Corn Reel

BY Patriot Equipment

Installation Operation Manual

Corn Reel Manual Table of Contents

Page Number
3
6
6
8
9
9
10
13
22
23
32

Corn Reel V2.2

SAFETY AND OPERATION RULES

GENERAL SAFETY STATEMENTS

Safety precautions are essential when the use of any mechanical equipment is involved. These precautions are necessary when using, storing, and servicing mechanical equipment. Using this equipment with the respect and caution demanded will considerably lessen the possibilities of personal injury. If safety precautions are overlooked or ignored, personal injury or property damage may occur. This unit was designed for specific applications. It should not be modified or/and used for any application other than which it was designed. If there are any questions regarding its application, write or call. Do not use this unit until you have been advised. For more information, call 1-800-264-6587. Read this entire manual carefully - know your equipment. Consider the application, limitations, and the potential hazards specific to your unit. Occupational safety is of prime concern to us. This manual was written with the safety of the operator and others who come in contact with the equipment as our prime concern. The manual presents some of the day-to-day work problems encountered by the operator and other personnel. We wrote this manual to help you understand safe operating procedures for the Corn Reels. We want you as our partner in safety. A copy of this manual should be available to all persons who may operate this machine.

It is your responsibility, as an owner, operator or supervisor, to know what specific requirements, precautions, what work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required. Avoid any alterations of the equipment. Such alterations may create a dangerous situation where serious injury or death may occur.

Why is SAFETY important to you?

3 BIG REASONS

1	Accidents disable and kill
2	Accidents cost money
3	Accidents can be avoided

Signal Words

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with 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 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 precautions are not taken, or a reminder of good safety practices.



The Symbol Shown Above Is Used To Call Your Attention To Instructions Concerning Your Personal Safety. Watch This Symbol - It Points Out Important Safety Precautions. It Means ATTENTION! Become Alert! Your Personal Safety Is Involved! Read The Message That Follows And Be Alert To The Possibility Of Personal Injury Or Death.

Anyone who will operate or work around the Corn Reel shall first read this manual! This manual must be delivered with the equipment to its owner. Failure to read this manual and its safety instructions is a misuse of equipment.

SAFETY EQUIPMENT

Please, remember safety equipment provides important protection for persons around an auger that is in operation. Be sure <u>ALL safety shields and protective devices are installed and properly maintained.</u> If you find any shields or guards damaged or missing, contact Minden Machine Shop Inc. for the correct items.

SERIAL NUMBER

To ensure efficient and prompt service, please furnish us with the model and serial number of your Corn Reel in all correspondence or other contact.



SAFETY PROCEDURES

- 1. Only use lifting equipment with the proper capacity when loading or lifting the Corn Reel. Forklifts with too little capacity may tip towards the front where the lifted weight is.
- 2. Do not use makeshift systems to handle equipment as you may create an unsafe condition.
- 3. Do not operate unit without safety shields or guards in place.
- 4. Do not enter the Corn Reel area when motor is operating, it could cause serious injury or death.
- 5. Never run engine in an enclosed area. As the exhaust is poisonous.
- 6. Avoid contact with the muffler. It becomes very hot during operation and remains hot for some time after the engine is turned off.
- 7. In case of any defect or awareness of potential danger, please contact the plant at 1-800-264-6587 immediately.

LIGHTING AND MARKING

It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility.



OPERATOR QUALIFICATIONS

Operation of the Corn Reel shall be limited to competent and experienced persons. In addition anyone who will operate or work around the Corn Reel must use good common sense. In order to be qualified, they must also know and meet all other requirements, such as:

1. Some regulations specify that no one under the age of 18 may operate power machinery. This includes Corn Reels.

- It is your responsibility to know what these regulations are in your own area or situation.
- 2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee or user in the safe operation and servicing of all equipment with which the employee or user is, or will be involved."
- 3. Unqualified persons are to stay out of the work area as shown in the work diagrams.
- A person who has not read and understood all operating and safety instruction is not qualified to operate the machine.

SAFETY OVERVIEW

- YOU are responsible for SAFE operation and maintenance of your Corn Reel.
- YOU must ensure that you and anyone who is going to operate maintain, or work around the corn reel must be familiar with the operating, maintenance, and safety information contained in the manual. This manual will take you step by step through your working day and alerts you to all good safety practices while operating the corn reel.
- Remember YOU are the key to safety. GOOD PRACTICES protect not only you but also the people around you. Make these practices a working part of your safety program. Be certain EVERYONE operating this machine is familiar with the procedures recommended and follows safety precautions. Remember, most accidents can be prevented. Do not risk injury or death by ignoring any information addressed.
- Corn Reel owners must give operating instructions to operators before allowing them to operate the reel. They must be reviewed at least annually thereafter per OSHA regulation 1928.57.
- The most important safety device on the equipment is a SAFE OPERATOR. It is the operator's responsibility to read and understand ALL instructions in the manual and to follow them. All accidents can be avoided!
- Any person who has not read and understood all operation and safety instructions is not qualified to operate the corn reel. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modifications may impair the functions and/or safety and could affect the life of the equipment.

SAFETY AFFIRMATION

- I have read and understand the operator's manual and all safety signs before operation, maintenance, adjusting or unplugging the corn reel.
- I will allow only trained persons to operate the Corn Reel. *An untrained operator is not qualified to operate this equipment.
- I have access to a fire extinguisher.
- I have all guards in place and will not operate the Corn Reel without them.
- I understand the danger of moving parts (PTO, auger flighting, and pinch points) and will stop the engine before servicing.
- I recognize the danger of the reel coming in contact with power lines.
- I understand that any accidents that occur with the Corn Reel are my responsibilities.
- I understand that Minden Machine Shop will not be held responsible for any accidents that involve the Corn Reel.

SIGN OFF SHEET (this must be signed annually as part of your safety program)

As a requirement of OSHA, it is necessary for the employer to train the employee in the safe operation and safety procedures with this Corn Reel. We include this sign off sheet for you convenience and personal record keeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE



MACHINE INSPECTION

After delivery of your new Corn Reel and/or completion of assembly, before each use, inspection of the machine is mandatory. This inspection should include, but not be limited to:

- 1. Check to see that all guards are in place, secured and functional.
- 2. Are all fasteners tight?
- 3. Check oil levels in the Engine, clutch gearbox and the auger gearbox. (See Owners Manuals.)
- 4. Is the chain the correct tension?
- 5. Are the paddles orientated correctly?

SAFETY DECALS

- 1. Keep safety decals clear and legible at all times.
- 2. Replace decals and signs that are missing or have become unreadable.
- 3. Safety signs are available from your Dealer or the Manufacturer.

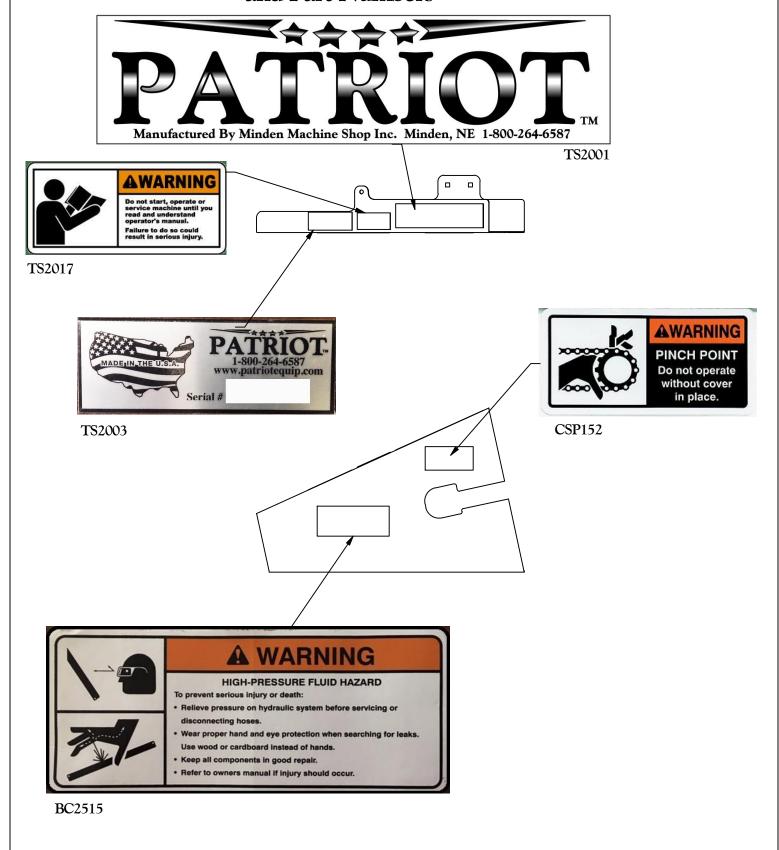
How to install Safety Decals

- 1. Be sure that the installation area is clean and dry.
- 2. Decide on the exact position before you remove the backing paper.
- 3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- 4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- 5. Small air pockets can be pierced with a pin and smoothed out using a piece of decal backing paper.

Corn Reel V2.2

6

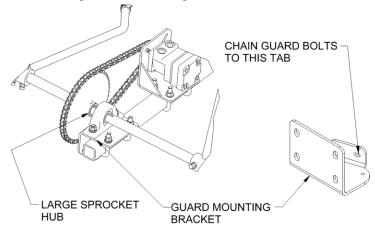
Corn Reel Decal Locations and Part Numbers



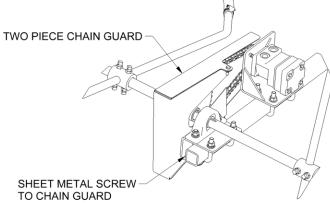
Corn Reel Assembly Instructions

Orientation: Sitting in the operator seat facing forward.

- 1. Lower the corn head to the ground if attached to the combine. Shut off the engine and remove the key from the ignition switch.
- 2. Thread the two shafts together (if necessary) and lay them out in front of your corn head. The shaft with the keyway will have to be on the driver (left) side of the machine.
- 3. Mount the beam clamp on the back of the head, the curved slot should go toward the back of the head. Space them so that one of the arms will be close to the key in the left side shaft when the shaft is positioned on the head. (See your specific head spacing drawing)
- 4. Attach the beam arm tube (2 x 2 Sq. tubing) into the beam clamp with the 1/2 x 3 ½ bolts with flat washers, lock washer, and nut. See illustration.
- 5. Mount the hydraulic motor on the motor mount using the 3/8 x 1 bolts, lock washers and flat washers with the <u>ports facing toward the combine</u>. Next, mount the small sprocket on the motor using the ½ x 1 key (with motor) and tighten all. When the motor mount is on the 2 x 2 tubing, the small sprocket should line up so the key on the main shaft will line up with it when it is placed on the head.



- 6. Slide the bearing mounts on the beam arms.
- 7. Begin assembling the double arm bats, the bearings and the main sprocket on the main shaft. KEEP IN MIND WHERE THE BEARING MOUNTS AND MOTOR MOUNT ARE SO THAT YOU PLACE THE SPROCKET AND BEARINGS IN THE RIGHT ORDER ON THE MAIN SHAFT.
- 8. Place (use correct lifting device to avoid injuries) the main shaft up on the bearing mounts and bolt the bearing to the mounts using the ½ u-bolts, with the nuts, lock washers, and flat washers.
- 9. The bearing mounts should be at the end of the main beam arm tubes (2 x 2 tubes).
- 10. Align the big sprocket up with the small sprocket and install the chain. Tighten the large sprocket when set.
- 11. Once you have the bearings all in line and are sure the sprocket is in the right place, tighten the bearing mounts to the main beam arms (2 x 2 tubing). Then tighten the bearings to the bearing mounts. Engage the lock collars of the bearings on the shafts.
- 12. Pull the motor mount back to tighten the chain and then tighten the motor mount u-bolts to the beam arm tube (2 x 2 tubing). Make sure the sprockets are in alignment and tracking straight.



ASSEMBLED VIEW OF MOTOR DRIVE

13. Place the inside and outside chain covers over the chain and tighten with appropriate bolts.

- 14. Adjust the double arm bats so that each bat is 90 degrees opposite to the one next to it and setting approximately 6 to 8 inches of the row toward the outside pointing toward the middle and then tighten. Install 1" heater hose (rubber hose) on each end of the bats using a hose clamp and tighten.
- 15. Attach the hydraulic hoses to the hydraulic motor. Attach the hydraulic tips to the other end of the hoses. Insert the hydraulic tips into the combine hydraulic reel circuit (tips are not included).
- 16. Adjust the reel up so you have about 3" clearance between the end of the hoses and the stripper plates.
- 17. Adjust the reel back so that 3" of clearance is present between the corn reel and the corn head auger.
- 18. Check that all fasteners are tightened and the reel is clear of obstructions.
- 19. Check that the work area is clear and safe to operate the corn reel. Perform a test run of the reel. If the reel operates backwards, switch the hoses at the combine. Retest.

Test Run



To perform a test run of the corn reel:

- Check that the work area is clear and safe to operate the corn reel. With some models of combines, the operator may need to program the combine that a reel is attached to the corn head or the reel will not function.
- Start the combine.
- Engage the machine side of the combine.
- Engage the head of the combine.
- The corn reel should be operating. The reel should be rotating towards the front of the corn head. If the reel is rotating in the correct direction, it is ready for operation.
- Is the corn reel turning in the opposite direction? If yes, the hydraulic hoses will have to be reversed. Shutdown the operation of the combine in the correct sequence. Stop the combine and remove the key from the ignition. Reverse the hydraulic hose connections at the combine connection location. Perform the test run again.

Operation



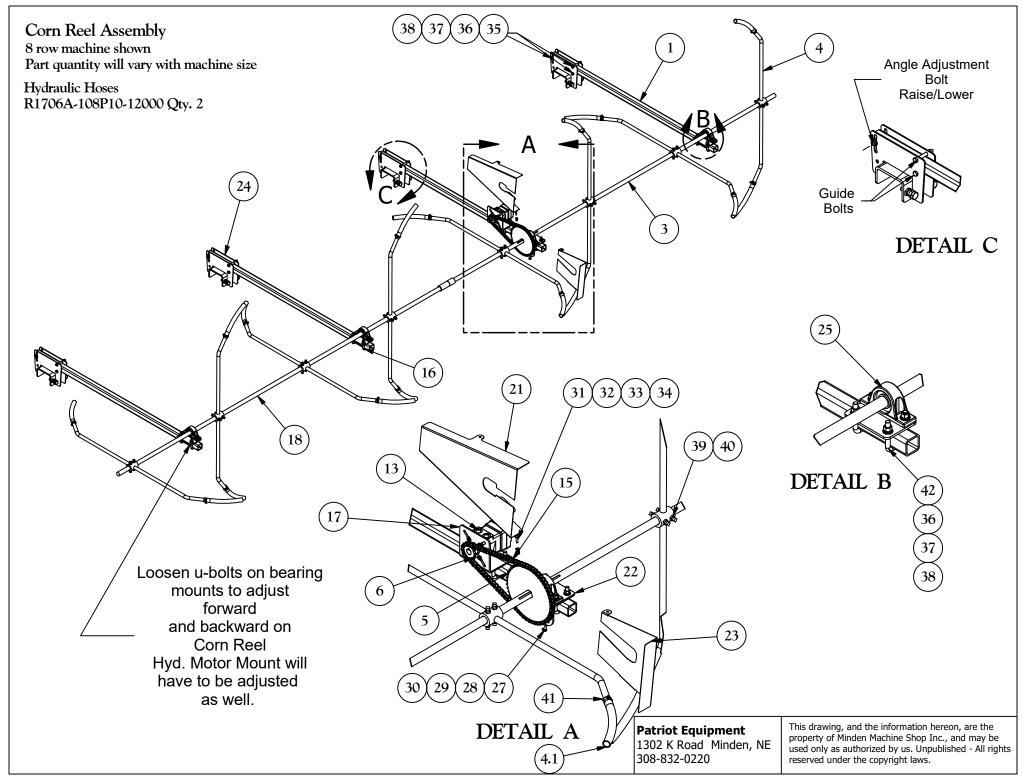
Check to make sure that the work area is clear before operating the corn reel!

After the installation of the corn reel is complete, a few adjustments may be needed once you reach the field. The corn reel will rotate based upon the reel control in the combine. The RPM can be matched to the ground speed of the combine or it can be manually adjusted by the operator. The ideal RPM allows for correct flow of the material through the corn head. If the RPM is too high, the material will wrap around the reel and some material will be ejected from the corn head and directed towards the operator area or out of the corn head. If the RPM is too low, material will not flow through the corn head. The correct RPM for the corn reel will appear as if it is "walking" that will allow the material to flow through the corn head evenly and consistently.



The corn reel should be adjusted with 3" of clearance between the reel and the stripper plates and also 3" of clearance between the reel and the corn head auger. These adjustments are made manually. Lower the corn head to the ground. Be sure to have the machine shut off, the engine off and the keys removed from the ignition switch when making these adjustments.

Parts Diagrams



Corn Reel V2.2

Corn Reel Parts List

CR-P032

BR10110

W5/16L

W5/16F

N5/16N

B5/16x1CB

Beam Clamp

23 24

25

27

28

29

30

4

4

2

2

2

Parts List			Parts List				
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	CR-A016	Beam Arm Tube Assembly	31	1	B1/4X1	Hex Bolt
3	1	Varies with Size	Sprocket Driven Shaft Assembly	32	1	W1/4F	Flat Washer
4	8	CR-A015	Double Arm Bat Assembly	33	1	W1/4L	Lock Washer
4.1	2	19019	Hose End	34	1	N1/4N	Nut
5	1	CR1903	#50 - 1 1/4" Bore 50 Tooth Sprocket	35	4	B1/2x3.5	Bolt
6	1	CR1901	#50 - 1" Bore 13 Tooth Sprocket	36	28	W1/2F	Flat Washer
7	4	W3/8F	3/8" Flat Washer	37	24	W1/2L	Lock Washer
10	1	CR1906	1/4" x 1 1/2"Key - square	38	24	N1/2N	Nut
13	1	CR1900	Hydraulic Motor (1" Shaft)	39	32	N1/2J	Jam Nut
14	4	B3/8x1	Bolt	40	32	B1/2x1.0SQHSC	Square Head Set Screw
15	1	CR1902	#50 Chain x 48"	41	16	CRHOCLAMP	#20 Hose Clamp
16	4	CR-A017	Bearing Mount Assembly	42	10	CR19049	1/2 x 2.125 x 3.625 U-Bolt
17	1	CR-A018	Hyd. Motor Mount Plate Assembly				
18	1	Varies with Size	Idler Shaft Assembly/Female Coupler				
20	4	W3/8L	Lock Washer				
21	1	CR-P034	Chain Cover Outside				
22	1	CR-P033	Chain Cover Mounting Bracket				

Nut

Chain Cover Inside

Carriage Bolt

Lock Washer

Flat Washer

Varies with head manufacturer

1-1/4 Pillow Block Bearing

Patriot Equipment 1302 K Road Minden, NE 308-832-0220 This drawing, and the information hereon, are the property of Minden Machine Shop Inc., and may be used only as authorized by us. Unpublished - All rights reserved under the copyright laws.

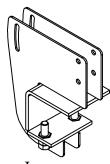
^{*}Refer to packing list for correct quantity of parts as they will vary with machine size

Corn Reel Mounts

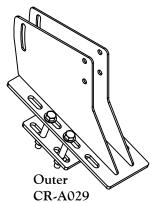
Corn Reel Beam Mounts



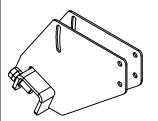
Case Narrower Beam Clamp 10 Series Heads CR-A021



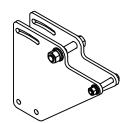
Inner CR-A028



Geringhoff Pre-2012 Beam Mounts

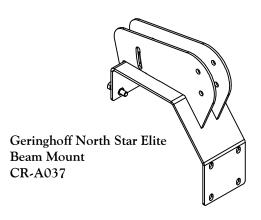


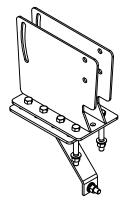
Inner CR-A030



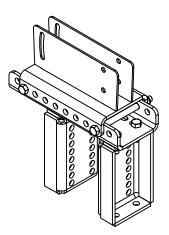
Outer CR-A031

Geringhoff 2012 and Newer Beam Mounts Round Tube

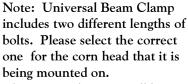




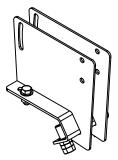
Gleaner Beam Mount CR-A022



Universal Beam Clamp Corn Reel CR-A040

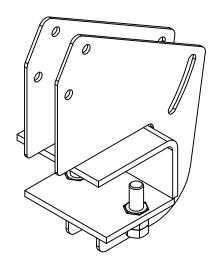


The universal mount will be placed on the top of the corn head beam and only two of the bolts will be used to mount the beam clamp. As these will be placed under the corn head beam and tigtened in place.

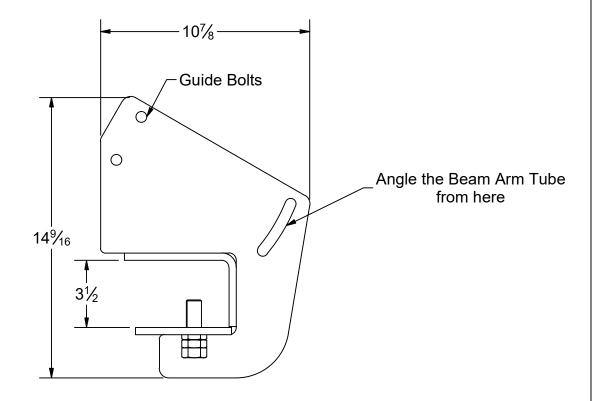


Massey Beam Mount CR-A024

Case Narrower Beam Clamp CR-A021 10 Series Corn Heads

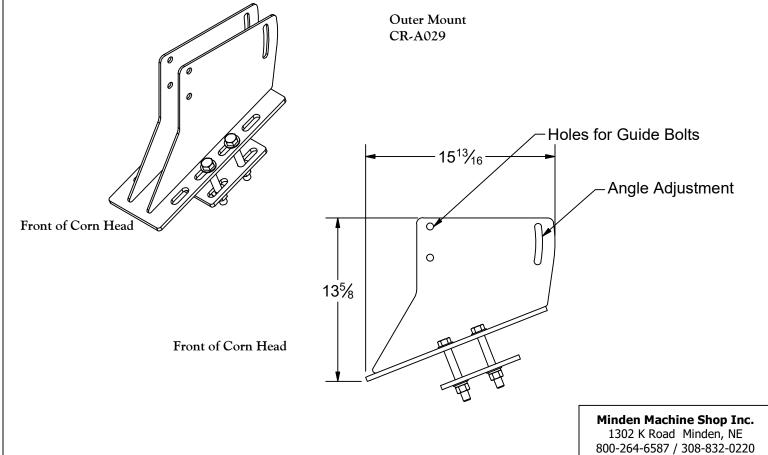


Front of Corn Head



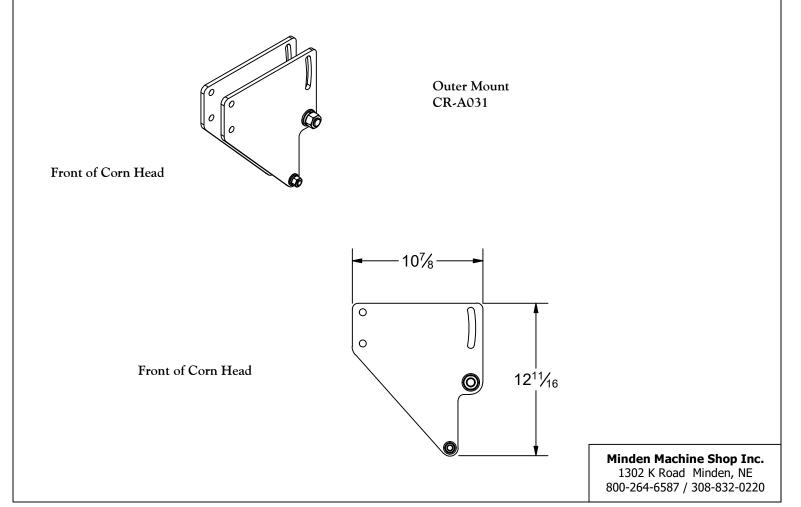
Front of Corn Head

Geringhoff Pre-2012 Beam Mounts **Inner Mount** CR-A028 -11½ Front of Corn Head 0 0 $14\frac{3}{16}$ Front of Corn Head **Outer Mount** CR-A029

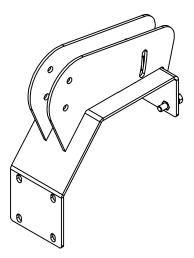


16

Geringhoff 2012 and Newer Beam Mounts Round Tube Inner Mount CR-A030 Front of Corn Head 163/16 Front of Corn Head

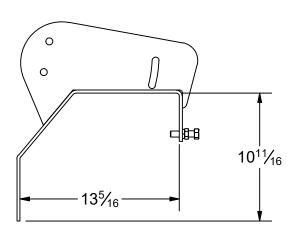


Geringhoff North Star Elite XL Beam Mount



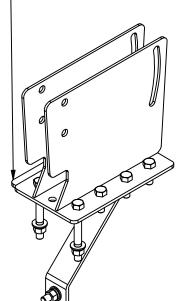
Front of Corn Head

Front of Corn Head



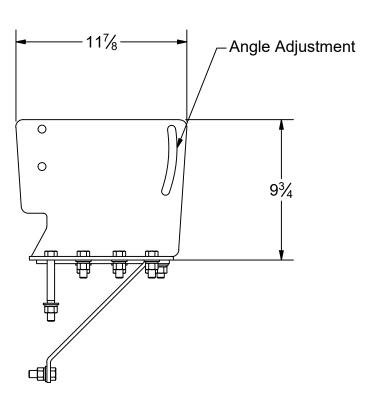
Gleaner Beam Mount CR-A022

Use plate to account for angle of corn head so mount is flat.

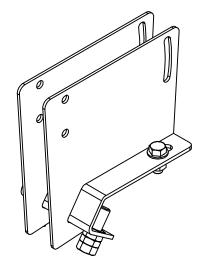


Front of Corn Head

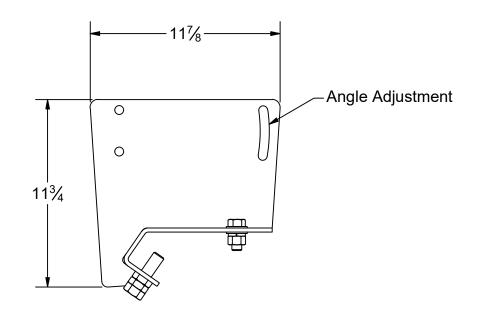




Massey Beam Mount CR-A024

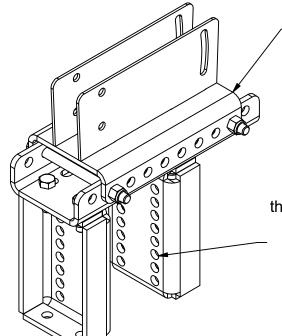


Front of Corn Head



Front of Corn Head

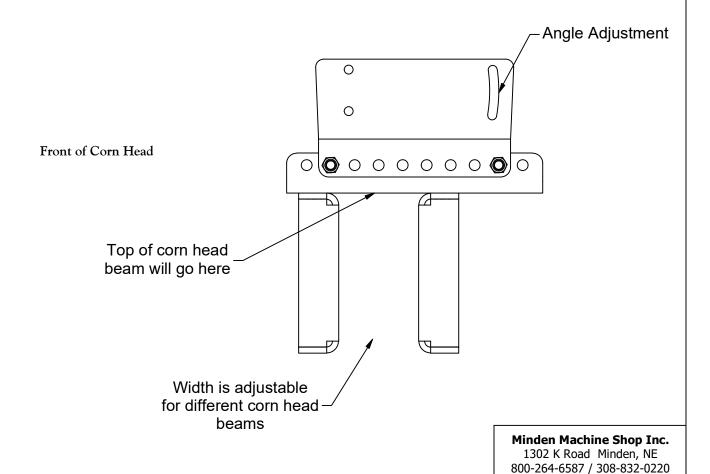
Universal Beam Clamp Corn Reel CR-A040



Mount can be adjusted forward or backward for corn reel placement

Select correct set of holes that will be closest to the bottom of the beam when mounted. Two sets of bolts included to fasten to the corn head. Select correct set of bolts for the beam size.

Front of Corn Head



Torque Data for Standard Nuts, Bolts, and Capscrews

Tighten all bolts to torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt chart as guide. Replace hardware with some grade bolt.

Note: Unless otherwise specified, high-strength Grade 5 hex bolts are used throughout assembly of equipment.

Bolt Torque for Standard Bolts

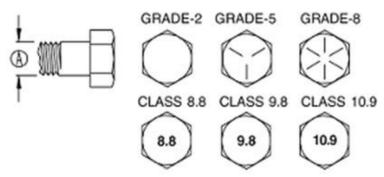
	Grade 2		ade 2 Grade 5			Grade 8	
Bolt Size A	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)	
1/4"	6	8	9	12	12	16	
5/16"	10	13	18	25	25	35	
3/8"	20	27	30	40	45	60	
7/16"	30	40	50	70	80	110	
1/2"	45	60	75	100	115	155	
9/16"	70	95	115	155	165	220	
5/8"	95	130	150	200	225	300	
3/4"	165	225	290	390	400	540	
7/8"	170	230	420	570	650	880	
1"	225	300	630	850	970	1310	

Bolt Torque for Metric Bolts

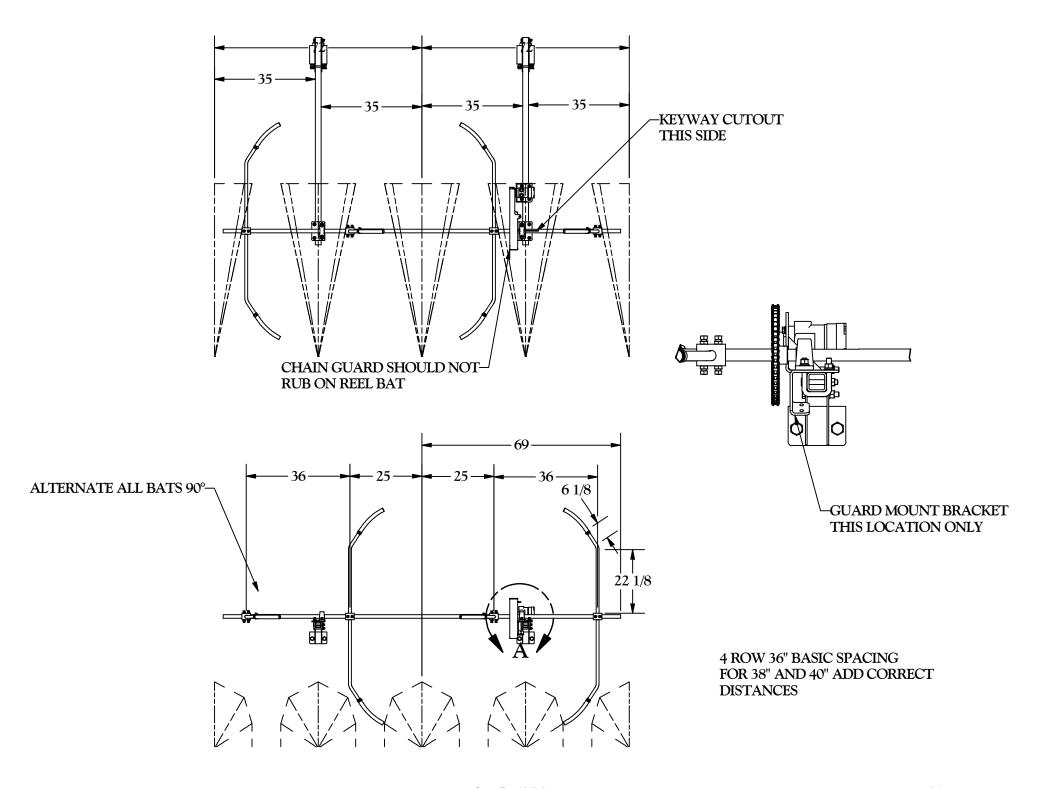
Bott Torque for Metric Botts						
	Clas	ss 8.8 Class 9.8 Class 10.9		Class 9.8		10.9
Bolt Size A	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
6	9	13	10	14	13	17
7	15	21	18	24	21	29
8	23	31	25	34	31	42
10	45	61	50	68	61	83
12	78	106	88	118	106	144
14	125	169	140	189	170	230
16	194	263	216	293	263	357
18	268	363			364	493
20	378	513			515	689
22	516	699			702	952
24	654	886			890	1206

Torque figures indicated are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

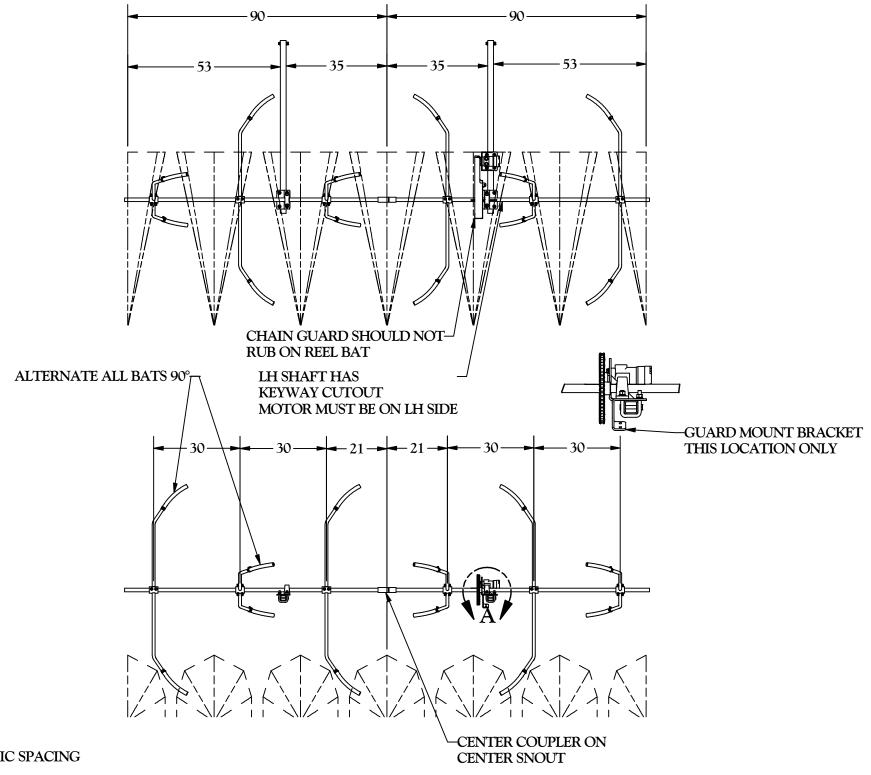
Grade or Class value for bolts and capscrews are identified by their head markings.



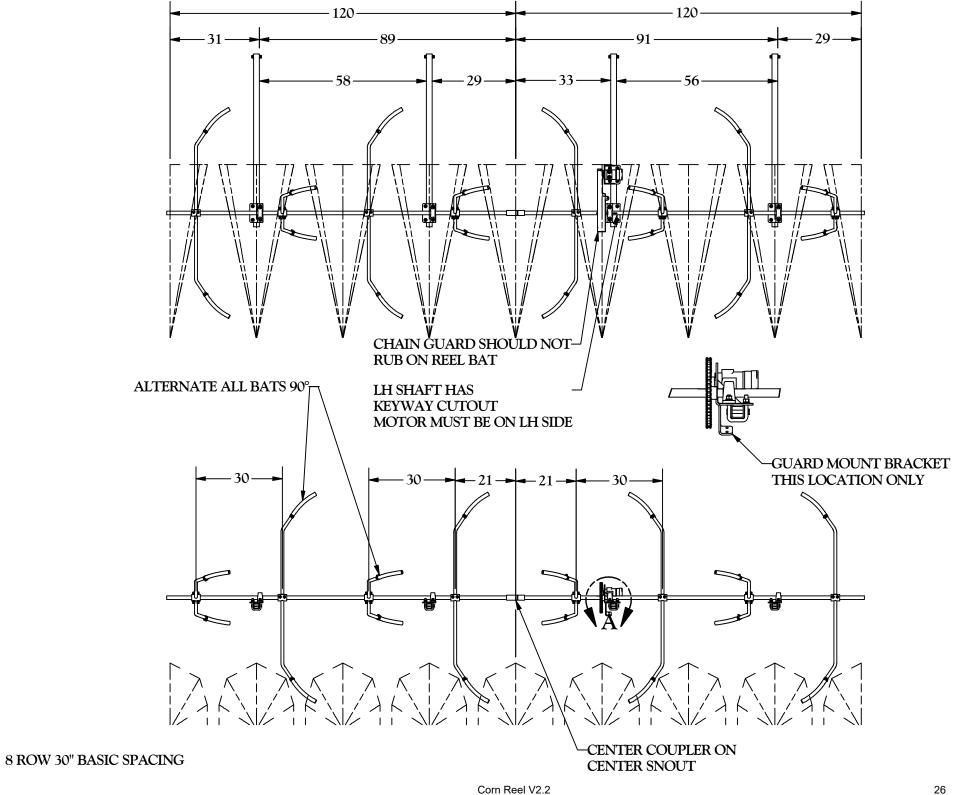
Machine Measurements



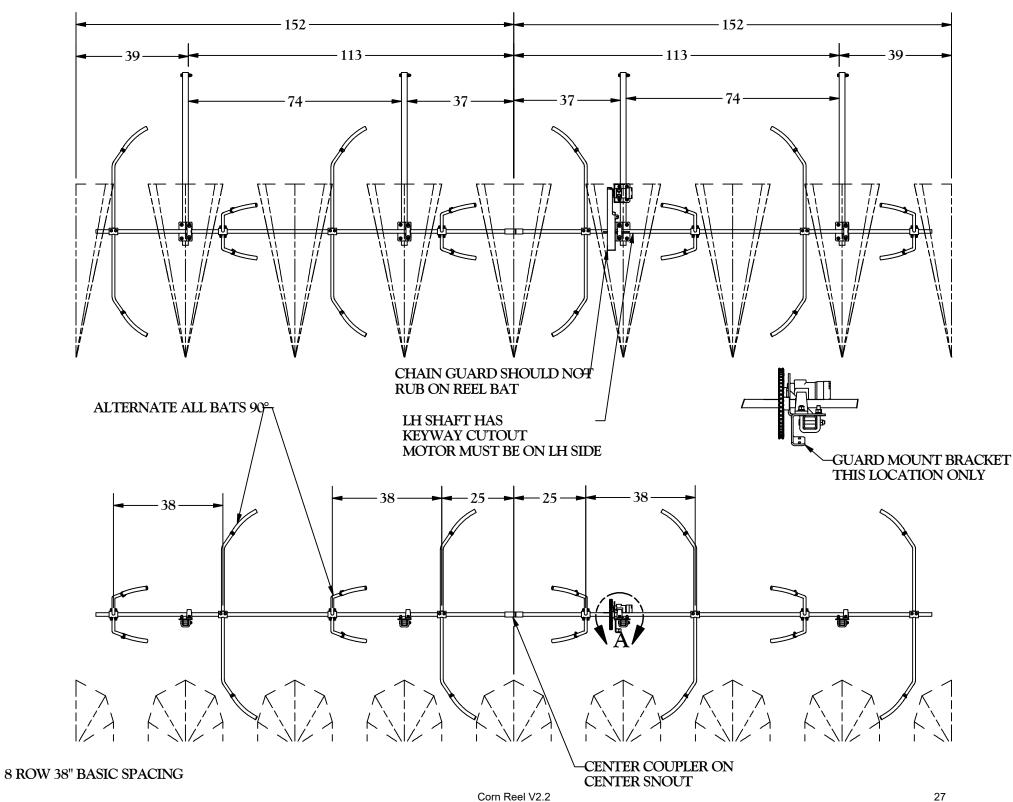
Corn Reel V2.2 24

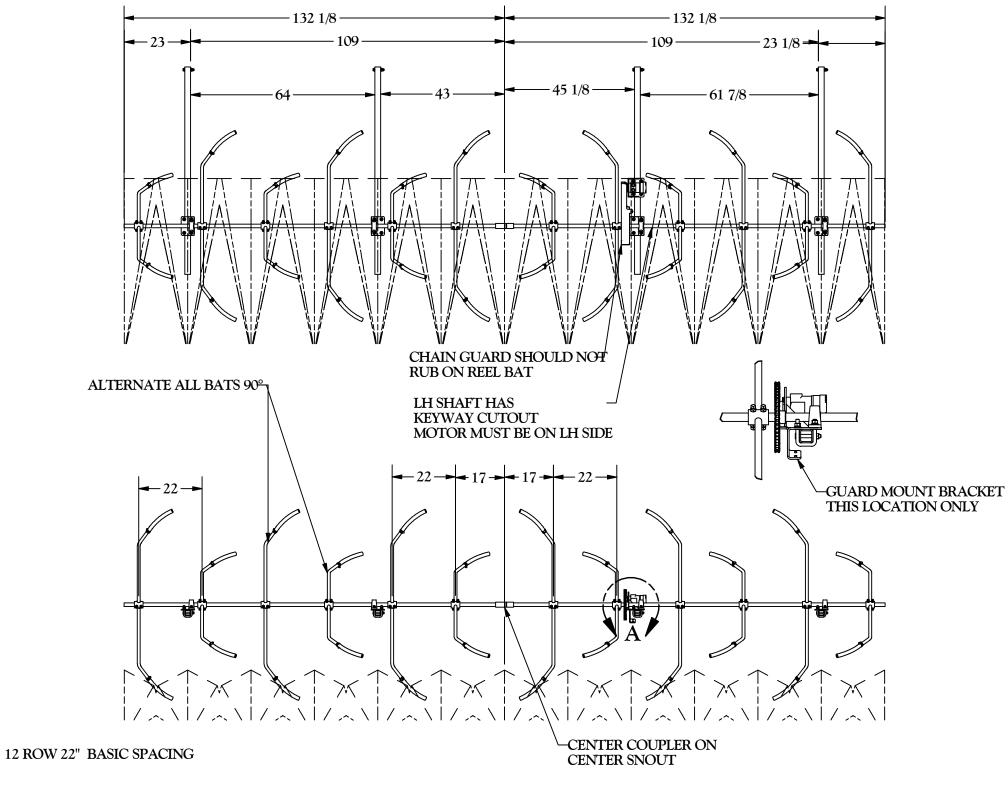


Corn Reel V2.2 25

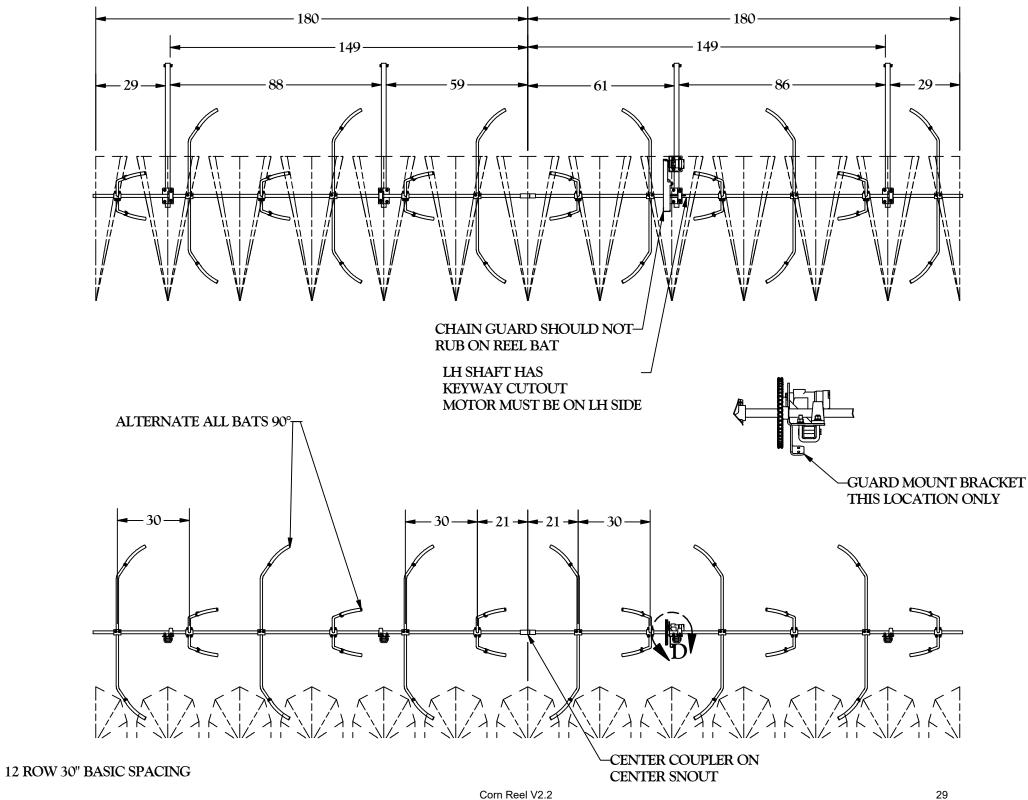


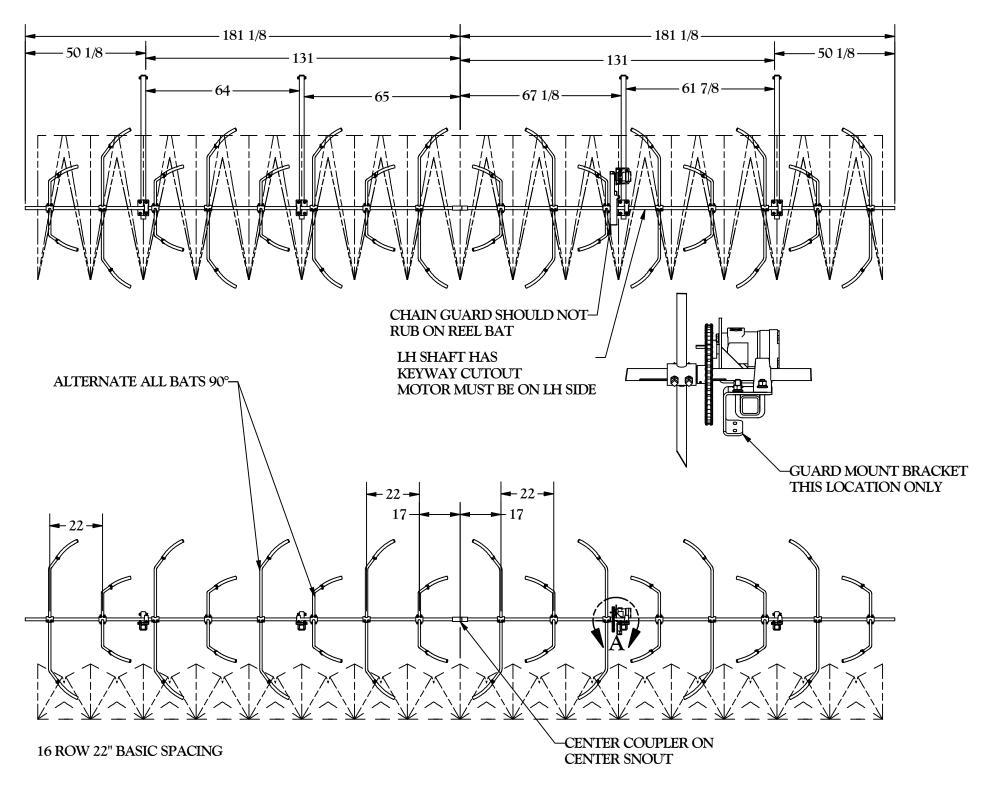
Corn Reel V2.2



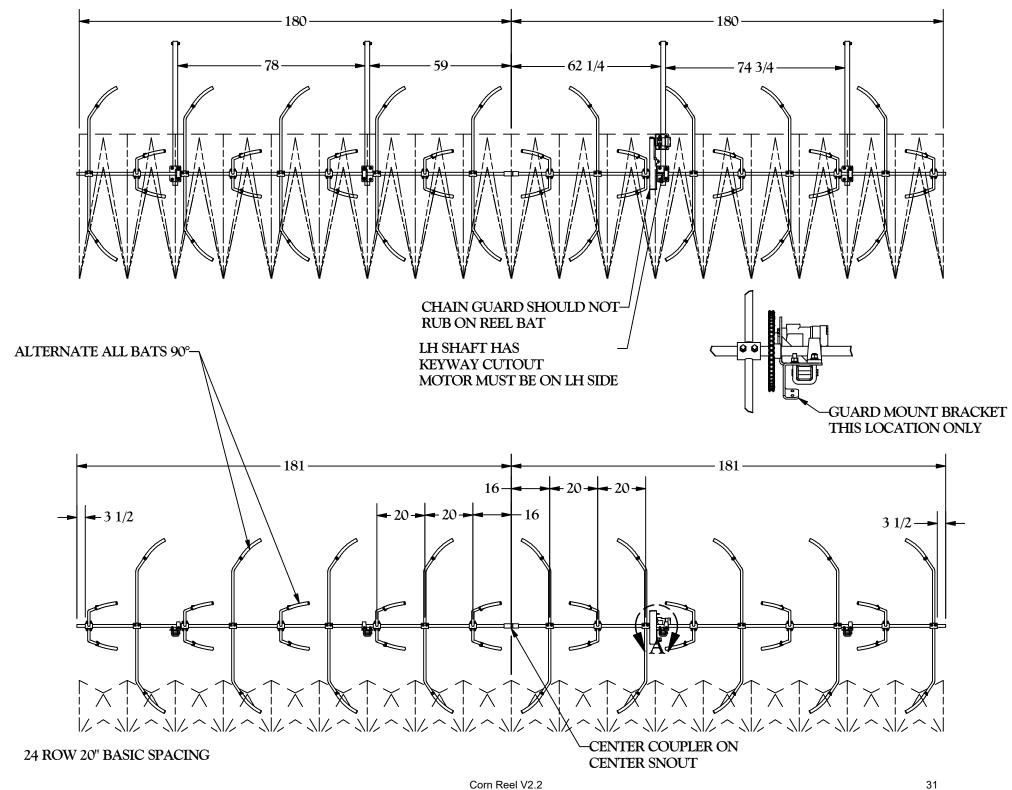


Corn Reel V2.2 28





Corn Reel V2.2 30



Minden Machine Shop Inc LIMITED WARRANTY

Minden Machine Shop Inc warrants all products manufactured by it to be free of defect in material and workmanship for a period of one (1) year from the date of purchase.

This Minden Machine Shop Inc. warranty does not cover:

- 1. Parts and accessories supplied by Minden Machine Shop Inc. but manufactured by others. Minden Machine Shop Inc. will facilitate the other manufacturer warranty for the benefit of the purchaser but will not be bound thereby (example: augers, motors, trailers, tanks, etc.).
- 2. Products that have been altered by anyone other than a Minden Machine Shop Inc. employee or are used by the purchaser, for purposes other than what was intended at time of manufacture or used in excess of the "built specifications".
- 3. Products that are custom manufactured by Minden Machine Shop Inc. utilizing the purchaser's design which deviates from Minden Machine Shop Inc. normal production line manufactured or customized features of the products.
- 4. Malfunctions or damages to the product from misuse, negligence, customer alteration, accidents or product abuse due to incoming material or poor material flow ability or lack of required performance or required maintenance (e.g., poor material flow ability caused by incoming wet fertilizer or hot soybean meal, etc).
- 5. Loss of time, inconvenience, loss of material, down time or any other consequential damage.
- 6. Product use for a function that is different than designed intent (e.g., storing soybean meal in grain bin, unacceptable material in the bin such as hot bean meal when product originally designed for other application, etc).
- 7. Minden Machine Shop Inc is not responsible for any equipment that this product is attached to or mounted on.

To activate this warranty, the purchaser must make contact in writing with Minden Machine Shop Inc. with in one (1) year of date of purchase. After contact, Minden Machine Shop Inc. has the right to determine the cause and qualify the legitimacy of the claim. Minden Machine Shop Inc., upon acceptance of a warranty claim, shall have a reasonable time to plan any repair or replacement and may affect repair or replacement out of its factory or through contract with a local repair service. If a purchaser after warranty notice is made, chooses to make the repair itself, Minden Machine Shop Inc. must approve any expenses before they are incurred to be responsible for customer reimbursement. Minden Machine Shop Inc. shall be liable on a warranty claim for repair or replacement of any defective products and this is the purchaser's sole and exclusive remedy. Minden Machine Shop Inc. will not be liable for any other or further remedy including claims for personal injury, property damage or consequential damage. The law of the Sate of Nebraska shall govern and any such claim and any issues with regard to the same shall be resolved in the Nebraska District Court for the county of Kearney.

RETURN OF MERCHANDISE

Merchandise may not be returned without written approval from the factory. All returns must have a return authorization number. Obtain this number before the return and show it on all return items. A 15% restocking charge is made on merchandise returned. Returned merchandise must be shipped pre-paid.

RECEIVING MERCHANDISE AND FILING CLAIMS

When receiving merchandise it is important to check both the number of parts and their description with packing slip. The consignee must make all claims for freight damage or shortage within 10 days from the date of delivery.

When the material leaves the factory it becomes the property of the consignee. It is the responsibility of the consignee to file a claim on any possible damage or loss. Please list your preferred routing on purchase orders.

MODIFICATIONS

It is the policy of Minden Machine Shop Inc. to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring the obligation to make such changes, improvements and modifications on any equipment sold previously.

Corn Reel V2.2

WARRANTY REGISTRATION

To register equipment, or file a claim, copy and paste the words on this page into an email or word document, fill out the appropriate information completely, and email it to larry@mindenmachine.com with the subject as EQUIPMENT WARRANTY, or fill it out and fax it to 308-832-1340.

Dealer Information:	Not Applicable, check here: []
Dealer Name:	
Address:	
City:	
State:	
Zip Code:	
Phone #:	
Email:	
End User Information:	
Purchaser:	
Address:	
City:	
State:	
Zip Code:	
Phone #:	
Email:	
Equipment:	
Serial #:	
Date Of Purchase: /	

Corn Reel V2.2

33