

# Chain Loop Rack and Pinion and Well Control Rod Kits

Assembly Manual

PNEG-2388

Version: 1.0

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PNEG-2388

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**All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.**

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## 1. Safety

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### Safety Guidelines

Safety guidelines are general-to-specific safety rules that must be followed at all times. This manual is written to help you understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Read and save these instructions.

As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must stay out of the work area at all times.

Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in **SERIOUS INJURY** or **DEATH**.

This equipment must be installed in accordance with the current installation codes and applicable regulations, which must be carefully followed in all cases. Authorities having jurisdiction must be consulted before installations are made.

When necessary, you must consider the installation location relative to electrical, fuel and water utilities.

Personnel operating or working around equipment must read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

**ST-0001-4**

## Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



This symbol indicates an imminently hazardous situation which, if not avoided, **will result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in serious injury or death.**



This symbol indicates a potentially hazardous situation which, if not avoided, **can result in minor or moderate injury.**



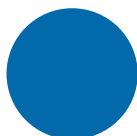
This symbol is used to address practices not related to personal injury.



This symbol indicates a general hazard.



This symbol indicates a prohibited activity.



This symbol indicates a mandatory action.

ST-0005-2

# 1. Safety

## Safety Cautions

### Use Personal Protective Equipment

- Use appropriate personal protective equipment:

**Eye Protection**



**Respiratory Protection**



**Foot Protection**



**Hearing Protection**



**Head Protection**



**Fall Protection**



**Hand Protection**



- Wear clothing appropriate to the job.
- Remove all jewelry.
- Tie long hair up and back.

ST-0004-1

### Follow Safety Instructions

- Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.
- Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.
- If you do not understand any part of this manual or need assistance, contact your dealer.



ST-0002-1

### Maintain Equipment and Work Area

- Understand service procedures before doing work. Keep area clean and dry.
- Never service equipment while it is operating. Keep hands, feet, and clothing away from moving parts.
- Keep your equipment in proper working condition. Replace worn or broken parts immediately.



ST-0003-1

### Operate Motor Properly

- All electrical connections must be made in accordance with applicable local codes (National Electrical Code for the US, Canadian Electric Code, or EN60204 along with applicable European Directives for Europe). Make sure equipment and bins are properly grounded.
- Lock-out power before resetting motor overloads.
- Do not repetitively stop and start the drive in order to free a plugged condition. Jogging the drive in this manner can damage the equipment and drive components.



ST-0009-3

### Rotating Auger Hazard

- Keep clear of rotating augers and moving parts.
- Do not remove or modify guards or covers.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.
- Failure to follow these precautions will result in serious injury or death.



ST-0037-1

### Stay Clear of Hoisted Equipment

- Always use proper lifting or hoisting equipment when assembling or disassembling equipment.
- Do not walk or stand under hoisted equipment.
- Always use sturdy and stable supports when needed for installation. Not following these safety precautions creates the risk of falling equipment, which can crush personnel and cause serious injury or death.

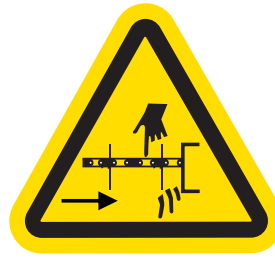


ST-0047-1

# 1. Safety

## Stay Clear of Moving Parts

- Entanglement in rotating sprocket or moving chain will cause serious injury or death.
- Keep all guards and covers in place at all times.
- Lock-out power source before making adjustments, cleaning, or maintaining equipment.



ST-0017-1

## Use Unload Equipment Properly

- Do not operate this equipment alone. Make sure someone nearby is aware of the proper shut down sequence in the event of an emergency.
- Do not allow any person intoxicated or under the influence of drugs to operate this equipment. All operators must be adequately rested and prepared to perform all functions of operating the equipment.
- Do not start equipment until all persons are clear of the work area and safety guards are in place.
- Do not allow anyone inside a bin, truck, or wagon which is being unloaded by an auger. Flowing grain can trap and suffocate in seconds.
- Use ample overhead lighting after sunset to light the work area.
- Always use caution to not hit the auger when positioning the load.
- Do not leave equipment operating while unattended.
- Be aware of pinch points, which can trap or catch objects and cause injury.
- Be sure all equipment is locked in position before operating.
- Always lock out all power sources to the equipment when unloading is finished.



ST-0051-1

## Sharp Edge Hazard

- This product has sharp edges, which can cause serious injury.
- To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment.



ST-0036-2






## 2. Decals

The safety decals on your equipment are safety indicators which must be carefully read and understood by all personnel involved in the installation, operation, service and maintenance of the equipment.

To replace a damaged or missing decal, contact us to receive a free replacement.

### GSI Decals

1004 E. Illinois St.  
Assumption, IL. 62510  
Phone: 1-217-226-4421

| Location           | Decal #   | Decals  | Description                   |
|--------------------|-----------|---|-------------------------------|
| On bin door covers | DC-GBC-1A |  | Warning, Keep Clear of Augers |

## General Information

The control rod kits are used for opening and closing the center well and intermediate well gates from the outside of the bin. The optional rack and pinion control can be used to open the bin well control gates easier. Contact your distributor for more information.

### Control Rod Kits

| Diameter | Part #   | Diameter | Part #    |
|----------|----------|----------|-----------|
| 24'      | GCP24000 | 68'-69'  | GCP68000  |
| 27'      | GCP27000 | 72'      | GCP72000  |
| 30'      | GCP30000 | 75'      | GCP75000  |
| 33'-34'  | GCP33000 | 78'      | GCP78000  |
| 36'      | GCP36000 | 80'      | GCP80000  |
| 37'-39'  | GCP38000 | 82'      | GCP82000  |
| 40'      | GCP40000 | 90'      | GCP90000  |
| 42'      | GCP42000 | 92'      | GCP92000  |
| 48'-49'  | GCP48000 | 105'     | GCP10500  |
| 54'-55'  | GCP54000 | 113'     | GCP113000 |
| 60'      | GCP60000 | 120'     | GCP120000 |
| 63'      | GCP63000 |          |           |

### Rack and Pinion Control

| Size | Part #  |
|------|---------|
| 8"   | 8081494 |
| 10"  | 8102029 |
| 12"  | 8120488 |

### 3. Assembly

## Assembling the Control Rod Kits with the Gate Handle

The control rod kit can be used on 24'-75' (7.32 m-22.86 m) diameter bins.

1. Align the control rod (8) between the holes in the gate handle (7) and attach the control rod clamp (9) to the control rod (8) by inserting a 5/16" x 1-3/4" roll pin (6) through the clamp (9) and the hole in the control rod (8).
2. Secure the control rod clamp (9) to the gate handle (7) using 5/16" x 3/4" carriage bolts (1), 5/16" flat washers (3) and 5/16" nylock nuts (4).

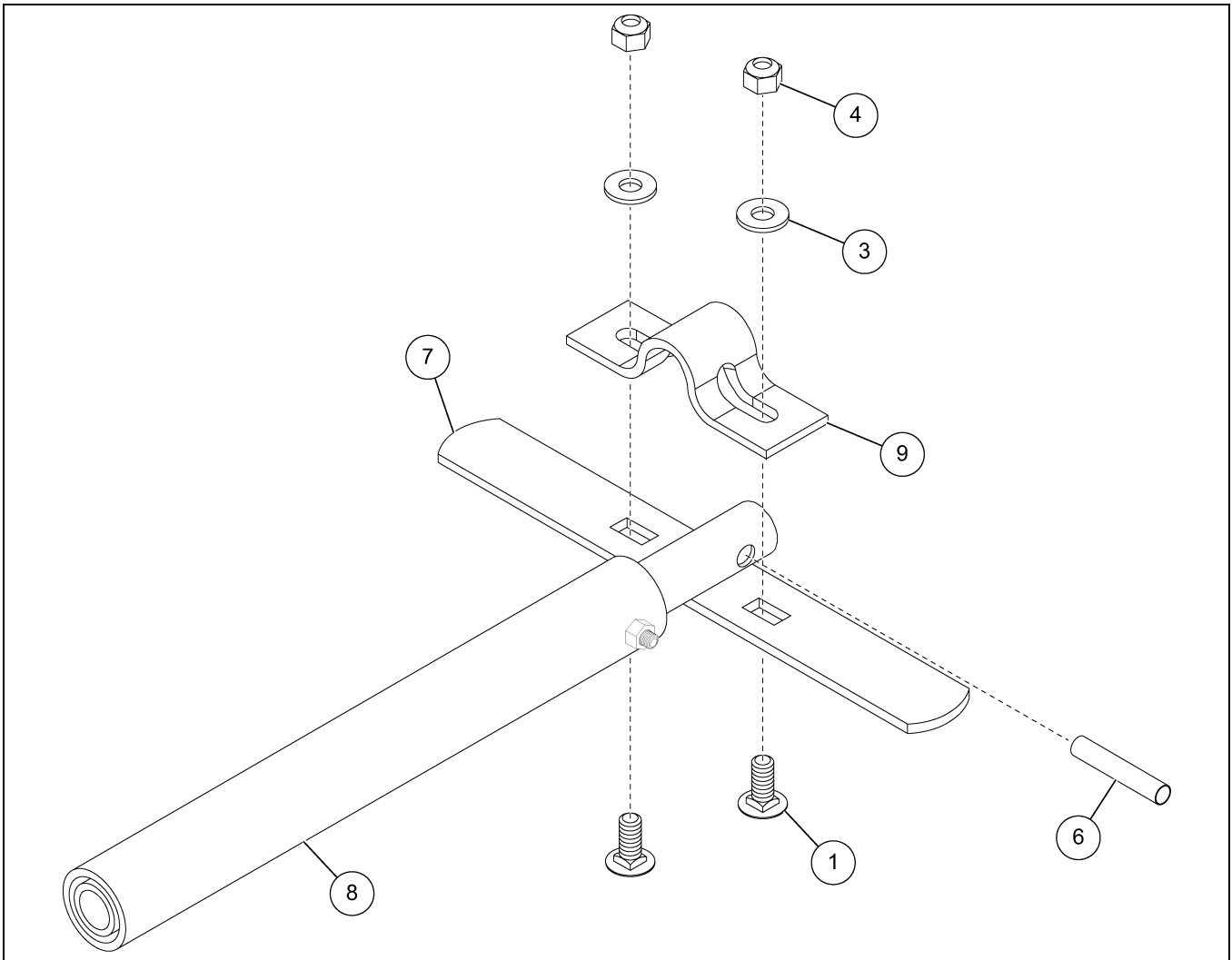


Figure 3A Control Rod Kit

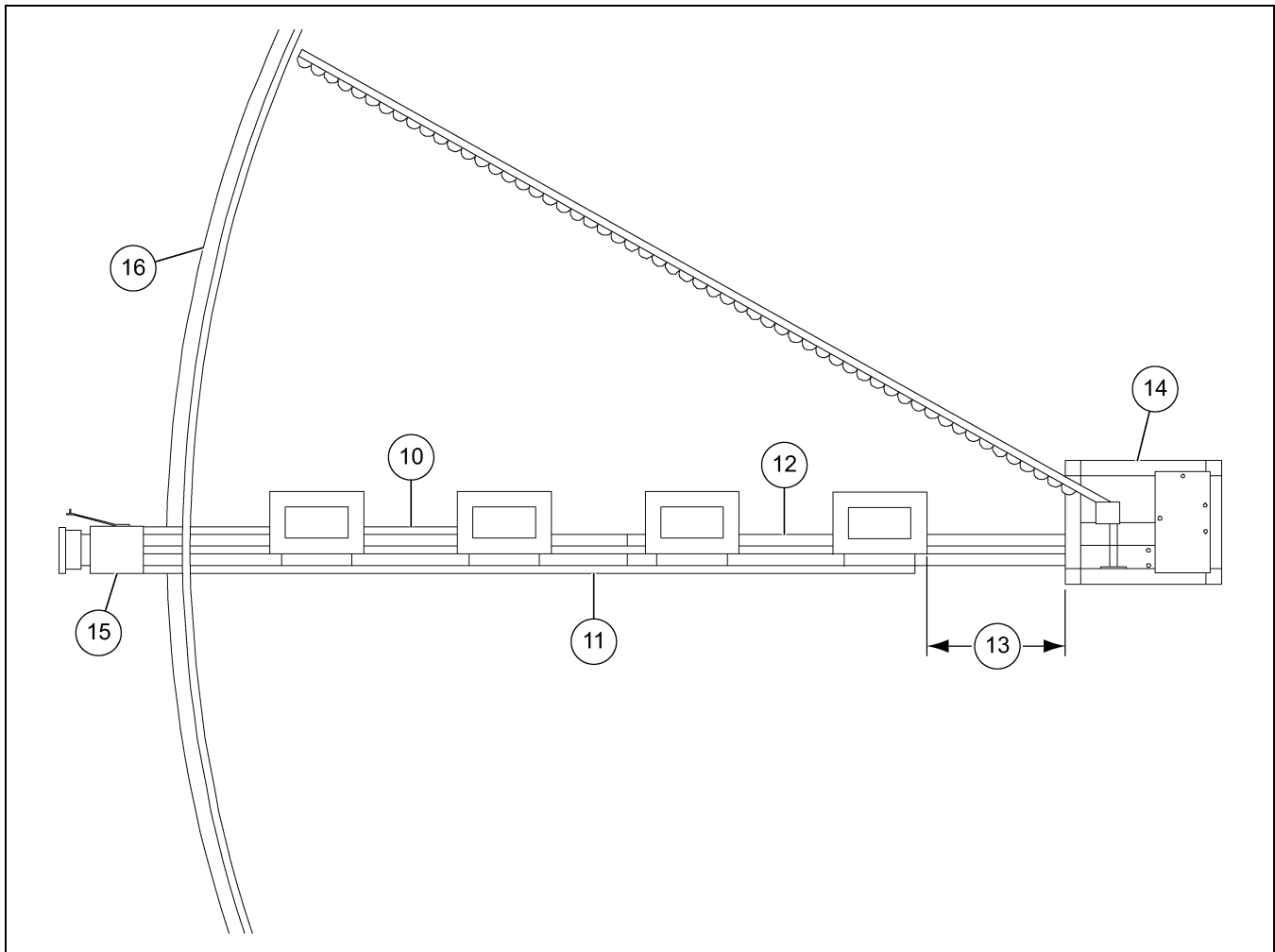
| Ref # | Description                |
|-------|----------------------------|
| 1     | 5/16" x 3/4" Carriage Bolt |
| 3     | 5/16" Flat Washer          |
| 4     | 5/16" Nylock Nut           |
| 6     | 5/16" x 1-3/4" Roll Pin    |

| Ref # | Description            |
|-------|------------------------|
| 7     | Gate Handle            |
| 8     | 1/2" Control Rod       |
| 9     | Well Control Rod Clamp |

## Control Rod Length

Use the following information to determine the control rod length for each diameter.

1. Use the following illustration (*Figure 3B*) and the chart *on Page 14* to determine the necessary pipe lengths.



**Figure 3B**

| Ref # | Description  |
|-------|--|
| 10    | Outer Intermediate Well Control Rod                        |
| 11    | Inner Intermediate Well Control Rod                        |
| 12    | Center Well Control Rod                                    |
| 13    | Intermediate Wells Spacing (See table <i>on Page 14</i> .) |
| 14    | Center Well  |
| 15    | Rack and Pinion Control                                    |
| 16    | Bin Wall   |

### 3. Assembly

## Control Rod Length (Continued)

| Length of Control Rods          |                                    |                              |                              |                       |  |                      |  |                    |
|---------------------------------|------------------------------------|------------------------------|------------------------------|-----------------------|--|----------------------|--|--------------------|
| Intermediate Wells Spacing (13) |                                    |                              | Center Well Control Rod (12) |                       | Inner Intermediate Well Control Rod (11) |                      | Outer Intermediate Well Control Rod (10) |                    |
| Bin Diameter                    | Spacing between Intermediate Wells | Number of Intermediate Wells | Assembly Length              | Length of Sections    | Assembly Length                          | Length of Sections   | Assembly Length                          | Length of Sections |
| 24'                             | 31-1/2"                            | 2                            | 11' - 11-1/2"                | 11' - 11-1/2"         | 8' - 2-1/2"                              | 8' - 2-1/2"          | 3' - 4-1/2"                              | 3' - 4-1/2"        |
| 27'                             | 38-1/2"                            | 2                            | 13' - 5-1/2"                 | 13' - 5-1/2"          | 9' - 1-1/2"                              | 9' - 1-1/2"          | 3' - 8-1/2"                              | 3' - 8-1/2"        |
| 30'                             | 45-1/2"                            | 2                            | 14' - 11-1/2"                | 14' - 11-1/2"         | 10' - 1/2"                               | 10' - 1/2"           | 4' - 1/2"                                | 4' - 1/2"          |
| 34'                             | 55-1/2"                            | 2                            | 16' - 11-1/2"                | 16' - 11-1/2"         | 11' - 2-1/2"                             | 11' - 2-1/2"         | 4' - 4-1/2"                              | 4' - 4-1/2"        |
| 36'                             | 35-1/2"                            | 3                            | 17' - 11-1/2"                | 17' - 11-1/2"         | 13' - 10-1/2"                            | 13' - 10-1/2"        | 8' - 8-1/2"                              | 8' - 8-1/2"        |
| 39'                             | 40-1/2"                            | 3                            | 19' - 5-1/2"                 | 19' - 5-1/2"          | 14' - 11-1/2"                            | 14' - 11-1/2"        | 9' - 4-1/2"                              | 9' - 4-1/2"        |
| 40'                             | 42-1/2"                            | 3                            | 19' - 11-1/2"                | 19' - 11-1/2"         | 15' - 3-1/2"                             | 15' - 3-1/2"         | 9' - 6-1/2"                              | 9' - 6-1/2"        |
| 42'                             | 29-1/2"                            | 4                            | 20' - 11-1/2"                | 20' - 11-1/2"         | 17' - 4-1/2"                             | 17' - 4-1/2"         | 8' - 1/2"                                | 8' - 1/2"          |
| 49'                             | 38-1/2"                            | 4                            | 24' - 5-1/2"                 | 21' and 3' - 5-1/2"   | 20' - 1-1/2"                             | 20' - 1-1/2"         | 9' - 4-1/2"                              | 9' - 4-1/2"        |
| 55'                             | 46-1/2"                            | 4                            | 27' - 5-1/2"                 | 21' and 6' - 5-1/2"   | 22' - 5-1/2"                             | 21' and 1' - 5-1/2"  | 10' - 9-1/2"                             | 10' - 9-1/2"       |
| 60'                             | 53-1/2"                            | 4                            | 29' - 11-1/2"                | 21' and 8' - 11-1/2"  | 24' - 4-1/2"                             | 21' and 3' - 4-1/2"  | 9' - 1"                                  | 9' - 1"            |
| 63'                             | 57-1/2"                            | 4                            | 31' - 5-1/2"                 | 21' and 10' - 5-1/2"  | 25' - 6-1/2"                             | 21' and 4' - 6-1/2"  | 13' - 9-1/2"                             | 13' - 9-1/2"       |
| 68'                             | 65-1/2"                            | 4                            | 34' - 5-1/2"                 | 21' and 13' - 5-1/2"  | 27' - 10-1/2"                            | 21' and 6' - 10-1/2" | 12' - 6-1/2"                             | 12' - 6-1/2"       |
| 72'                             | 69-1/2"                            | 4                            | 35' - 11-1/2"                | 21' and 14' - 11-1/2" | 29' - 1/2"                               | 21' and 8' - 1/2"    | 13' - 1/2"                               | 13' - 1/2"         |
| 75'                             | 73-1/2"                            | 4                            | 36' - 5-1/2"                 | 21' and 16' - 5-1/2"  | 30' - 2-1/2"                             | 21' and 9' - 2-1/2"  | 13' - 6-1/2"                             | 13' - 6-1/2"       |

## Assembling the Control Rods

The control rod kit comes with three control rods to be used with a minimum of two intermediate wells and the center well. Two or more rod sections of same control rod are used for larger diameter bins.

1. Locate the two 1/2" control rod (8) sections and find the end with internal thread for each rod.
2. Use the thread coupler (17) and screw the two control rod (8) sections together.

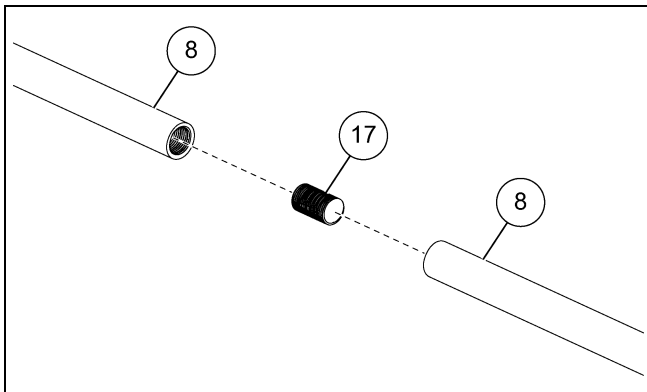


Figure 3C

| Ref # | Description      |
|-------|------------------|
| 8     | 1/2" Control Rod |
| 17    | Threaded Coupler |

## Installing the Rack and Pinion Control (Optional)

The rack and pinion control can be used with up to three sets of controls. The center controller is used to open and close the center well gate. The other two controls are used to open and close the intermediate well gates.

### What You Should Know

Control rod kits with the rods pre-cut to be ready for use can be purchased. Contact your distributor for more information.

1. Place the rack and pinion control (15) on the unload tube (19) with the control rod sleeves (20 and 21) facing towards the bin wall (16).
2. With the rack and pinion control (15) placed on the unload tube (19), rotate the handle (24) as far as possible to move the control rod sleeves (20 and 21) towards the bin wall (16).
3. Slide the rack and pinion control (15) as close as possible to the unload tube flange. Align the lower half band (18) with the rack and pinion control (15) and secure it to the unload tube (19) using 5/16" x 1-1/2" bolts (2) and 5/16" nuts (5).

**NOTE:** *Make sure there is enough space to reach the flange bolts to ease the frequent removal and installation of the powerhead.*

4. Close the center well gate and all the intermediate well gates.

**NOTE:** *Make sure the well gates open towards the outside of the bin when the control rods are pulled.*

5. Measure the distance from the center well gate clamp to the hole in the center control rod sleeve (21) and add 2" (5.08 cm) to it.
6. Cut a control rod of length equal to the length measured in [Step 5](#).
7. Attach one end of the control rod (23) to the center well gate and the other end to the middle control rod sleeve (21) in the rack and pinion control (15).
8. Secure the control rod (8) to the middle control rod sleeve (21) using a safety pin or 5/16" bolt (2) and nut (5).

**NOTE:** *Control rod guides are necessary when the recommended number of intermediate wells are not used or when there is a larger distance than normal between the intermediate wells. Control rod guides are available for purchase separately.*



**The control rods MUST be supported. Unsupported control rods can cause misalignment due to sagging and will cause the controls to grind. This is a misuse of the equipment. Any misuse of the equipment will void the warranty.**

9. Make sure the intermediate bin wells are properly distanced.

### 3. Assembly

## Installing the Rack and Pinion Control (Optional) (Continued)

10. Identify the control rods.
  - a. The center control rod should control the center well gate.
  - b. One control rod should control the intermediate well gates nearest to the center well.
  - c. One control rod should control the intermediate well gates nearest to the bin wall.

**NOTE:** Each intermediate well control rod should control even number of intermediate wells.

11. Measure the distance from the intermediate well gate clamp to the hole in the respective control rod sleeve (21) and add 2" (5.08 cm) to it.
12. Cut a control rod of length equal to the length measured in [Step 14](#).
13. Attach one end of the control rod (22) to the intermediate well gate and other end to the corresponding control rod sleeve (20) in the rack and pinion control (15).
14. Secure the control rod (22 and 23) to the control rod sleeve (20 and 21) using a safety pin or a 5/16" bolt (2) and nut (5).
15. Repeat [Steps 13-15](#) for the other control rod.

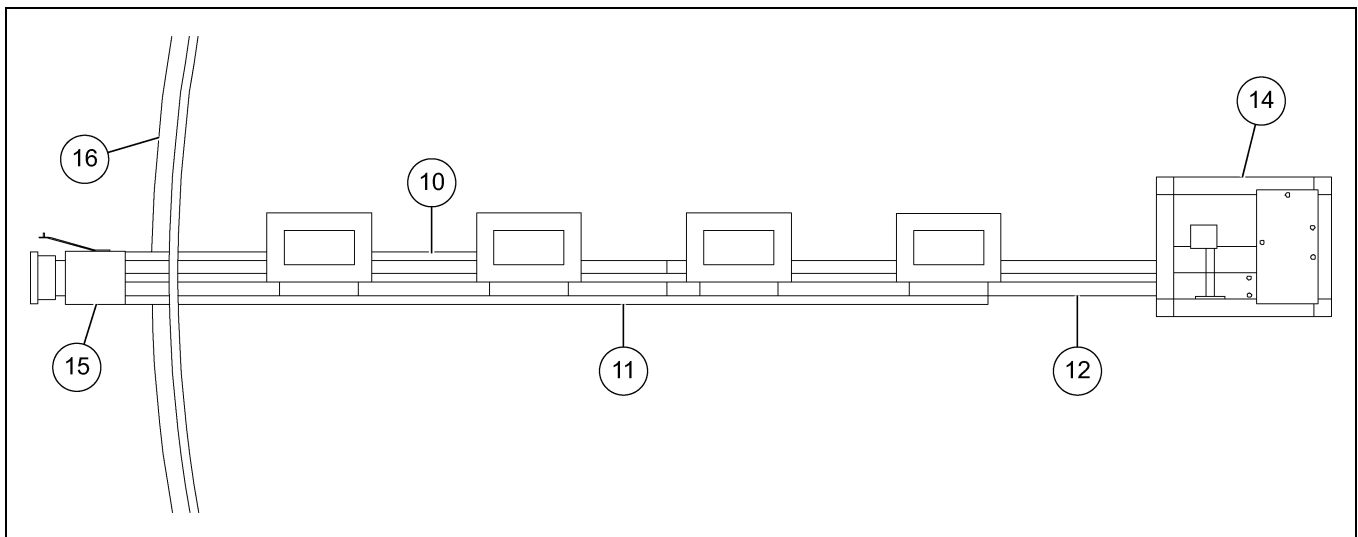


Figure 3D

| Ref # | Description                         |
|-------|-------------------------------------|
| 10    | Outer Intermediate Well Control Rod |
| 11    | Inner Intermediate Well Control Rod |
| 12    | Center Well Control Rod             |
| 14    | Center Well                         |
| 15    | Rack and Pinion Control             |
| 16    | Bin Wall                            |



## Installing the Rack and Pinion Control (Optional) (Continued)

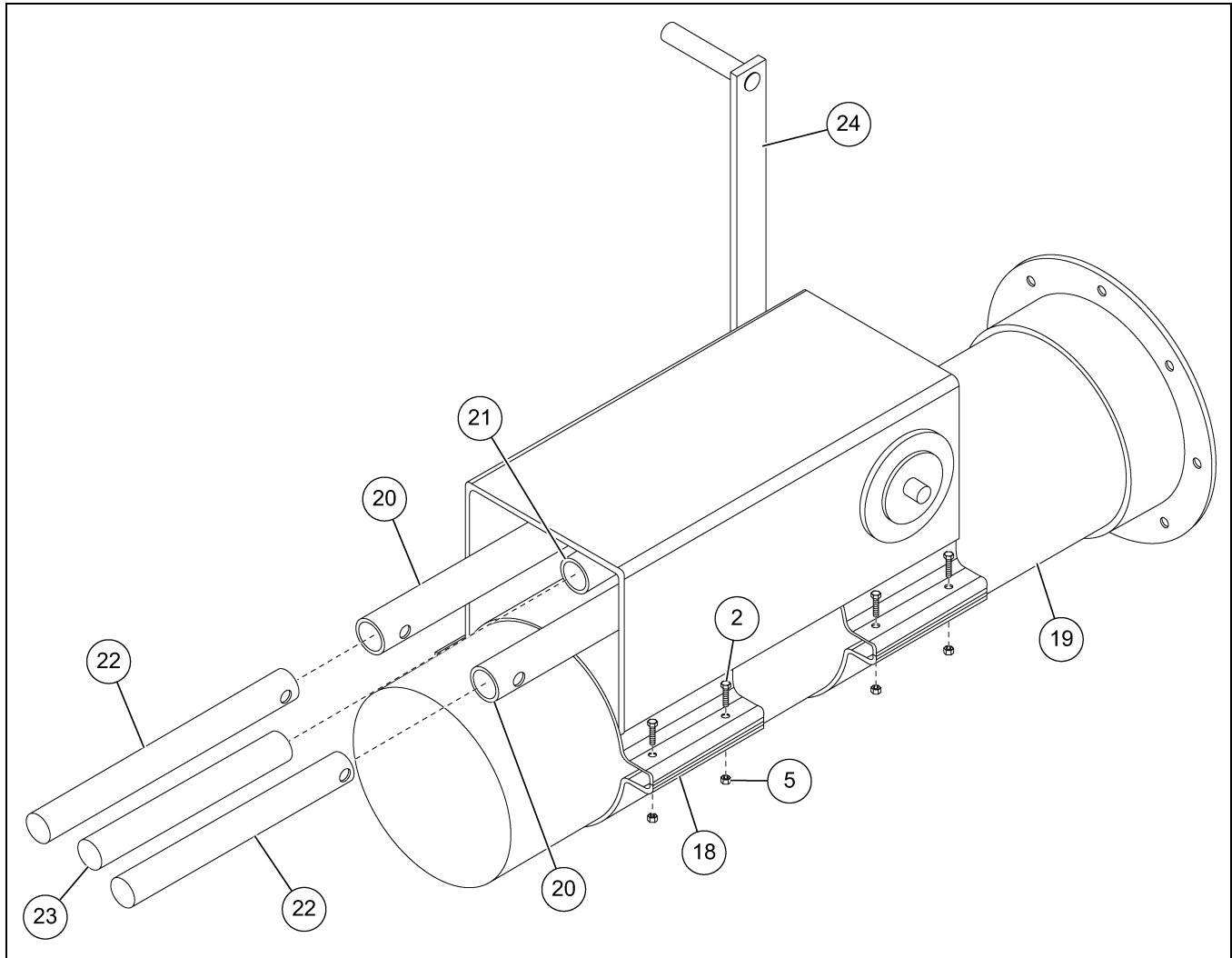


Figure 3E

| Ref # | Description                      |
|-------|----------------------------------|
| 2     | 5/16" x 1-1/2" Bolt              |
| 5     | 5/16" Nut                        |
| 18    | Half Band                        |
| 19    | Unload Tube                      |
| 20    | Intermediate Control Rod Sleeves |
| 21    | Center Control Rod Sleeve        |
| 22    | Intermediate Control Rods        |
| 23    | Center Control Rod               |
| 24    | Handle Assembly                  |

### 3. Assembly

## Operating the Rack and Pinion Control

1. Make sure all the well gates are properly closed and start the unload.
2. Insert the pin or the bolt in the center well sleeve (21) and rotate the handle (24) to pull the control rod (23) and open the center well gate to the proper flow rate.



***NEVER open the intermediate bin wells until the grain stops flowing from the center bin well.***

3. After the grain flow from the center bin well was stopped, remove the pin or bolt from the center well sleeve (21) and insert it in the intermediate well sleeve (20). Rotate the handle (24) and open the intermediate well gates (nearest to the center well) and then open the intermediate well gates nearest to the bin wall (16).



***Make sure that the center bin well is also open when the intermediate bin wells are open.***

4. If using the direct gear drive bin sweep auger, remove the pin from the center control rod and open the center bin well control gate as far as possible. Place the control rod in the **CLOSED** position and insert the pin in the second (2<sup>nd</sup>) hole of the center control rod.
5. To close the opening, perform [Step 4](#) in reverse.

## Limited Warranty - N.A. Grain Products

The GSI Group, LLC. ("GSI") warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI's sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

### Warranty Enhancements:

The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

|                          | Product   | Warranty Period |
|--------------------------|---|-----------------|
| <b>Storage</b>           | Grain Bin Structural Design   | 5 Years         |
|                          | • Sidewall, roof, doors, platforms and walkarounds                                  |                 |
|                          | • Flooring (when installed using GSI specified floor support system for that floor) |                 |
| <b>Conditioning</b>      | • Hopper tanks (BFT, GHT, NCHT, and FCHT)   | 5 Years         |
|                          | Dryer Structural Design - (Tower, Portable and TopDry)                              |                 |
|                          | • Includes (frame, portable dryer screens, ladders, access doors and platforms)     |                 |
|                          | All other Dryer parts including:  |                 |
|                          | • Electrical (controls, sensors, switches and internal wiring)                      |                 |
| <b>Material Handling</b> | All Non-PTO Driven Centrifugal and Axial Fans                                       | 3 Years         |
|                          | Bullseye Controllers  | 2 Years         |
|                          | Bucket Elevators Structural Design  | 5 Years         |
|                          | Towers Structural Design  | 5 Years         |
|                          | Catwalks Structural Design  | 5 Years         |
|                          | Accessories (stairs, ladders and platforms) Structural Design                       | 5 Years         |

### Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

#### Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

#### Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

(Limited Warranty - N.A. Grain Products\_ revised 01 October 2020)

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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[www.gsiag.com](http://www.gsiag.com)**

