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**Introduction**

Thank you for purchasing Calmer’s BT Chopper® Upgrade Kit for your corn head. We hope you will get many years of productive use from it. The purpose of this upgrade kit is to improve your corn head’s performance and accelerate corn residue decomposition. All product users must read and understand this manual prior to equipment operation. This manual is considered part of your machine and should remain with the machine at all times. Do not allow anyone to operate or maintain this equipment who has not fully read and comprehended this manual. Failure to follow the recommended procedures may result in personal injury or death or equipment damage.

Information in this manual is designed to help owners and operators to obtain the best results and safe operation from their investment. The life of these products depends largely on the care it is given and we suggest that the manual should be read and understood and referred to frequently. If for any reasons you do not understand the instructions and safety requirements, please contact us at any time. The intent of this manual is to provide guidelines to cover general use and to assist in avoiding accidents and injuries.

There may be times when circumstances occur that are not covered in the manual. At those times it is best to use common sense and contact our factory.

The requirements of safety cannot be emphasized enough in this publication. We urge you to make safety your top priority when using and maintaining this equipment.

**Warranty**

Calmer Corn Heads, Inc. has been in business since 2004 and has an excellent reputation for quality and workmanship. Please contact us (the manufacturer) if you feel a component has not lasted to your expectation. These concerns will be handled on a case-by-case basis. Please contact our factory directly at (309) 629-9000 for replacement parts.

**Safety**

Read and understand this manual and all safety signs before operating and maintain. Review the safety instructions and precautions annually.

**TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.**
Note the use of the signal words DANGER, WARNING and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:

**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

**WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.

**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**NOTICE** is used to address safety practices not related to personal safety.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment’s operations. **Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions of how it works.**

**SAFETY SIGNS**

Sharp Objects signs are placed on the exterior of all stalk roll boxes. See the sign, right, for reference and understand the associated cutting dangers with the enclosed product.

**BEFORE OPERATION**

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing which may catch on moving parts.
- Always wear protective clothing and substantial shoes.
- Always wear provided cut-resistant gloves when installing stalk rolls.
The Complete Calmer Residue Management Deluxe Upgrade Kit Includes Per Row:

Your reference for Right and Left is as you are sitting in the combine cab looking at the corn head.

### Case-IH Hydraulic Kit

- **A** (2) BT Chopper® Stalk Rolls
- **B** (1) Left Hydraulic Stripper Plate
- **C** (1) Right Manual Stripper Plate
- **D** (2) 9-Tooth Idler Sprockets
- **E** (2) 7-Tooth Drive Sprockets
- **F** 48-Pitch Chrome-Pin Gathering Chains

### NH Hydraulic Kit

- **A** (2) BT Chopper® Stalk Rolls
- **B** (1) Left Hydraulic Stripper Plate
- **C** (1) Right Manual Stripper Plate
- **D** (2) 9-Tooth Idler Sprockets
- **E** (2) 7-Tooth Drive Sprockets
- **F** 48-Pitch Chrome-Pin Gathering Chains

- **(2) Lower Idler Spring Washers**
- **(2) Cut-Resistant Gloves**
- **(2) Washers**
- **(2) 1/2” x 6 1/2” Grade 8 Bolts**
  (15226)
- **(4) Stainless Steel Washers**
- **(2) 1/2” X 6 1/2” Grade 8 Bolts**
  (15226)

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DANGER: Ensure the corn head is secured properly, combine lift cylinder stops are in place, equipment is turned-off, and the parking brake is engaged before attempting any adjustments.

1. Attach the corn head to your combine in accordance with the instructions in the manufacturer’s owner’s manual. It is critical to lock the lift cylinder in the raised position before making any further adjustments.

2. Remove the corn head dividers and hoods.

3. Remove weed knives.

4. Clean-out the nose of the spiral cones.

5. Un-bolt spirals.

6. Remove spirals.
7. Install a short 1/2” bolt to protect threads when using puller.

8. Attach a 2 jaw puller to the open slots on stalk roll knives, tighten down, and pull off the pinion shafts.

9. Clean rust from pinion shafts.

10. After pinion shafts are clear of any rust, check for leaks and replace seals, if necessary.
STEP 2

Check Pinion Shaft Timing

NOTICE: Before beginning assembly steps, check the timing with a combination square to ensure pinion shafts are exactly 90 degrees from each other.

To Correct The Problem:

• Leave the gear box on the corn head.
• Remove the stalk rolls.
• Clean around the stalk roll housing.
• Remove stalk roll housing bolts and frame mounting bolts.
• Raise the stalk roll housing high enough to rotate the pinion shaft 180 degrees then set back down.
• Recheck pinion shafts with combination square.
Installing Calmer BT Chopper® Stalk Rolls

STEP 3

Rolls are marked on the left (L) and right (R) spirals and should be installed as a set, as packaged by Calmer Corn Heads.

Important: Stalk rolls are to be installed from your perspective while sitting in the combine cab, looking at the corn head.

⚠️ DANGER: BT Choppers® are extremely sharp! Make sure that you are wearing the gloves provided with your order and that you handle the stalk rolls with extreme care!

NOTICE: Corn head angle must be adjusted to 23-25 degrees in standing corn and 20 degrees in down/lodged corn for maximum performance and to avoid excessive wear on components! Failure to do so will void warranty!

DO NOT APPLY any anti-seize substance on the shaft!

1. Slide Calmer BT Chopper® Stalk Rolls onto pinion shafts.

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NOTICE: Because of the variability of the width of the flat portion at the end of the pinion shaft, that flat area may need to be polished for proper fit. If needed, flap disk sand the flat portion at the end of the pinion shaft to ensure stalk rolls slide on easily.

2. Apply medium-strength Loctite to the threads of the 1/2” bolts provided with Calmer stalk rolls.

3. Install the provided washers and 1/2” bolts through the spiral at the end of the stalk rolls. Torque to 110 ft. lbs. Recheck torque every year and at least 1 time during harvest.

4. After installation, if your stalk roll flutes contact each other and do not intermesh correctly, then it is likely that the gearbox has been re-worked. The flat area at the end of the pinion shafts must be exactly 90 degrees from each other. For reference or to correct the problem, see page 5.

5. Re-install weed knives and set to a 1/4” gap.

NOTICE: To prevent possible damage to stalk rolls, WEED KNIVES MUST BE SET TO A 1/4” GAP!

If stalk rolls hit weed knives: Grind just enough of the weed knife to allow 1/4” gap.

If stalk rolls hit the wear plate: Grind just enough on the wear plate to get the metal out of the way of the knives.
Recommended Stripper Plate Adjustments: Begin with normal settings of 1 1/8” gap at the front and 1 3/16” gap at the rear, then adjust accordingly to ensure plates are 1/16” wider than the diameter of the 3rd cornstalk node above the brace root. Ensure stripper plate gap is centered over the stalk rolls.

Hydraulic Plates: Below are instructions for setting your Calmer Hydraulic Stripper Plates:
• Position stripper plates so the center gap between the edge of the stripper plates is located over the center of the stripping tunnel.

For Hydraulic Plates Only: Once the stripper plates are at the desired gap, mark the gauge on the frame or write down the value given in the cab’s “A” post display for future reference. This is the ideal spot for the hydraulic stripper plates to match your initial settings.

Note: To minimize the amount of trash and stalk intake, the stripper plates must be open 1/16” wider than the diameter of the 3rd cornstalk node above the brace root.
1. Inspect chain guides & idler blocks for wear.

**Important:** You must use stainless steel washers with Calmer’s 9-tooth idler. Some modification may be required when installing. (See below)

2. Disassemble the old idler sprocket.

**Gathering Chain Tighteners**
Gathering chain tighteners occasionally lock up. This is caused when the spring vibrates and augers itself into the hole between the bolt and the flat strap. This can be fixed by removing the idler bolt and adding a second washer (enclosed) at the bottom of the pipe spacer, which is identical to the washer at the top of the pipe spacer (See photo below). Apply anti-seize or lubricant to the bolt threads for future adjustments.

3. Inspect to see if plow bolt shoulder extends above the idler strap.
   - If the plow bolt shoulder extends above the idler strap then you must smooth-out the shoulder with a grinder until flush with the idler strap.
   - If the plow bolt shoulder is flush or does not extend above the idler strap, no further modification is required.
4. Reassemble the 9-tooth idler sprocket by inserting the plow bolt through the idler strap.

5. Place 1-stainless steel washer (provided) on the plow bolt.

6. Install the 9-tooth idler sprocket with part number facing up.

7. Place 1-stainless steel washer (provided) on the plow bolt.

8. Install a 5/8 lock washer.

9. Install nut and torque to 100 ft. lbs.

10. Oil the gathering chain drive shaft.

11. Place the gathering chain around the idler sprocket.

12. Insert the 7-tooth sprocket in the chain at the drive end.
13. Lug Timing
- **For Standing Corn:** Time the gathering chain lugs so the lugs are staggered.
- **For Down Corn:** With 9-tooth idlers, time the lugs so they are almost horizontally opposed from each other. Adding plastic paddles will also help in harvesting down corn. (See page 16) **These oversized down corn plastic gathering chain paddles are available for purchase from Calmer Corn Heads.**

14. Reinstall bolt and washer into top of gathering shaft to secure 7-tooth sprocket.

15. **Tighten the gathering chain tightener until there is a 3/16” clearance between the pipe spacer and washer.** Apply anti-seize or lubricant to threads for future adjustments.

16. **Test for proper installation of components.** To ensure proper installation of components, using the feeder house reverser, operate corn head for 10 seconds. Next, operate corn head normally at idle then gradually increase to full speed.
Helpful Corn Head Adjustments & Modifications

Marion’s Recommended Sieve Adjustments for Corn: I personally disagree with the suggested sieve settings in many owner’s manuals. Below is what I’ve found to be most successful throughout my years of farming.

- **Bottom Shoe Sieve:** Run Wide Open (Try this one round to gauge effectiveness)
- **Top Chaffer Sieve:** Close until sample in the grain tank is clean

**Reason:** When harvesting corn, the bottom sieve is not needed. There is no part of the kernel that needs to be re-threshed! Therefore, the bottom sieve should be wide open. This allows the kernels to fall directly into the clean grain auger.

**Results of my Recommended Sieve Settings:**
1. More capacity
2. More air to top sieve
3. Less separator loss
4. Less cracks in dry corn
5. Less grinding in wet corn
6. Less plugging of return elevator in wet corn

**Corn Head Angle** A properly adjusted corn head angle is critical to its performance. For optimum performance and to retain Calmer’s warranty on parts, the corn head angle MUST be set between 23-25 degrees in standing corn and 20 degrees in down/lodged corn.

**Setting Your Corn Head Angle**
Place the combine on a level surface then lower the corn head until the row unit frame is 2-inches off the ground. Place a magnetic protractor directly on the stripper plate and read the angle. If the angle is too steep, pull the top of the corn head toward the combine, push the bottom out, or a combination of both.

**Check Clutches**
1. Disconnect PTO Shaft
2. Wedge a 2”X4” in between the stalk rolls
3. Use a wrench to turn the drive line
4. Apply pressure to the slip clutch. It should slip around 350-450 ft. lbs.
Reducing Ear Toss
1. For minimal ear toss, the feeder house chain must be running at maximum speed. Adjust the corn head speed to conditions in the transmission or in the oil bath.
2. Cross auger should be horizontally adjusted rearward, as close to the feeder house chain and rear stripper/striping tunnel as possible. This will improve the transfer of material from cross auger to the feeder house chain, ultimately reducing ear toss. (Note: Adding half and/or full links to lengthen the feeder house chain will move it closer to the auger.)

Cross Auger Flighting
Cross auger should be vertically adjusted to have 1 3/4” clearance between the auger flighting and tray at the tightest point. This significantly reduces ear slicing which is a cause of cracked kernels in the grain tank. Note: you may need to increase the length of the slots in the end plate bearing hanger to allow for this adjustment. When you turn on the end rows, there should be a layer of ears between flighting and the tray.

Setting Gathering Chain Speed to Match Ground Speed
Begin calibration with initial gathering chain speed of 55 RPMs. If butt shelling is a problem, slow down the corn head speed until it starts to bulldoze cornstalks, then speed back up until bulldozing stops. 

Note: If RPMs are too fast, trash intake and butt shelling increase. If RPMs are too slow, you may experience poor stalk chop, row unit bulldozing and ear loss.

Oil Bath Settings for Case-IH 2200 Series Corn Heads
The 2200 corn head should have the oil bath in overdrive, the large sprocket on the back (driver), and the small sprocket on the front (driven). Please refer to the following corn head gear ratios:
- 2206 and 2212 corn heads should be set to 28 Driver; 22 Driven, low side of gearbox.
- 2208 corn heads should be set to 34 Driver; 26 Driven, low side of gearbox.

Oil Bath Settings for Case-IH 2400 Series Corn Heads
The 2400 corn head should have the oil bath in 1 to 1 ratio. Run the feeder house speed wide open.

Check Lubricant Level in Gear Boxes
See manufacturer’s owner’s manual for proper lubricant specifications.
Installing Calmer’s Down Corn Plastic Gathering Chain Paddles

Follow the instructions for assembly of plastic gathering chain paddles and attach to every other lug on each gathering chain. (One orange paddle is used on the row left of the feeder house in front on the buddy seat for calibrating corn head speeds.)

1. Place paddles on an open vise. The paddle on the left goes on the left gathering chain and the paddle on the right, the right gathering chain. (See picture 1)

2. Install and hammer two round headed carriage bolts into each paddle, making sure that bolt shoulders are seated in paddles. Repeat for remaining paddles and bolts. Be careful not to damage threads. (See picture 1)

3. Suspend a pipe between 2 ladders and hang chains over pipe as shown in photo at lower right hand corner. This can be helpful when installing paddles to chain.

4. Install left-hand paddles on every other lug of the left Gathering chain. Secure with two lock nuts and tighten until carriage head depresses in plastic paddle. We use a standard 6 point 7/16”, 3/8” drive socket with a 3” extension to install and tighten nuts. Installing the nut next to the chain first will speed alignment and assembly. (See picture 2)

5. Install right-hand paddles on every other lug of the right gathering chain. Secure with two lock nuts and tighten until carriage head depresses in plastic paddle. We use a standard 6 point 7/16”, 3/8” drive socket with a 3” extension to install and tighten nuts. Installing the nut next to the chain first will speed alignment and assembly. (See picture 3)
Maintenance Record

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Calmer Corn Heads

P.O. Box 9  |  Alpha, IL  61413  |  (309) 629-9000  |  Fax (309) 629-9001
www.calmercornheads.com

Patent/ Patent Pending. Any replications of this concept or its instruction manual are strictly prohibited without the expressed written consent of Calmer Corn Heads, Inc.

Calmer Corn Heads Trash Reduction/Decomposition Kit Warranty
Except as specified below, the Calmer Corn Head one (1) year from date of purchase warranty covers all defects in material and workmanship. The following are not covered: damage caused by accident, misuse, abuse, product modification or neglect; damage from failure to follow instructions contained in the instruction manual; damage resulting from the performance of repairs by someone not authorized by Calmer Corn Heads; damage caused by installation of parts that do not conform to Calmer Corn Head specifications; components not used for their intended purpose; any claims based on misrepresentations by the seller; products sold on an “as-is” or final sale basis; or the cost of installing, removing, or reinstalling the unit. Calmer Corn Heads liability is limited to the repair or replacement, at our option, of any defective product and shall not include incidental or consequential damages. Calmer Corn Heads reserves the right to replace a discontinued model with a comparable model. Any replacement units or parts may be new or rebuilt.

TO OBTAIN WARRANTY SERVICE
PLEASE CALL 1-309-629-9000

May 2018

“Thank you for purchasing Calmer Products to improve your residue management capabilities at your farm”

Marion Calmer
CEO – Calmer Corn Heads, Inc.
President – Calmer Ag Research Center
Owner/Operator – Calmer Farms