

# OWNER/OPERATOR MANUAL



## Continuous Flow Low Profile SQ Series Grain Dryers

**2022**



### INSTALLER NOTICE!


This Manual MUST BE DELIVERED to the Dryer Owner/Operator. Failure to read this Manual is a misuse of the equipment.  
THE CONTROL BOX KEY is located inside the Dryer Disconnect Box.

Maintenance

Service and maintenance of Dryers must only be done by a **qualified technician**. Dryer maintenance must be documented as being performed according to the following written procedures. Appoint an accountable person who will properly follow the procedures and document them. Parts should be repaired or replaced if necessary.

**Visually inspect** the Dryer prior to operation and especially prior to harvest season, when it will be used heavily. Correct any hazardous situation. Repair any faulty equipment. Ensure that electric motors are operating at the proper speed.

Important Areas to Clean



**Figure 108.**  
**Under the Plenum Floor**

Item	Description
1	Plenum Divider Floor
2	Plenum Access Door
3	Unload Service Access Door
4	Unload
5	Plenum Divider Block Plate (above/below Plenum Floor)

TOP VIEW

Plenum and Unload Access Doors Open

## Clean the Discharge

### IMPORTANT!



*The Unload Cover must be kept clean. A buildup of chaff residue here can decompose and become slippery and hazardous.*

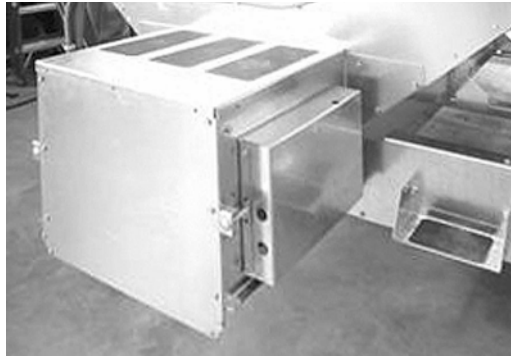


Figure 109.  
Discharge Areas

### **⚠ DANGER**

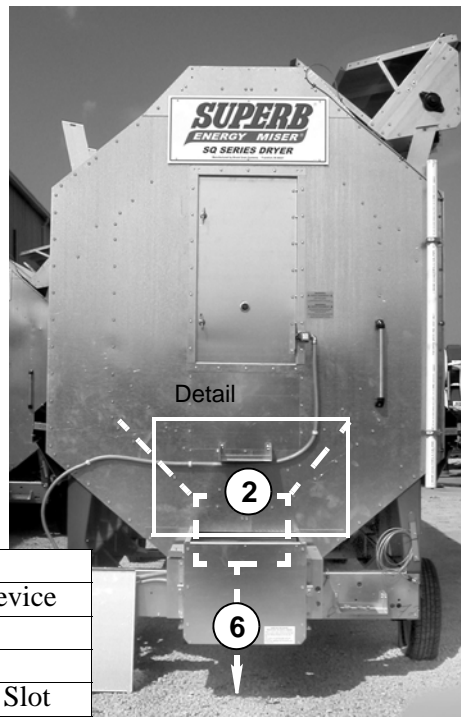


*Electricity can kill! DISCONNECT POWER prior to maintaining or cleaning the Dryer! Inspections MUST be done with the main power disconnected, LOCKED OUT and TAGGED OUT. Failure to follow these instructions will result in serious injury or death. The Dryer may start automatically causing serious injury or death.*

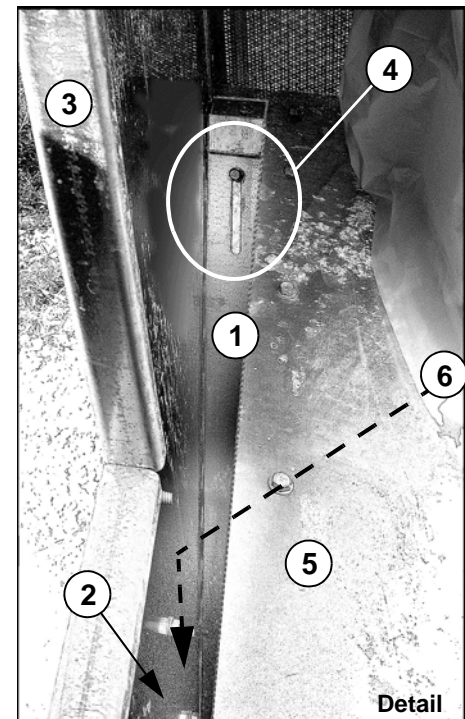
## Check the Automatic Cleanout Device / Cleanout Chute

Check and clean this area regularly. As the Fan is running, this movable slide panel (just above the Lower Plenum) automatically discharges air and foreign material down toward a **Cleanout Chute** above the Unload Conveyor, thus keeping the Plenum Floor and Upper Plenum areas clean of most dust, fines and beeswings. There is an adjustment screw in a 2" slot on the left side just below the Plenum Floor line (if facing the rear of the Dryer).

LOCATION, External View



VIEW from above, inside rear of Dryer Door OPEN



The Cleanout Chute ends in a dust-collecting hopper at the rear of the Dryer Plenum and re-directs the materials into the grain stream as they are discharged out of the Dryer. This greatly reduces the need for internal cleaning of the Dryer.

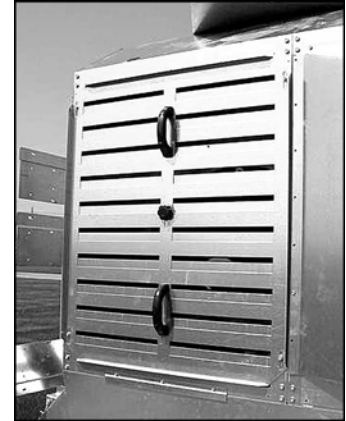
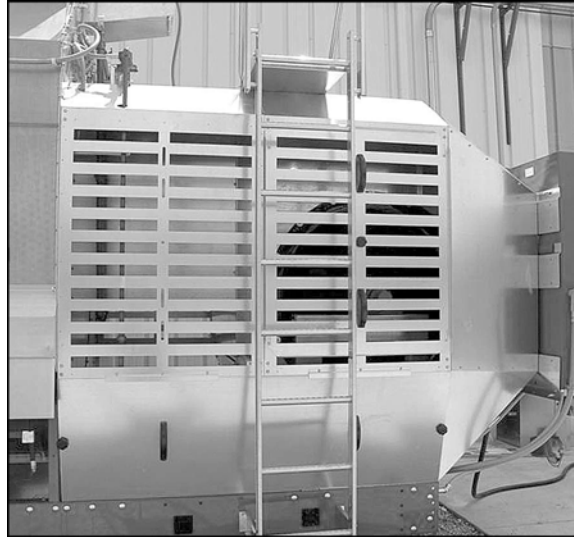
Item	Description
1	Automatic Cleanout Device
2	Cleanout Chute
3	Rear Plenum Door
4	Adjustment Screw and Slot
5	Plenum Floor
6	Direction of debris outflow

Figure 110.  
Automatic Cleanout Device Leading to Cleanout Chute

## Clean the Free Air Inlets, Fan Inlet Guards and Service Access Openings

Check the openings for trash accumulation, especially if loose leaves and other light material are airborne near the Dryer.

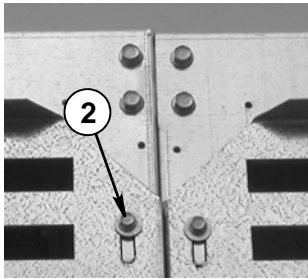
Clean tops of areas and all flat (or near-flat) surfaces, such as the Louvers of Free Air Inlets.



**Figure 111.**  
**Louver Areas: With and Without Service Access Doors**



## Adjustments on Fan Inlet Guards (Shutters or Louvers) on SQA and SQE Models



Detail: Adjustment Slots

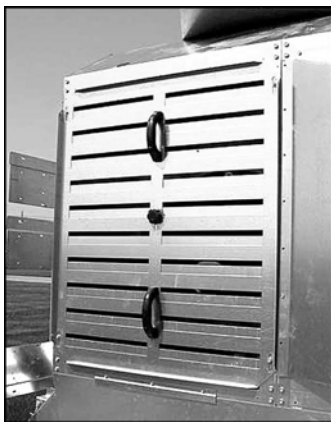
Fan Inlet Guards control the amount of outside air drawn into the Fan. Turn the Adjustment Knob to adjust the openings. The Retainer Screw should slide freely in the slots at the top of the Guards (see **Detail**, left).

When Louvers are in the desired position, lift or lower the Guards by the Handles and lower edge. Turn the Knob again to tighten them into the desired position.

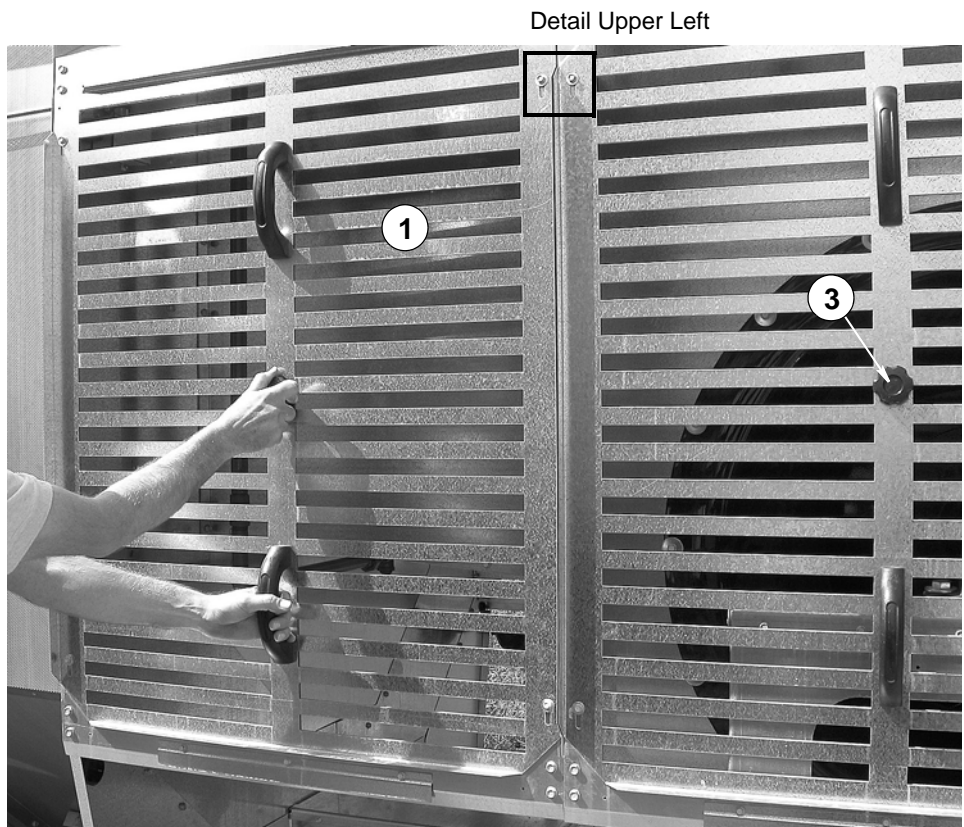
Both Louvers should always be set at the same level to provide balanced airflow to both sides of the Fan.

In suction cooling, set these Louvers from a partially-open to a fully-open position. When drying very wet grain, to decrease the amount of air pulled through the grain in the cooling zone. The Louvers should be fully closed when maximum cooling is required in low-moisture removal, high-grain-volume drying.

Item	Description
1	Free Air Inlet/Louver
2	Retainer Screw
3	Adjustment Knob

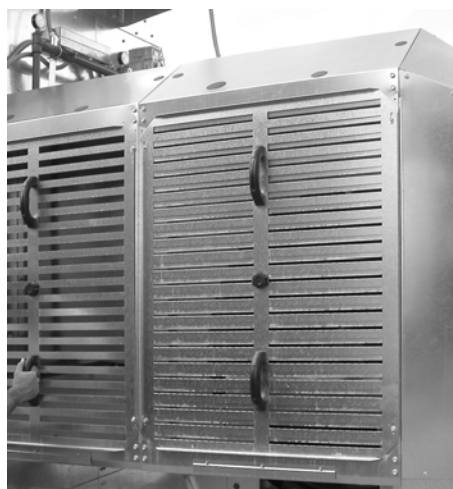


PARTIALLY OPEN



Detail Upper Left

FULLY OPEN



PARTIALLY OPEN



FULLY CLOSED

**Figure 112.**  
Adjusting  
Fan Inlet Guard

**IMPORTANT!****DANGER**

**DISCONNECT POWER**  
prior to maintaining or  
cleaning the Dryer!  
**Electricity can kill!**  
Inspections **MUST** be  
done with the main  
power disconnected  
and **LOCKED OUT**.  
Failure to follow these  
instructions will result  
in serious injury or  
death. The Dryer may  
start automatically  
causing serious injury  
or death.

OPEN DRAIN WEEKLY TO  
RELEASE UNVAPORIZED  
MATERIAL.

CAUTION: CLOSE DRAIN  
BEFORE PUTTING UNIT  
BACK IN OPERATION.

OUVRIR LE DRAIN  
HEBDOMAIREMENT  
POUR ÉLIMINER TOUTE  
SUBSTANCE NON  
ÉVAPORÉE.

PRÉCAUTION: FERMER LE  
DRAIN AVANT DE  
ÉMETTRE L'UNITÉ EN  
OPÉRATION.

3136-39

**Figure 113.**  
**Drain Decal**

## Preventive Maintenance Schedule

*The following are **MINIMUM** maintenance requirements:*

### Daily (assuming 24-hour-per-day operation during drying season)

- Clean foreign material from the Fan Inlet Guards.
- Sweep off the top exhaust slope where fines have accumulated on outer perforated skins.
- Visually check for uniform grain movement along all perforated panels of the lower outer grain column slope. Pay particular attention to the area directly under the Wet Grain Hopper where excessive amounts of fines and foreign material can accumulate.
- In cold weather, check the grain supply for chunks of frozen material which may wedge a conveyor, causing a Belt burnout, chain breakage, or a Motor overload shutdown.

### Semi-Weekly: Shut down for cleaning

- Check inner perforated skin panels for dust and chaff accumulation (especially if grain has excessive foreign material). Sweep down if necessary and remove material from inside the Dryer.
- Through an open panel, sweep fines and chaff accumulated on top of the Unload Cover, down into the Unload. Check Drag Cover Access Panels, to be sure a proper seal is maintained. Replace all Covers and Guards.

### Weekly

**Inspect the Plumbing Train.** Drain the drip-leg on LP-gas model Dryers. Use pipe joint compound on pipe threads when replacing the plug or cap. It may be necessary to clean these each week *or more often*, as fuel quality in some areas is poor. Check for and correct gas leaks around plumbing fittings, especially on high-pressure Vaporizer lines.

### Monthly (all year round)

Run the Fan and Load Auger and Dry Conveyor for about ten (10) minutes once each month to keep a protective lubricant film on bearings, gears and chains.

### Semi-Monthly

**Unload and clean grain** completely from the Dryer. Thoroughly inspect grain columns for accumulation of trash and fines, especially at the peak of the inner perforated grain walls. If grain columns are excessively trashy, **clean** as described above for **Weekly**. Remove trash from the grain before drying.

Check tension and condition of the V-Belts on the Fan, Load Auger. Tighten Belts if necessary by moving Motor Mounts and adjusting all Bolts equally. Motor Base Adjustment Bolts are located on the right-side lower frame of the Dryer. Adjust both Bolts uniformly to maintain correct Motor alignment, Belt tension and wear.

Fan Belts should never squeal at startup. if they do, they need to be cleaned and/or tightened. See the "SQ Belt Tension Chart" on the facing page.

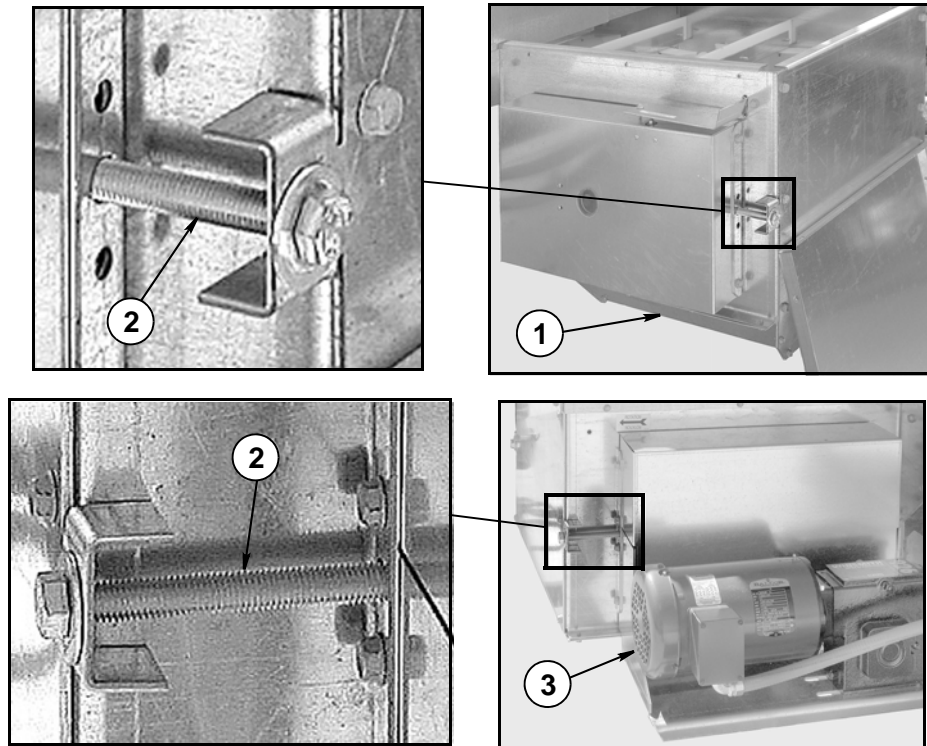
## SQ Belt Tension Chart

Model	Deflection in inches	Deflection in <i>mm</i>	Deflection Force
<b>SQ8</b>	0.75 - 0.81 (3/4 - 13/16)	[19.05 - 20.57]	9
<b>SQ12</b>	0.78 - 0.81 (25/32 - 13/16)	[19.81 - 20.57]	9
<b>SQ16</b>	0.78 - 0.81 (25/32 - 13/16)	[19.81 - 20.57]	11.5
<b>SQ20 3-Phase</b>	0.78 - 0.81 (25/32 - 13/16)	[19.81 - 20.57]	10**
<b>SQ20 1-Phase</b>	0.78 - 0.81 (25/32 - 13/16)	[19.81 - 20.57]	10
<b>SQ24 3-Phase</b>	0.68 (11/16)	[17.27]	13 - 13.5*
<b>SQ24 1-Phase</b>	0.68 - 0.71 (11/16 - 23/32)	[17.27 - 18.03]	10
<b>SQ28 3-Phase</b>	0.68 - 0.71 (11/16 - 23/32)	[17.27 - 18.03]	18.5
<b>SQ28 1-Phase</b>	0.68 - 0.71 (11/16 - 23/32)	[17.27 - 18.03]	11
<b>SQ32</b>	0.68 (11/16)	[17.27]	12 - 12.5
<b>SQ36</b>	0.68 - 0.71 (11/16 - 23/32)	[17.27 - 18.03]	12.5
<b>SQ40</b>	0.68 - 0.71 (11/16 - 23/32)	[17.27 - 18.03]	12.5 - 13

All figures are based on TB Woods Drive program.

Item	Description
1	Rear Discharge
2	Adjustment Bolt
3	Unload Motor

Figure 114, right  
Chain Tension Adjustment Bolt  
at Rear Discharge



### **⚠ DANGER**

**Turn off, Lockout and Tagout electrical power *BEFORE* servicing electrical or moving components. Failure to follow this instruction could result in death or serious injury.**

### End-of-Season Shutdown

Locate the fuel Shutoff Valve at the tank or meter. With the Dryer in **MANUAL** mode and the Burner running, close the Valve. Allow time for the flame to burn out. Cool the grain. Empty the Dryer. Disconnect power to the Dryer.

- Unload grain from the Dryer and check columns for complete removal.
- Sweep off the inside and outside perforated skins
- Clean off all material resting on the Unload Service Access Doors.
- Close all Service Access Doors.
- Wash down the Dryer inside and out (optional). Avoid getting water in the Burner or Fan Motor by covering them with plastic. When finished washing, remove the plastic sheets and fire the Dryer at a low plenum temperature until all parts are dry.
- Cover the Fan, Load, Unload and Auxiliary Motors. To prevent moisture condensation on the Motor, provide for ventilation.
- Indoors: Unplug the Intui-DRY® HMI Monitor power. To reduce risk of lightning damage during the off-season, disconnect the ethernet communication cable that runs between the Monitor and the Dryer red Control Box. Store the HMI in a climate-controlled environment when not in use.

## Pre-Season Maintenance (and Annually Thereafter)

Plan well in advance in case repairs or parts are needed. Carefully perform and combine all procedures listed under **Daily**, **Semi-Weekly** and **Semi-Monthly** as the annual maintenance routine.

**Clean out** all accumulated foreign material and fines from the Dryer plenum, Grain Columns, and around the Fan. The OSHA *Grain Handling Standard* 1910.272 (j) requires a grain facility owner or employer to develop and implement a *written* housekeeping program that identifies high-dust-collecting areas and:

- the methods by which “fugitive grain dust” will be eliminated from exposed surfaces such as ledges, floors, and other equipment;
- establishes how often the cleaning will be done;
- documents in writing that the above cleaning has been done properly.

Do a **SAFETY check**.

- Check for missing and damaged DANGER, WARNING or CAUTION Safety Decals. Obtain replacements if required.
- Perform all **Safety System Checkout** instructions. See pages 87-96.

Check all **non-moving parts**: Panels, Doors and Guards for tightness of fit, and to see they are not touching Belts. Examine all rubber hoses and gaskets. Replace as needed. Check all **moving and rotating parts** for vibration, wear or damage. Lubricate as needed.

- Inspect the Auger flighting.
- Check the Fan and Motor assembly for blade damage, or a shift in wheel clearance.
- Check for loose balance-weight Bolts—indicated by a “clicking” sound when a Fan is rotated slowly.
- Check Auger bearings for wear. Listen for clatter or vibrations with the Dryer running empty. If excessive noise or vibration is present, trace the sound/source of the vibration to either hanger bearings or end bearings. Top Auger hanger bearings can be inspected by removing the Garner Bin Access Panel on top of the Garner Bin beside the bearing hanger. Bearing locations have two (2) formed galvanized angles sandwiching the upper slope flanges of the Garner Bin skin panels.
- Check the Grain Level Switch paddle for free rotation.
- Check the Motor rotation on three-phase models—if power wires have been disconnected since their last use.
- Grease the Fan Motor as per instructions in the **Lubrication Chart** on the facing page. Some Motors have an additional CAUTION Decal 001948 (not shown) with special lubrication notes.

**CAUTION**

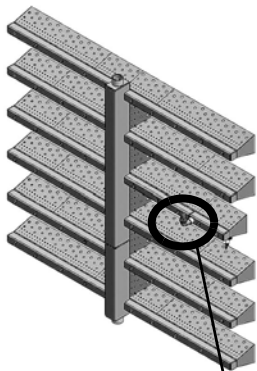


Figure 115.  
Burner, Pilot Fitting

**Special grease and procedures are required for the Fan Motor. Failure to FIRST read and follow instructions in the Lubrication Chart could cause damage to the Dryer. Pay attention to lubrication notes on Motor Decals. Failure to follow the instructions on these Decals could result in equipment damage and void the Warranty.**

Check the tightness of screws on major Control Panel components (starters, relays, circuit breakers, etc.) Loose electrical connections can cause overheating and erratic operation.

Check the Plumbing Train through the Burner and Vaporizer:

- Clean the gas line Strainer *only* if fuel restriction or starvation is indicated by high upstream pressure with lower-than-normal downstream pressure on the liquid pressure Gauge (LP gas). Use pipe joint compound when replacing plug threads. If a new inlet line has been installed, or the Dryer has been moved to a new location, check for pressure drop across the strainer **after the first day of operation**.
- Clean the Burner Igniter and re-gap it to 3/16" [4.8] if necessary.
- Check the Burner. Clean plugged orifices with a drill bit—50# drill, .070" [1.8] or an acetylene torch tip cleaner. Check the tightness of bolts and nuts attaching perforated baffles to the Burner. Replace as required.
- Using a liquid soap solution, check for plumbing leaks.

Check Thermostat capillaries to make sure they are properly retained and positioned.



## Lubrication

**Grease Bearings** according to the **Lubrication Chart** below. The **grease zerk** can be accessed without removing safety covers.

Be sure to replace Bearing covers when service is complete.

- Load Auger flange Bearings (2)
- Unload Conveyor flange Bearings (2)
- Fan pillow block bearings (2, C-models only)

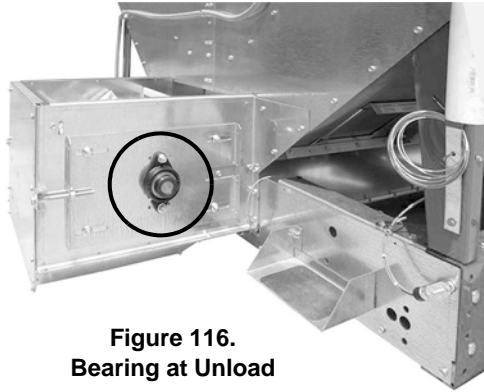


Figure 116.  
Bearing at Unload

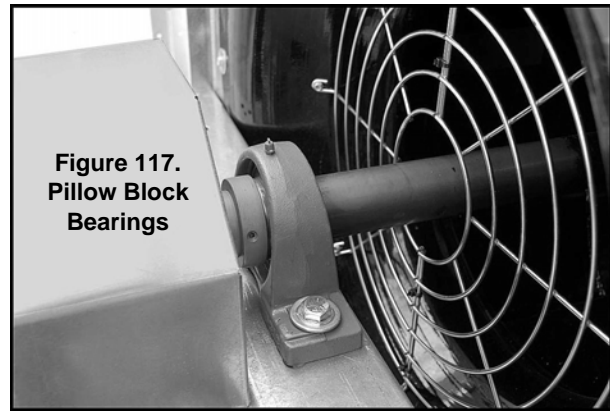


Figure 117.  
Pillow Block  
Bearings

### CAUTION



*Pay attention to lubrication notes on Electric Motor Decals. Failure to follow the instructions on these Decals could result in equipment damage and void the Warranty.*

## Lubrication Guide Based On Daily Operation During Harvest/Drying Season

Component	Area	Qty. / Dryer	Instruction
Fan, C-Model Dryer (centrifugal fans)	Fan Bearings	2	Clean the zerk tip and check the grease-gun tip <b>before</b> applying grease. Grease every two (2) weeks during drying season using 3 - 4 pumps of grease. Add grease <b>slowly</b> and with the wheel turning <b>slowly</b> to allow even distribution of grease in the bearing and to avoid damaging the seals.
	Fan Motor		Consult the Motor manufacturer's instructions for the correct lubrication procedure. Follow their guidelines <b>closely</b> . Improper lubrication can be as damaging as no lubrication. If in doubt, contact the Motor manufacturer or a licensed electrician. Follow the lubrication instructions on the Fan Motor. Some models have a WARNING Decal (17304) with specific instructions. Contact your Dealer for a replacement if this Decal is missing or damaged.
Load Auger and Unload Drag Conveyors and Motors	Conveyor flange Bearings	4	Grease every two (2) weeks during drying season using 3 - 4 pumps of grease per Bearing. Run the augers and listen for unusual Bearing noises.
	Motor Bearing		Use two (2) pumps of grease to each Motor Bearing (two per Motor) once every 4 - 5 <b>years</b> . <b>CAUTION!</b> Over-greasing can cause premature failure.

### IMPORTANT!



In addition to these steps throughout the drying season, it is important to run the Fan, Load Auger, and Unload Conveyor about ten (10) minutes every four (4) weeks in the off-season to **KEEP** a protective oil film on Bearings, gears and chains. When greasing bearings use a good grade grease such as Shell Oil Co. Alvania® #2, Socony-Mobil Armvac 781, Amoco Lithium M-P, Texaco 939 Premium RB, or an equivalent (especially important for Fan bearings).



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Changes this issue:

Pages 4, 18, 36: The S/N Specifications Plate was updated.

Page 20: The AC Drive Box cover was updated.

Pages 10, 27: There is a new Maintenance Platform and Manual, MFH2234A.

Page 44: Schematic 3924-00003 changed to 3924-00040. Schematic 3924-00006 changed to 3924-00042

Pages 60-61: Typical LP and NG Plumbing Train diagrams were updated.

Page 79: Burner Startup information was modified.

Page 86: Photos of the Dry Grain Port were added. Information on the optional NEW TrueGrain™ Moisture Sensor System was added. 42" and 48" Leg Kits are available for more clearance when the TrueGrain™ is used with air lock systems taller than 6".

Page 116: A **Dryer Weights and Capacities Chart** was added.

Pages 120-122: **SQ with TrueGrain™ and SUPER-AIR®** and **SQ Leg Packages** were added for optional Leg and Transition packages.

Changes last issue:

The Brock Grain Systems corporate phone number changed from (574) 658-9141 to (866) 658-9141.

There were changes to the Intui-DRY® Controller main screen and other Systems screens; the START button changed to RUN.

There were changes to preferred means of operation and stopping the Dryer.

Pages 90-96: Intui-DRY® Alarms changed; the Dryer Code Color Chart was updated.

Pages 121-124: The Intui-DRY® Quick-Start Guide was updated.

There were trademark updates. Company contact information was updated.

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