S-Series Combine and Front End Equipment Optimization

“Ready To Harvest” for Soybeans and Grain Quality

John Deere Harvester Works

Contents

Preface

The content of this material is intended to help you know how to choose the best configuration and set up an S-Series combine and platform, for any Soybean variety and condition before going to the field.

Setup and Adjustment recommendations are intended as a starting point before harvest season. Additional adjustments and fine tuning will be necessary depending on crop moisture and harvest conditions.

Crop setting checklists and Grain Quality Tips are a quick reference for configurations and operating speeds to help optimize grain quality.

Platform and Draper Setup and Adjustments

Most common problems in Soybeans are:

- Poor appearance of the field after harvest (flagging)
- Uneven cut stubble
- Cutterbar Plugging/Pushing
- Poor cutting / losses
- Increased feeding difficulty in damp conditions
- Grain Loss

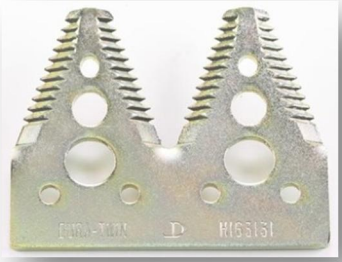
FACT: The highest percentage of Soybean Harvest field grain losses are at the platform on the Cutterbar and Reel.

4 soybeans per sq. /ft. = 1 bu. /ac. loss

Cutting Knife Configurations

The following components are critical to insure that the cutting system performs to its optimum:

Coarse-tooth Sections



<u>Coarse Tooth Sections are recommended for Soybeans on both Draper and Auger Platforms</u>

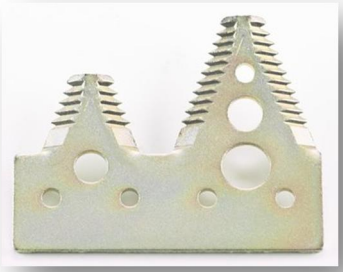
Cut quality is critical.

Blunt Nose Knife Guards

Be sure all knife sections and knife guards have sharp edges and knife hold downs are tight.

For No Till soybeans in corn stalks the Short/Long sections and the Non- Clog knife guards are recommended.

No Till Short/long sections



Non-Clog guards have the cross bar between the points removed to prevent stalks from plugging and a blunt nose to prevent stabbing stalks from hair pinning and pushing/ plugging.

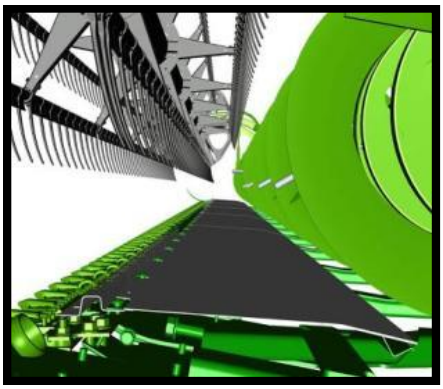
No Till Non -Clog

For No Till Double Crop Soybeans in straw stubble Open Top Knife Guards with long coarse tooth sections are recommended to prevent straw stubble plugging.

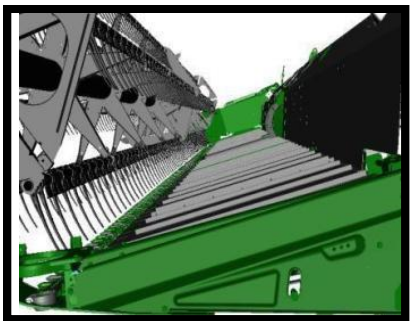
Open Top Guards

Recommended Platform Adjustments

Flex Auger platform: the reel is run low and back to pull crop over the cutterbar and to the auger. Down and Back.



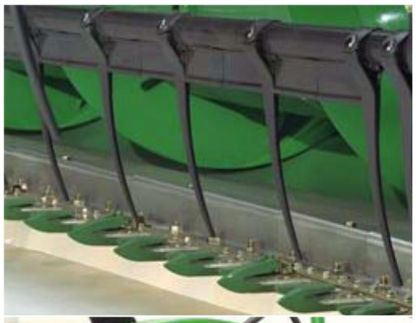
Flex Draper: the reel needs to only pull crop over the cutterbar onto the side belts. The reel should be ran higher and further out. Up and Out.



Auger adjusted back to the strippers and fingers 5/8” off the floor

Reel Height

On the flex auger and draper platforms, hydraulically lock the cutterbar up or leave the shipping brackets in place and adjust the reel height to 1 ½" clearance above the knife guards.



Reel Finger Pitch

Reel Fingers should be adjusted for crop condition:

—Most aggressive position (pulled back) for down or tangled crop.

—Medium aggressive position (leaned back) for normal crop conditions.

—Least aggressive position (Straight down) for tall standing crop.

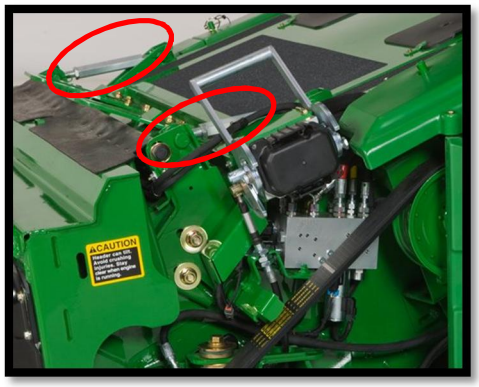
Platform Tilt

Cutterbar should be operated parallel and as close to the ground as possible, to not miss any low pods on the stems.

For combines without Hydraulic Fore/Aft Adjustment

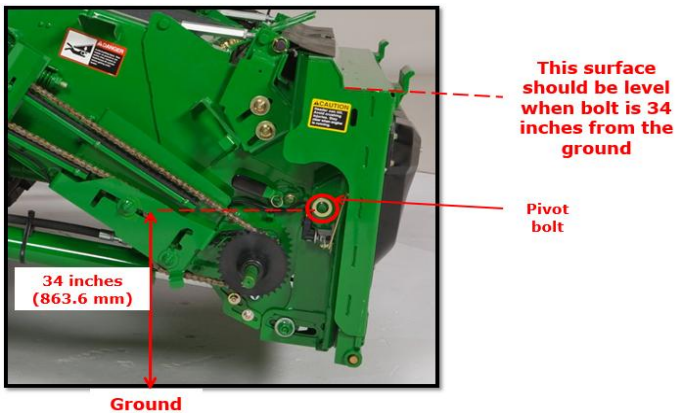
To adjust fore/aft position:

1. Loosen 10 feederhouse bolts. (5 each side)



2. Turn 2 upper turnbuckles until appropriate fore/aft position is reached.

3. Appropriate fore/aft position is reached when the pivot bolt is 34 inches off of the ground (top edge surface is level).



4. Tighten all bolts.

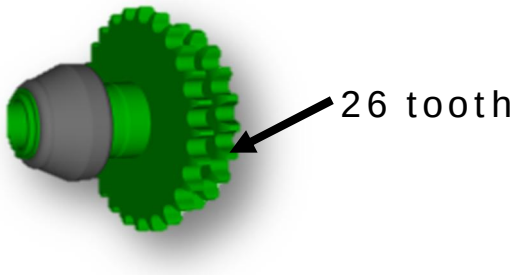
Refer to Operator's Manual for bolt torques.

Combine
Configuration and Setup

Feederhouse Drum Height
- DOWN position

Chain Speed
- Conveyor chain speed - slow

26T small diameter sprocket

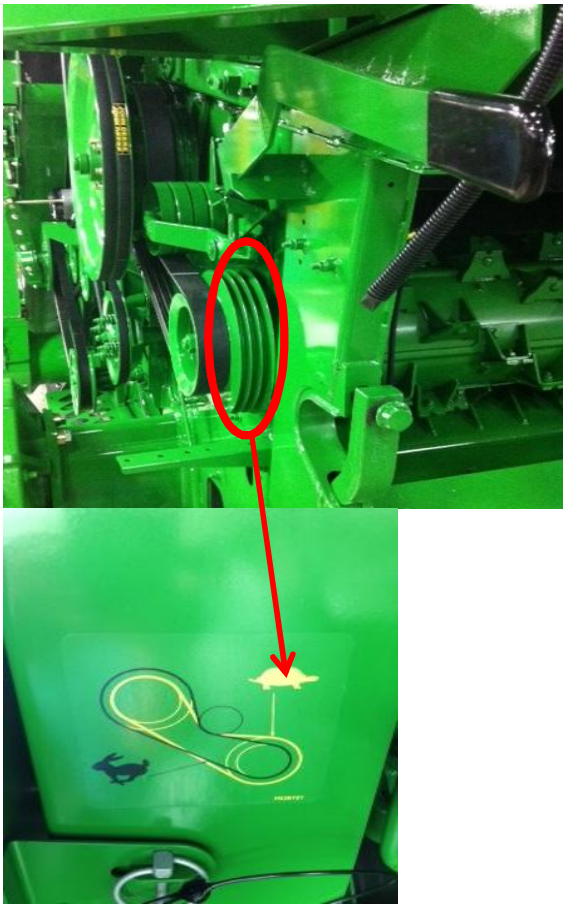


Backshaft Speed
Feederhouse Variable Drive and 5 Speed Drive

- Operate the cutterbar slow 500 – 530RPM for the variable drive
- 1ST gear on a 5 Speed drive.

Feed Accelerator Speed

- Slow side speed
  Large Diameter Inner Pulley

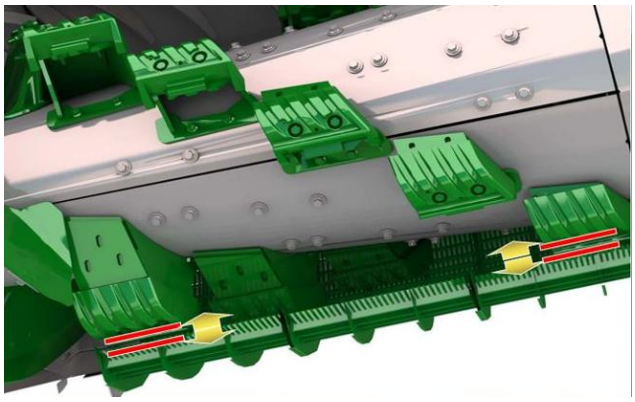


Concaves

Round bar is the recommended concave in all three locations for soybeans since its overall performance is very good in all moisture conditions.
The open areas between the concave bars allow the beans to fall through the concave faster to reduce grain damage.

Large Wire Concaves may also be used, but are a risk for hairpin plugging in green stem beans.

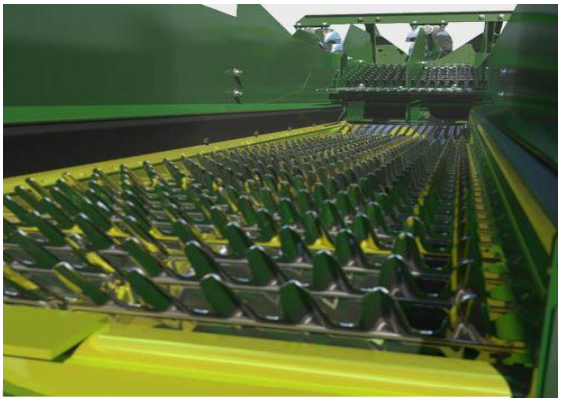
Refer to your Operators Manual for how to Level Concaves (from front to rear) and calibrated to “Zero” for clearance to the rotor threshing elements.



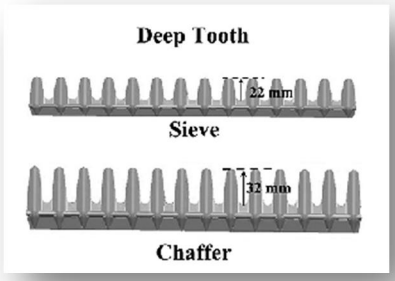
Misadjusted Concaves that are tight in the rear or too tight in the front, causes poor threshing and grain damage.

Cleaning Shoe

Either Deep-tooth chaffer or General Purpose chaffers can be used for Soybeans

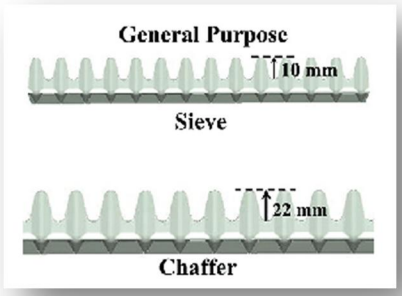


Either Deep Tooth sieve or General Purpose sieve can be used for Soybeans



Be sure chaffer and sieve are calibrated so the opening <u>exactly</u> matches the cab display setting.

If openings do not match, follow the Factory Cal procedures.

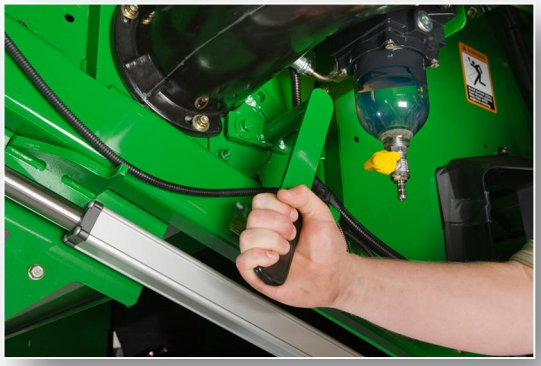


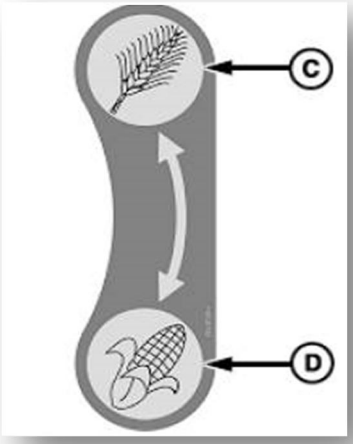
Active Tailings System (S680, S690)

Set the lever UP to the open CORN position to open the rethresher concave for soybeans.
Open concave provides less grain damage.

Chopper Cob Deflector

Move the Cob Deflector Door handle to the Small Grain position (C) for Soybeans.

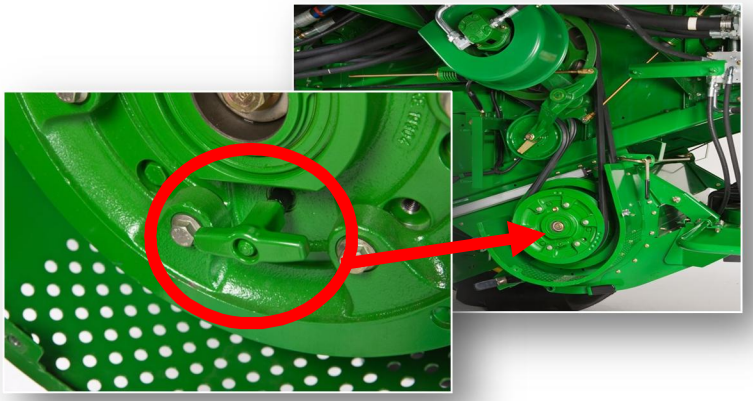




Chopper Speed

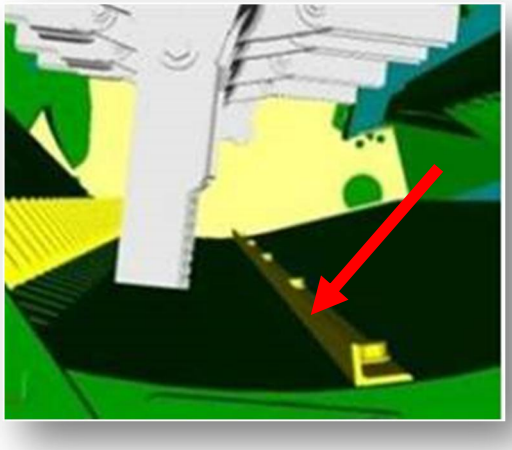
Two Speed Drive Handle

- Pull Out – for fast speed in Soybeans



Chopper Knife bank Engaged Position:
Loosen wing nut on chopper.
Move adjustment handle downward until knife bank is at half of adjustment slot.
Knives 50% engaged.
Tighten wing nut to lock knife bank into position.

Additional Smaller Residue Sizing Option
Adding the straw chopper controller bar (available through ServiceParts) reduces the stem cut length when desired. The controller bar is installed to the chopper floor. Smaller sizing of the residue, for No Till residue.
Risk: Controller bar increases horsepower.



Combine
Adjustment Checklist

FeederHouse Drum – DOWN

FeederHouse Chain Speed – 26T

Feed Accelerator – LOW Speed

Accelerator Wear Strips – Serrated

Rotor Speed – 580 RPM
Dry stems - 500 RPM
Green Stems – 600 RPM

Cleaning Fan Speed – 980 RPM

Round Bar Concave
Concave Clearance – 25

Large Wire Concave
Concave Clearance - 25

Deep Tooth Chaffer Opening – 14
Dual Zone Rear Opening – 5

GP Chaffer Opening – 16
Dual Zone Rear Opening - 5

Sieve Opening – 8

Rethresher – Corn Setting

Chopper Speed – HIGH

Seed Soybean and Soybean Grain Quality

1. Investigate field conditions before harvesting. If there is a lot of variability in the crop maturity that will determine when the harvest will begin.

2. To avoid splits and seed coat cracking, start harvesting @ 14- 15% moisture. When seed drops below 10-11% moisture it will be difficult to prevent damage.

3. When beans drop to 10% moisture or drier, stop harvest and let them stand and wait overnight to the next morning or until they get a rain on them and then go back when moisture increases. When the beans get down to 10% or less, you will have splits, regardless what you do.

4. Rotor threshing speed depends on how dry the stems are. If the stems are dry, start at 500 RPM. If the stems are damp or green, run up to 600rpm if necessary. If there are still splits, then open the concave 5 at a time. Leave the rotor speed alone if possible. Need to keep the rotor speed up for material handling in the separator.

5. If unthreshed pods show up in the grain tank, then close the concave a 1-2 at a time until they go away. There is a fine line with concave clearance, between splits and unthreshed pods.

6. Keep the ground speed normal to keep the separator full and MOG material handling. If there is a lot of threshed/open pods and small sticks in the grain tank, increase the cleaning fan speed. DO NOT close the sieve. Closing the sieve will run free beans through the tailings and cause seed damage. When you do a power shut down, drop open the tailings elevator door you should NOT have any free soybeans in the tailings at all.

7. Check concaves for level front to rear. Concaves out of level may cause a pinch point increasing damage potential.

8. Calibrate and “Zero” the concave position sensor.

9. Check all the clean grain auger flighting to be sure there are no sharp edges.

10. Do not unload grain tank completely empty.
Leave some grain in the tank to cover the augers to minimize damage.

11. Do not fill the grain tank over top of the loading auger
The grain boiling up above the loading auger can add to grain damage.

12. Do not unload the grain tank at high engine RPM.

Platform Troubleshooting

Shatter Loss at the Cutterbar

1. Reel speed not matched to ground speed.
   - Adjust speed so that the reel moves the crop evenly.
   - In standing crop, reel speed should be equal to or slightly faster than combine ground speed. Reel should look like it is pulling combine through the field.
   - In down and tangled crops, reel speed should be 50% faster than the combine ground speed.
   - Too fast of reel speed results in shatterloss.
   - Running reel too low in crop causes shatterloss.
   - Be sure Reel Speed has been calibrated.

2. Ground speed too fast.
   - Reduce ground speed so that reel does not hit and shatter crop.

3. Worn Cutting Components.
   - Check knife guards and knife sections.

Down and Tangled Crop Difficulties - Cannot get under or cut down crop.

1. Adjust Finger Pitch back

2. Add Crop Lifters to the knife guards in down and tangled crops.

3. Tilt the Feederhouse forward to nose down the cutterbar.

4. Reduce ground speed.

5. Cut beans at 45 deg. angle to the down direction.

6. Install Rod dividers.

Grain Tank Sample

Threshed pods and sticks in the grain tank

1. Be sure concaves are level and zeroed.

2. Be sure chaffer and sieve opening is correct and calibrated.

3. Tighten chaffer opening by 2mm to help remove sticks and pieces.

4. Increase cleaning fan in 50 RPM increments until shoe loss is observed.

5. Check setting every 2 hours as the crop dries during the day.

6. Closing the sieve to clean up the grain tank causes increased tailings and grain damage.

NOTES