# Power Spread Grain Spreader Installation & Operating Instructions

**MODEL # 2018**

## Owner's Manual

**MANUAL # PNEG-258**

AIRSTREAM
a division of
THE GSI GROUP

# POWER SPREADER OPERATING INSTRUCTIONS

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# ROOF WARNING, OPERATION & SAFETY

## ROOF DAMAGE WARNING AND DISCLAIMER


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## POWER GRAIN SPREADER OPERATION

Thank you for choosing a GSI/Airstream product. It is designed to give excellent performance and service for many years.

This manual describes the installation and operation of the Airstream Power Spread Grain Spreader. It is designed to spread grain and fines evenly throughout the bin.

The principal concern of the GSI Group, Inc. ("GSI") is your safety and the safety of others associated with grain handling equipment. This manual is written to help you understand safe operating procedures, and some of the problems that may be encountered by the operator or other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist, and to inform all personnel associated with the equipment, or who are in the area. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

## SAFETY ALERT SYMBOL

The symbol shown is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions. It means "ATTENTION", "WARNING", "CAUTION", and "DANGER". Read the message and be cautious to the possibility of personal injury or death.

### WARNING! BE ALERT!

Personnel operating or working around electric fans should 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 the equipment.

# SAFETY ALERT DECALS

Grain Systems, Inc. recommends contacting your local power company, and having a representative survey your installation so the wiring is compatible with their system, and adequate power is supplied to your unit.

Safety decals should be read and understood by all people in the grain handling area. The bottom right decal should be present on the inside bin door cover of the two ring door, 24" porthole door cover and the roof manway cover.

If a decal is damaged or is missing contact:

Grain Systems, Inc.
1004 E. Illinois St.
Assumption, IL 62510
217-226-4421

A free replacement will be sent to you.

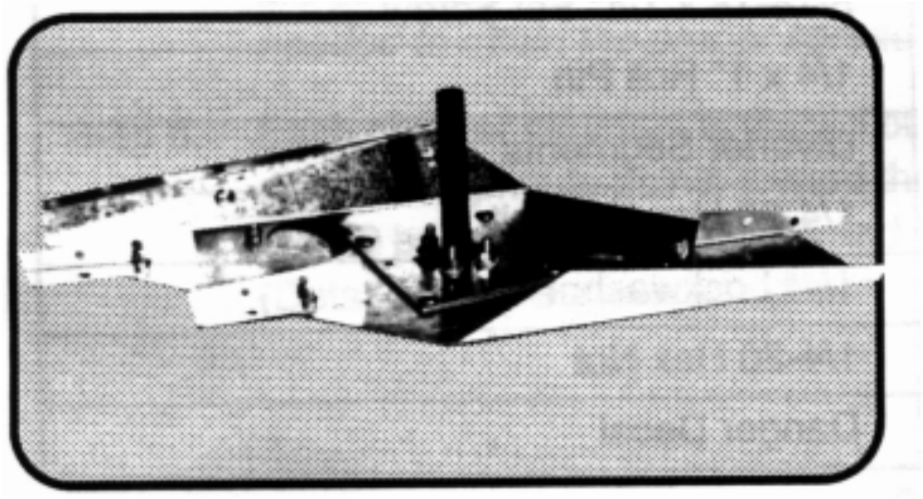


# GRAIN SPREADER ASSEMBLY INSTRUCTIONS

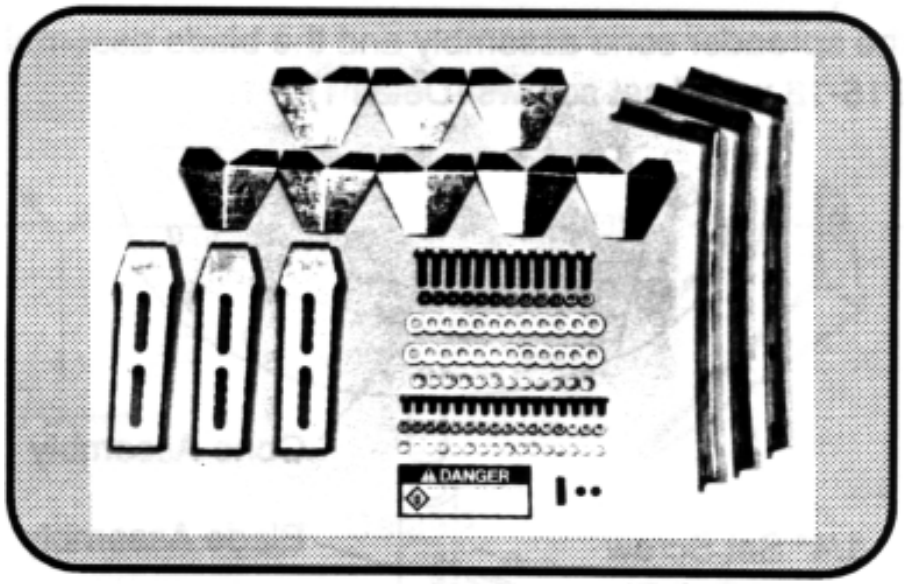
The Power Spread is a direct drive spreader. The unit is powered by a totally enclosed, 115-volt, 1/3 HP motor. Maximum grain capacity is 3,000 bushels per hour, depending on moisture content and weight fo grain. When properly adjusted, the spreader will spread the grain and fines evenly throughout the bin. This will help prevent uneven drying.

The spreader unit is partially assembled and is devided into three different sections:

- Blade assembly
- Cone assembly
- Hardware



**Power spread blade assembly.**




**Power spread hardware.**


**Power spread cone assembly.**

# GRAIN SPREADER ASSEMBLY INSTRUCTIONS

## HARDWARE LIST FOR SPD-2018

| Item # | Part # | Quantity | Description |
|---|---|---|---|
| 4 | SPD-2008 | 3 | Hanger Extention |
| 5 | SPD-2010 | 3 | Hanger Bracket |
| 16 | S-4276 | 12 | 5/16-18 x 1 1/4" Bolt HHCS grade 5 |
| 17 | S-1147 | 12 | 5/16" Lockwasher |
| 22 | S-845 | 24 | 5/16" Flatwasher |
| 24 | S-396 | 12 | 5/16-18 Hex Nut |
| 26 | S-6078 | 2 | 5/16-18 x 1/4" Set screw |
| 27 | S-6079 | 1 | 1/4 x 1" Roll Pin |
| 31 | SPD-2095 | 8 | Diverter Segments |
| 32 | S-1101 | 16 | 1/4-20 Hex HD Bolt |
| 33 | S-2041 | 16 | 1/4" Lockwasher |
| 34 | S-1102 | 16 | 1/4-20 Hex Nut |
| --- | 0045341 | 1 | Danger Decal |

1. Carefully unpack the unit and inspect for shipping damage.

2. Check tightness of all bolts in the cone and blade assemblies.

3. Layout hardware and compare with hardware list (Table 1).

4. Connect the spreader cone assembly and the blade assembly with one 1/4 x 1" roll pin and two 5/16-18 x 1/4" set screws (Figure 1).

5. Select the proper number of diverter segments required (See Diverter Segments chart).

Note: The various types of grain, moisture content, bin diameter, and capacity of fill auger are all conditions that change the evenness of spread. Some experimentation is needed to attain the proper spread pattern.

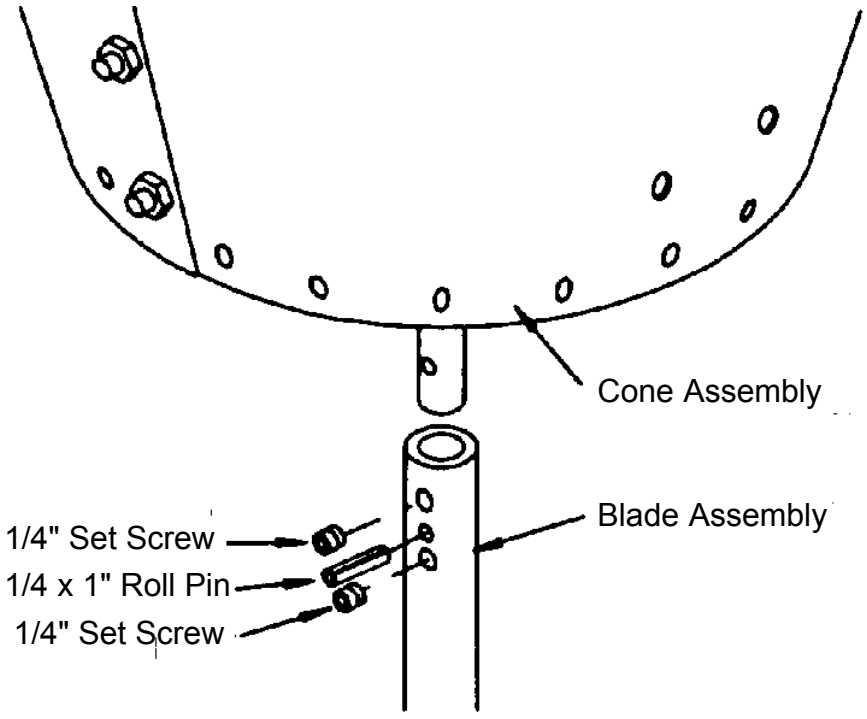



**Figure 1: Spreader cone assembly and blade assembly connection.**

### DIVERTER SEGMENTS CHART

| Fill Auger (diameter) | Diverter Segments (# required) |
|---|---|
| 6" | 8 |
| 8" | 4 (equally spaced) |
| 10" or larger | 0 |

6. Each diverter segment is placed outside of the spreader cone. The bottom of the diverter segments points toward the center of the spreader cone. Using two 1/4-20 bolts with lockwashers and hex nuts, attach each diverter segment to the spreader cone (Figure 2).

7. Remove blade extension from blade assembly for 24 foot diameter bins and smaller (Figure 3).

8. Turn the three spreader diverters outward (Figure 3). The diverters on the blade are turned inward for shipping purposes. Further adjustments may be required after installation.

9. Use two 5/16-18 x 1 1/4" bolts, four 5/16" flatwashers, two 5/16" lockwashers, and two 5/16-18 nuts to fasten each of the three hanger brackets inside the spreader cone (Figure 4). The five mounting slots provided in the hanger brackets are used for adjusting the spreader up and down inside the bin. Location is dependent on several factors such as interference with stirring systems and grain bouncing off the spreader motor onto bin roof.

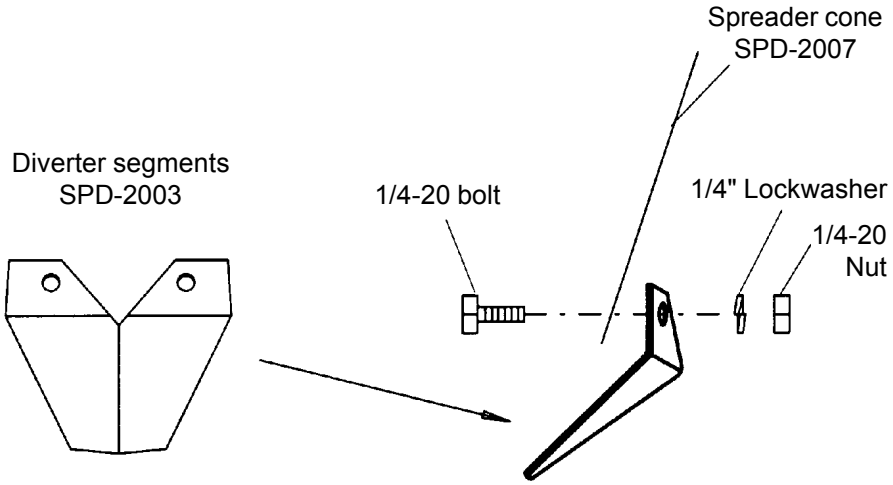



**Figure 2: The diverter segments connection to the spreader cone.**

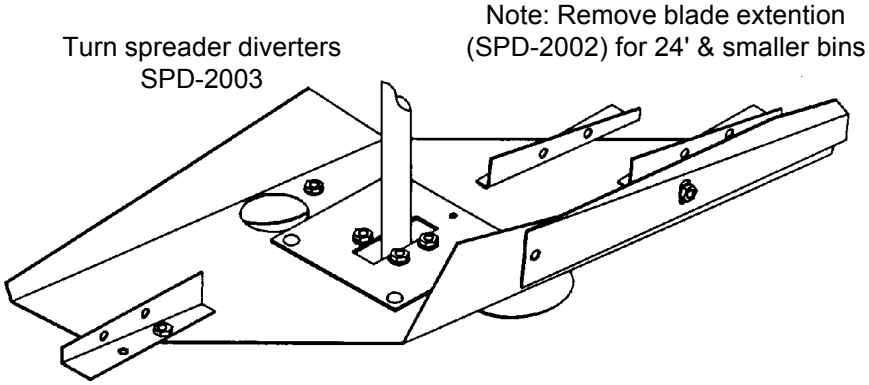



**Figure 3: The diverter segments on the blade.**

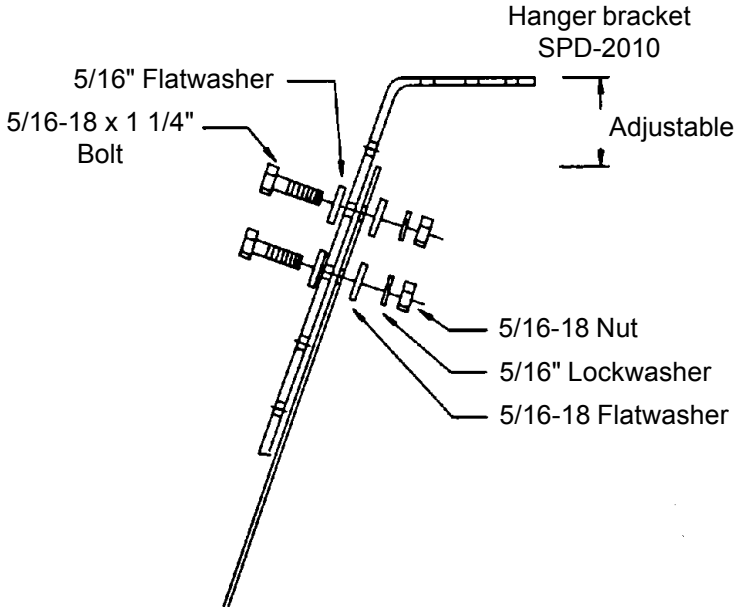



**Figure 4: The spreader cone connection to the hanger bracket.**

# GRAIN SPREADER ASSEMBLY INSTRUCTIONS

10. Measure bin opening (hatch collar) to select correct slots for bolting hanger extensions to hanger brackets. All GSI bins with standard peak roof cap have a hatch collar diameter of 31 1/2". Loosely mount each hanger extension to a hanger bracket, using the appropriate slots with two 5/16-18 x 1 1/4" bolts, two 5/16" lockwashers, four 5/16" flatwashers, and two 5/16-18 nuts (Figure 5).

11. Compare assembled unit with parts assembly drawing on page ?? to make certain that all parts are properly installed.

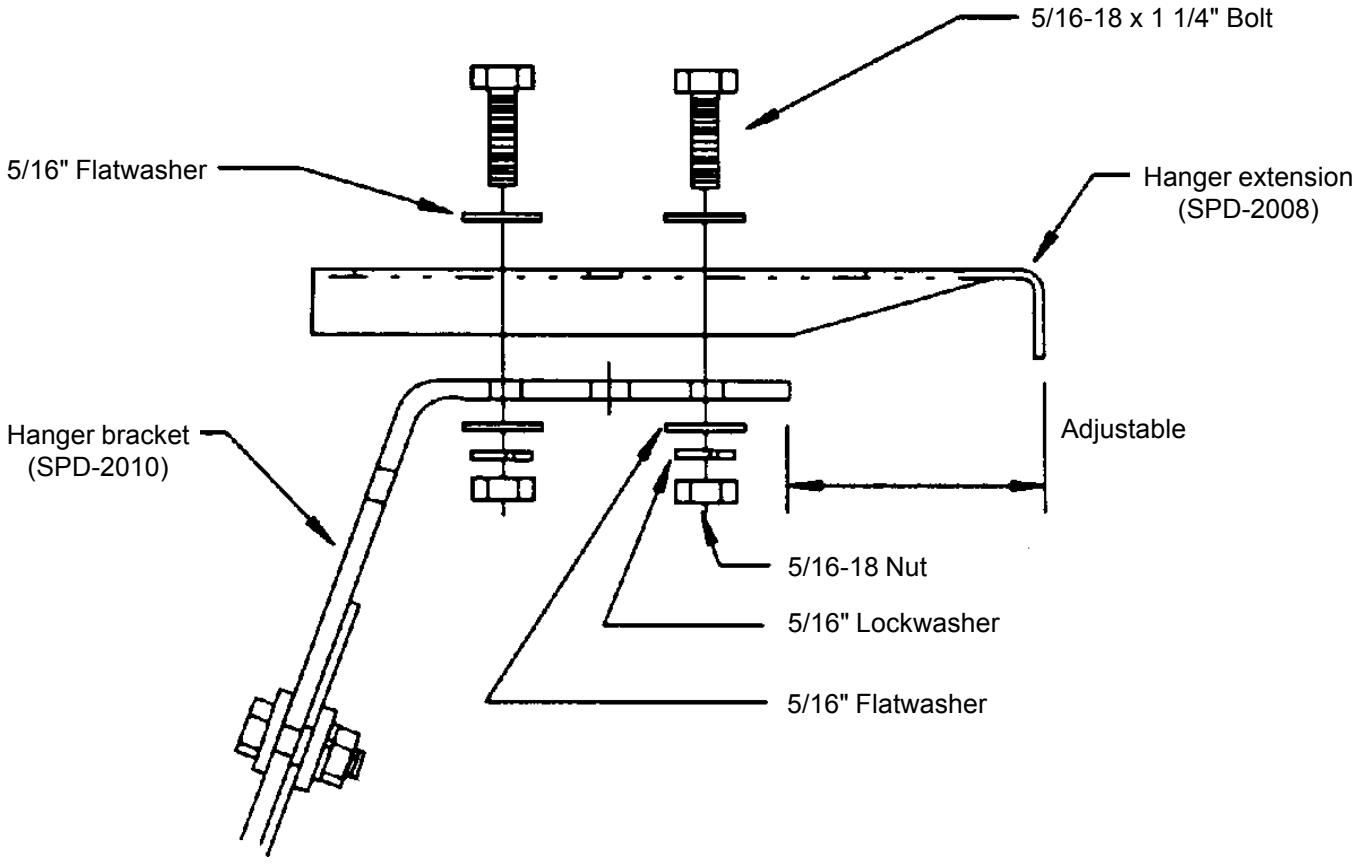



**Figure 5: The hanger extension connection to the hanger bracket.**

# GRAIN SPREADER INSTALLATION

1. Adjust hanger extensions to fit roof opening and install the power spread unit.

2. Use the 9/32" hole at the end of each hanger extension and bolt hanger extensions to hatch collar.

3. Then tighten all bolts holding hanger extensions.

4. Once unit is installed, use a carpenter's level across the top of the spreader cone to make sure it is level in all directions (Figure 6).

5. If required, add spacer washers between hanger brackets and hanger extensions to level unit (Figure 7).

The power spread 1/3 HP motor is protected with an internal automatic reset overload. Before servicing, all power to the unit must be disconnected and locked out to avoid a possible reset/restart and serious injury.

Before connecting and applying power, rotate the spreader blade by hand to be certain it rotates freely without obstruction. The motor turns the spreader blade counter-clockwise as viewed from above the unit. The power spread unit requires 115 volt power supply. The minimum wire size is 14 gauge for runs up to 200 feet. It is advisable to provide additional protection such as 15 amp slow blow fuses or 20 amp circuit breaker. Consult a licensed electrician for wire size on longer runs. Regardless of grain type and bin size, the grain flow must be directly down (vertical) and centered (horizontal) within the spreader cone (Figure 8). This has to be done to prevent high and low grain surface areas from one side of the bin to the other.

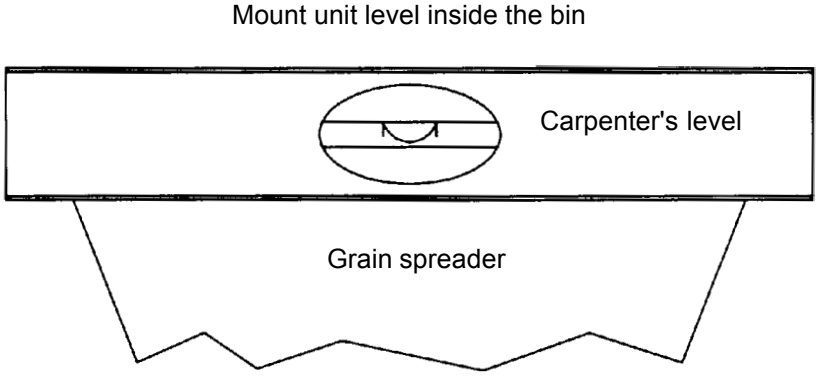



**Figure 6: Mount spreader and check with level.**

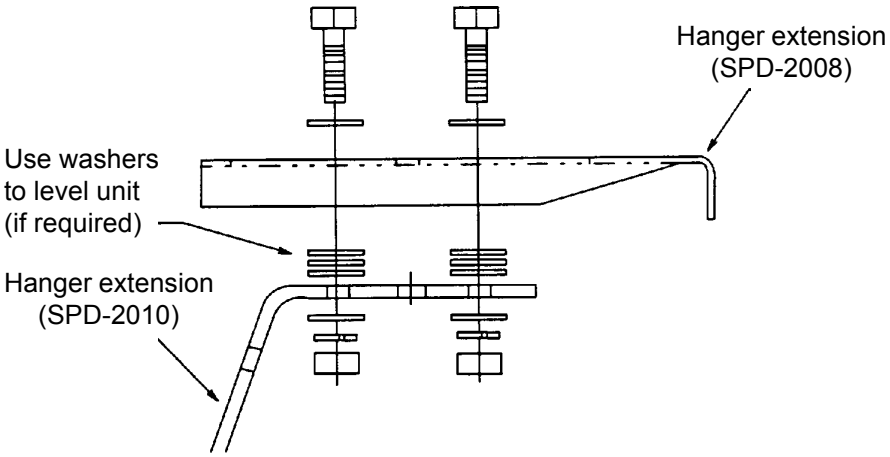



**Figure 7: Use washers to level unit.**

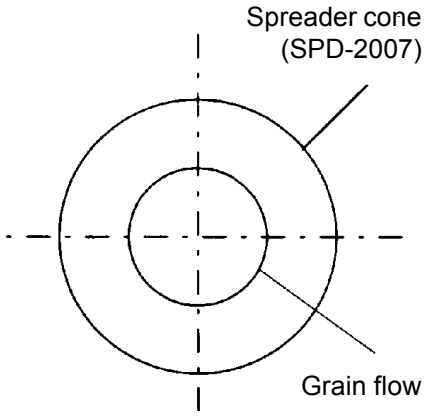
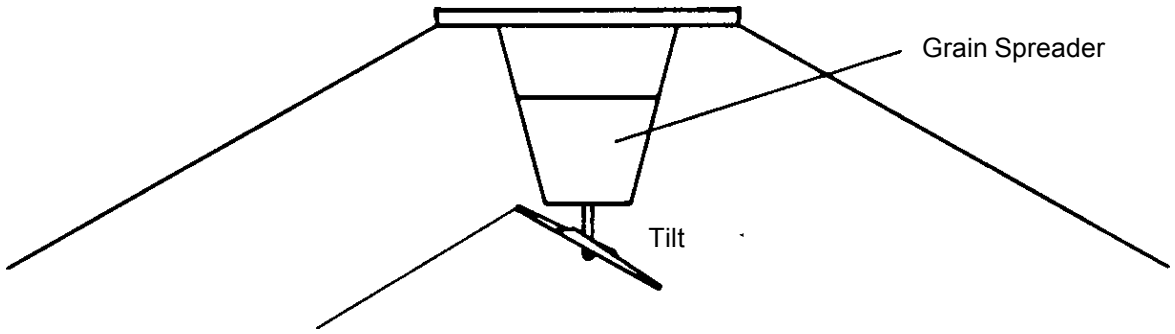



**Figure 8: Grain flow must be centered within the spreader cone.**




Single spreader diverter end up for desired grain spread.

**Figure 9: Adjustment of the tilt.**

The grain spreader blade assembly has four features for adjusting grain flow pattern.

1. Tilt is the adjustment of the entire spreader blade, which controls overall grain spreading. Tilt is adjusted by loosening the two U-bolts that allow the tipping of the blade up and down. This may vary according to bin diameter and fill rate (Figure 9).

2. Spreader diverters are used to increase or decrease grain flow resistance over spreader blade. With the diverters straight (Figure 10) the grain will travel further. Angled grain diverters will reduce the throwing distance.

3. Blade extension is used when extra throwing distance is required for larger bins.

4. Dampers are used to control center filling.

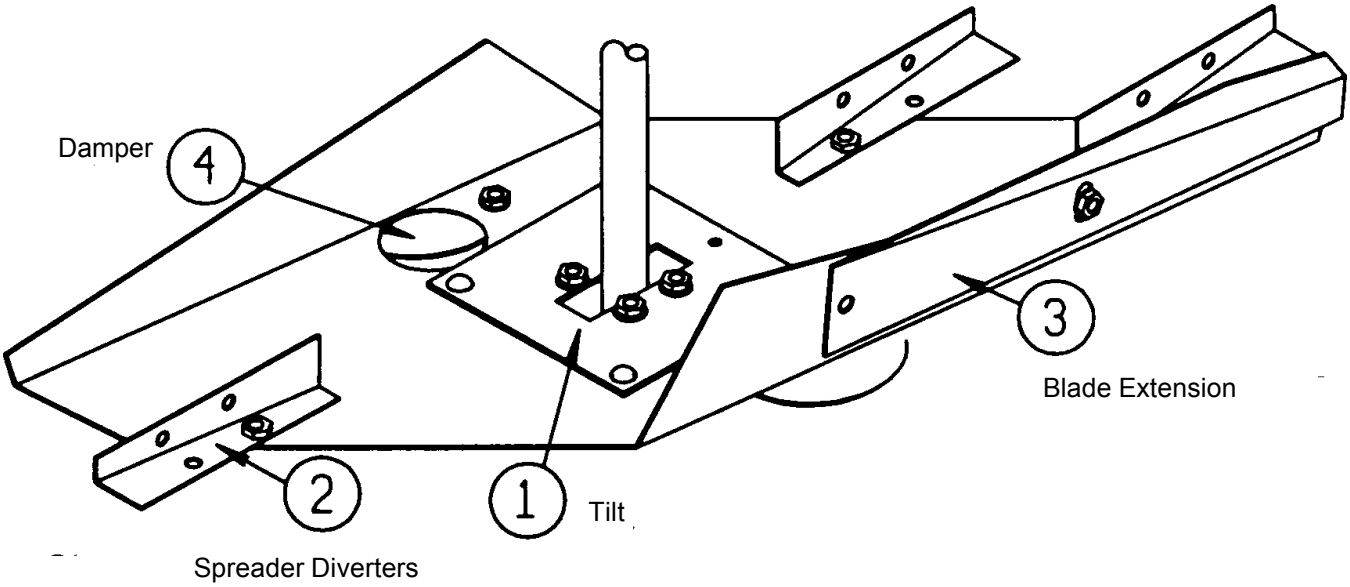



**Figure 10: Four features for adjusting the grain flow pattern.**

# OPERATING INSTRUCTIONS

## ADJUSTMENT FOR BIN FILL

| | | | LARGE BIN 36" DIA. AND GREATER | SMALL BIN 24" DIA. AND LESS |
|---|---|---|---|---|
| **REF #** | **PART** | **TYPE** | **OPERATION/PROCEDURE** | **OPERATION/PROCEDURE** |
| 1 | Spreader Blade | Tilt | Decrease (flatten)/loosen U-bolts and pivot the blade to horizontal. Always refer to single diverter side as gauge. | Increase/loosen U-bolts and pivot the blade (single diverter side) upward. |
| 2 | Spreader Diverter | Single Side | Decrease (center filling)/ loosen bolts and rotate diverter clockwise. | Increase (center filling)/loosen bolt and rotate diverter counter-clockwise. |
| | | Dual Side | Decrease (center filling)/ loosen bolts and rotate diverters clockwise to direct flow in line with grain stream. | Increase (center filling)/loosen bolt and rotate diverters counter-clockwise to direct flow across grain stream. |
| 3 | Blade Extension | Tilt | Increase/loosen bolt and pivot the extension upward to maximum allowance in slotted hole. | Remove blade extension. |
| 4 | Damper | Opening | Decrease (center filling)/ loosen bolts and pivot dampers to nearly closed position. | Increase (center filling)/loosen bolts and pivot dampers to almost fully open position. |

1. Rotation is always viewed from top of the unit looking down onto the blade.

2. Be sure to fully tighten all bolts after each adjustment is made.

3. These adjustments describe the requirements for both extremes of bin sizes. For bin sizes between 24' and 36' in diameter start with intermediate adjustments, then vary slightly as required.

## MAINTENANCE

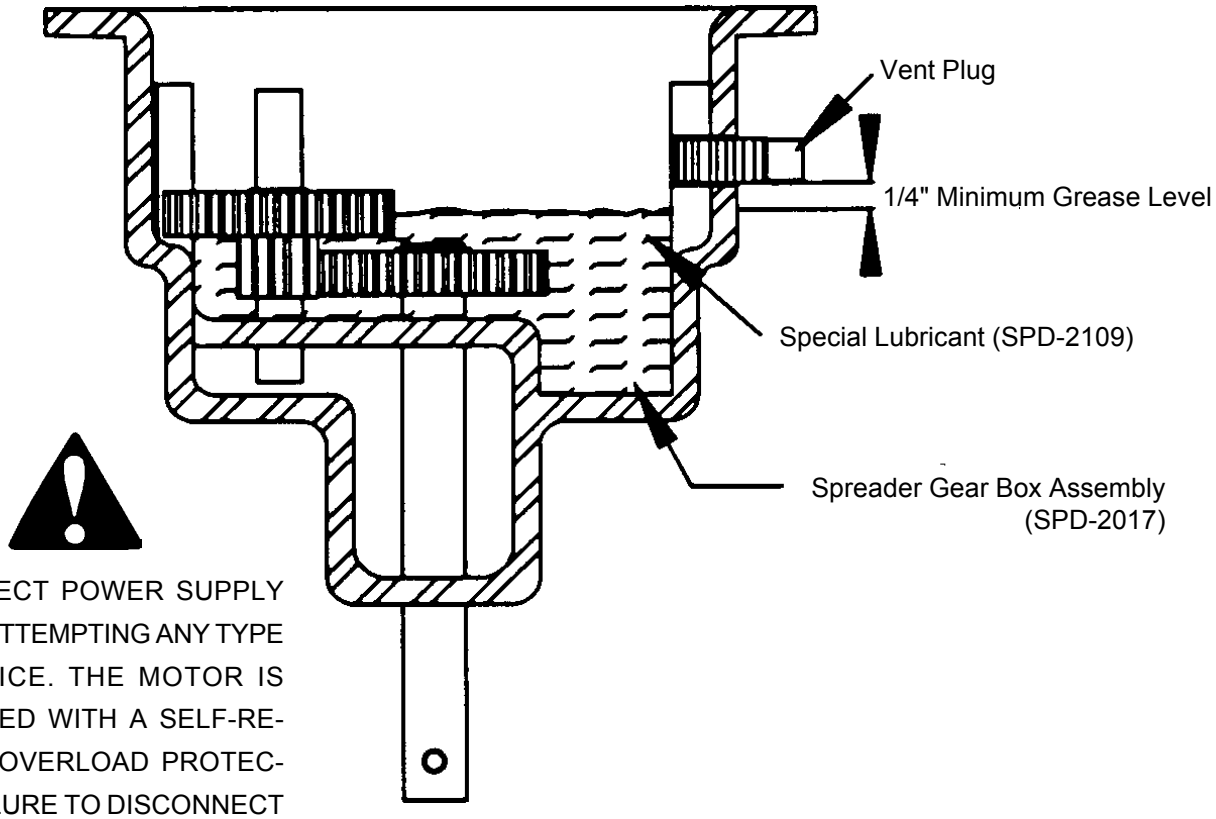
For normal operation, annually relubricate both motor bearings with approximately ten drops of 5W-30 oil. The gears of the gear box assembly are lubricated witha special high temperature, food grade lubricant (SPD-2109) at the time of manufacturing. The level of grease in the gear box should be checked annually and will normally not require further lubrication unless seal breakage occurs. After the grease has settled to the bottom of the gear box, the grease level can be checked. The grease level should not be more than 1/4" below the vent plug (Figure 11). It may be necessary to insert a wire through vent plug hole to find the grease level. The level also can be checked by removing motor and viewing grease level through hole for motor pinion gear.

Inspect seals annually for signs of leakage (check bearings annually for tightness).

In the event the motor fails to start, check power supply to the motor. If power supply exists and motor still fails to start, disconnect power and check blade for freedom of rotation. If power does not exist, check for blown fuse or flipped circuit breaker.

If motor stops operating for no apparent reason, wait approximately five minutes for the automatic overload protection device to reset and reattempt operation. If problem continues, check power supply for voltage and check blade of unit for freedom of rotation.

If motor pinion requires removal for any reason, it must be properly installed and located, as shown in the parts assembly on page ?.

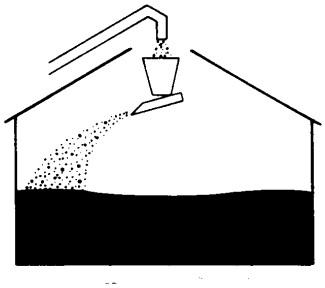



DISCONNECT POWER SUPPLY BEFORE ATTEMPTING ANY TYPE OF SERVICE. THE MOTOR IS PROTECTED WITH A SELF-RESETTING OVERLOAD PROTECTION. FAILURE TO DISCONNECT POWER CAN RESULT IN SERIOUS INJURY OR DEATH.

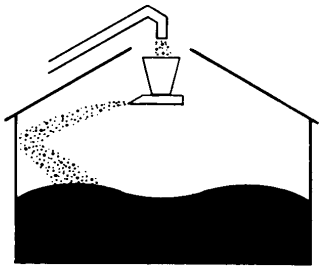
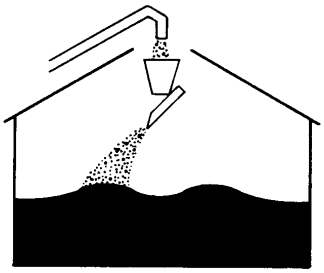
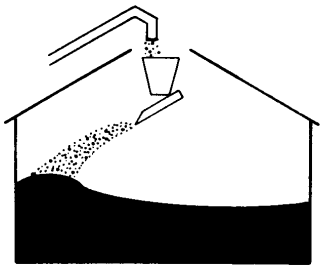
**Figure 11: The gear box assembly showing grease level.**

# TROUBLESHOOTING GUIDE

## CORRECT SPREADING PATTERN



Grain is slightly depressed in the center, grain flow is centered and the spreader is level.

| Trouble | Probable Cause | |
|---|---|---|
| Large doughnut shaped ring caused by grain hitting high on bin wall. | Tilt blade downward, decrease bite. Remove blade extension. |  Spreader blade too flat. |
| Grain is high in center of bin, small doughnut. | Flatten blade, increase bite, decrease grain flow to spreader. Add blade extension. |  Spreader blade too steep. |
| Grain is high on one side of bin. | Level spreader, correct grain flow to spreader, (never allow grain to flow into spreader at an angle or off center). |  Not level, not centered. |

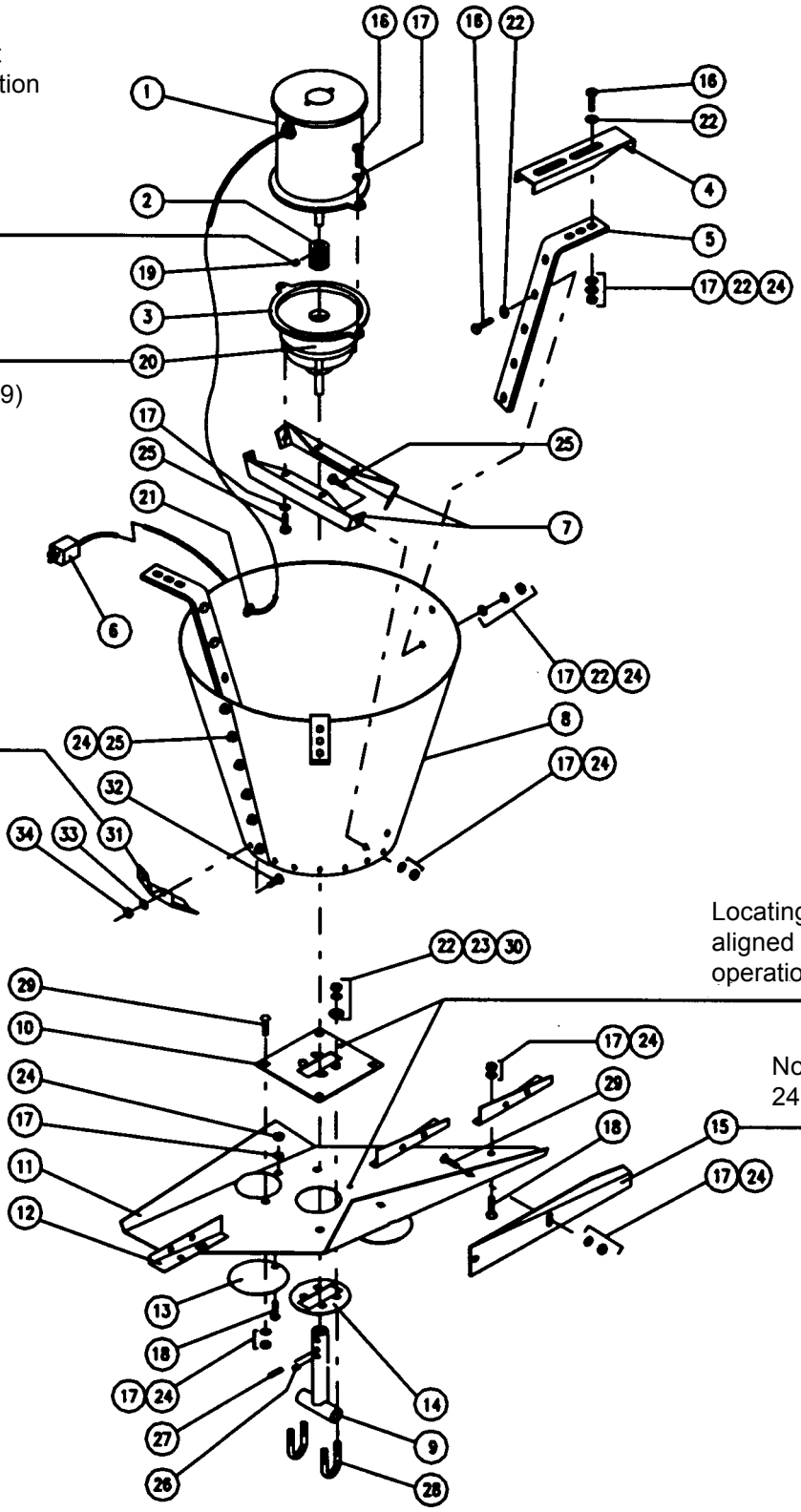
# POWER SPREAD PARTS ASSEMBLY

**WARNING!**
Automatic Reset
Overload Protection

**NOTE:** Tighten set screws against flat on motor shaft

Special Gearbox Lubricant (SPD-2109)

| Auger Size | Segments Used |
|---|---|
| 6" | 8 |
| 8" | 4 |
| 10" | 0 |



# PARTS LIST FOR SPD-2018

| ITEM # | PART # | QUANTITY | DESCRIPTION |
|---|---|---|---|
| 1 | SPD-2015 | 1 | Motor 1/3 HP, 120V, 1 PH |
| 2 | SPD-2105 | 1 | Pinion Gear |
| 3 | SPD-2017 | 1 | Gear Box Assembly |
| 4 | SPD-2008 | 3 | Hanger Extension |
| 5 | SPD-2010 | 3 | Hanger Bracket |
| 6 | S-1509 | 1 | Male Plug |
| 7 | SPD-2009 | 2 | Gear Box Mounting Bracket |
| 8 | SPD-2007 | 1 | Spreader Cone |
| 9 | SPD-2013 | 1 | Drive Shaft Weldment |
| 10 | SPD-2004 | 1 | Upper Back-up Plate |
| 11 | SPD-2001 | 1 | Spreader Blade |
| 12 | SPD-2003 | 3 | Spreader Diverter |
| 13 | SPD-2006 | 2 | Damper |
| 14 | SPD-2005 | 1 | Lower Back-up Plate |
| 15 | SPD-2002 | 1 | Blade Extension |
| 16 | S-4276 | 14 | 5/16-18 x 1 1/4" NFT Bolt Gr. 5 |
| 17 | S-1147 | 33 | 5/16" Lockwasher |
| 18 | S-6606 | 5 | 5/16-18 x 3/4" Hex HD Bolt (Serrated) |
| 19 | * | 1 | Set Screw |
| 20 | SPD-2109 | * | Special Gearbox Lubricant |
| 21 | S-6381 | 1 | Strain Relief Plug 5R-7W-2 |
| 22 | S-845 | 28 | 5/16" Flatwasher |
| 23 | S-456 | 4 | 3/8-16 Hex Nut |
| 24 | S-396 | 33 | 5/16-18 Hex Nut |
| 25 | S-4275 | 14 | 5/16 x 3/4" Tap Bolt |
| 26 | S-6078 | 2 | 5/16-18 x 1/4" Set Screw |
| 27 | S-6079 | 1 | 1/4 x 1" Roll Pin |
| 28 | S-6077 | 2 | U-bolt 3/8-16 x 1"W x 2 1/4" Lg. |
| 29 | S-6076 | 6 | 5/16-18 x 3/4" Carriage Bolt |
| 30 | S-1054 | 4 | 3/8" Lockwasher |
| 31 | SPD-2095 | 8 | Diverter Segments |
| 32 | S-1101 | 16 | 1/4-20 Hex HD Bolt |
| 33 | S-2041 | 16 | 1/4" Lockwasher |
| 34 | S-1102 | 16 | 1/4-20 Hex Nut |
|  | SPD-2107 |  | 1/3 HP Spreader Blade Replacement Kit |

*Denotes items included in gear box assembly.

# NOTES

# AIRSTREAM GRAIN CONDITIONING SYSTEMS

AIRSTREAM
a division of
THE GSI GROUP

1004 E. Illinois St.
Assumption, IL 62510
Phone 217-226-4421
Fax 217-226-4498
Toll Free Fax 800-353-8306

September 1996