

STS SERIES

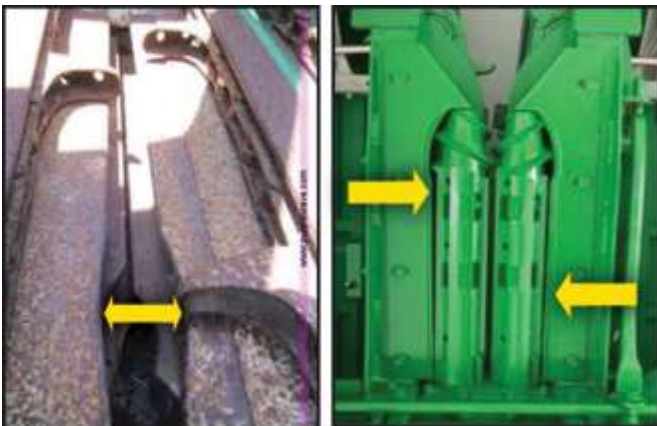


It All Starts with the Headers

One of the most important combine adjustments is the header. If the header is not set correctly then it is going to be difficult to set the combine to perform as it should. How the crop enters the combine from the header can have a big impact on the combine's performance and how the grain tank sample looks. When it comes to platforms, you need a smooth, consistent flow of crop coming into the feederhouse. If you are slug feeding the combine it will not thresh and separate the crop adequately. When it comes to corn heads, deck plate spacing, head speed and even auger position can affect feeding and how the grain tank sample looks.

Corn Heads

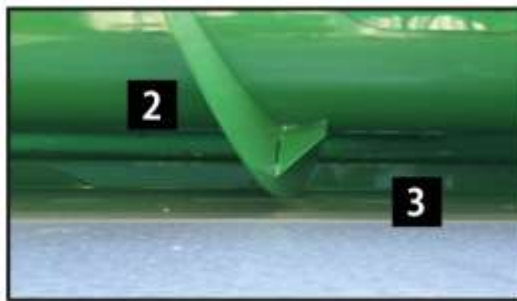
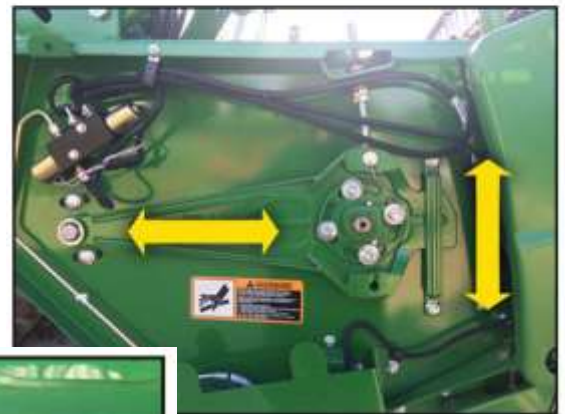
You do not want your deck plates to look like this. You will want to set the deck plates so they will not cause butt shelling. As components wear, you may need to move the trash knives inward so they can cut any trash that may wrap on the stalk rolls.



Platforms

You can adjust the pitch of the fingers on the reel to improve feeding in some conditions.

If you are faced with conditions where the crop doesn't want to feed into the auger there are a few things that can be adjusted. The auger can be moved up, down, fore or aft, but when you adjust the auger make sure that it will not hit the floor or the stripper plates. Depending on the head, you may have up to three stripper plates, which will need to be adjusted if you move the auger.



You may also adjust the finger timing. This will make the auger finger extend farther so it can grab crop better, but be sure to check the clearance of the fingers to the floor. If misadjusted, they may hit the floor.





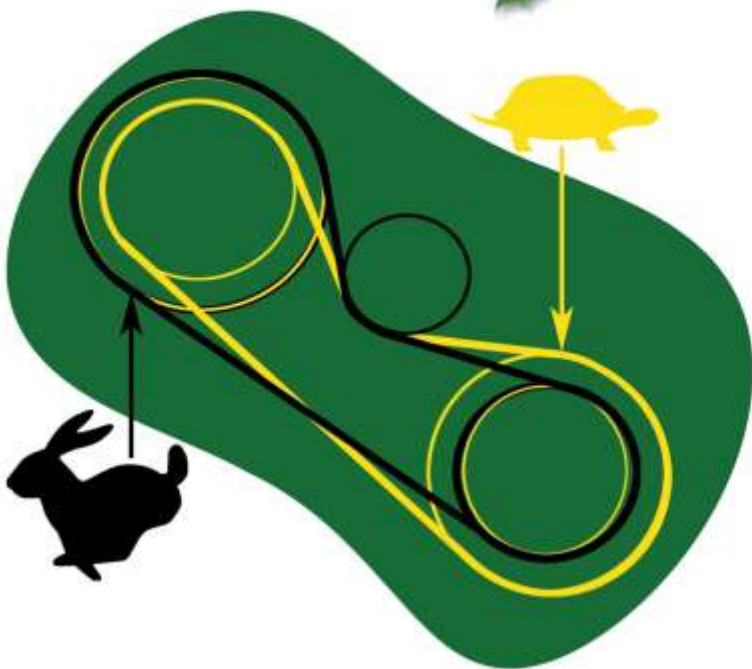
Feederhouse

One adjustment that can be made to the feederhouse is regulating the conveyor chain speed. Move the chain to the big sprocket for beans and move it to the small sprocket for corn. The second adjustment you can make is to move the drum height : up for corn and down for beans. If you're running a 35 ft. or larger platform draper, leave the drum up to allow for increased crop flow.



Feed Accelerator Speed

You will want to speed up when combining beans or heavy crops so you can keep the rotor full and at capacity. This is what meters the crop to the rotor.

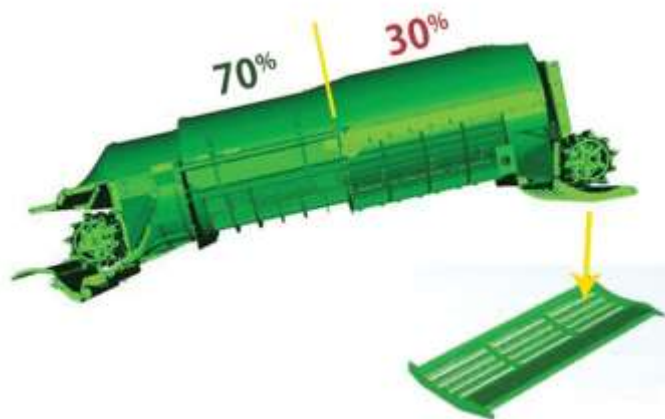
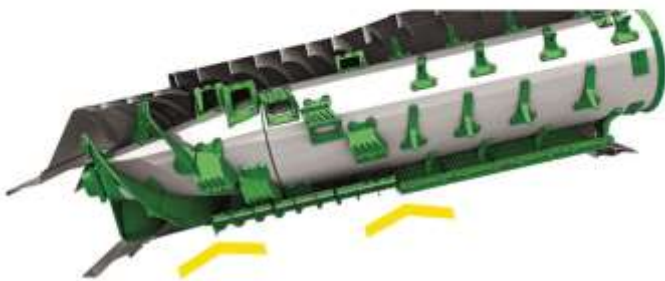
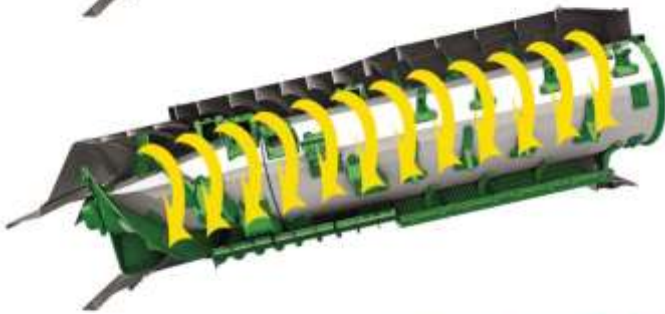
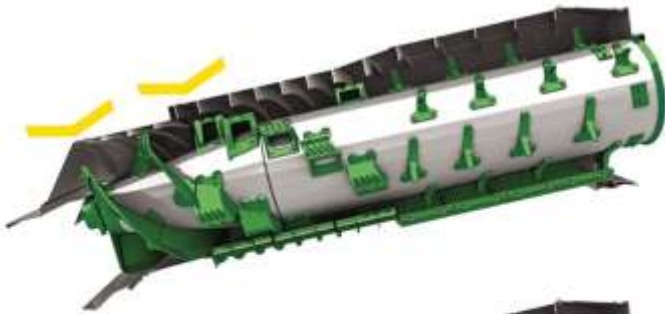


This is the belt routing for the feed accelerator. You will want to set the belt to the slow setting for corn and the fast setting for beans. If you don't change speeds from crop to crop you may slug the feed accelerator or slug feed the rotor and cause it not to thresh and separate as intended, or cause grain damage.

Rotor Feeding Transition

There are three equal feed flights to the rotor. With the head feeding smoothly and the feed accelerator set how it should all the parts should fill evenly.

The crop will go around the rotor 12 times before it reaches the discharge beater.



Threshing

With the crop requiring 12 revolutions to pass through the rotor you may think there is plenty of time for the grain to separate and thresh. In reality, 100% of the threshing and 70% of the separation should take place in the first 3/4 foot of the rotor. The rest of the rotor is used for final separation. You can inspect this by doing a power shut down and taking the side covers off the rotor.

Separation

Beyond the rotor there is one more chance for grain to be caught. The combine is able to catch grain as MOG (material other than grain) goes through the discharge beater, but you never want to rely solely on the discharge beater to do the separating. If you observe separator loss, you will need to make adjustments.

Separator Grate Bushings

Separator grate bushings should be installed like this when harvesting corn and soybeans, because it will help to reduce the bits of cob that enter the grain tank and will help minimize separator loss.



Threshing Clearance

This diagram shows threshing clearance in relation to how it can affect the grain quality and the thru put.



Rotor RPM

This diagram shows the relationship of rotor speed to grain quality, trash in the cleaning system and how it can affect fuel consumption.



Ground Speed

You have to take the ground speed into account when you set the combine. As ground speed is increased, you may have to open the rotor and speed it up to meet the increased amount of crop entering the combine.



Change Separator Range

The STS combines have a 2 speed separator drive. Range 1 runs 210-550 RPM and Range 2 runs 380-1000 RPM. There is also a neutral position so you can inspect the rotor if needed. When you shift from one range to the next it is a good idea to turn the rotor drive sheave to make sure it is fully in gear. It is also a good idea to speed and slow the rotor fully once a day to ensure that there is always a good layer of grease on the rotor drive sheave cams.



Beyond the discharge beater is the chopper diverter. For corn, move the handle to the “corn” or “up” position and for beans move the handle to the “small grain” or “low” position.

Note : Harvesting corn on the small grain setting will damage chaffer beyond repair.

The “One” position is used for beans, as it is the fast setting. The “Two” position is used for corn, as it is the slower setting. On 50-60 series combines you will be required to move the chopper idler arm to change belts. On 70 series combines you will have to raise the chopper to loosen the chopper drive belt.



The chopper speed on a S-series is different from previous STS machines. It is much simpler to change. From low range, which is the slow speed setting, you simply push the T handle into high range, which is the high speed setting.

When you harvest corn always ensure that the knife bank is pulled out. When you harvest beans you can position the knife bank halfway in or all the way in. If halfway in, less power will be required to run the chopper but it may not cut the straw as well.



There are some other adjustments that can be made to your power cast tail board in addition to adjusting speed of the spinners. If you want more residue and still want to spread the full width of the head you can remove the rear filler plates. This will allow more residue to be dispersed in the center of the spread pattern.



One adjustment that can be made to both standard and power cast tail boards is the pitch. Adjusting the pitch of the tail board will affect the width of the pattern. You can modify this by moving the tail board support arm to the different bolt holes.



If you have the standard tail board you can adjust the fins to get the spread pattern you are looking for.

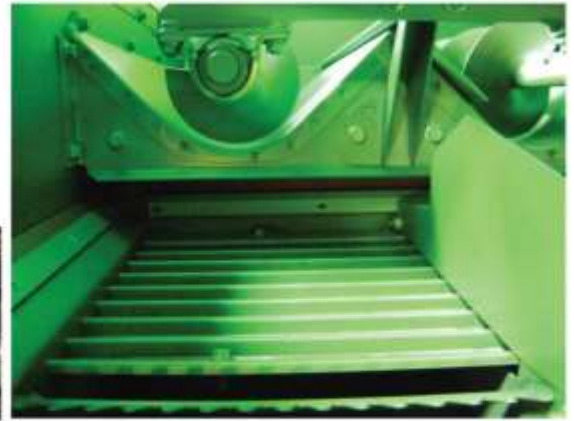


New with the S-series combines are the crop diverter vanes which allow the operator to achieve an even load on the chopper. Simply turn the adjusting screw counterclockwise to move the vanes to the left hand side and clockwise to move the vanes to the right hand side of the machine.

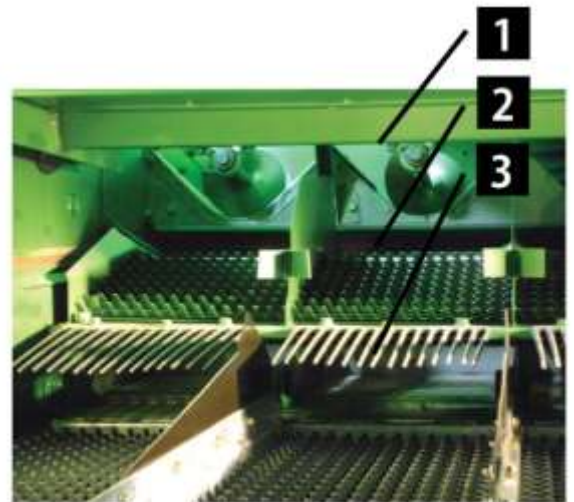


Cleaning Grain

1. The first step takes place in the shoe augers. As the grain is conveyed, it will work its way to the bottom of the auger while the trash will remain on top. This is good because when the grain travels over the precleaner, it can fall through with ease.



2. The next two parts of the cleaning system are non-adjustable. Immediately following the shoe augers is the precleaner. This is the first place the grain and trash will begin to separate. The following area is the precleaner extension which holds the trash off the front of the chaffer so the grain can fall through more effortlessly.



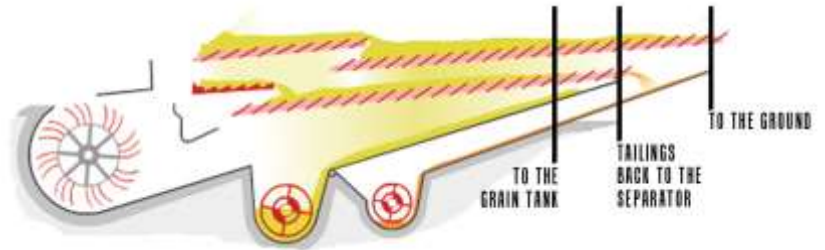
3. The final two parts of the cleaning system are adjustable. One of these is the chaffer. The goal at this point is that most of the grain to be through to the sieve. The last component of the five-part cleaning system is the sieve. This is where the final cleaning takes place. Anything that does not go through the sieve will go through the tailings for further cleaning and separation.





Also new to 2013 and newer S-series machines is the dual adjust chaffer. The front portion may be adjusted by a switch in the cab or by a switch on the side of the machine. The rear portion must be manually adjusted. It is recommended to set the rear portion at 5mm for flat ground and 10mm for hilly conditions. Operators have the option to install a new chaffer in 2012 S-series machines.

This diagram shows the layout of the cleaning system and the three paths the grain can take : Tank, Tailings or Loss.



Tips for Sieve Settings

- The Cleaning System is designed to run wide
- Closing it too far shuts down airflow and causes flow outs (Losses-FM-High Tailings)
- For Sample or Loss Issues, try to correct the issue before it gets to the cleaning system vs. adjusting the cleaning system
- Initiate a visual check of the sieves as opposed to only monitoring the display indicator
- Utilize the tailings as a safety in overflow conditions



Return Auger

All S680 and S690 machines have an active tailings system, in which case the machine has a rethresher to run the tailings through instead of running the tailings back into the rotor. This gives these machines more capacity.

Note : The return auger on these machines is located under the rotor and drops the grain onto the return pan to get run back through the cleaning system. Active tailings systems have two settings: a small grains setting and a corn setting. For this area you want to keep it on the corn setting for both corn and soybeans.

Here is an example of an instance where a farmer was having problems with trash in the grain tank and how the grain sample improved as adjustments were made.

Combine Settings Example : 2013 Crop Season

180 bu. Corn at 16% Moisture

- Trash in Tank
- High Tailings
- Chaffer Loss above 4.3 mph

Operator had slowed the rotor, opened the concave and closed the sieves, but he could not improve the sample.

Rotor Speed :	250 rpm
Concave :	38 mm
Fan Speed :	1000 rpm
Chaffer :	17 mm
Shoe :	11 mm



1



2



3



We first adjusted the deck plates, moving them closer, and increased the head speed. This gave us the ability to pull the stalk through without having it break off and pass through the combine. This solution meant it would take less to clean the crop coming in. Many times adjustments up front on the header and feederhouse can have a big impact on the grain tank and what is coming out the back.

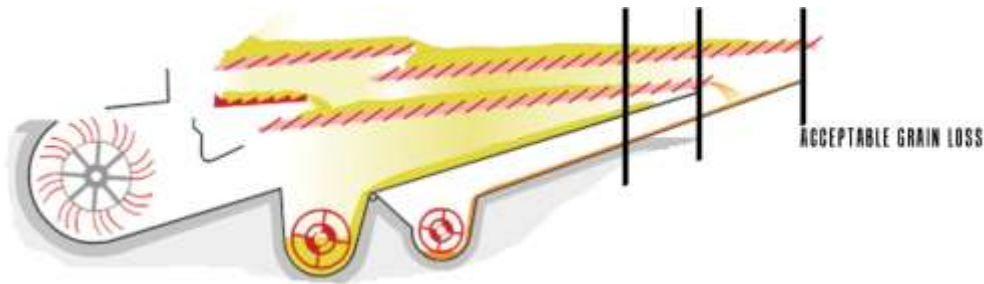
This is what the sample looked like after we made the changes to the corn head, but we still needed to get the cob pieces out of the grain tank.

The final fix was to close the concave and then increase the rotor speed. This is what the final sample looked like.

In conclusion, the crop had been bunching in the rotor and causing over-threshing. There was not good crop engagement. We got the capacity back and we could increase ground speed and still maintain a good grain tank sample.



Some things that can be done on the threshing end of the rotor to optimize grain quality and throughput include leveling the concave and concave inserts and maintaining the right rotor speed for the crop as well as the right concave clearance.



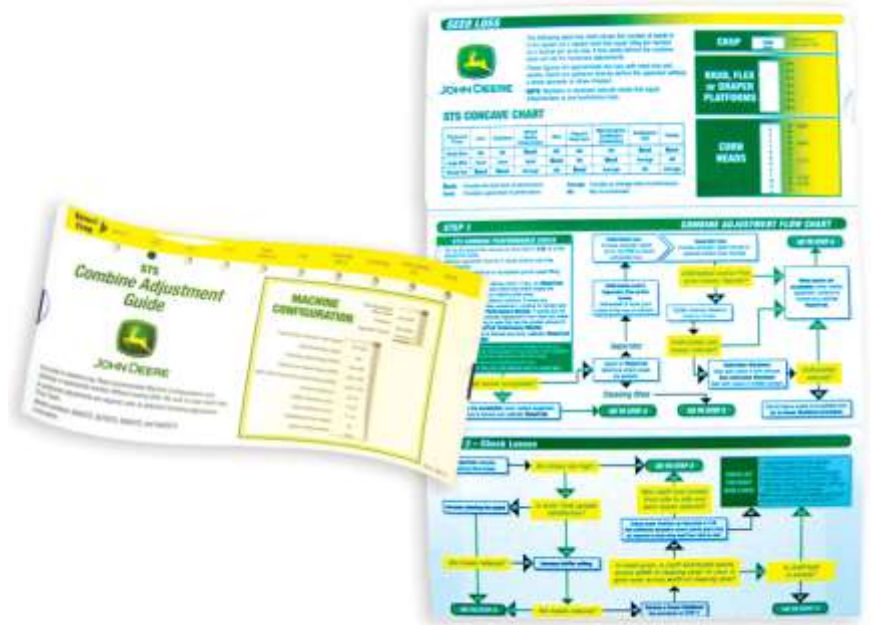
When you check for grain loss you need to lift up the chopper and run the combine for 100 ft or so. Then look for grain loss in just the width of the separator. Any loss outside of that would be header loss.

RAISE THE CHOPPER AND MEASURE THE WIDTH OF THE SEPARATOR.



Combine Adjustments

The operator must determine if the amount of seed loss occurring is acceptable. If further adjustments are needed, follow the steps below. Make only one adjustment at a time, as more than one adjustment can create further seed loss, or create an unacceptable grain tank sample.



Zero Calibrate Machine

At the start of the season it is a good idea to do a zero cal on the concaves, chaffer and sieves. This way the readings in the cab will be as accurate as possible. Combines must be dirt and cob free.

Enter Factory Settings

You can either use last year's settings or refer to the combine adjustment guide. (above)