Auger Fill Systems

Installation and Operation Guide

Manual No. 25-03-1502 06/2019

Notes, Warnings, and Cautions

This manual contains Notes, Warnings and Cautions in addition to the assembly instructions.

Notes: Provide additional comments to help with installation and set up.

CAUTIONS: Provide notification of situations that can cause damage to machinery and tools.

WARNINGS! Provide alerts to situations that can cause personal injury or death.
Please take the time to read and understand this manual before beginning assembly.
CAREFULLY FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS in this manual.
Observe the following precautions when working on or near the machinery:

- Understand the limitations and hazards associated with operating this equipment before using.
- Wear appropriate eye protection when assembling and using this equipment .
- Do not wear loose clothing, jewelry, etc.
- Keep sleeves rolled above the elbows.
- Confine long hair.
- Always wear approved protective footwear.

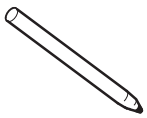
MAKE SURE ALL PERSONNEL UNDERSTAND THE POTENTIAL DANGER of someone getting too close or trying to make repairs or adjustments while the machine is running. This equipment has several AREAS **WHERE INJURIES COULD OCCUR IF GUARDS OR COVERS ARE REMOVED. KEEP ALL COVERS AND GUARDS IN PLACE WHILE EQUIPMENT IS IN OPERATION.**
Observe the following precautions when servicing the machinery:

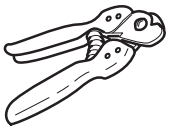
- Do not remove guards except when performing maintenance.
- Do not operate the machine with guards or covers removed.
- When performing maintenance or repairs make sure the local control switch is OFF and the main power control panel is OFF and tagged **"DO NOT OPERATE."**
- Make all adjustments with the power **OFF.**
- **NEVER** reach into the machine while the system is operating, keep hands out of the machine chain and belt areas. Keep all guards and covers in place when power is on.
- Work carefully and give the work you are doing your undivided attention. Do not look away, talk or play around. Careless acts can cause **SERIOUS INJURY.**

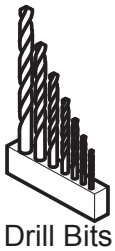
Contents

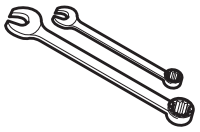
Tools Required


Hex Wrenches

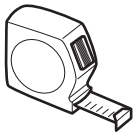

Marking Pen

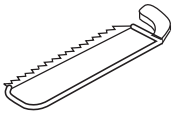

Cable Cutters

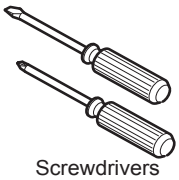

Drill Bits


Wrenches

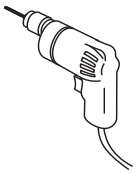

Needle Nosed Pliers


Tape Measure

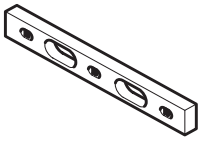

Hacksaw


Screwdrivers


Socket Set


Electric Drill


Locking Pliers


24" Level

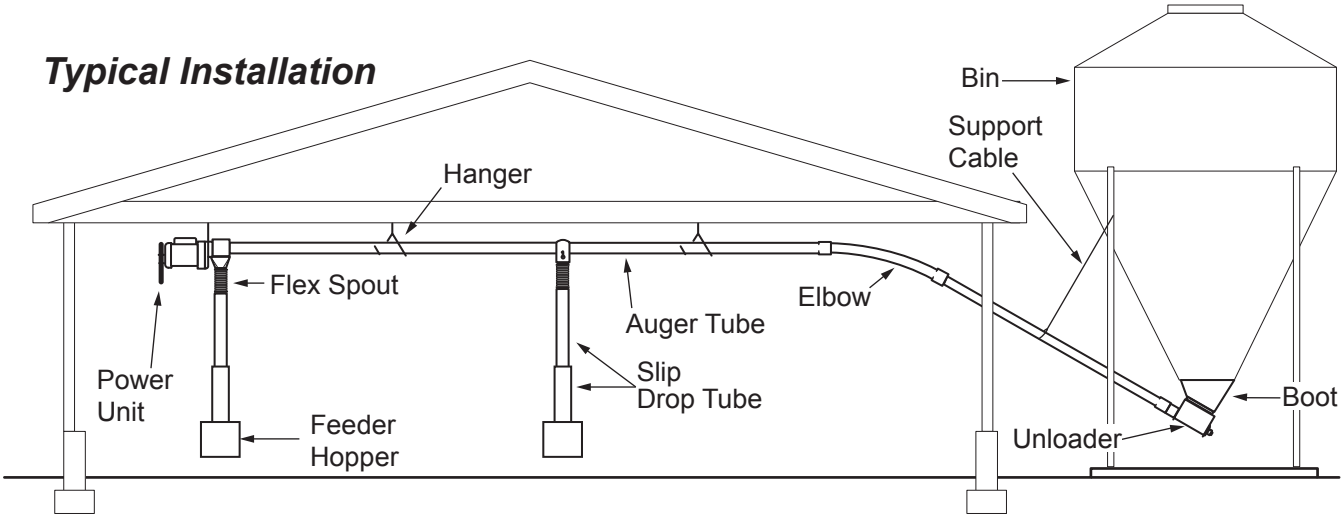

Hammer

Introduction and Overview

It is important to plan ahead. Please read this entire manual before you begin the actual assembly and installation. Taking the time to read all of the instructions may help you avoid costly errors during the assembly and installation process.

This manual covers general installation of all Flex-vey fill systems offered by Big Dutchman. In an attempt to make this manual work for all systems, drawings were chosen to be the most informative. The system you are installing may look slightly different than the illustrations in this manual. Refer to the Parts Book furnished with the equipment for the actual parts in your system.

Typical Installation



The Flex-vey Fill System includes everything between the **Bin** and the **Feed Hopper(s)**. Starting at the Bin, a **Boot** is attached at the bottom of the bin. There is usually an **Unloader** valve installed on this boot, but in the case of the 22 inch opening bin, the boot is also the unloader.

The **Auger** and **Auger Tube** begin at the unloader. If the unloader is level with the ground, an **Elbow** is installed at the unloader. Usually the unloader is mounted to a boot at a 30 degree angle, so an elbow is not needed. The auger tube then rises into the building.

Depending on the placement of the bin, the next elbow is either inside or outside of the building. This elbow brings the auger tube level and near the ceiling of the building.

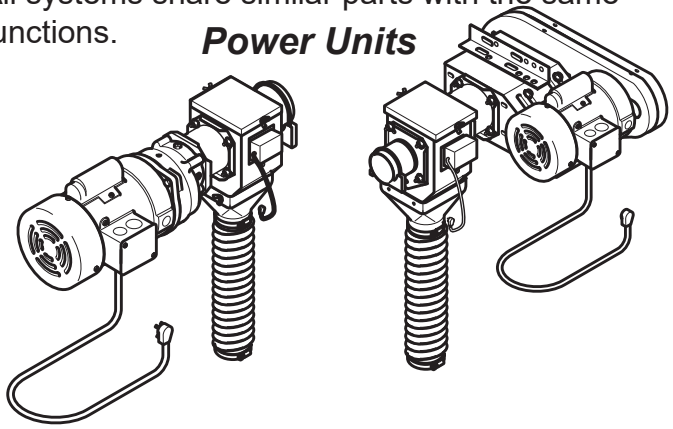
The auger tube is suspended near the ceiling and continues toward the first feed hopper. A **Drop** is installed at the feed hopper. A short length of flexible tube is installed at the drop. A **Coupler** is used if the auger tube needs to be joined and there is no belled end available.

The drop at the last feed hopper is part of the **Power Unit**. The power units may be belt or direct drive. Flex-vey fill systems are available in several diameters. You may have any of the following configurations:

- Single Auger, Single Bin
- Single Auger, Tandem Bins
- Dual Augers, Single Bin
- Dual Augers, Tandem Bins

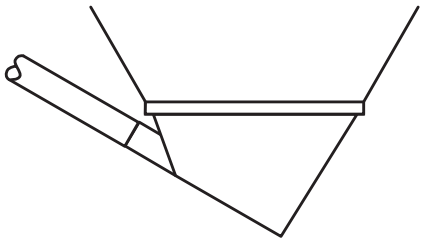
The fill system may be supplying feed to two hoppers in a broiler house or as many as twenty five hoppers in a large layer house. All systems share similar parts with the same functions.

Power Units

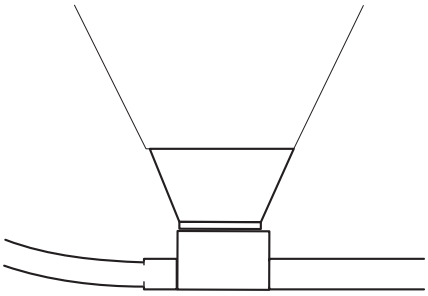


Direct Drive **Belt Drive**

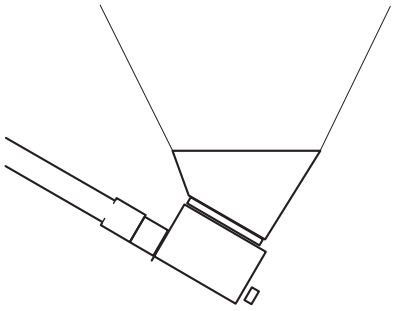
Typical Boot Styles



22 in. [56cm]
30 Boot

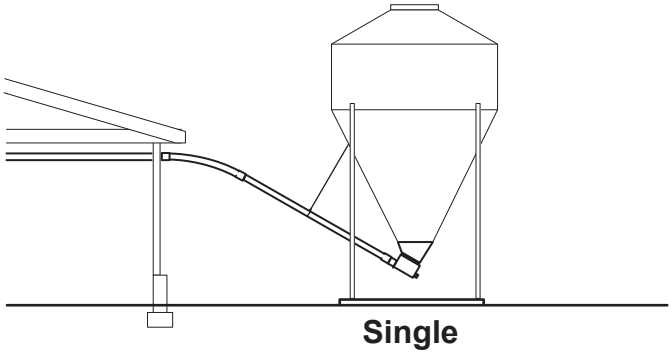


16 in. [41cm]
Straight Boot

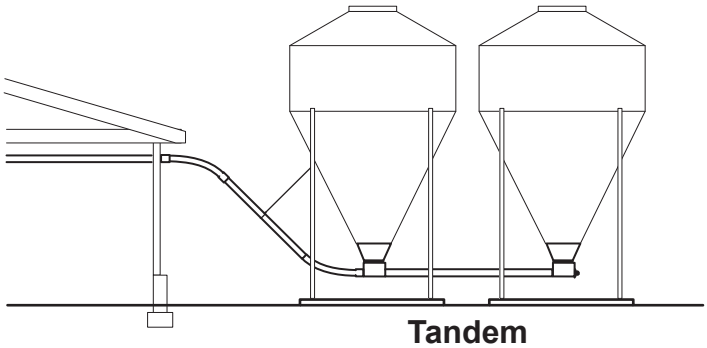


16 in. [56cm]
30 Boot

Single and Tandem Bins with Single Auger

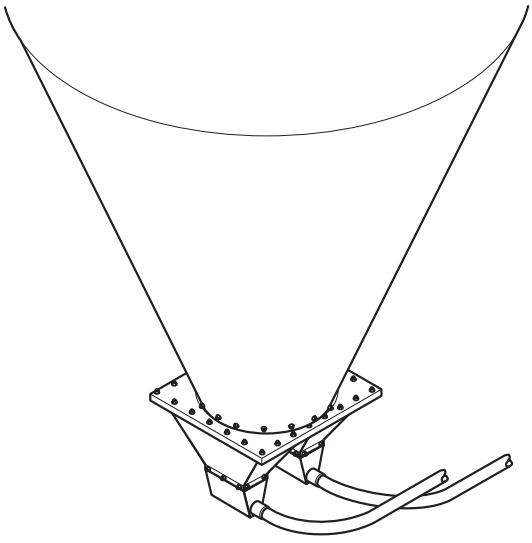


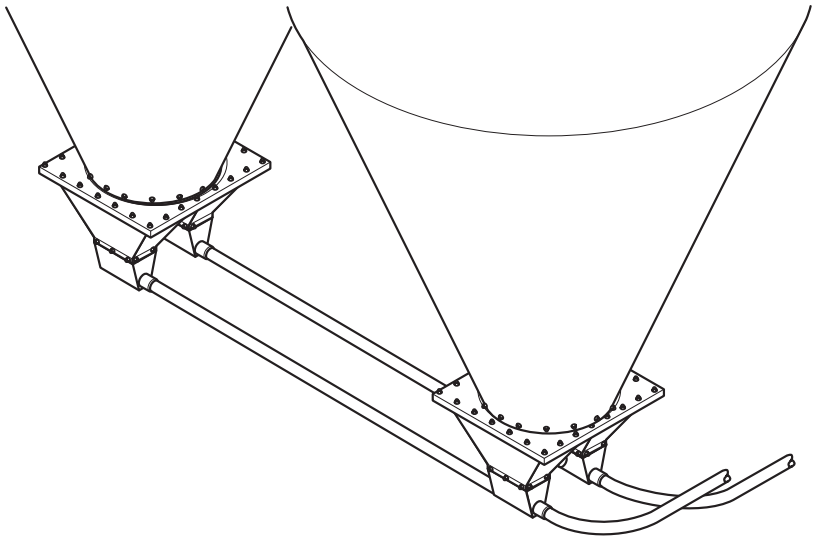
Single



Tandem

Single and Tandem Bins with Dual Auger





Important Considerations

Distance between the bin and the building

When locating the concrete foundation for the bin, the location of the first feed drop and the height at which the tube will enter the building must be considered.

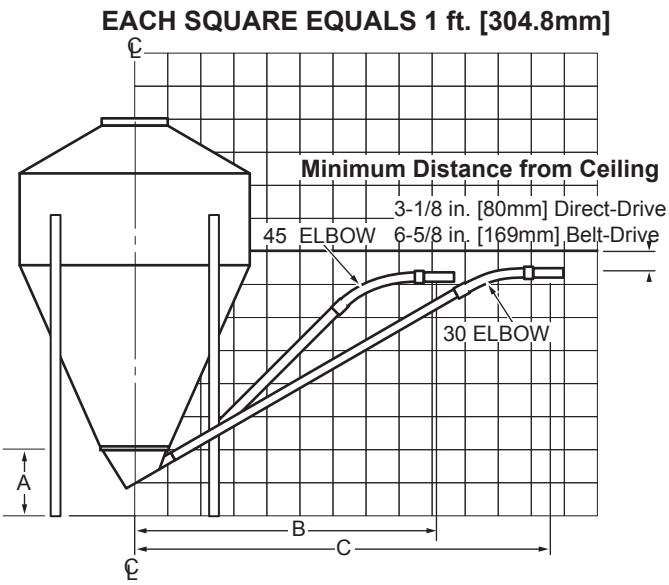
Position of feed drop tubes

The drop locations should be determined accurately.

Amount of overhead clearance required inside the building

The minimum clearance to the top of the tube must be 3 1/8 in. [80mm] when using a direct drive power unit or 6 5/8 in. [169mm] when using a belt drive power unit.

IMPORTANT: When considering overhead clearance, remember some models of power units require access to the top of the switch housing for attaching auger.



PLACEMENT CHART

16 in. [41cm] Boots					
Bins		**6 ft. [1.8m]**	**7 ft. [2.1m]**	**9 ft. [2.7m]**	**12 ft. [3.7m]**
Common Measurement from Bottom Bin to Pad	**A**	32 7/8 in [.835m]	36 1/2 in. [.927m]	32 5/8 in. [.830m]	35 3/4 in. [.908m]
Length from Center of Bin to Wall (45 Rise)	**B**	9 ft.- 7 in. [2.95m]	9 ft.- 5 in. [2.89m]	9 ft.- 7 in. [2.95m]	9 ft.- 5 in. [2.89m]
Length from Center of Bin to Wall (30 Rise)	**C**	13 ft.- 9 in. [4.24m]	13 ft.- 5 in. [4.11m]	13 ft.- 9 in. [4.24m]	13 ft.- 5 in. [4.11m]

22 in. [56cm] Boots

Bins		**6 ft. [1.8m]**	**7 ft. [2.1m]**	**9 ft. [2.7m]**	**12 ft. [3.7m]**
Common Measurement from Bottom Bin to Pad	**A**	32 7/8 in. [.835m]	36 1/2 in. [.927m]	32 5/8 in. [.830m]	35 3/4 in. [.908m]
Length from Center of Bin to Wall (45 Rise)	**B**	8 ft.-10 1/2 in. [2.705m]	8 ft.- 8 1/2 in. [2.654m]	8 ft.-10 1/2 in. [2.705m]	8ft.- 8 27/32in. [2.663m]
Length from Center of Bin to Wall (30 Rise)	**C**	12 ft. [3.658m]	11 ft.- 8 9/32in. [3.563m]	12 ft. [3.658m]	11 ft.- 8 3/8 in. [3.566m]

NOTE: All measurements assume Bin Pad and House Floor are same level and 8 ft. [2.44m] ceiling.

30 Rise –
6 15/16 in. [176.2mm]Vertical for every 12 in. [304.8mm] Horizontal

45 Rise –
12 in. [304.8mm] Vertical for every 12 in. [304.8mm] Horizontal

Sequence of Installation

Install Unloader and Boot
Install either 16 in. boot and unloader valve or 22 in. boot.

Install Auger Tube
Install the elbows, tube, hangers and tee drops from bin to power unit.

Assemble the Power Unit
Assemble belt or direct drive power unit.

Install the Feed Drops
Install the power unit drop and all intermediate feed drops.

Install the Auger
Install, adjust tension and test operation of auger.

Installation

Install Unloader and Boot

16 in. Boot & Unloader to Hopper Collar

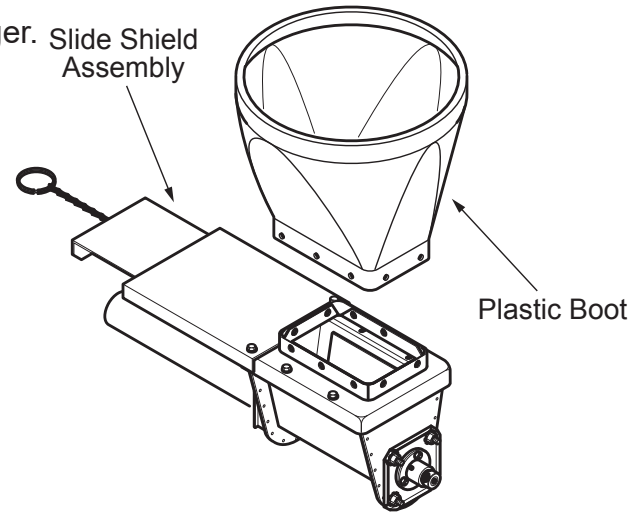
Insert plastic 16" boot into the hopper collar rotating to the proper direction for feed flow. Make sure boot is as far up inside the collar as possible. Using the 8 holes in the collar as a template, field drill 11/32 in. [8.73mm] holes in the top rim of the boot. Use the correct hardware to fasten the boot to the collar.

IMPORTANT: The supplied cover plate must be used to seal hole in collar when the 16 in. agitator is not used. Caulk around hole after bolting.

Bolt the slide shield assembly to the transfer plate using 5/16 x 3/4 in. bolts. Position the complete slide assembly with transfer plate to unloader, as shown, and bolt in place.

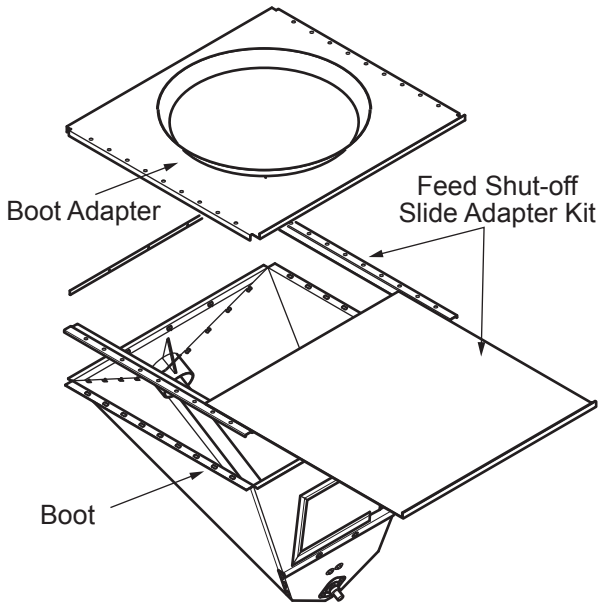
22 in. Boot to Adapter

Attach the boot to the bin adapter with the 5/16 x 1 in. hex head bolts, washers and kep-nuts from the parts bag. If the optional feed shut-off slide adapter kit is used, install it between boot and adapter. Thread the bolts through the nuts that are welded into the slide frame. Attach the boot to the projecting bolts with 5/16 in. washers and kep-nuts.



16 in. Boot and Unloader

IMPORTANT: When using 30° boot, slide assembly must be mounted on the uphill side of the unloader.



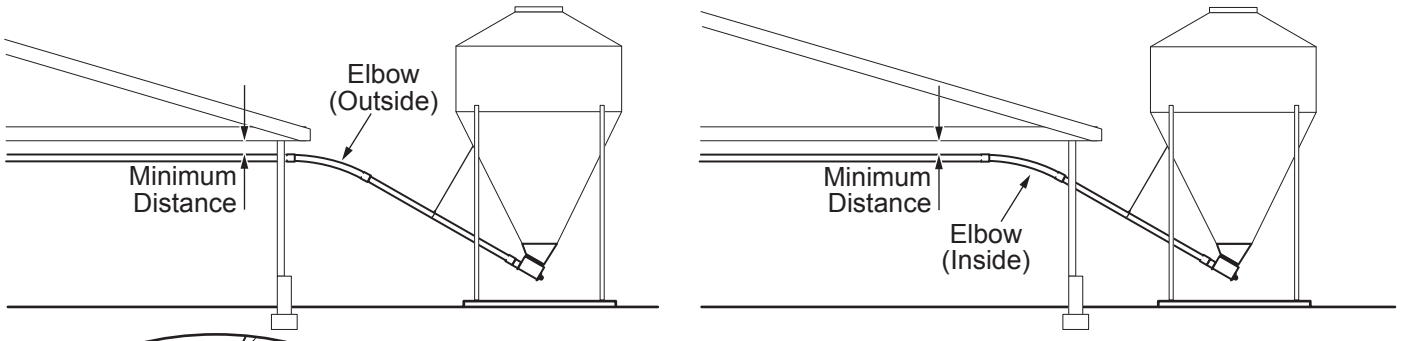
22 in. Boot

Install Auger Tube

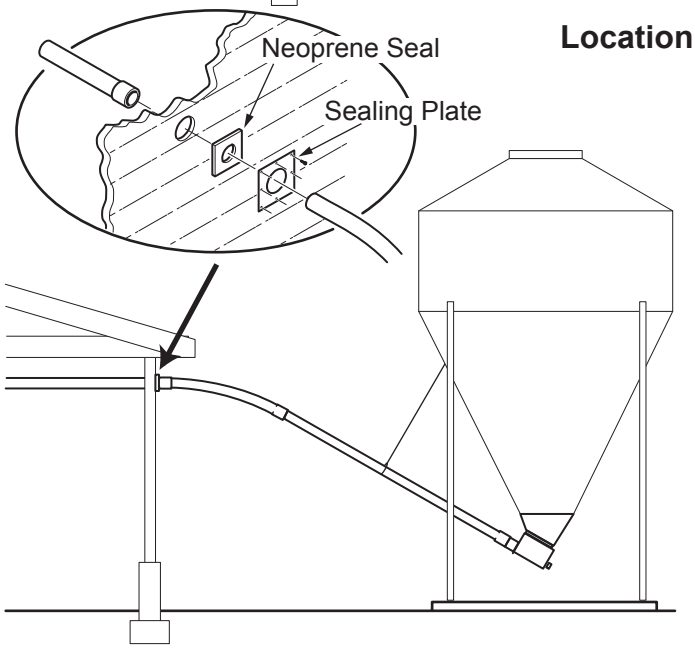
1. Locate the point at which the tube will enter the building. This is done by marking a vertical chalk line on the outside wall of the building directly opposite the bin spout. The height of the hole is found by running a string from the top of the spout to the wall at the angle of the auger tube if the elbow is to be inside the building. When the elbow is to be outside the building, the hole is located at the height of the auger tube inside the building.

IMPORTANT: Remember to allow room under the ceiling for the power unit. If there is no ceiling, the tube may enter directly under the eaves or through the top face board.

2. Cut a hole large enough to pass the auger tube through the sidewall of the building. Install weather seal kit over this opening.
3. Push the belled end of the first section of tube over the boot spout. Secure the tube to the boot spout with the clamp provided.



Location of Elbow



Weather Seal Kit

4. Support the section of the tube from the boot spout by fabricating a clamp and cable attached to two bin legs forming a support "V" to the tube.

NOTE: If elbow is to be used at unloader, the elbow is installed first.

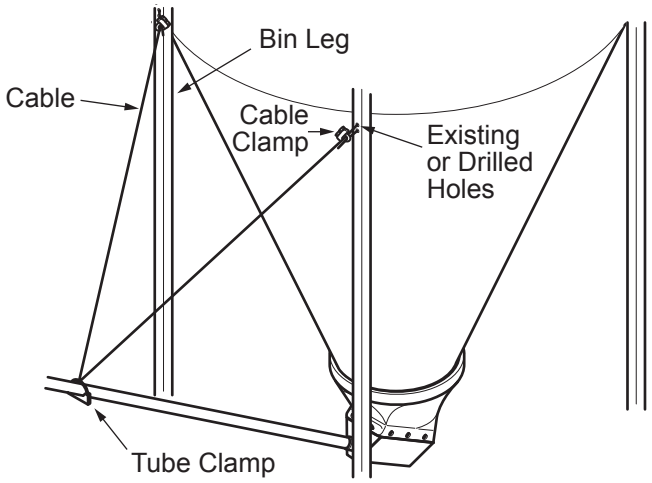
5. There are two types of elbows, PVC and metal. PVC is glued together and metal elbows are clamped together.

NOTE: PVC elbows are cut to fit at assembly, metal elbows are already made to the correct angle.

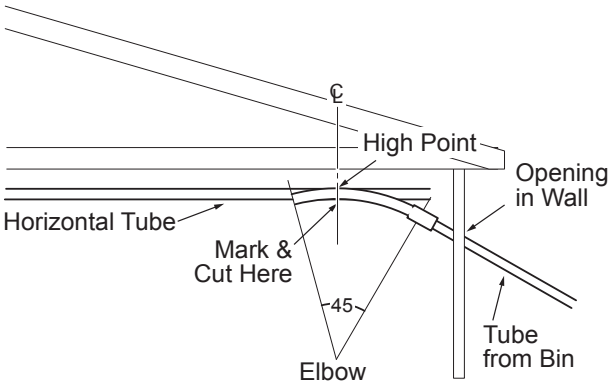
6. To cut PVC elbows correctly, dry fit the elbows and tubes. Mark and cut the elbow as shown.
7. Continue to install auger tube up to the location of the first drop (location of first hopper to be filled).

IMPORTANT: Do not glue together at this time. All joints are glued after system is assembled to allow for adjustments.

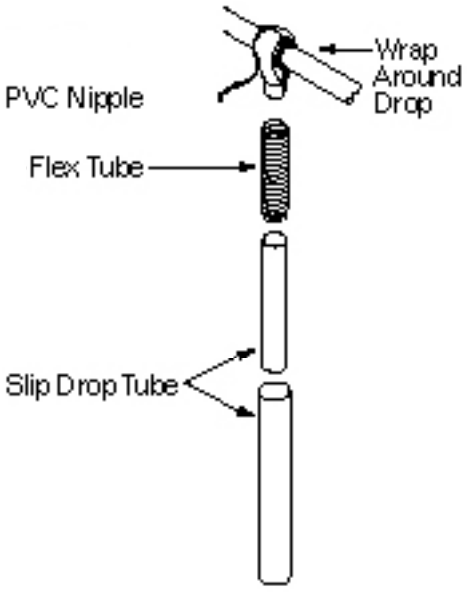
8. Depending on the type of drop, cut the tube so that the drop will be in the exact location required.

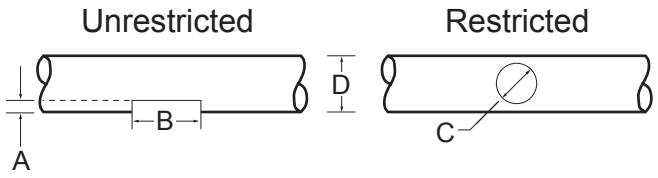


Fabricate Tube Support



Mark and Cut Elbow (PVC)

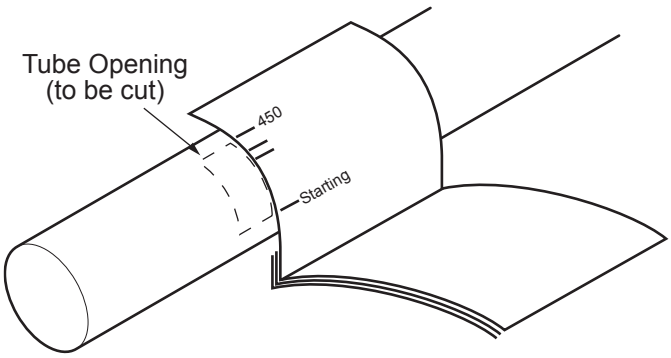




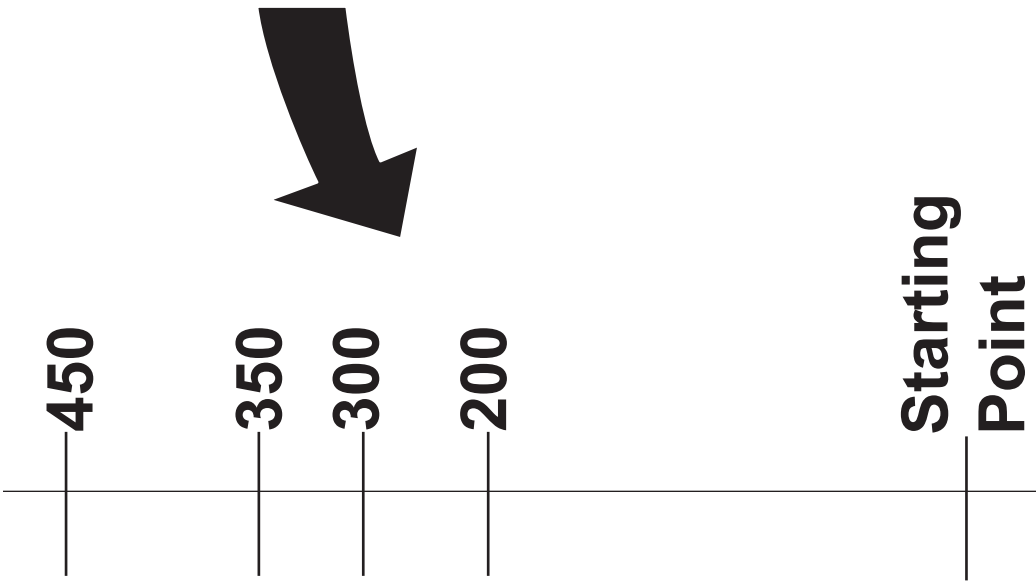
FLEX-vey Model	Dim. A MAX.	Dim. B	Dim. C MAX.	Dim. D
450	1 1/8 in. [29mm]	3 3/8 in. [86mm]	3 5/8 in. [91mm]	4 1/2 in. [114mm]
350	7/8 in. [22mm]	2 5/8 in. [67mm]	2 3/4 in. [71mm]	3 1/2 in. [89mm]
300	3/4 in. [19mm]	2 1/4 ini. [56mm]	2 3/8 in. [60mm]	3 in. [75mm]
200	5/8 in. [15mm]	1 3/4 in. [45mm]	1 7/8 in. [48mm]	2 3/8 in. [60mm]

For auger tube other than the above:
A is no more than 1/4 of **D**. (.25 x diamater)
B is 3/4 of **D**. (.75 x diameter)
C is no more than 80% of **D**. (.8 x diameter)

Cut Out for Wrap Around Drop



How to Use Template



Wrap Around Feed Drop

Determine if the drop is to be restricted or unrestricted. If it is to be a restricted drop, use a hole saw to cut proper size hole from chart. If it is to be an unrestricted drop, use a hacksaw to cut the proper size hole from chart.

IMPORTANT: Dimensions A and C are MAXIMUM dimensions, never exceed these maximums or the auger tube will be severely weakened.

NOTE: Flex-vey 450, 350, 300 and 200 unrestricted cut out can be measured with the template at the edge of this page. Lay manual on tube as shown. Mark tube from starting point to the line next to your model number. Measure width of opening and repeat.

9. Support the tube by suspending it with the tube hanger kits. The support should be every 5 ft. [1.5m].
10. Install the remaining sections of tubing, suspending the system as you go. The power unit will be the last drop.
11. When all the tube is in place, mark the center of the last drop position and cut the tube 3 in. [76.2mm] shorter than your mark.
12. Beginning at the bin end of the system, glue each joint or tighten clamps, taking care to keep the system straight, level and square.

Assembling the Direct Drive Power Unit

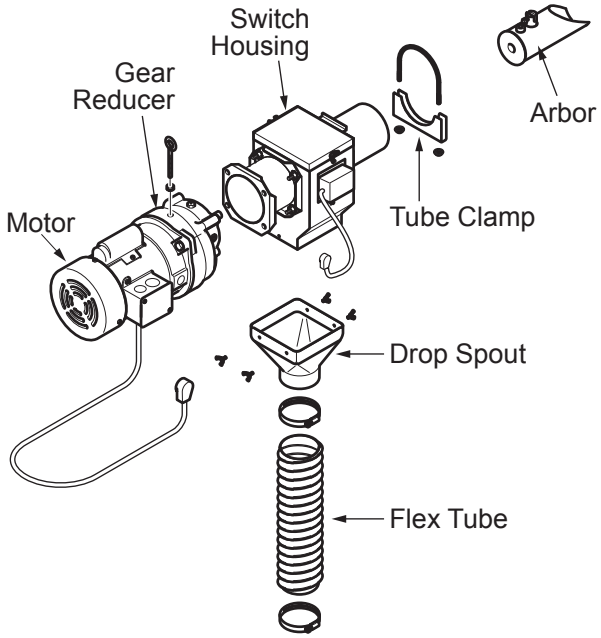
1. Remove all the parts from the carton.

NOTE: Most of the assembly of this power unit was done at the factory.

2. If motor is not attached to gear reducer, attach with pinion in place. Install arbor assembly onto reducer shaft.

IMPORTANT: Check reducer oil level and fill if necessary. Refer to reducer manual.

3. Attach motor and reducer assembly to adapter on switch housing.
4. Slide auger tube onto the adapter on opposite side of switch housing and clamp in place.



Direct Drive Power Unit

Assembling the Belt Drive Power Unit

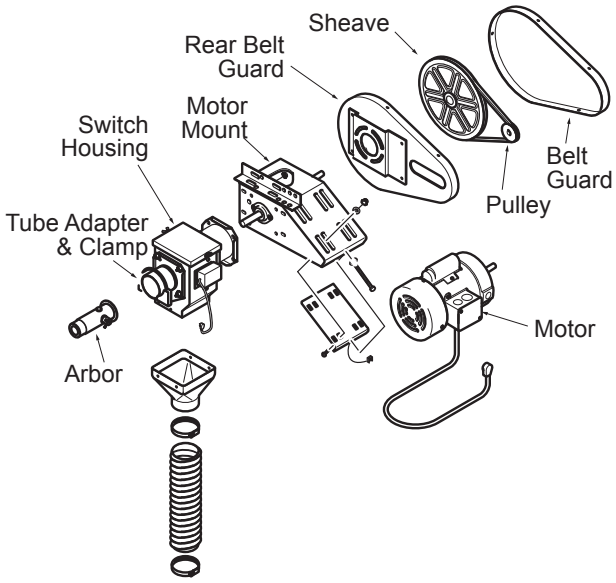
1. Remove all parts from the carton.

NOTE: Some pre-assembly has been done at the factory.

2. Install the arbor assembly onto drive shaft.
3. Mount switch housing to side of motor mount. Mount motor on the adjustable motor mount with shaft protruding away from the switch housing.

NOTE: Do NOT tighten the motor mount carriage bolts at this time. Final adjustment will be made after the belt is installed.

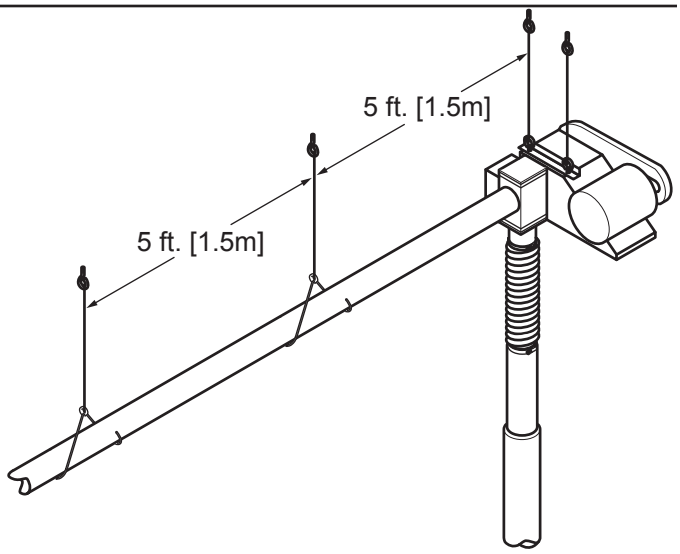
4. Attach the belt guard assembly to the motor mount.
5. Install the sheave onto the drive shaft and the pulley onto the motor shaft. Install and adjust belt.
6. Slide auger tube onto tube adapter and clamp.



Belt Drive Power Unit

Completing the Power Unit Assembly (Belt & Direct)

1. Attach the drop spout to the lower end of the switch housing.
2. Wire the motor cord to the motor.
3. Suspend the power unit before connecting the auger. The power unit must be the same height as the tube and able to swing freely in any direction.
4. The power unit is now in place. Adjust the suspension to hold the power unit in a permanent position.
5. Install the belt guard on the belt-drive power units.



Suspend the Power Unit

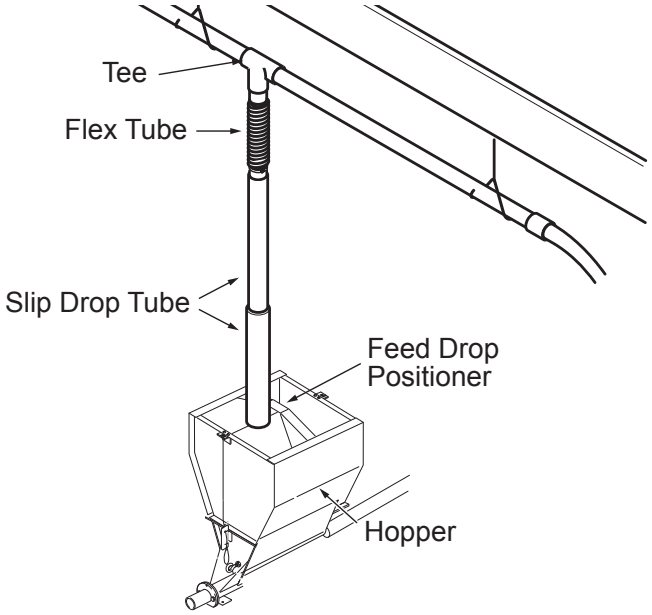
Install Feed Drops

Power Unit Drop

1. Attach the flexible drop tube section to the power unit drop with the hose clamp. Be sure to push tube all the way on before clamping.
2. Measure the remaining length of drop tube required and cut a piece of the drop tube to size. Attach it to the lower end of the flexible tube with another hose clamp.

NOTE: Push flex tube on the drop tube a minimum of 3 in. [76mm] before clamping.

3. The larger diameter drop tube is the adjustable sleeve. Slide sleeve over drop tube to complete installation.



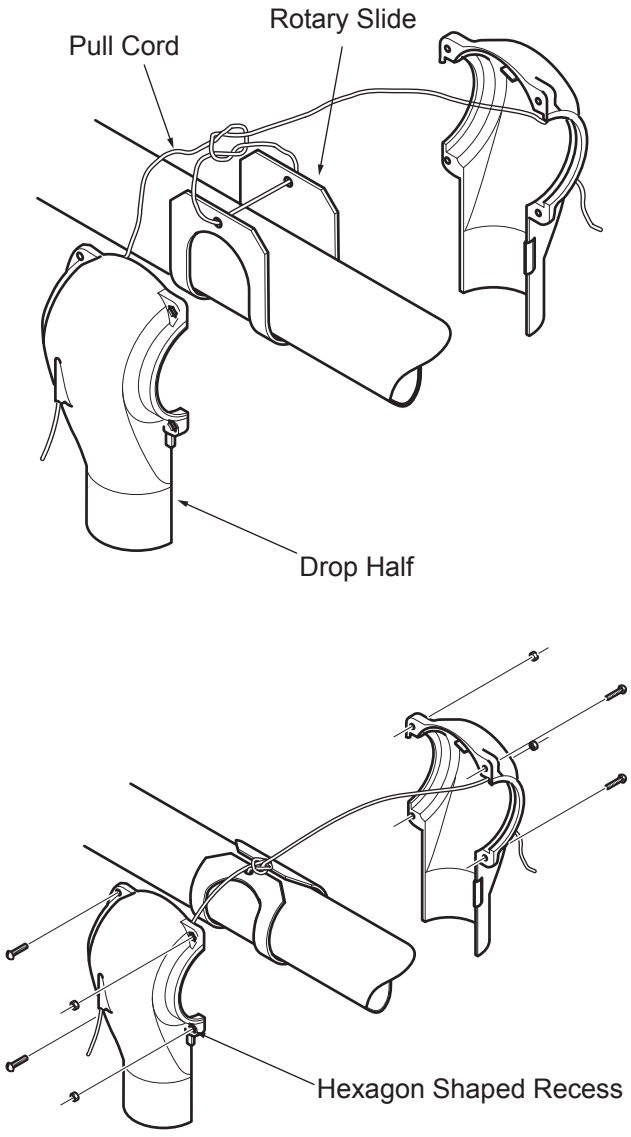
Typical Drop Installation

Wrap Around Type Drop (with shut off)

1. Wrap the rotary slide around the tube covering the outlet hole.

NOTE: Position all slides with the cut out facing the same direction so they all operate the same.

2. Thread ends of the pull cord through the holes in the slide and tie off as shown. Tie the knot in the center of the pull cord.
3. Thread ends of pull cord through the drop halves as shown and position drop halves around tube over the rotary slide.
4. Fasten the drop halves together with the machine screws and nuts, placing the nuts into the hexagon shaped recesses.
5. Position the drop so that the slide is centered when viewed up through the opening in the drop. Pull on cord until slide is in the fully open position.
6. Mark the cord where it enters the drop, thus locating the place to tie a knot. This knot serves as a stop and indicator of the fully open position.
7. Tie the green ball on the end of the cord that opens the drop and tie the red ball on the other end.
8. Dab some PVC cement around the tube on either side of the drop to keep drop from shifting along tube.



Wrap Around Drop Assembly

Auger Installation

1. Place the coil of auger about 15 ft. [4.5m] from the bin. Cut the holding wires. Uncoil the auger carefully to avoid injury and to prevent the auger from tangling or kinking. If the auger gets kinked, it must be cut and brazed together as shown later in this manual.
2. Check the tag on the auger to determine its length. The auger should be at least 5 in. [13cm] longer than the distance from the heel of the bin boot to the end of the tube. If the auger needs to be lengthened, it should be brazed to an additional piece. See **Brazing the Auger** section for complete brazing instructions.

IMPORTANT: Keep all brazed joints towards the bin end of the system whenever possible.

3. Push one end of the auger into the tube through the back end of the unloader valve. Continue to push auger into tube all the way to power unit.
4. Rotate the power unit shaft to thread the auger into the locking clamp. It may be necessary to cut or file the end of the auger first so that it will fit into the clamp.

NOTE: With some models, it may be necessary to disconnect the switch housing from the power unit to attach the auger.

5. When the auger is snugly fitted to the clamp, tighten the screw. Secure the tube to the power unit with the clamp provided.
6. From unloader end, pull slack out of auger then release. Cut auger flush with the end of the unloader.
7. Loosen set screw on clamp pin and install unloader arbor into auger until it touches bearing thrust washer. Tighten clamp pin set screw. Insert the arbor into the back of the unloader and clamp.

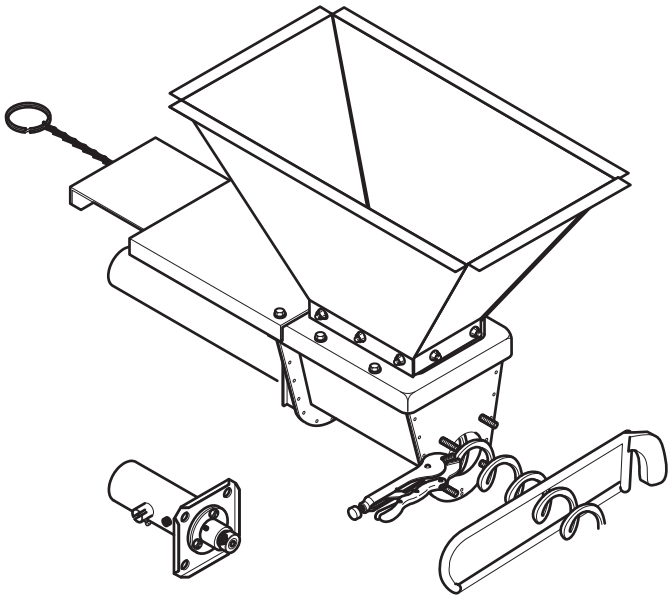
CAUTION: Never get your fingers tangled in the auger when it can move in the tube.

IMPORTANT: Do NOT stretch auger. Wear protective gloves while pulling auger.

IMPORTANT: Check the inside of the bin boot and unloader to be sure no tools, parts or debris are in the boot.

8. Run the unit in 10 second bursts a few times. If the unit runs freely, tighten the motor mount bolts and run the system about 10 minutes without feed. This will de-burr the system and equalize the auger tension.
9. With the system shut off, fill the bulk bin.
10. Run the Flex-vey Fill System.
11. Check the feed drop(s) and switches to make sure the system is functioning properly.
12. After the slide is opened all the way, and the feed is all the way to the far end of the auger and the system shuts off, close the feed slide.
13. Release the bearing holder, the auger will push out of the unloader. Remove the arbor and bearing. Cut the auger leaving just enough exposed to reattach the arbor.
14. Reassemble the system. This insures the auger tension is neutral when the system is full, and will help reduce elbow wear.

NOTE: When operating a tandem system only one unloader valve can be open at one time.



Cutting the Auger

Brazing the Auger

Big Dutchman auger is made of a specially hardened steel that requires specific procedures during the brazing process. The following instructions should be followed carefully to assure a strong, smooth joint.

Equipment needed for brazing:

- Welding Torch
- Bronze Brazing Rod with Flux
- 2 ft. [.6m] length of Angle Iron
- 2 Locking Pliers
- Approx. 1 qt. [1liter] of near boiling water

1. File the rough ends of the auger smooth. Clean oily coating from last full turn of auger.
2. Align and clamp the two auger ends on a length of angle iron.
3. Butt the two ends of the auger approximately half a turn.

   DO NOT:

   • apply any pressure that could cause misalignment

   • hook the auger ends inside each other

   • butt more than 3/4 of a turn.
4. Use a brazing torch to uniformly heat the first two full turns of auger, one turn in each direction from the joint.
5. Heat the brazing rod tip and dip it in the flux, while continuing to heat the auger to nearly white hot. Apply brazing rod. The near white heat stage should allow the brazing material to flow into the joint. It will appear to be drawn into the joint.

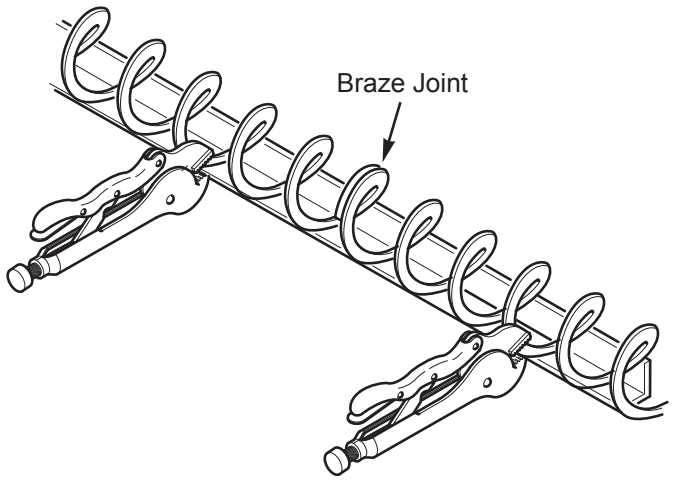
NOTE: Do NOT add unnecessary amounts of rod. Excessive material on the auger will interfere with the flow of feed.

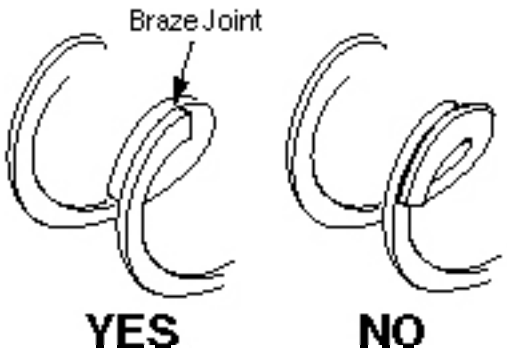
6. When brazing is completed, reheat the area (two turns of the auger) uniformly to cherry red. Quench with near boiling water.
7. To complete the job, the brazed area must be tempered. Uniformly reheat the two-turn area for a short time (to a straw color). This will draw the steel from a very hard condition to a desirable spring temper.

CAUTION: Do NOT heat auger to red hot during this tempering process. Too much heat at this point will soften the steel. If the auger is overheated during this process, repeat the tempering process.

8. After the joint has cooled, file off any burrs or excessively high spots.

IMPORTANT: Keep all brazed joints towards the bin end of the system whenever possible.





Big Dutchman, Inc. Limited Warranty

Big Dutchman, Inc. ("**Big Dutchman**") warrants to original purchaser ("**Buyer**") that goods manufactured solely by Big Dutchman ("**Products**") will be free from defects in material or workmanship under normal and intended use and service for a period of one year from delivery date of the Products except that the Products shall not be defective to the extent that (i) they conform with drawings of or specifications for or a sample of goods that have been approved by Buyer; (ii) they conform with goods, testing results, dimensional layouts or manufacturing methods that have been submitted and approved by Buyer; (iii) they are damaged due to the method or length of storage by Buyer; or (iv) to the extent they conform to the specifications as changed or waived if Buyer's representative agrees, either orally or in writing, to the change in or waiver of the specifications for any Product.

In the event of a defect in any Products constituting a breach of the warranty provided herein, Big Dutchman will at its option either (i) repair or replace such Product free of charge, or (ii) in lieu of repair or replacement, refund to Buyer the original purchase price less the reasonable value of Buyer's use of the Products. Big Dutchman shall furnish to Buyer instructions for the disposition of the defective goods. Big Dutchman shall have the option of requiring the return of the defective goods, transportation prepaid, and proof that the goods were not used, installed or altered or subject to misuse or abuse to establish the claim. No goods shall be returned to Big Dutchman without its prior consent. The acceptance of any goods returned to Big Dutchman shall not be deemed an admission that the goods are defective or in breach of any warranty, and if Big Dutchman determines that the goods are not defective they may be returned to Buyer at Buyer's expense. This warranty sets forth Buyer's sole and exclusive remedies for any defect in the goods. The rights and obligation under this warranty may not be assigned or delegated to a third party by Buyer without the prior written permission of Big Dutchman. Neither Buyer nor any other person may modify or expand the warranty provided herein, waive any of the limitations, or make any different or additional warranties with respect to the Products. Any statements to the contrary are hereby rendered null and void unless expressly agreed to in writing by an authorized officer of Big Dutchman.

EXCEPT AS STATED IN ABOVE, BIG DUTCHMAN DOES NOT MAKE ANY WARRANTY AS TO THE GOODS OR SERVICES AND, IN PARTICULAR, DOES NOT MAKE ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, AND BUYER IS SOLELY RESPONSIBLE FOR DETERMINING THE PROPER APPLICATION AND USE OF THE GOODS.

Big Dutchman makes no representation or warranty that individual animals, or any given population of animals, will utilize any of Big Dutchman's goods in the manner for which the goods were intended or designated. Any component parts that are not manufactured by Big Dutchman, such as electrical motors and controls, are excluded from any warrant by Big Dutchman, although such parts may be covered by separate warranties of the respective manufacturers. This warranty set forth above does not apply if all components of a system are not supplied by Big Dutchman or if the goods are not purchased from and installed by an authorized distributor or company warehouse, or installed and operated in accordance with Big Dutchman's specifications and instructions.

BIG DUTCHMAN SHALL NOT HAVE ANY TORT LIABILITY TO BUYER OR ANY OTHER PERSON WITH RESPECT TO ANY OF THE GOODS OR SERVICES AND SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, EXEMPLARY, INDIRECT OR PUNITIVE DAMAGES ARISING FROM ANY PRODUCT DEFECT, DELAY, NONDELIVERY, RECALL OR OTHER BREACH. BUYER SHALL NOT HAVE ANY RIGHT OF REJECTION OR OF REVOCATION OF ACCEPTANCE OF THE GOODS.

Big Dutchman

USA
P.O. Box 1017 · Holland, MI 49422-1017 · USA
tel + 1 616 582 4000 fax + 1 616 392 6188
www.bigdutchmanusa.com · bigd@bigdutchmanusa.com