



GLEANER® / *Super Series*

Quick Reference Guide S67 & S77 Models

It is YOUR responsibility to read and understand the safety section in your Operator's Manual and the manual for all attachments before operating your machine. Remember YOU are the key to safety. Good safety practices not only protect you, but also the people around you.

Study the features in your Operator's Manual and make them a working part of your safety program. Keep in mind that the safety section in your Operator's Manual is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all **REMEMBER - SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.**



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Combine Setup

Cereal Grain - Wheat, Oats, Barley

INITIAL COMBINE SETUP

| Crop | Rotor RPM | Concave Setting * | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|--------|-----------|-------------------|-------------|-----------------|----------------|---------------|----------------|
| Wheat | 800 | 0.1" - 0.2" | 3 - 6 | 0.75" (19 mm) | 0.375" (10 mm) | Fast | Solid |
| Oats | 600 | 0.1" - 0.2" | 3 - 6 | 0.75" (19 mm) | 0.375" (10 mm) | Fast | Solid |
| Barley | 600 | 0.1" - 0.2" | 3 - 6 | 0.75" (19 mm) | 0.375" (10 mm) | Fast | Solid |

* - As read on the EIP

INITIAL HEADER & HEADER DRIVE SETUP

- Cutterbar locked up on flex headers.
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

STRAW CHOPPER

- Position chopper drive belt so chopper is operating at Fast speed.

TIPS

- Filler bars may be required for hard threshing cereals to eliminate white caps. Order Concave Filler Kit #700958588 from your dealer.

Milo - Grain Sorghum

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|-----------------|---------------|---------------|----------------|
| 400 | 0.2" - 0.4" | 3 - 6 | 0.625" (16 mm) | 0.313" (8 mm) | Fast | Solid |

INITIAL HEADER SETUP

- Cutterbar locked up on flex headers.
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

STRAW CHOPPER

- Position chopper drive belt so chopper is operating at fast speed.

Corn/Maize Field Shelled

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|-----------------|----------------|---------------|----------------|
| 300 | 0.6" - 0.8" | 3 - 6 | 0.56" (14 mm) | 0.625" (16 mm) | Slow | Solid |

INITIAL HEADER SETUP

- Variable speed header drive in unlocked position.
- Right-hand pivot drive belt positioned on small countershaft drive sheave and large driven pivot sheave.

TIPS

- Use round end corn chaffer for higher moisture corn.
- Use grain chaffer for drier corn.

Soybeans

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|------------------|-------------------|---------------|----------------|
| 400 | 0.4" | 3 - 6 | 0.75" (19 mm) | 0.375" (16 mm) | Fast | Perf. |

INITIAL HEADER SETUP

- Release and adjust cutterbar on flex headers. Adjust header height control.
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

TIPS

- Round end corn chaffer can remain in combine for soybeans.

Canola/Rapeseed

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting * | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-------------------|-------------|-------------------|-----------------|---------------|----------------|
| 600 | 0.7" - 0.8" | 2 - 5 | 0.875" (22 mm) | 0.5" (13 mm) | Fast | Solid |

- Initial Header Setup
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

Edible Beans

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|------------------|-------------------|---------------|----------------|
| 250 | 0.3" - 0.4" | 3 - 6 | 0.75" (19 mm) | 0.375" (10 mm) | Fast | Solid |

INITIAL HEADER SETUP

- Cutter Bar - In some crops, the material is direct cut so the header should be set-up accordingly. In many cases, the crop is windrowed and the material is harvested from the windrow.
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

TIPS

- Optional perforated boot covers on clean grain and tailings elevators may be used if desired.
- Optional slow speed elevator kit may be used if desired.

Sunflowers

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting * | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-------------------|-------------|-------------------|-----------------|---------------|----------------|
| 350 | 0.4" | 2 - 5 | 0.625" (16 mm) | 0.25" (6 mm) | Fast | Solid |

INITIAL HEADER SETUP

- Header must be equipped with sunflower attachment to minimize head and seed loss at the header.
- Variable speed header drive locked out in slowest position.
- Right hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

Flax

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|-------------------|---------------------|---------------|----------------|
| 800 | 0.0" - 0.4" | 3 - 5 | 0.625" (16 mm) | 0.125" (3.18 mm) | Fast | Solid |

INITIAL HEADER SETUP

- Flax is generally windrowed and a pickup attachment is used on header.
- Variable speed header drive locked out in slowest position.
- Right-hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

Grass Seed (Bluegrass, Bentgrass)

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|--------------|-----------------|-------------|------------------|------------------|---------------|----------------|
| 500 - 600 | 0.1" - 0.2" | 1 - 7 ** | 0.75" (19 mm) | 0.1" (2.5 mm) | Fast* | Solid |

* - If baling straw is preferred, order impeller if needed.

** - The Light Seed Kit #71363017 can be installed and used.

INITIAL HEADER SETUP

- Variable speed header drive locked out in slowest position.
- Right hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

Alfalfa

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|--------------|-----------------|-------------|--|------------------|---------------|----------------|
| 600 - 800 | 0.3" - 0.5" | 3 - 6 ** | 0.25" - 0.925" (6 mm - 16 mm) | 0.1" (2.5 mm) | Fast* | Solid |

** - The Light Seed Kit #71363017 can be installed and used.

INITIAL HEADER SETUP

- Variable speed header drive locked out in slowest position.
- Right hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|----------------------------------|------------------|---------------|----------------|
| 700 - 900 | 0.0" - 0.1" | 2 - 6 ** | 0.25" - 0.925" (6 mm - 16 mm) | 0.1" (2.5 mm) | Fast* | Solid |

** - The Light Seed Kit #71363017 can be installed and used.

INITIAL HEADER SETUP

- Variable speed header drive locked out in slowest position.
- Right hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

INITIAL COMBINE SETUP

| Rotor RPM | Concave Setting | Fan Opening | Chaffer Opening | Sieve Opening | Chopper Speed | Elevator Boots |
|-----------|-----------------|-------------|------------------|----------------|---------------|----------------|
| 600 | 0.2" | 3 - 5 | 0.75" (19 mm) | 0.2" (5 mm) | Fast* | Solid |

INITIAL HEADER SETUP

- Variable speed header drive locked out in slowest position.
- Right hand pivot drive belt positioned on large countershaft drive sheave and small driven pivot sheave.

| Condition | Possible Cause | Correction |
|--|---|--|
| Ragged and uneven cutting of crop | Cutting mechanism not operating at recommended speed. | Check basic speed of combine and check header drives. |
| | Reel speed too slow for ground speed. | Increase reel speed. |
| | Reel height too high. | Lower reel. |
| | Reel position is either too far forward or too far back on reel arms. | Adjust reel position so reel bats hold grain leaning slightly into sickle. |
| | Header not level. | Level header. |
| | Guards are bent or broken. | Straighten or replace guards. |
| | Upper lips of guards bent causing poor shearing action. | Adjust upper lips of guards so they are parallel to lower shear edge of guard. |
| | Sickle not contacting guards. | Adjust sickle so tips of sickle sections rest lightly on guards. |
| | Sickle hold down clips worn or not adjusted properly. | Replace worn hold down clips and adjust clips. |
| | Too much fore and aft looseness between sickle back and guards. | Adjust wear plates. |
| | Bent or twisted sickle. | Straighten or replace sickle assembly. |
| | Ground speed too fast. | Reduce ground speed. |
| | Flex cutter bar hanging up. | Check flex arms, filler panels (at ends of headers) and stabilizers for freedom of movement and correct any binding. |
| | Flex header height sensor on rockshaft not set the same. | Readjust sensor as outlined in header Operator Manual. |
| Rockshaft binding (flex header) | Free rockshaft. | |
| Insufficient ground pressure from flex cutter bar. | Increase ground pressure by decreasing spring tension on flex arms. | |
| Flex cutter bar tilted up too much at the front. | Tilt cutter bar down so skid pads are parallel to the ground. | |
| Intermittent signal for automatic header height control flex header. | Clean corrosion and paint from contacts on switches. Check for good connecting at harness disconnects. Check for broken wires in harness. | |

| Condition | Possible Cause | Correction |
|--|---|--|
| Shattering of grain ahead of cutter bar | Reel speed not coordinated with ground speed. | Change reel speed to coordinate with ground speed. |
| | Ground speed too fast for condition of crop. | Decrease ground speed. |
| | Reel height too low. | Raise reel. |
| Loss of grain heads and cut crop at cutter bar | Reel not low enough. | Lower reel. |
| | Conveyor clearance too high from header bottom. | Lower conveyor. |
| | Conveyor fingers retracting too early. | Adjust fingers close to header bottom. |
| | Cutting with header too high, cutting stalks too short for proper delivery. | Lower header. |
| | Reel speed too low. | Increase speed of reel. |
| | Reel incorrectly positioned on reel arms. | Position reel closer to header conveyor. |
| | Conveyor flights worn. | Replace conveyor flighting. |
| Guards Plugging | Sickle sections not contacting guards. | Adjust sickle so tips of sickle section rest lightly on guards. |
| | Missing or worn sickle sections. | Replace sickle sections. |
| | Reel not adjusted to provide smooth flow of material into header conveyor. | Refer to Operator Manual for best starting position and adjust reel height, reel speed and reel fore and aft position for even flow. Straighten or replace guards. |
| | Guards bent or broken. | Straighten or replace guards. |
| | Cutter bar tilted down too much. | Tilt cutter bar up. |
| | Bent or twisted sickle. | Straighten or replace sickle assembly. |
| | Ground speed too fast. | Reduce ground speed. |
| | Skid pads binding (flex header). | Check that skid pad splice brackets are not binding skid pads. |
| | Flex cutter bar too heavy. | Decrease ground pressure by increasing spring tension on flex arms where plugging is occurring. |
| | Flex header height too low. | Move selection to higher cutting position. |
| | Dirt on skid pads (flex header). | Clean dirt off skid pads. |

| Condition | Possible Cause | Correction |
|---|---|---|
| Crop bunching on cutter bar | Reel too high. | Lower reel. |
| | Reel too far forward. | Set reel back. |
| | Reel speed too slow. | Increase reel speed. |
| | Sticky header pan. | Remove dirt, gum or rust. |
| | Conveyor too high. | Lower header conveyor. |
| | Worn conveyor flighting. | Replace flighting. |
| | Conveyor fingers retracting too early. | Adjust fingers as close to header bottom as possible. |
| Excessive vibration of cutting parts | Conveyor not operating at recommended speed. | Check header drive. Check basic speed of combine and conveyor. |
| | Cutting mechanism not at recommended speed. | Check basic speed of combine. |
| | Excessive looseness of cutting parts and sickle drive. | Remove all excessive play from cutter bar and sickle drive to eliminate vibration. |
| | Drive idler shock absorber worn. | Replace shock absorber. |
| | Pickup reel tines entering sickle. | Raise reel with fine height adjustment. |
| | Drive tires improperly inflated. | Inflate tires to recommended tire pressure. |
| | Header not secured to feeder house. | Check lower header hooks are secure and spring latch is properly seated in hooks. |
| | Stabilizers loose at anchors (flex header). | Tighten bolts holding the stabilizer anchors to the header guard angle and to the cutter bar assembly. Tighten wobble box stabilizer attaching bolts. |
| | Loose or broken cutter bar or flex arm attaching bolts (flex header). | Tighten or replace all bolts attaching cutter bar to header and flex arms. |
| | Reel wrapping in tangled and weedy crops | Incorrect location of pickup reel. |
| Reel speed too fast. | | Reduce speed of reel. |
| Pickup reel tines pitched too much to rear. | | Adjust tine pitch. |
| Pickup reel tines bent. | | Replace or straighten tines. |
| Crop not divided at header ends. | | Install or adjust long dividers. |
| Reel ends wrapping. | | Install reel end shields. |
| | | Raise reel to reduce amount of straw gathered by reel. |
| | | |

| Condition | Possible Cause | Correction |
|---|--|--|
| Crop wrapping on header conveyor | Conveyor too high or too low. | Adjust conveyor height. |
| | Uneven feed to conveyor. | Adjust reel speed and/or location. |
| | Conveyor finger retracting too early or conveyor fingers too late | Adjust position of conveyor fingers. |
| Header conveyor plugging or material not moving from center of conveyor into front feed chain | Straw retarder clearance from conveyor flight too great. | Adjust straw retarder. |
| | Reel not adjusted to provide smooth flow of material into header conveyor. | Adjust reel height. Adjust reel speed and flow of material into header conveyor reel fore and aft position for even flow. |
| | Conveyor fingers retracting too early or too late. | Adjust position of conveyor fingers for best material flow. |
| | Insufficient lead in header conveyor flighting. | Conveyor flighting should have slight lean toward center of conveyor. Using carpenter's square against conveyor tube and flighting should lean approximately 12.7 mm (0.5 in) toward center of conveyor. |
| | Straw retarder clearance from conveyor flight too great. | Adjust straw retarder closer to flight. |
| | Conveyor too far forward or too far to rear. | Adjust conveyor fore and aft position. |
| | Conveyor too high or too low. | Adjust conveyor height. |
| | Feeder chains not moving material. | Move front feed chain drum forward away from header consistently. |

| Condition | Possible Cause | Correction |
|---|---|---|
| Feeder chains plugging or wrapping | Uneven feed from header. | Refer to previous section on HEADER or CONVEYOR PLUGGING condition for header performance checks. |
| | Improper feed chain speed. | Check feed chain drive sheave installation with grain header belts driving off larger sheave diameter. With corn header, belts driving off smaller sheave diameter. |
| | Feeder chain drum stops set too low. | Adjust feeder drum stops. |
| | Dirt between front and rear feed chains. | Clean out dirt. |
| | Front feeder chain drive slip clutch set too loose. | Check clutch assembly for worn or broken parts. |
| | Worn or damaged cylinder bars. | Replace thresher cylinder bars. |
| | Concave clearance too wide. | Reduce concave clearance and then speed if cracking occurs. |
| | Feeder chain slats bowed or missing. | Straighten or replace bent or missing slats. |
| | Material entering into the outer ends of front chain slats. | Adjust straw retarders toward center of header, then install fairing extensions. |
| Too much material entering combine | Cutting too low in order to get all down and tangled crops. | Use lifting guards or pickup reel in down and tangled conditions. |
| Uneven or bunched feeding of crop to cylinder | Uneven feed to cylinder. | Refer to previous listed feeding problems. |

| Condition | Possible Cause | Correction |
|-------------------------------------|--|---|
| Slugging or overloading of cylinder | Engine not up to correct speed. | Adjust engine high idle to proper speed. |
| | Cylinder drive belt slipping. | Check condition of belt and replace or clean if it becomes worn or oily. Check and lubricate gearbox input torque sensor mechanism. |
| | Too much material entering cylinder. | Reduce ground travel speed. |
| | Cylinder bars worn or damaged. | Replace cylinder bars. |
| | Concave twisted, worn excessively or damaged. | Repair concave. |
| | Concave plugged with mud or dirt, etc. | Clean concave. |
| | Cage helical bars worn or damaged. | Repair helical bars and be sure they are properly aligned. |
| | Cage door assembly not aligned. | Align door assembly by adjusting alignment bolts to form a smooth inner surface in the cage. |
| | Cylinder discharge paddles worn or damaged. | Replace discharge paddles. |
| | Discharge impeller or straw chopper drives slipping. | Repair by checking and replacing worn belts and damaged sheaves. Adjust belt tensions. |
| | Uneven feed to cylinder. | Refer to section on UNEVEN OR BUNCHED FEEDING. |
| | Crop too damp or green. | Wait for crop to improve. |
| | Crop extremely difficult to convey. | Install edible bean kit across the cage. (Such as edible beans and sunflowers). |

| Condition | Possible Cause | Correction |
|---------------------------------------|---|---|
| Excessive cracked grain in grain tank | Crop too damp or green. | Wait for crop conditions to improve. |
| | Cylinder speed too fast for crop grain cracking but still do a good job. | Decrease cylinder speed just enough to stop threshing. |
| | Uneven feeding or slugs entering cylinder. | Refer to section on UNEVEN OR BUNCHED FEEDING. |
| | Engine not up to correct speed. | See your dealer. |
| | Concave not level. | Level concave to cylinder. |
| | Insufficient material entering cylinder. | Increase ground speed for more intake of material. |
| | Dented conveyor housings, bent conveyor shafts or worn conveyor fighting. | Check each conveyor in the combine and header and correct. Remove dents from conveyor housings to achieve adequate clearance with auger. Straighten or replace bent conveyors. Repair or replace conveyors with worn or damaged conveyor fighting. |
| | Concave clearance too close. | Increase concave clearance. |
| | Excessive tailings return. | Adjust the cleaning shoe to reduce tailings. On combines equipped with optional tailings return, adjust handle to return tailings to distribution augers. |
| | Grain remains in cage too long. | Remove concave filler bars. |
| | Excessive feed chain speed. | Check feed chain drive sheave installation on right-hand end of feeder countershaft. With grain header, belts driving off larger sheave diameter. With corn header, belts driving off smaller sheave diameter. V/S header drive must be locked into low speed position when operating grain header. |
| | Worn cylinder bars. | Replace cylinder bars. |
| | Kernel moisture too high. | Wait for crop to mature. |

| Condition | Possible Cause | Correction |
|--|--|---|
| Grain not threshed from heads or shelled from cob or pod | Concave clearance too great. | Decrease concave clearance and adjust cylinder speed to prevent cracking. |
| | Cylinder speed too slow. | Increase cylinder speed enough to do good job of threshing. Do not increase speed to point where grain cracking is excessive. |
| | Concave not level. | Level concave to cylinder. |
| | Uneven feed to cylinder. | Refer to section on UNEVEN or BUNCHED FEEDING. |
| | Insufficient material entering cylinder. | Increase ground speed for more intake of material. |
| | Cylinder bars worn or damaged. | Replace cylinder bars. |
| | Cylinder not aggressive enough. | Replace cylinder bars. |
| | Concave extremely worn or damaged. | Replace concave. |
| Material lodging outside of cage | Crop very difficult to thresh. | Install concave fillers. On combines equipped with optional tailings return, adjust handle to return tailings to cylinder. |
| | Crop condition. | Plugging only on front top of cage normal in some conditions. |
| | Material not being delivered by distribution auger. | Check and repair drive for belt slippage. |
| | Cylinder speed too high. | Decrease cylinder speed. |
| | Cylinder bars or helical bars worn. | Replace cylinder bars or helical bars. |
| | Concave plugged with mud or dirt, etc. | Clean concave. |
| | Cylinder discharge metal paddles worn or missing. | Repair discharge. |
| | Discharge impeller or straw chopper drives slipping. | Repair by checking and replacing worn belts and damaged sheaves. Adjust belt tensions. |
| | Concave clearance too close. | Increase clearance (maximum recommended clearance 19 mm (0.75 in)). |
| | Separator grate cover needed | Install the separator grate cover on the separator grate. |

| Condition | Possible Cause | Correction |
|---------------------------------|---|--|
| Cylinder Vibration | Dirt and material stuck to inside of cylinder bars. | Clean material from inside of cylinder bars. |
| | Vibration caused by cylinder drive. | Place cylinder drive gearbox in neutral and operate cylinder drive through its variable speed range to determine if vibration is still present. If so, check: <ol style="list-style-type: none"> 1. V/S drive and driven sheaves for condition and balance. 2. V/S cylinder drive belt. 3. Cylinder drive torque sensor, and cylinder drive gearbox bearings and gears. <p>Make sure to place gearbox back in High or Low gear.</p> |
| Grain loss from cylinder | Engine not up to correct speed. | Adjust engine high idle to proper speed. |
| | Insufficient material entering cylinder. | Increase ground speed for more intake of material (corn only). |
| | Uneven feed to cylinder. | Refer to section on UNEVEN or BUNCHED FEEDING. |
| | Cylinder speed too high or too low. | Try various cylinder speeds to determine optimal speed for threshing and separating. |
| | Insufficient threshing at concave. | Decrease concave clearance. |
| | Grain not coming out of cage. | Install two extra reverse cylinder bars. Adjust separator grate closer to cylinder. (Especially for milo or barley or if in green, weedy conditions). |
| Foreign Material in Clean Grain | Engine not up to correct speed. | Adjust engine high idle to proper speed. |
| | Separator drive belt, fan drive belt, or cleaning shoe drive belt slipping. | Inspect drives, replace any damaged belts and adjust idlers as required. |
| | Missing or plugged fan inlet screen. | Clean or reinstall fan inlet screen. |
| | Uneven feed to cylinder. | Refer to section on UNEVEN or BUNCHED FEEDING. |
| | Insufficient material entering cylinder. | Increase ground speed for more intake of material. |

| Condition | Possible Cause | Correction |
|---------------------------------|---|---|
| Foreign Material in Clean Grain | Incorrect chaffer for crop being harvested. | Round end, shallow tooth 28.6 mm (1.125 inch) spacing - generally used in corn but has also been found to provide desired cleaning in some crops such as soybeans and high moisture cereal grains where more air volume is desired. Square end, deep tooth 41.3 mm (1.625 in) spacing - generally used in high moisture corn to remove pieces of cob from the tank sample. |
| | Insufficient air blast from cleaning fan. | Increase fan choke setting. |
| | Sieve opening too wide. | Consider increasing air, then decrease sieve opening in 1.6 mm (1/16 in) increments. |
| | Uneven opening of sieve or chaffer louvers. | Straighten louvers or replace sieve or chaffer. |
| | Chaffer opening too wide. | Consider increasing air, then decrease sieve opening in 1.6 mm (0.06 inch) increments. |
| | Finishing sieve required for crop and crop conditions. | A number of finishing sieves are available and can be used to provide best clean in crops such as soybeans and small or light seeds. |
| | Excessive tailings allowing uneven distribution of material on the cleaning shoe. | Refer to EXCESSIVE TAILINGS condition section. |
| | Cleaning shoe overloaded due to over threshing. | Refer to remedies listed under MATERIAL LODGING OUTSIDE OF CAGE. |
| | Excessive cob breakage from cage. | Optimize concave setting and cylinder speeds. |
| Grain loss over cleaning shoe | Engine not up to correct speed. | Adjust engine high idle to proper speed. |
| | Separator drive belt, fan drive belt or cleaning shoe drive belt slipping. | Inspect drives, replace any damaged belts as required and adjust idlers. |
| | Plugged fan inlet screen. | Clean screen. |
| | Uneven feed to cylinder. | Refer to section on UNEVEN or BUNCHED FEEDING. |
| | Insufficient material entering cylinder. | Increase ground speed for more intake of material. |
| | Material plugging fan choke and/or fan. | Clean fan choke and fan. Be sure fan inlet screens are installed. |
| | Insufficient chaffer opening. | Increase chaffer opening in 1.6 mm (0.06 inch) increments. |

| Condition | Possible Cause | Correction |
|-------------------------------|--|---|
| Grain loss over cleaning shoe | Incorrect fan choke setting. | Grain loss can be caused by too little or too much air volume. If grain and material is falling off rear edge of chaffer in piles or bunches, air volume is too low and fan choke setting should be increased. If grain is being blow out and can be caught approximately 30.5 mm (12 inch) behind end of chaffer, fan choke setting should be decreased. |
| | Harvesting in damp freezing weather. | Wait for suitable harvest conditions. |
| | Improper distribution of material on cleaning shoe - excessive tailings. | Refer to EXCESSIVE TAILINGS condition section. |
| | Cleaning shoe overloaded due to over threshing. | Refer to remedies listed under MATERIAL to LODGING OUTSIDE OF CAGE condition. Adjust separator grate to #9 condition. |
| | Incorrect chaffer for crop being harvested. | Round end, shallow tooth 28.6 mm (1.125 in) shoe spacing - used in all crops except corn. Round end, deep tooth 41.3 mm (1.625 in) spacing - generally used in corn but has also been found to provide desired cleaning in some crops such as soybeans and high moisture cereal grains where more air volume is desired. Square end, deep tooth 41.3 mm (1.625 in) spacing - generally used in high moisture corn to remove pieces of cob from the grain tank sample. |
| | Incorrect air pattern. | Inspect fan, fan choke, shoe air duct and splitter location. |
| | Grain loss present when entering and/or leaving the crop. | This situation is usually normal because the cleaning system should be adjusted to provide min. grain loss when in a fully loaded condition. |

| Condition | Possible Cause | Correction | |
|--------------------------------------|--|---|--|
| Excessive Tailings | Insufficient sieve opening. | Increase sieve opening in 1.6 mm (0.06 inch) increments. | |
| | Insufficient air blast from cleaning fan. | Increase fan choke setting. | |
| | Chaffer opening too wide. | Consider increasing air, then decrease chaffer opening in 1.6 mm (0.06 inch) increments. | |
| | Cleaning shoe overloaded due to over threshing. | Refer to remedies listed under MATERIAL LODGING OUTSIDE OF CAGE condition. | |
| Sieves plugging with straw and chaff | Insufficient air blast from cleaning fan. | Increase fan choke setting. | |
| | Sieve opening too wide. | Consider increasing air, then decrease sieve opening in 1.6 mm (0.06 inch) increments. | |
| | Chaffer opening too wide. | Decrease chaffer opening in 1.6 mm (0.06 inch) increments. | |
| | Missing or improperly installed fan inlet screen. | Properly install all fan inlet screens. | |
| | Shutting down machine before it has cleaned out. | Allow crop to pass through and clear machine before disengaging separator. | |
| | Incorrect chaffer for crop being harvested. | Round end, shallow tooth 28.6 mm (1.125 in) spacing - used in all crops except corn. Round end, deep tooth 41.3 mm (1.625 in) spacing - generally used in corn but has also been found to provide desired cleaning in some crops such as soybeans and high moisture cereal grains where more air volume is desired. | |
| | | | Square end, deep tooth 41.3 mm (1.625 in) spacing - generally used in high moisture corn to remove pieces of cob from the grain tank sample. |
| Incorrect air pattern. | Inspect fan, fan choke, shoe air duct and splitter location. | | |

Loss

Grain Harvesting

These charts are provided as a guide to help determine actual loss in bushels per acre.

| NUMBER OF GRAINS PER SQUARE FOOT BEHIND COMBINE | | | | | | |
|---|------------|----------|-------------|----------|-----------|----------|
| | WHEAT - 19 | | BARLEY - 17 | | OATS - 10 | |
| Header Size | Shoe | Cylinder | Shoe | Cylinder | Shoe | Cylinder |
| 4.9 m (16 ft) | 61 | 200 | 54 | 183 | 37 | 128 |
| 5.5 m (18 ft) | 67 | 228 | 61 | 204 | 35 | 120 |
| 6.1 m (20 ft) | 75 | 253 | 67 | 227 | 39 | 133 |
| 7.6 m (25 ft) | 94 | 317 | 84 | 283 | 49 | 167 |
| 8.2 m (27 ft) | 101 | 342 | 90 | 306 | 53 | 180 |
| 9.1 m (30 ft) | 112 | 380 | 100 | 340 | 59 | 200 |
| 11.0 m (36 ft) | 135 | 456 | 120 | 408 | 71 | 240 |

| NUMBER OF GRAINS PER SQUARE FOOT BEHIND COMBINE | | | | | | |
|---|----------|----------|----------------|----------|-----------------|----------|
| | RYE - 24 | | SOYBEANS - 3.5 | | MILO-MAIZE - 20 | |
| Header Size | Shoe | Cylinder | Shoe | Cylinder | Shoe | Cylinder |
| 4.9 m (16 ft) | 74 | 257 | 11 | 37 | 62 | 214 |
| 5.5 m (18 ft) | 85 | 288 | 13 | 42 | 70 | 240 |
| 6.1 m (20 ft) | 94 | 320 | 14 | 47 | 78 | 266 |
| 7.6 m (25 ft) | 118 | 400 | 17 | 58 | 98 | 333 |
| 8.2 m (27 ft) | 128 | 432 | 19 | 63 | 106 | 360 |
| 9.1 m (30 ft) | 142 | 480 | 21 | 71 | 118 | 400 |
| 11.0 m (36 ft) | 170 | 576 | 25 | 84 | 142 | 480 |

Corn Losses

The following table lists the kernels per square foot concentrated directly behind the combine in row length in meters (feet) per 1/100 of an acre.

| ROW LENGTH IN METERS (FEET) PER 1/100 ACRE | | | | | | | | |
|--|------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| Row Width mm (in) | 1 Row | 2 Row | 3 Row | 4 Row | 5 Row | 6 Row | 8 Row | 12 Row |
| 508 (20) | 79.9 (262) | 39.9 (131) | 26.6 (87.3) | 20.0 (65.5) | 16.0 (52.4) | 13.3 (43.6) | 10.0 (32.7) | |
| 711 (28) | 57.0 (187) | 28.5 (93.5) | 18.7 (61.3) | 14.2 (46.7) | 11.4 (37.4) | 9.5 (31.3) | 7.1 (23.4) | |
| 762 (30) | 53.0 (174) | 26.5 (87) | 17.7 (58.0) | 13.3 (43.6) | 10.6 (34.8) | 8.8 (29.0) | 6.6 (21.8) | 4.4 (14.5) |
| 813 (32) | 49.1 (161) | 24.6 (80.7) | 16.4 (53.8) | 12.3 (40.3) | 9.8 (32.3) | 8.2 (26.9) | 5.5 (18.2) | |
| 914 (36) | 44.2 (145) | 22.1 (72.5) | 14.7 (48.3) | 11.0 (36.2) | 8.8 (29.0) | 7.3 (24.1) | 5.2 (17.2) | |
| 965 (38) | 42.1 (138) | 21.0 (69.0) | 14.0 (46.0) | 10.5 (34.5) | 8.4 (27.6) | 7.0 (23.0) | | |
| 1016 (40) | 39.9 (131) | 20.0 (65.5) | 13.3 (43.6) | 10.0 (32.7) | 8.0 (26.2) | 6.6 (21.8) | | |
| 1067 (42) | 37.8 (124) | 18.9 (62.0) | 12.6 (41.3) | 9.4 (31.0) | 7.6 (24.8) | 6.3 (20.6) | | |

Determining Combine Loss

| Crop | No. seeds per lb. | Lb. per bushel | Seed in 1 bushel | Seeds per sq. ft. if 1 bushel were spread over one acre |
|------------------|-------------------|----------------|------------------|---|
| Wheat | | | | |
| Durum | 11,300 | 60 | 678,000 | 15.5 |
| Sample | 14,100 | 60 | 1,146,000 | 26 |
| Sample | 15,900 | 60 | 954,000 | 21.8 |
| Sample | 13,100 | 60 | 786,000 | 18 |
| Barley | 13,600 | 48 | 655,000 | 15 |
| Rape (Annual) | 157,000 | 50 | 7,850,000 | 180 |
| Rape (Winter) | 104,500 | 50 | 5,225,000 | 120 |
| Timothy | 1,130,000 | 45 | 50,000,000 | 1,165 |
| Corn | 1,428 | 56 | 80,000 | 3 |
| Soybeans (Small) | 5,900 | 58 | 342,000 | 8 |
| Soybeans (Large) | 2,720 | 58 | 156,500 | 4 |
| Rice | 30,000 | 45 | 1,350,000 | 31 |
| Flax | 80,800 | 56 | 4,525,000 | 104 |
| Oats | 12,700 | 32 | 406,000 | 9.3 |
| Rye | 18,000 | 56 | 1,013,000 | 23 |

Standard Payable Moisture & Density Chart

| Crop | Standard Moisture (%) | Crop Density (lbs/bushel) | Crop Density (kg/bushels) |
|--------------------|-----------------------|---------------------------|---------------------------|
| Alfalfa | 12.0 | 60 | 27 |
| Barley | 14.0 | 48 | 22 |
| Canola | 10.0 | 52 | 24 |
| Corn | 15.5 | 56 | 25 |
| Edible Beans | 14.5 | 60 | 27 |
| Flax | 7.0 | 56 | 25 |
| Grass Seeds | 12.0 | 22 | 10 |
| Lentils | 10.5 | 60 | 27 |
| Millet | 11.0 | 50 | 23 |
| Mustard | 8.0 | 60 | 27 |
| Navy Beans | 14.5 | 62 | 28 |
| Oats | 14.0 | 32 | 15 |
| Peas (Black-Eyed) | 12.0 | 60 | 27 |
| Peas (Field) | 10.5 | 60 | 27 |
| Popcorn (Yellow) | 14.0 | 60 | 27 |
| Popcorn (White) | 14.0 | 60 | 27 |
| Rape Seed | 10.0 | 52 | 24 |
| Rice (Long) | 14.0 | 45 | 20 |
| Rice (Medium) | 14.0 | 45 | 20 |
| Rye | 14.0 | 56 | 25 |
| Safflower | 6.0 | 45 | 20 |
| Sorghum | 13.0 | 56 | 25 |
| Soybeans | 13.0 | 60 | 27 |
| Sunflower (Oil) | 14.0 | 25 | 11 |
| Sunflower (Stripe) | 14.0 | 28 | 13 |
| Wheat (Durham) | 13.0 | 60 | 27 |
| Wheat (HrdRdSpr) | 13.0 | 60 | 27 |
| Wheat (HrdRdWtr) | 13.0 | 60 | 27 |
| Wheat (SftRdWtr) | 13.0 | 60 | 27 |
| Wheat (White) | 13.0 | 60 | 27 |





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