



MODEL SP4 GRAIN SPREADERS

Owner's and Operator's Manual



ATTENTION



Pay close attention when you see this triangular symbol throughout this manual and on decals.

Obey the Dangers, Warnings and Cautions.

YOUR SAFETY IS INVOLVED!

READ AND UNDERSTAND THIS MANUAL BEFORE BEGINNING OPERATIONS.



***POWER MUST BE OFF BEFORE MAKING ANY ADJUSTMENTS!
METAL EDGES ARE SHARP! PLEASE WEAR GLOVES.***



April 2009

032095

Manufactured by:



A Division of GLOBAL Industries, Inc.
9364 North 45th Street
Omaha, Nebraska 68152

GENERAL STATEMENT



WARNING

Watch for this warning symbol!

It will always be accompanied by important information regarding Safety, Warnings, and Precautions.



ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED!

TO THE OWNER

Occupational safety is of prime concern to NECO. This Owner's and Operator's Manual is provided to help ensure the safety of the operator as well as others who may come in contact with the equipment. It is your responsibility as an owner, operator, or supervisor to know what specific requirements, precautions, and work hazards exist and to make these known to all persons working with the equipment or who are in the area, so that they may take any needed safety precautions. Failure to read this Owner's & Operators Manual or to understand and heed its safety instructions constitutes a misuse of the equipment.

We at NECO are continually testing and improving our products to provide the most efficient and economical grain handling equipment available. We cannot be responsible, however, for upgrading or changing units previously sold when making improvement to subsequent models.

The NECO equipment that you have just purchased will provide years of dependable service when properly maintained. Your work load will be lightened and you'll save valuable time. Welcome to the growing number of satisfied NECO equipment owners.

LIMITED WARRANTY*

For a period of one (1) year after shipment of goods by Buyer to the Buyer's customer, NECO will supply free of charge, F.O.B. NECO's factory, Omaha, Nebraska, replacement parts for any parts that prove to be defective due to workmanship or material.* Defective parts must be returned, freight-prepaid, to the NECO Factory in Omaha, Nebraska. You must obtain a "Return Authority" form from NECO prior to returning goods.

GOODS NOT MANUFACTURED BY NECO CARRY ONLY THE MANUFACTURER'S WARRANTY.

THIS UNDERTAKING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

*This limited warranty does not extend to parts designed to wear in normal operation and be replaced periodically or to damage caused by negligence, accident, abuse, or improper installation or operation.

FAILURE TO FOLLOW THE INSTRUCTIONS CONTAINED IN THIS MANUAL AS WELL AS ANY OF THE CONDITIONS LISTED BELOW WILL CAUSE THIS LIMITED WARRANTY TO BE VOIDED.

1. Improper assembly
2. Improper installation (including power and wiring)
3. Unauthorized alteration of goods
4. Operating the unit when repairs are needed
5. Use of unauthorized parts
6. Operation by children or uninstructed personnel
7. Processing of materials that are abrasive, that do not flow freely, or that are otherwise unsuited for processing in a grain dryer
8. Abuse or misuse of the unit or of any of its components
9. Accidents

LIMITATION OF LIABILITY

BUYER AGREES THAT IN NO EVENT SHALL NECO HAVE LIABILITY FOR DIRECT DAMAGES IN EXCESS OF THE CONTRACT PRICE OF THE GOODS FOR WHICH THE CLAIM IS MADE. Buyer further agrees that in no event shall NECO have liability for loss of use, loss of profits, or for any indirect, incidental, or consequential damages on any claim of any kind.

SP4 GRAIN SPREADER WITHOUT MOTOR

Packing List

SP4 SPREADER CRATE		
Quantity	Part Number	Description
1	032089	SP122 SP4 Adjusting Tool
1	032124 or 032125	SP4 Spreader Assembly Long Pan Assembly SP4 Spreader Assembly Short Pan Assembly
1	032107	Box of Parts for SP4 Spreader (see table below for contents)

BOX OF PARTS for SP4 Spreader		
Quantity	Part Number	Description
3	032048	SP101 SP4 Bracket Horizontal Hanger
3	032052	SP103 SP4 Hanger Bracket Upper Vertical
1	032066	SP107 SP4 Grain Pans Weldment
1	032068	SP108 SP4 Motor Guard
1	032095	Owner's & Operator's Manual, Model SP4 Grain Spreaders
1	032004	Bag of Hardware for SP4 (see table below for contents)

BAG OF HARDWARE for SP4 Spreader					
Quantity	Part Number	Description	Quantity	Part Number	Description
3	003012	Carriage Bolts $\frac{3}{8}$ x $\frac{3}{4}$ Zinc	1	003176	Lockwasher $\frac{1}{4}$ " Medium
3	003018	Carriage Bolts $\frac{3}{8}$ x 3 Zinc	4	003177	Lockwasher $\frac{5}{16}$ " Medium
1	003038	Cap Screw $\frac{1}{4}$ -20 x $\frac{3}{4}$	6	003178	Lockwasher $\frac{3}{8}$ " Medium
4	003045	Cap Screw $\frac{5}{16}$ -18 x $\frac{3}{4}$	4	003180	Lockwasher $\frac{1}{2}$ " Medium
4	003048	Cap Screw $\frac{5}{16}$ -18 x $1\frac{1}{2}$	1	003190	Flatwasher $\frac{1}{4}$ "
4	003053	Cap Screw $\frac{5}{16}$ -18 x $2\frac{1}{2}$	3	003192	Flatwasher $\frac{3}{8}$ "
3	003057	Cap Screw $\frac{5}{16}$ x 1 Hex	3	003193	Flatwasher $\frac{1}{2}$ "
4	003072	Cap Screw $\frac{1}{2}$ x 1 Hex	1	032021	SP14 1" Plastic Cap
1	003135	Cap Screw $\frac{5}{16}$ x 4 Full Thread	4	032069	SP109 Motor Spacer
1	003145	Nut $\frac{1}{4}$ -20 Hex Zinc	1	032092	SP125 Bolt Protective Sleeve
4	003147	Nut $\frac{5}{16}$ Hex Zinc	4	032104	Motor Spacer $\frac{3}{4}$ " x $1\frac{3}{4}$ " long
12	003148	Nut $\frac{3}{8}$ Hex Zinc	4	003150	Nut $\frac{1}{2}$ "-13 Zinc

When a customer orders extension brackets, the following items will be included.

BOX—SP4 Spreader Extension Bracket Kit		
Quantity	Part Number	Description
3	032051	SP102 SP4 Bracket Extensions
1	032110	Bag of Hardware

BAG OF HARDWARE for SP4 Spreader Extension Bracket Kit		
Quantity	Part Number	Description
6	003072	Cap Screw $\frac{1}{2}$ " x 1 Hex Zinc
6	003150	Nut $\frac{1}{2}$ " -13 Hex Zinc
6	003180	Lockwasher $\frac{1}{2}$ " Med Split
6	003193	003193 Flatwasher $\frac{1}{2}$ " USS Zinc

SP4 ASSEMBLY AND INSTALLATION INSTRUCTIONS

1. Attach the vertical hanger brackets to the preassembled brackets. Use the $\frac{3}{8}$ " X 3" carriage bolts for leveling adjustments.
2. If the unit was ordered with extension brackets, attach them to the vertical hanger brackets.
3. Fasten the horizontal hanger brackets to the vertical brackets (or to the extensions). For units with small hatches it will be necessary to cut off the ends of horizontal brackets. This will allow for incoming conveyor clearance.
4. Install the $\frac{3}{8}$ " X 1" locking bolts into the end of the horizontal brackets.

FOR UNITS SHIPPED WITHOUT A MOTOR:

5. Attach the motor to the motor mount plate. 143T and 145T frame motors will use the spacer bushings.
6. Attach the motor pulley to the motor shaft.
7. Pull the idler arms toward the funnel and insert a 16-penny nail onto both holes as shown on page 5. (A nail is not provided.)
8. Install V-belts around the pulleys. Then remove the nail.
9. Wire the motor so that the pulley rotates in a clockwise direction as seen from above.
10. Remove the top cotter pin and washer on the idler arm. Install the motor guard as shown on page 6. Replace the cotter pin and the washer. If the washer doesn't fit don't try to replace the washer as it's not necessary. Failure to use the guard could result in damage to the motor fan.
11. LEVELING - It is very important that the spreader is leveled. If possible, place the level on the aluminum pulley and measure at three points 120° apart. If the pulley cannot be reached, flip the guide pan and place the level on the top of the funnel. See page 6. **Be sure to flip the guide pan back into place.**
12. Turn on the spreader to check the smoothness of the operation. Proceed to the operating instructions.

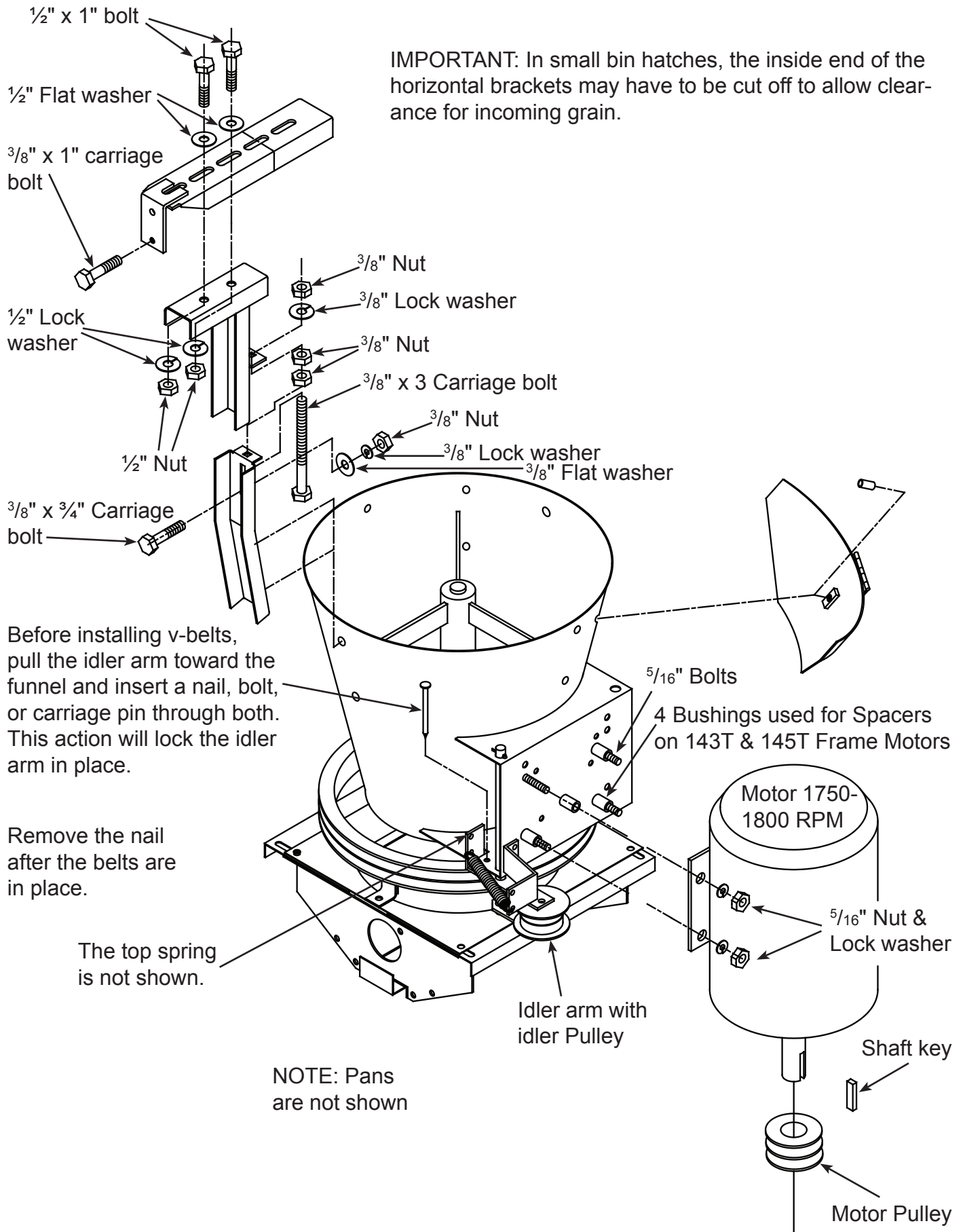


Figure 1. Hanger Brackets and Motor

Flip out the guide pan to make room for putting a level across the top of the funnel back when

Remove the cotter pin and washer to install the guard. (The washer may not be needed.)

If possible, place the level on the aluminum pulley shown here.

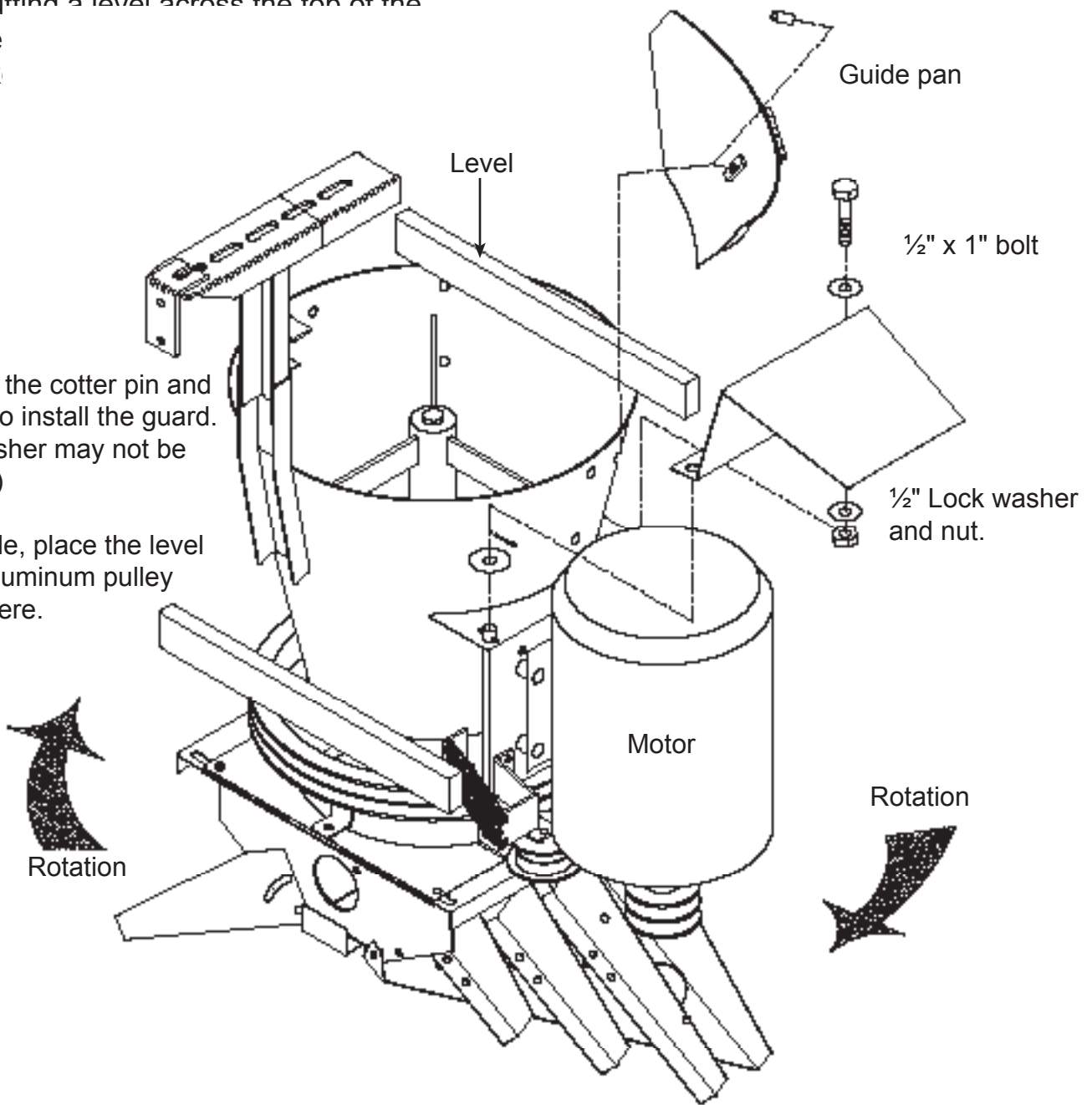


Figure 2. Motor Guard and Level Adjustment

IMPORTANT

Failure to install the motor guard could cause grain overflow or splashing of grain both of which may damage the motor. Stray kernels can lodge between the fan and the housing.

LEVELING INSTRUCTION

Take a level reading on top of the pulley to ensure accurate leveling. Operating the spreader at an angle will cause grain to be spread unevenly—creating a high side and a low side.

SP4 OPERATING INSTRUCTIONS



Make all adjustments with the POWER OFF and LOCKED OUT!!!

The SP4 spreader is designed to rotate clockwise as viewed from the top. **Be sure the motor is wired for clockwise rotation.**

The spreader must be leveled prior to operation. See the leveling instruction on the previous page.

1. The guide pan helps direct the flow of incoming grain. Install the guide pan opposite the side of the funnel from where the grain flows. If the grain is not adequately centered there may be a high side and a low side of grain in the bin rather than an even distribution. (See Figure 3.)
2. Control the flow of grain onto the pans with the flow control gates. Using the tool provided, move the gates inward in equal increments until the incoming grain starts to back up into the funnel.
3. Spring-loaded parts can be adjusted with the adjusting tool. Figure 4, titled "Spreader Operation," shows how to adjust the blades to achieve the desired distribution.
4. The grain pans should be lowered in equal increments for small bins. They should be raised for large bins.

IMPORTANT: Raising the pans too high will diminish the spreader's capacity.

5. The throwing blades and the cover plates are preassembled onto the pans at the factory. They should be positioned to handle most spreading requirements. The blades and gates, however, may need to be adjusted. Please review the following steps as well as the instructions on the following two pages.
6. The blades will throw grain further if they are rotated clockwise as seen from above. (The blades will throw grain nearer when they are rotated counterclockwise.)
7. Adjust the gates and plates to distribute grain over the center of the bin.
8. After the spreader is fully adjusted it should not require further adjustments. Adjustments may be advisable, however, if another type of grain is processed.

IMPORTANT - Bins with steel floor supports

When filling a bin with steel floor supports under a perforated floor, **fill the bin with at least two feet (60 cm) of grain before turning on the fans.** The tremendous air flow from the fans can easily bend the floor supports if there's too little weight of grain on the floor.



SHUT OFF and LOCK OUT POWER
BEFORE ATTEMPTING ANY ADJUSTMENTS

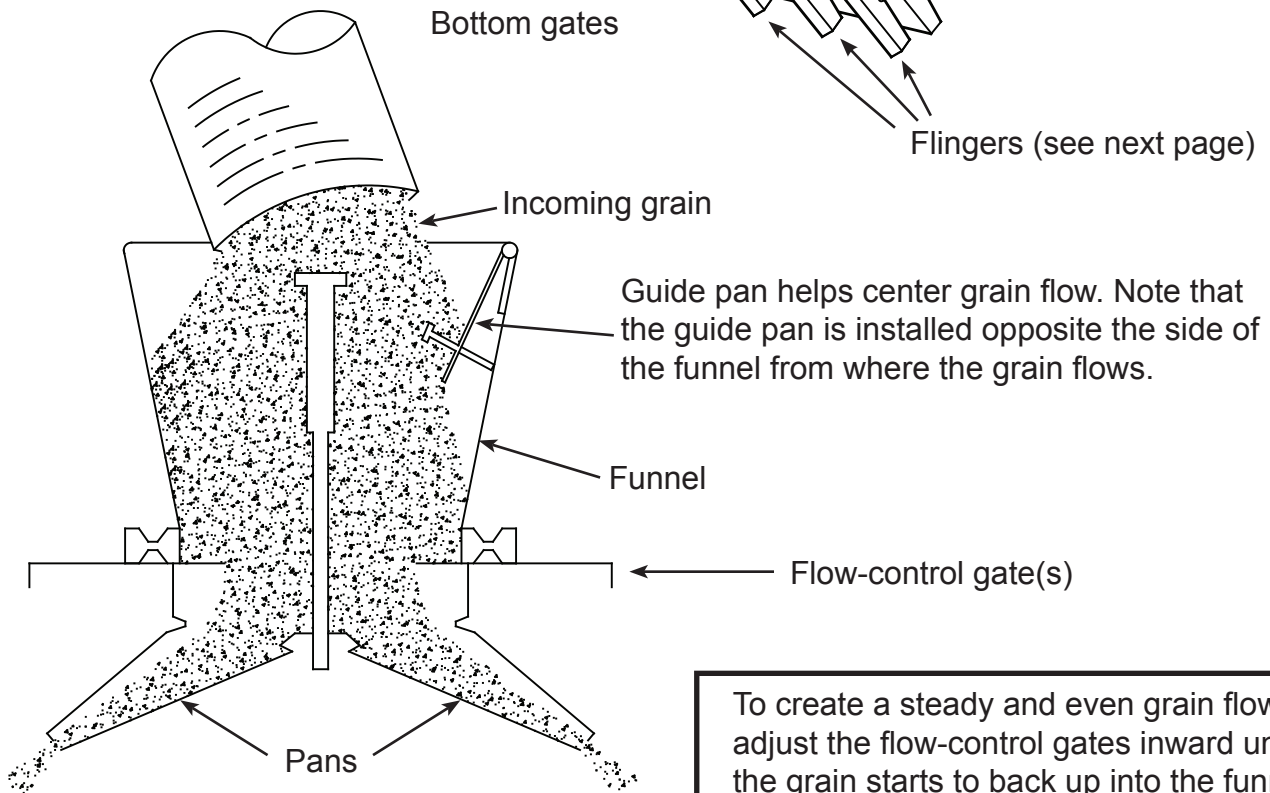
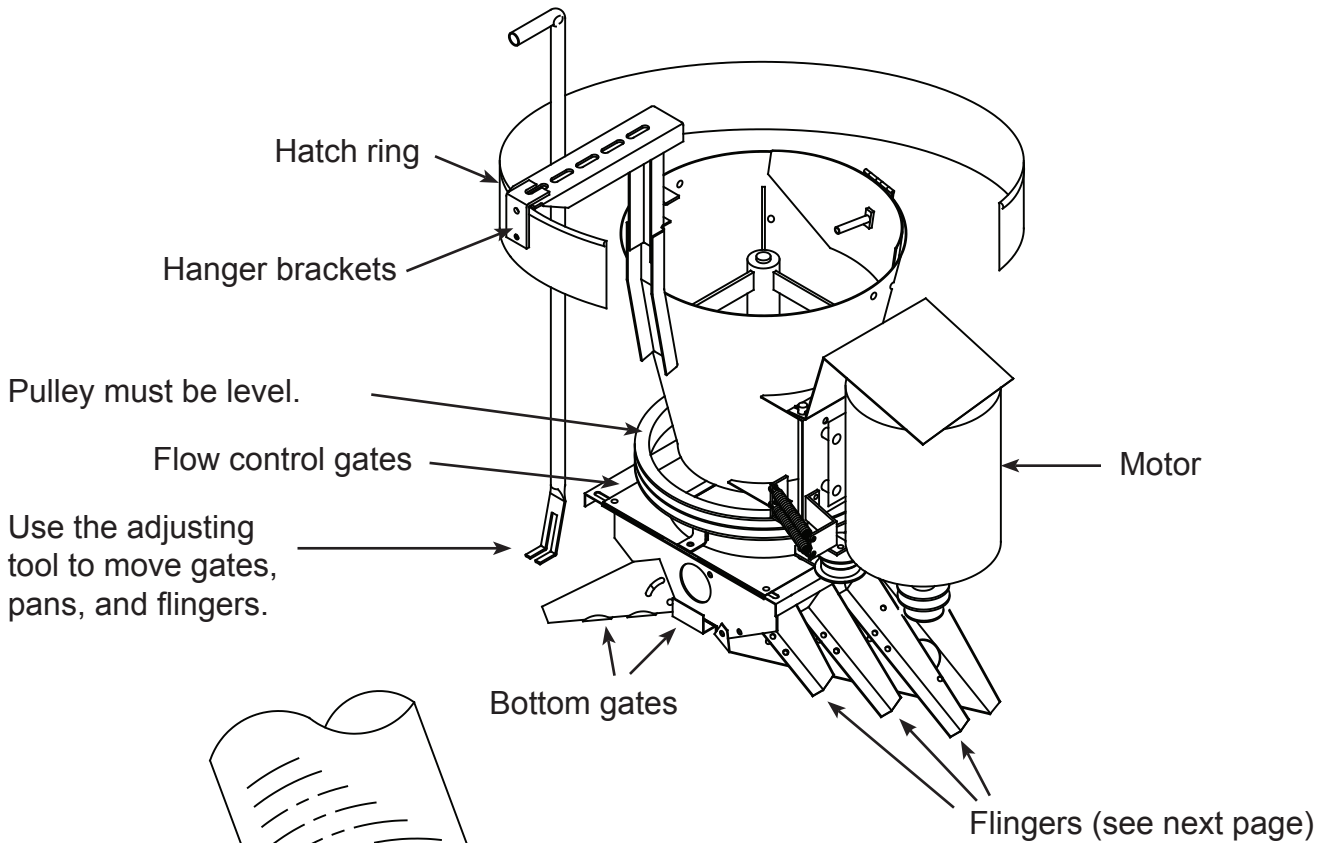
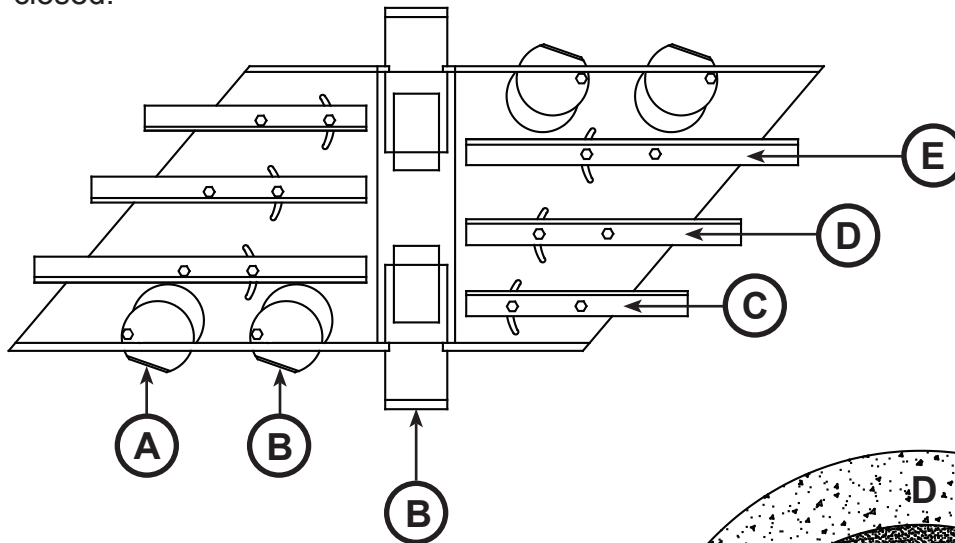
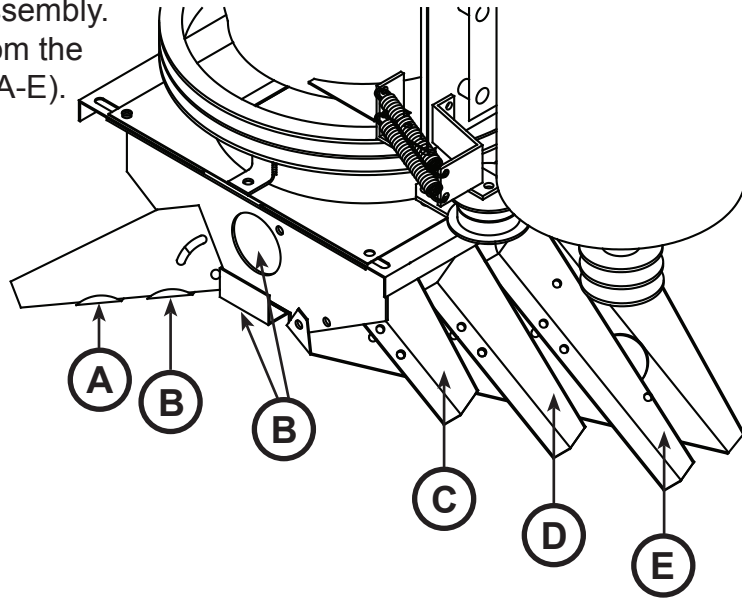


Figure 3. Spreader Operation

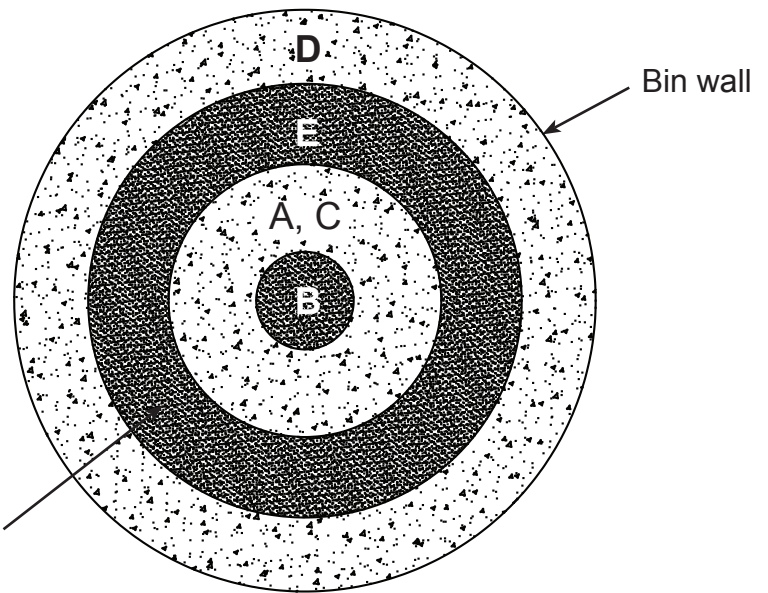
To the right is a side view of the lower part of the grain distribution assembly. The grain flows with gravity from the inner funnel onto the flingers (A-E).

Below is a top-down view of the dual distribution pan showing the six throwing blades, the two central (rectangular) distribution gates, and four of the six round flow holes (with cover disks). The incoming grain hits the dual pan and is diverted by the blades as desired. The flow rate is determined by the degree to which the gates and flow holes are opened or closed.



Rotate blades clockwise (as seen from above) to throw the grain farther. (Rotate the blades counter-clockwise to throw the grain closer.)

The SPREADER PATTERN is shown to the right. By studying it you can see which throwing blades must be adjusted to redirect the various flow streams of grain.

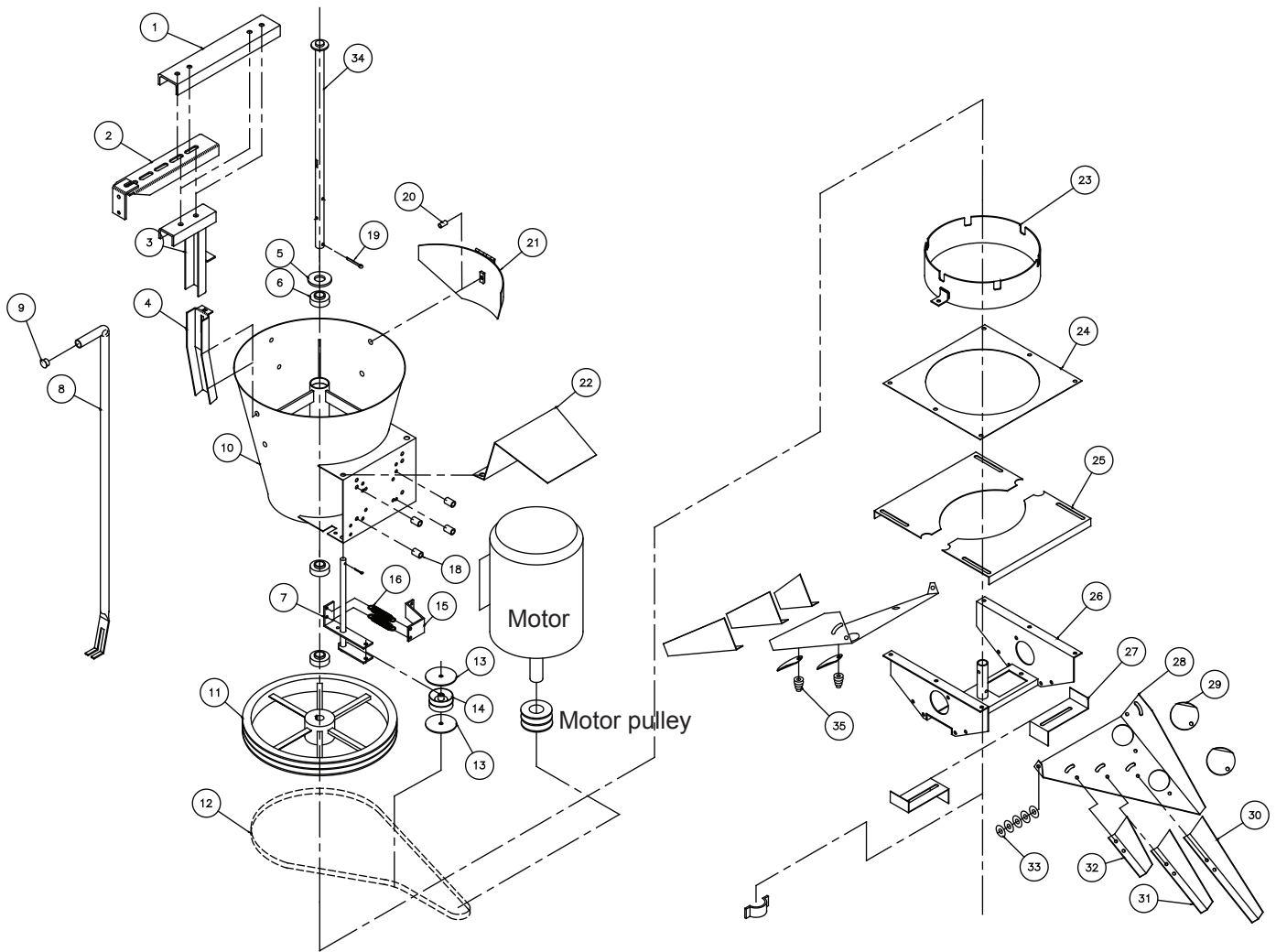


Grain that bounces off the bin wall falls into this area (E).

Top-down view of a grain bin

Figure 4. Spreader Operation

SP4 GRAIN SPREADER



Part Number 032022
(used before September 2001)

Figure 5. Replacement Parts Diagram

SP4 GRAIN SPREADER

Figure 5 key. Replacement Parts

Item Number	Quantity	Part Number	Description
1	2	032051	Extension Brackets (Optional)
2	3	032048	SP101 Horizontal Hanger Brackets
3	1	032052	SP103 Upper Vertical Hanger Brackets
4	3	032056	SP104 Lower Vertical Hanger Brackets
5	1	035307	B172 Felt Washer 1¼"
6	2	035875	B319 1" Cylindrical Bearing with Locking Collar
7	1	032072	SP111 Idler Arm Weldment
8	1	032089	SP122 Adjusting Tool SP4
9	1	032021	SP14 1" Plastic Cap
10	1	032057	SP105 Funnel Weldment
11	1	032047	SP44 Pulley 18" O.D. x 2 Groove Double
12	2	036154	Belt B x 65 (For items made before 2006-06 use part 035900)
13	4	032076	SP112 Belt Tracking Disk
14	1	035867	B312 Flat Idler Pulley 2¾" by ¾"
15	1	032070	SP110 Spring Tension Bracket
16	3	025064	V10 2¾ Expansion Springs
17	1	003205	Cotter Pin 3/16" x 1½"
18	4	032069	SP109 Motor Spacers for 14T3 and 145T Frames
19	1	003208	Cotter Pin 5/16" x 2 zinc
20	1	032092	SP125 Bolt Protective Sleeves
21	1	032066	SP107 SP4 Grain Pan Weldment (035369)
22	1	032068	SP108 Motor Guard
23	1	032177	SP4 Spreader Flow Ring Weldment
24	1	032078	SP114 SP4 Distributor Transition Plate
25	2	032079	SP115 SP4 Distributor Flow Control Gates
26	1	032179	SP116 Distributor Weldment (035081 Prior to 2001-09)
27	2	032084	SP117 Center Distributor Gates
28	2	032100	SP134 Short Grain Pan (Up to 36') (032085 37'-60' Diameter Bins)
29	6	032017	SP9 Cover Disc
30	2	032086	SP119 Large Throwing Blades
31	2	032087	SP120 Intermediate Throwing Blades
32	2	032088	SP121 Small Throwing Blades
33	30	03319	SP19 0.380 x 1.125 Spring Washers 0.053
34	1	032184	SP106 Pivot Shaft Weldment (032064 Prior to 2001-09)
35	24	035075	B29 1¾" Cone Springs

*Note that only one (1) of each of these items is included (as of 2009-04).

SP4 TROUBLE SHOOTING GUIDE



Make all adjustments with the POWER OFF and LOCKED OUT!!!

If the spreader fails to spread evenly (grain in one side of the bin is higher than grain in the other side of the bin), do the following.

1. Make sure the control gates are closed far enough that grain starts to back up into the funnel.
2. Make sure the spreader is level.
3. Make sure the belts are being adjusted with the spring.
4. Make sure the pulleys are tight against the shafts.
5. Make sure the grain is being delivered evenly into the spreader.

If the spreader puts more grain in one area than another (creating a high spot or low spot), check the adjustments of the spreader and readjust as necessary.

If the spreader fails to provide proper capacity, do the following.

1. Make sure the flow control gates are open wide enough.
2. Check the motor rotation (the large pulley should run clockwise as seen from above).
3. Make sure the grain-throwing pans aren't tilted too high.
4. Check for belt slippage.
5. Check for loose pulleys.
6. Make sure air flow from the fan isn't causing an updraft that prevents grain from flowing freely.
7. Check for trash buildup in the spreader.
8. Make sure the capacity of the spreader you're using is compatible with the delivery system you're using. For example, if the auger or elevator feeding grain into the spreader has a flow capacity much greater than the spreader, the spreader will not be able to process the grain flow.

If the spreader is excessively loud, do the following.

1. Check for foreign material in the spreader.
2. Check for a bad bearing in the spreader.
3. Check for loose bearings in the spreader.
4. Make sure pans aren't hitting objects such as Circuflow holding rods or stirring auger chains.

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www.necousa.com

MANUFACTURED BY

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