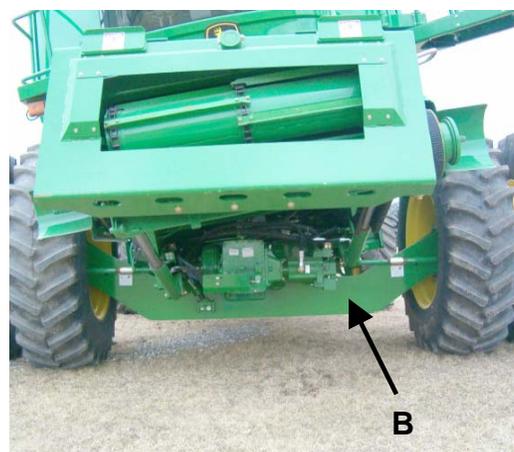
A- Leveling Cylinder Stops



Carriage

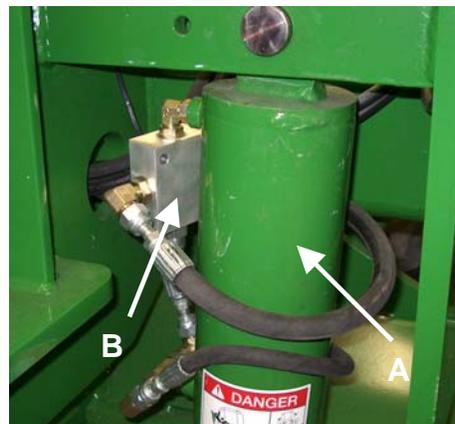
The carriage is designed to support the combine's chassis while allowing the combine to rotate. It consists of an undercarriage and an overcarriage. The drive wheels, final drives, and transmission are mounted to the undercarriage. The overcarriage bolts to combine's axle and chassis. The leveling controller and limit switches are mounting to back of the overcarriage. The leveling cylinders connect the overcarriage to the undercarriage. The carriage raises the combine chassis five inches.

B- Carriage



Hydraulic Leveling Cylinders and Counter-Balance Valves

There are two leveling cylinders located on the rearward side of the leveling system's undercarriage. 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 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 or disconnection. Never repair or replace hydraulic leveling related components without first installing safety stops on the cylinders.



- A- Leveling Cylinders**
- B- Counter-Balance Valve**

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 during long term storage. When the stops are not being used, they should be stored on the mount next to the leveling cylinder.



- C- Cylinder Safety Stops**

Drop Axle

The drop axle accomplishes two things. First the drop axle lowers the chassis five inches to match the height change due to the leveling system. Second, the drop axle allows the rear axle to rotate through a full range of motion.

Warning –Because of the increased rotation of the rear axle it is necessary to space the rear wheels out to avoid interference with shields. See the Adjustment Section for more information.

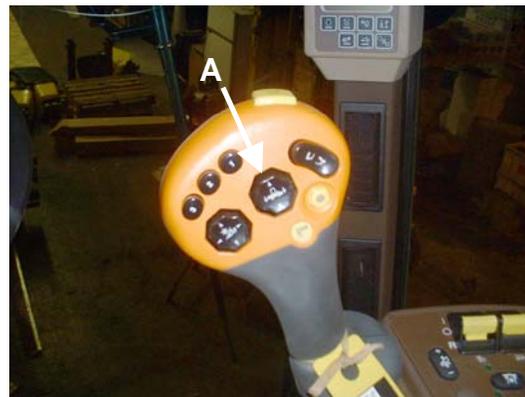


- D- Drop Axle**

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 other Contour Master control switches.

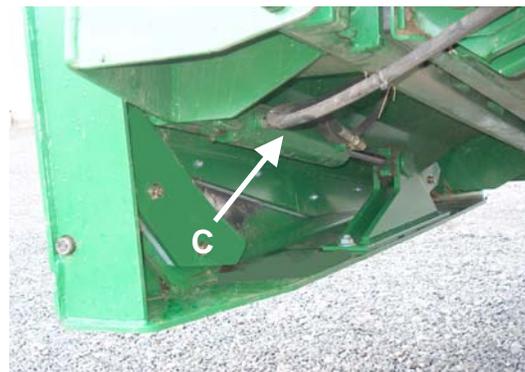
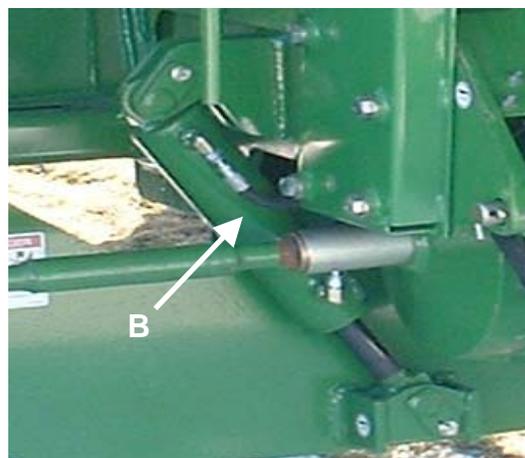


Header Tilt System

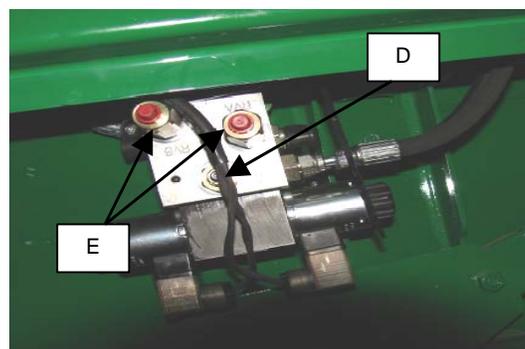
The header tilt hydraulic system consists of the header tilt control valve, master cylinder, slave cylinder, flow control, and relief valve.

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.



- A- Header Trim switch**
- B- Master Cylinder**
- C- Slave Cylinder**
- D- Trim Flow Valve**
- E- Trim Relief Valves**



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.

Ladder Position

Operating the leveler with the ladder in the 90° will damage the ladder. To provide increased operator access, Hillco has provided an alternative ladder position of 52°. Hillco recommends using this ladder position.

Field Operation - Manual Leveling

To manually level the combine, the road transport disconnect switch (B) must be off (the indicator light (A) next to the switch must be not lit). Press the left side of the manual leveling control switch (E) to level left, press the right side of the button to level right. In the auto-leveling mode the manual leveling control switch will override the automatic leveling control while depressed. As soon as the switch is released the leveling will resume in automatic mode.

Field Operation - Automatic Leveling

To enter the auto-leveling mode, depress the auto-leveling switch (C). The auto-leveling indicator lamp (D) will light when in the auto-leveling mode. In auto-leveling mode the leveling system will automatically correct for slopes to 18%. When the leveling system reaches maximum level right, or left, the maximum level indicator lamp will light on the steering column.



Caution—If you are unloading the combine while harvesting, take care to ensure that the unloading auger does not tilt into the truck.

Road Transport

When road transporting the combine the auto level switch (C) must be off and the road transport disconnect switch (B) should be in the on position (the indicator lamp (A) will be lit).

- A- Road Transport Disconnect Switch Indicator light**
- B- Road Transport Disconnect Switch**
- C- Automatic Leveling Control Switch**
- D- Automatic Leveling Indicator Light**
- E- Manual Leveling Control Switch**



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.



A- Header Tilt Switch

Note—The Contour Master's Angle Sensor In-Cab Display will not function when the combine is equipped with a sidehill leveling system. When calibrating the header do not calibrate the Angle Sensor. Attempts to calibrate the sensor will cause the system to display error codes. The Contour Master functionality will not be affected by not calibrating the angle sensor.

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 the road transport mode. This will ensure that there are not any unexpected weight shifts during the loading process. In addition to the Tie Down location, Hillco provides T-hook slots on the carriage for securing combine to the trailer.

A-Tie Down Slots



MAINTENANCE

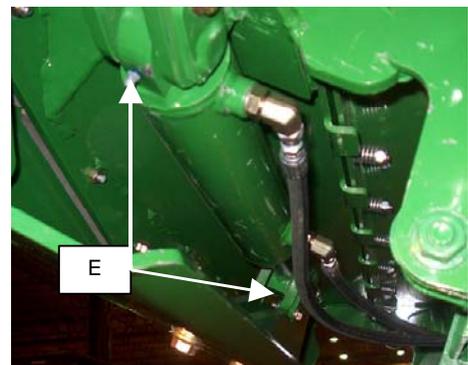
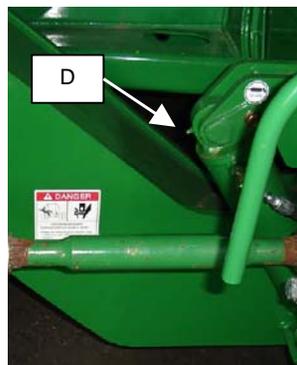
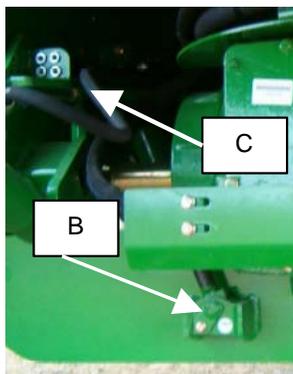
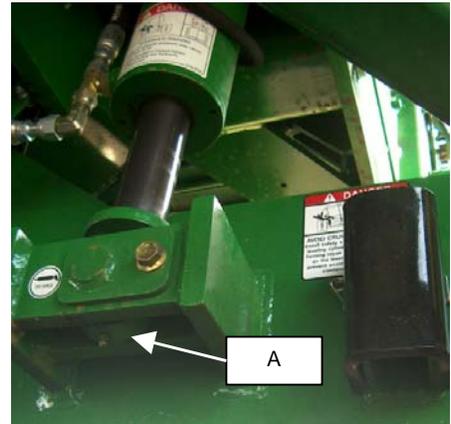


Prior to any maintenance, follow these procedures:
Park the combine on level ground, raise the header, turn off the ignition, block the tires, and lower the header lift cylinder safety stop.

Lubrication – Leveling System

All grease points on the Hillco Leveling System require a 50-hour grease interval. None of the lubrication points can be over-greased.

- A- Rod end of main leveling cylinders**
- B- Rod end of the master cylinder**
- C- Grease bulkhead**
- D- 2955s ONLY- Base end of the master cylinder**
- E- Base and rod end of the slave cylinder**



Lubrication – Header Drive Shafts

Because there are a number of header configurations that can be used with this leveling system, Hillco cannot anticipate the drive shafts used to drive these headers. It will be necessary to modify the drive shafts to allow access for greasing.

Standard PTO Style Drive Shafts - These drive shafts utilize a single cross at each end of the drive shaft. Grease zerks on both crosses and the zerk on the outer profile tube (at the slip joint) should be greased on 50-hour intervals. The zerk on the outer profile tube can be accessed through the grease slot in the outer shield tube by fully collapsing the driveline. Hillco suggests adding an additional access slot in the outer shield tube that aligns with the grease zerk when the drivelines are coupled to the combine's reverser shaft and the combine is on level ground.

Constant Velocity Drive Shafts - Due to the high working angles of the drive shafts on narrow headers, constant velocity drive shafts are used to transmit power to the header. These drive shafts utilize two universal joints and a ball-and-socket joint at each end of the drive shaft. There are a total of 7 grease zerks per drive shaft and they must be greased on 8-hour intervals. CV drive shafts will not tolerate a lack of grease. The grease zerks access slots should be enlarged to ensure that these zerks could be greased.

Consult the lubrication label on each drive shaft for more details.

100 Hour – Annual Inspection

Hillco leveling systems pass through several quality control pre-delivery inspections to ensure that all mounting fasteners are properly torqued before entering service. However during the break-in process, mating surfaces may readjust and reduce the torque of these fasteners. It is strongly recommended that the operator perform the following inspection at 100 hours and again prior to each year of service.

Inspect the following areas:

REAR AXLE

- All Bolts are properly tightened (combine to spacer and spacer to rear axle are 153 lb-ft)
- Torque wheel bolts (150 lb-ft + ¼ turn)
- Steering hoses are without pinch or abrasion points

CARRIAGE

- Torque all bolts properly
- Hydro hoses routed properly
- Brake Pedal should depress no more than ½ way
- Adjust parking brake properly
- Brake lines are properly secured and free of pinch and abrasion points

Bolt location	Torque
Overcarriage to JD Axle	400 lb-ft
Axle Extensions	675 lb-ft
Final Drive Mounting (top two)	300 lb-ft
Final Drive Mounting (bottom rear)	148 lb-ft +1/4 turn
Final Drive Mounting (bottom front)	148 lb-ft +1/2 turn
Transmission Mounting	235 lb-ft

HYDRAULICS

- Hoses are without pinch or abrasion points
- Hydraulic reservoir is filled to the proper level
- Main Engine Gear Case is filled to proper level
- No leaks in the hydraulic system
- Torque pump mounting bolts to 39 lb-ft of torque

ELECTRICAL

- Harnesses are without pinch or abrasion points
- Limit switches set such that the rotation stop ¼" short of cylinder's full stroke

TRANSITION

- Tighten the clamping and pivot bolts to 153 lb-ft torque
- Tighten the tilt slave cylinder mount bolts to a torque of 225 lb-ft



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

ADJUSTMENTS



Prior to any adjustments, follow these procedures:

Park the combine on level ground, raise the header, turn off the ignition, block the tires, and lower the header lift cylinder safety stop.

Leveling Controller Adjustment

When operating properly, the leveling control system should maintain a chassis position within 1.5 degrees of level when returning to level from either the left or right. If this 3-degree dead band seems unevenly split between the left and the right sides then the clinometer requires adjustment.

To adjust the clinometer, loosen the top and bottom bolt on the clinometer. The bottom hole is slotted allowing for rotation of the clinometer. Move the bottom of the clinometer in the direction you wish the combine to level. Make small (1/16") adjustments due to the sensitivity of the controller. If the combine is listing to the left at level, move the bottom of the controller to the right side of the combine. Move the clinometer to the left side of the combine if the combine lists to the right at level. It is best to perform the return to level test at low engine idle.

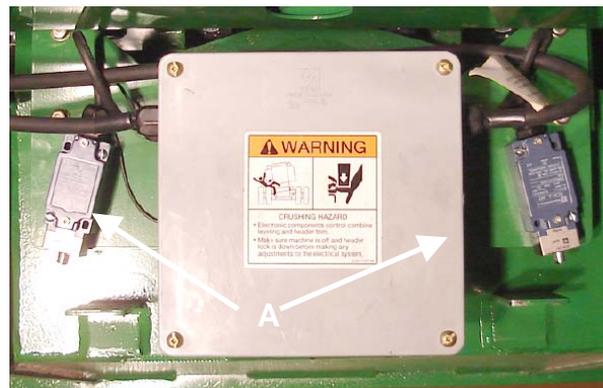


A- Leveling Controller

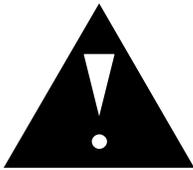
Limit Switch Adjustment

Locate the two limit switches that are mounted beside the gray controller box near the leveling system's main pivot pin and on the back of the carriage.

Loosen the two mounting screws on each limit switch and lift them up to the top of their slots, then slightly tighten the screws to hold the limit switches in place.



Next, place the leveling system into manual mode and 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 portion of the combine's chassis. Next, shut off the machine. Loosen the two screws that mount the left limit switch to its mounting plate. Adjust the left limit switch downward until the undercarriage front plate activates the plunger. You will hear a click when the switch is activated. The plunger should be compressed 1/16-1/8" past the point that it clicks. Test the limit switch by manually leveling right, away from the switch, and then back to the left. The combine should stop leveling when the switch is activated and the maximum level indicator lamp on the steering column should illuminate. Repeat the process for the right limit switch.



Caution—In some tire configurations, the tire can contact the gull wing doors. In this case, the limit switches must be adjusted to prevent tire contact with the combine chassis. However, to prevent chassis and tire damage in the event of a hydraulic or electrical failure, Hillco strongly recommends that cylinder stops be installed on the leveling cylinders. Cylinder stops may be ordered from Hillco. Hillco is not responsible for chassis damage that occurs due to the lack of appropriate cylinder stops.

Header Shims

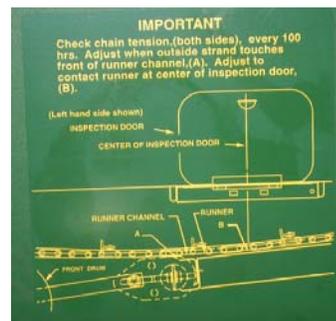
Shims can be purchased from your JD dealer to raise the header in relation to the Hillco transition's header adapter. The floor of the header should sit level or slightly higher than the bottom of the opening of the header adapter, to allow for smooth crop flow. These are the same plates that are used on the original JD feeder house.

A- John Deere Header Shims



Feeder Chain Adjustment

Follow the original John Deere feeder chain adjustment instructions found on the under side of the inspection doors on the top of the combine's feeder spout.



Fore/Aft Tilt Frame Adjustment



Caution—If adjusting the tilt frame with the header on the combine, it is necessary to set the header on level ground in order to relieve tension the turnbuckles. Shut the engine off, set parking brake and remove key.

Loosen the five clamping bolts (A) and the pivot bolt (B) on each side of the feeder house.

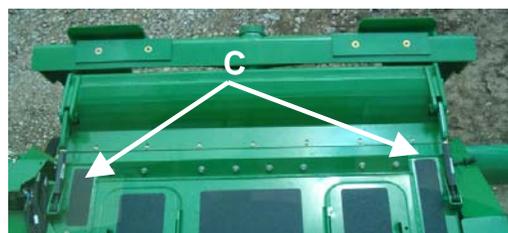
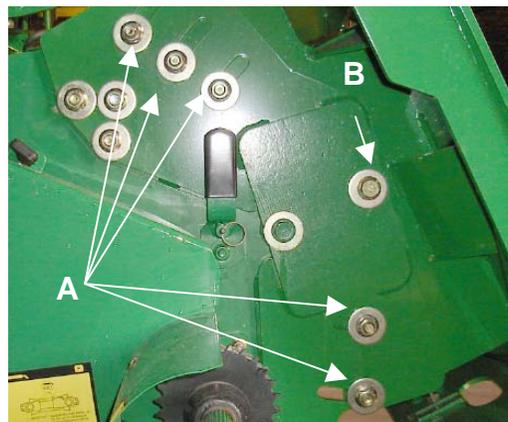
Loosen the jam nuts on the turnbuckles.

Adjust the turnbuckles until the desired header angle is achieved.

Tighten the jam nuts.

Tighten the clamping bolts and pivot bolt to 153 lb-ft of torque.

A—Clamping Bolts
B—Pivot Bolt
C—Turnbuckle



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

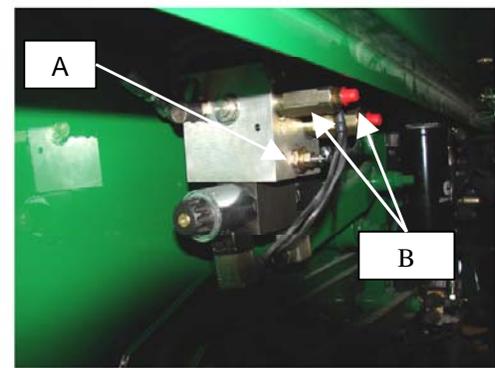
Lateral Tilt Flow Control Adjustment

The lateral tilt flow control valve (A) 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 necessary to adjust the header's rotational rate.

To adjust the header rotational 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.

Specification

Left-to-Right Cycle Time-----14 sec



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. However in 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.

- A- Tilt Flow Control Screw**
- B- Tilt Pressure Relief Valve**

	<p>Caution—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.</p>
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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.

REAR AXLE SPACING

On a combine equipped with a Hillco Leveler the rear axle has a greater rotation range. As a result the rear axle spacing must be spaced to prevent shielding interference. Refer to the following chart for Hillco's rear axle spacing recommendations

Steering Tire Size	Tire Tread- Centerline to Centerline				
	Position A Inches	Position B Inches	Position C Inches	Position D Inches	Position E Inches
14.9-24 8PR R1	X	123.1	131.1	139.1	Y
16.9-26 R1	X	130.4	138.4	146.4	154.4
18.4-26 R1 6PR	X	127.4	135.4	143.4	151.4
18.4R-26 R1	X	127.4	135.4	143.4	151.4
18.4-26 R2 6PR	X	127.2	135.2	143.2	151.2
600/65R28 R1W	X	X	134	142	150
18.4-30 R2 10PR	X	X	135.5	143.3	151.3
28I-26 R1 12PR	X	X	X	152	160
28L-26 R2 12PR	X	X	X	152	160

X—Not recommended due to shielding interference.

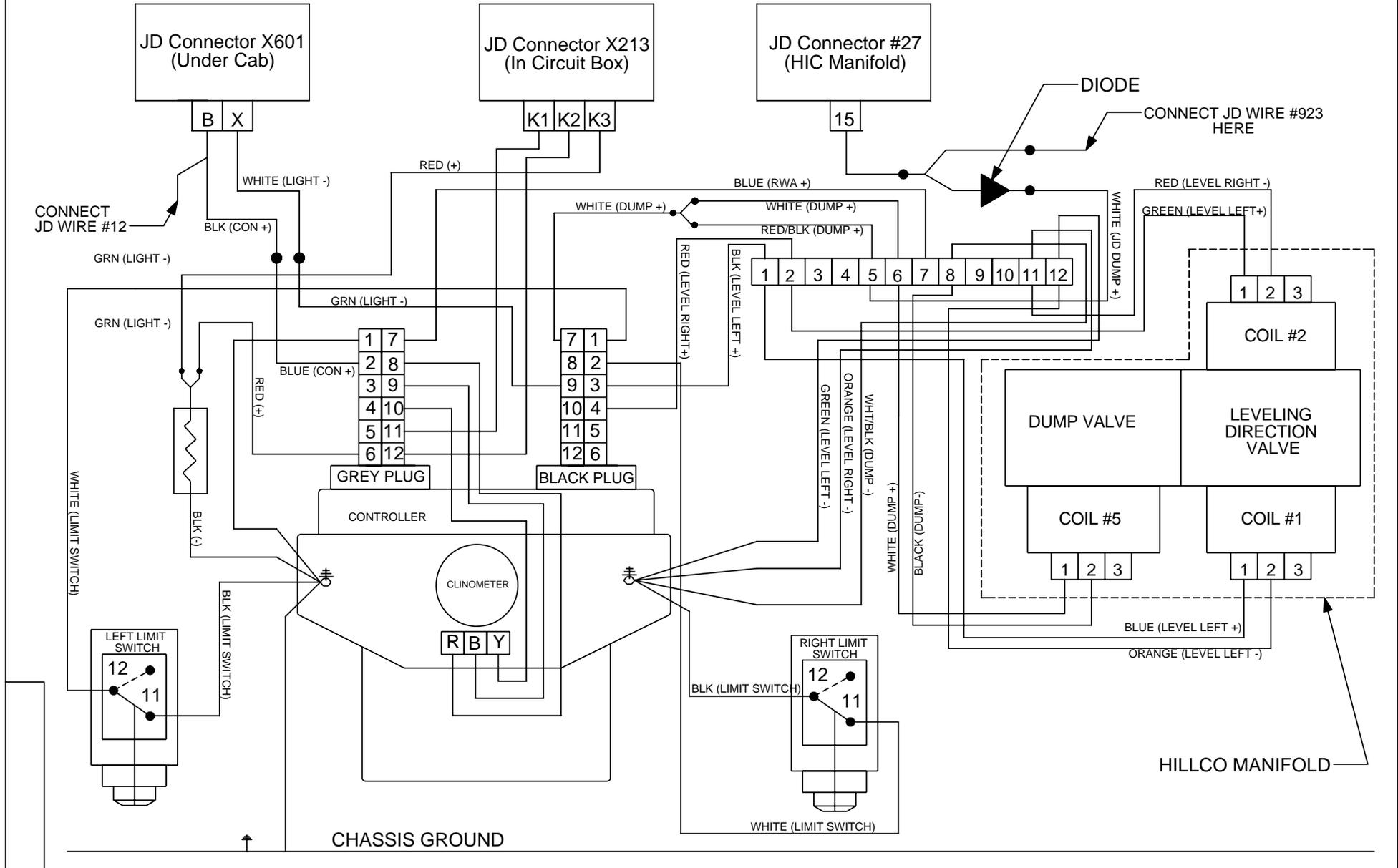
Y—Not recommended to possible overextension of axle.

Notes

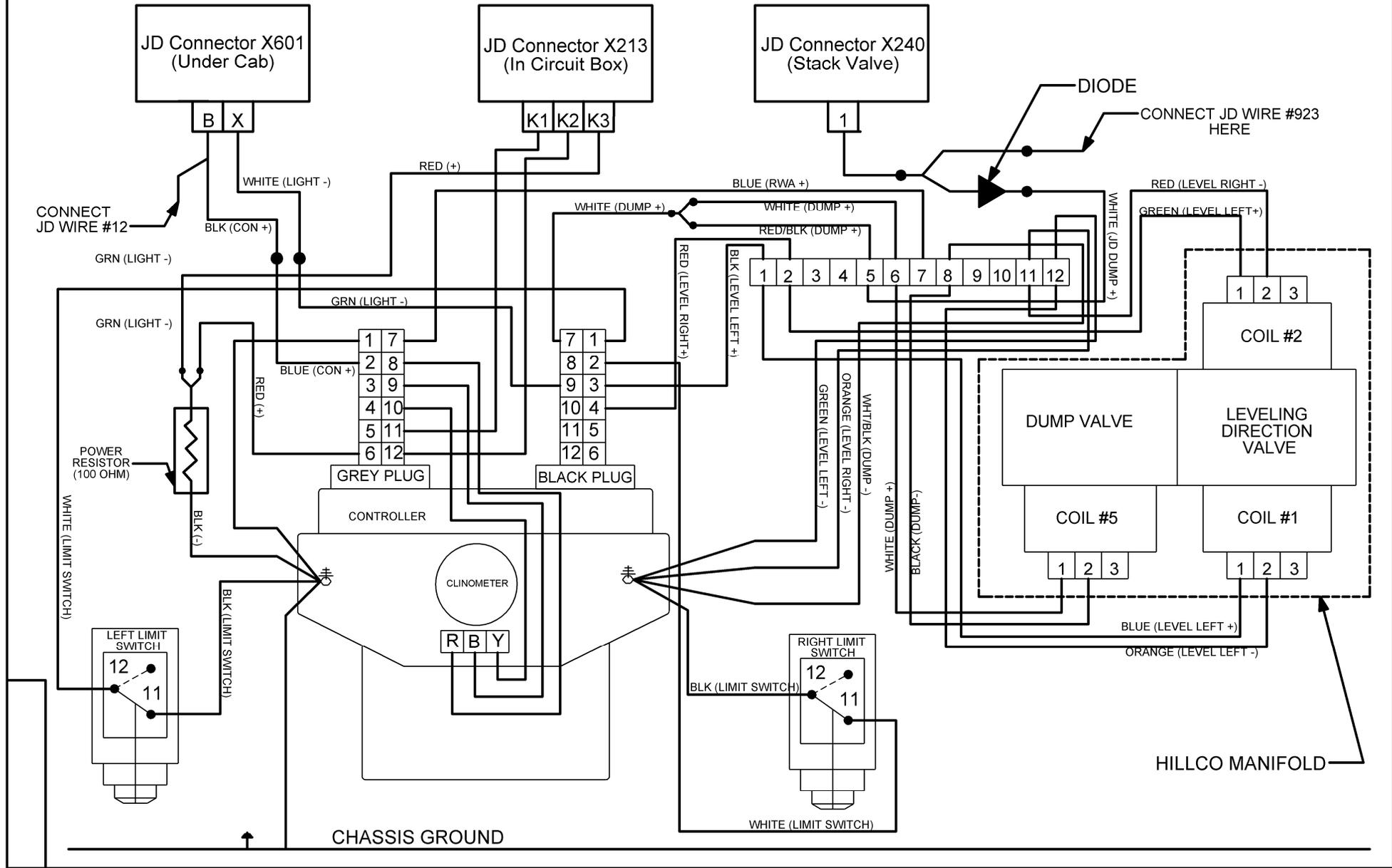
Schematics

Sheet 1 of 1				Part #	
REV.	DESCRIPTION	DATE	BY	Designed By	SGD
A	Release for Production	03/30/07	SGD	Description	Leveling Electrical Schematic
				Drawn By	SGD
				Product	Model 2970/55S
				Page ID	1
				S/N	Serial Numbers 1201-1299
					Wt:
					Scale: 1:4

FOR STS COMBINES 9560 (715301-); 9660 (715401-);
9760 (715501-); 9860 (715601-)



Sheet 1 of 1				Part #	
REV.	DESCRIPTION	DATE	BY	Designed By	SGD
A	Release for Production	03/30/07	SGD	Description	Leveling Electrical Schematic
FOR STS COMBINES 9560 (705401-715300); 9660 (705501-715400); 9760 (705601-715500); 9860 (705701-715600)				Drawn By	SGD
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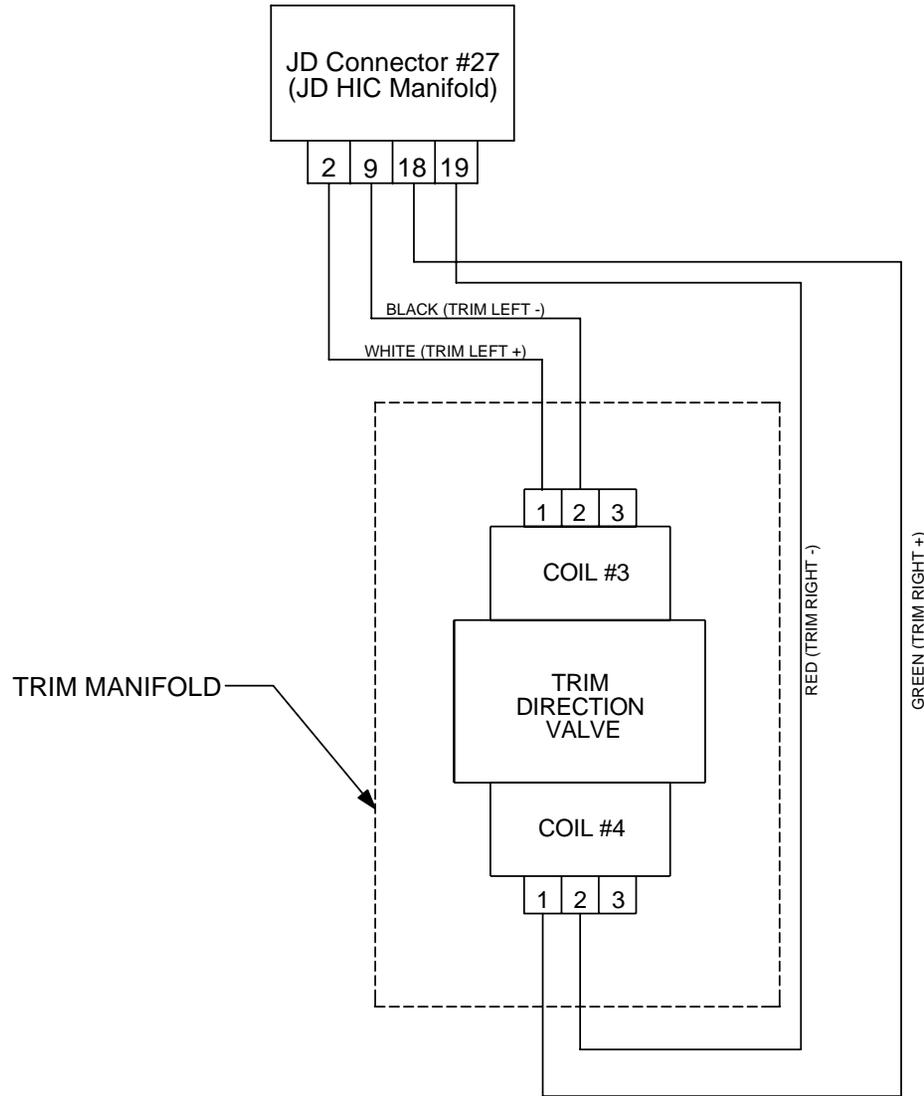


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Sheet 1 of 1				Part #	
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Drawn By	SGD	Product	Model 2970/55S	Wt:	
Page ID	1	S/N	Serial Numbers 1201-1299	Scale: 1:4	

REV.	DESCRIPTION	DATE	BY
A	Release for Production	03/30/07	SGD

FOR STS COMBINES 9560 (7153000-); 9660 (715400-);
9760 (715500-); 9860 (715600-)



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Sheet 1 of 1

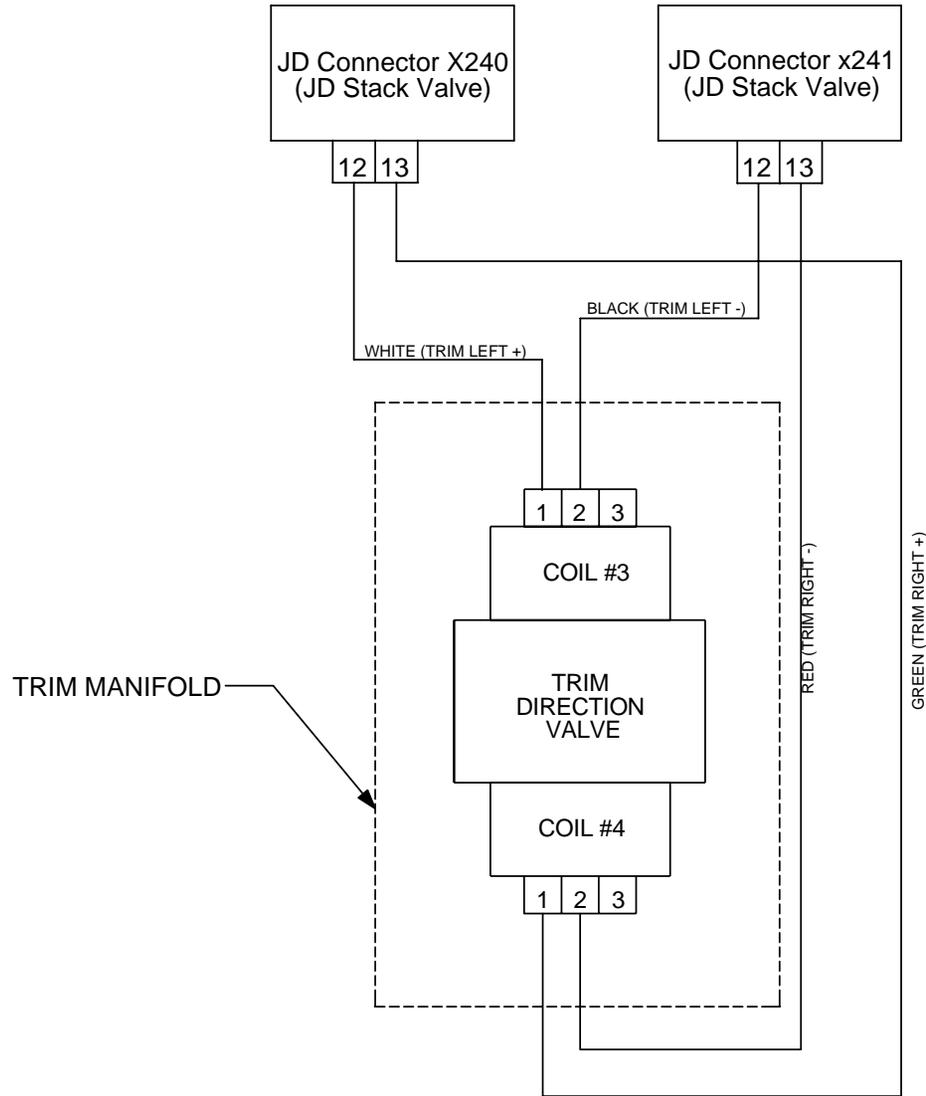


Part #

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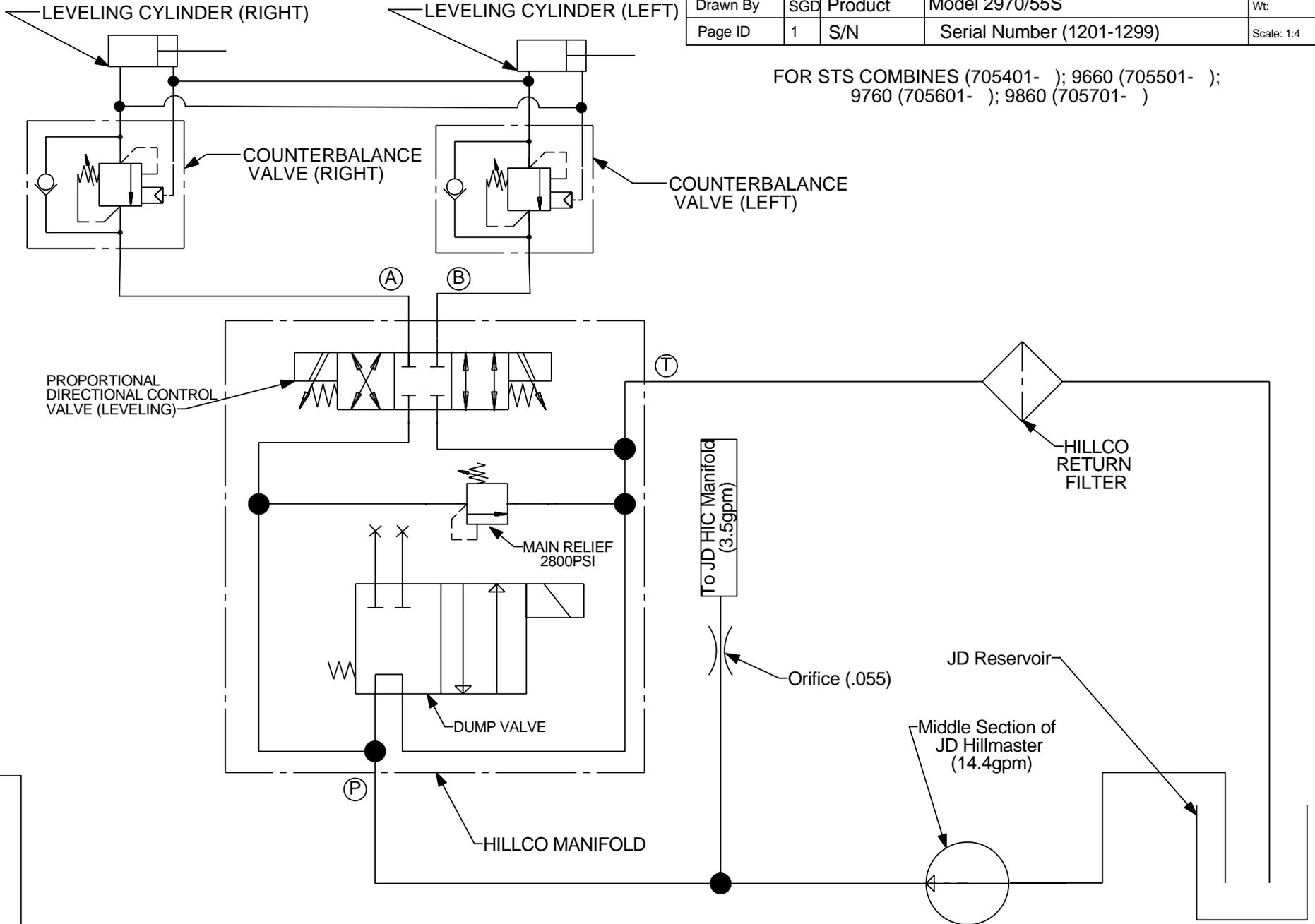
FOR STS COMBINES 9560 (705401-7153000); 9660 (705501-715400);
9760 (705601-715500); 9860 (705701-715600)



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Sheet 1 of 1				Part #	
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FOR STS COMBINES (705401-); 9660 (705501-);
9760 (705601-); 9860 (705701-)



Sheet 1 of 1				Part #	
Designed By	SGD	Description	Trim Hydraulic Schematic		
Drawn By	SGD	Product	Model 2970/55S	Wt:	
Page ID	1	S/N	Serial Numbers 1201-1299	Scale: 1:1	

FOR STS COMBINES 9560 (705401-); 9660 (705501-);
9760 (705601-); 9860 (705701-)

