

Variable Speed Drive Checks

ISSUE CHANGES –

ISSUE	DATE	CHANGES
1	09.02.23	TECHNICAL SERVICE BULLETIN CREATED
2	18.08.23	ADDITION OF REAR PULLEY HUB WEAR CHECK



Refer to Operators Manual for Safety Procedures

Shelbourne Reynolds recommends that it is good practice to thoroughly check over a Stripper Header prior to harvest in order to maximise the machines efficiency and avoid any potentially disruptive and inconvenient down time during harvest.



Wearing items including bearings and drive belt on the variable speed rotor drive system and slip clutch plates on the chain drive auger system in particular should be checked over using the following information both before harvest and regularly during harvest in order to reduce the potential damage to the machine and possible risk of fire.

This bulletin provides simple guidance on the following important safety & maintenance checks:

- Rear pulley cam bearing condition
- Rear pulley hub wear
- Rear pulley wear bushes and pins
- Gearbox oil
- Auger chain drive
- Auger slip clutch
- Front pulley cam follower bearings
- Variable speed belt
- Build up of crop material

All information in this Technical Service Bulletin is also contained in a video, scan this QR code to access.



Variable Speed Drive Checks

Check variable speed cam bearings

These bearings are located between the rear variable speed pulley assembly and the gearbox.

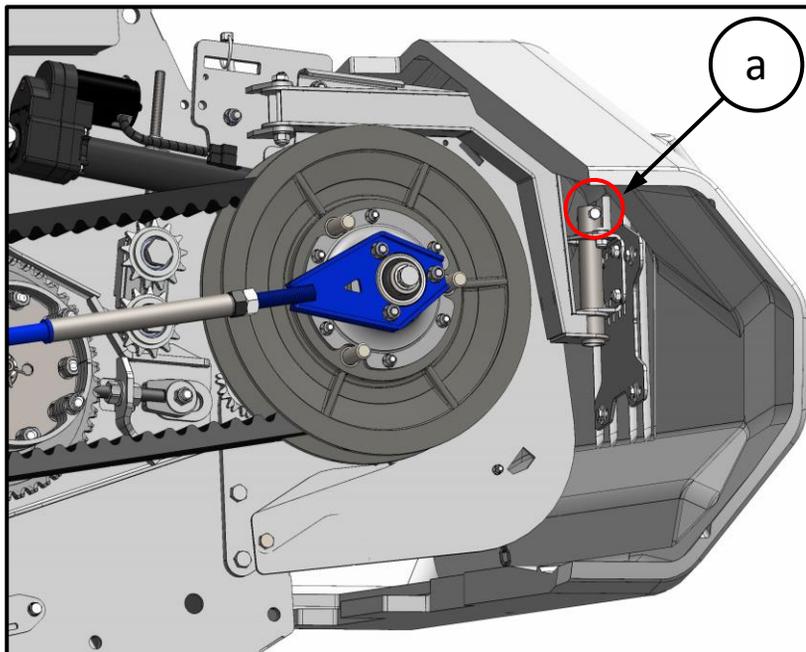
1. Run the rotor up to full speed, pressing the “+” button on the Shelbourne monitor, so that the rear pulley is fully closed.



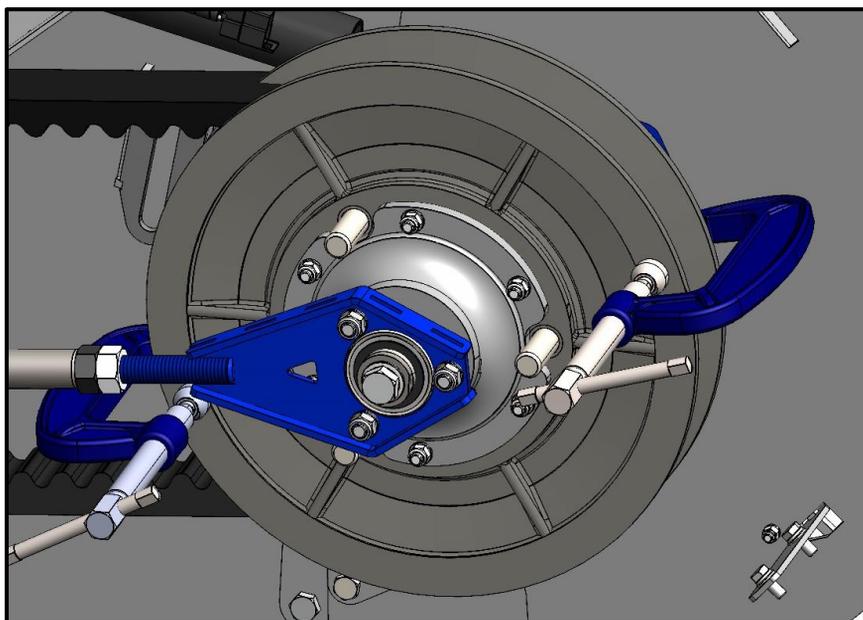
Stop the machine and implement the safe stop procedure

2. Open and remove drive guard fully from the machine for best access by removing the fastener (a) then lift and slide the guard off the arm w/a.

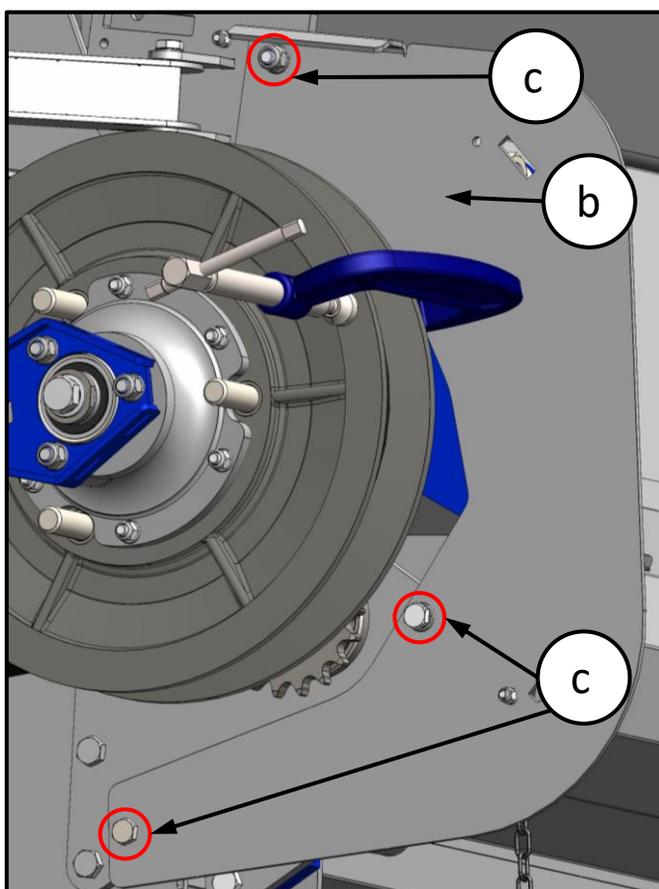
Note the guard shown is for 2018 and on headers, earlier headers used a different systems.



Variable Speed Drive Checks

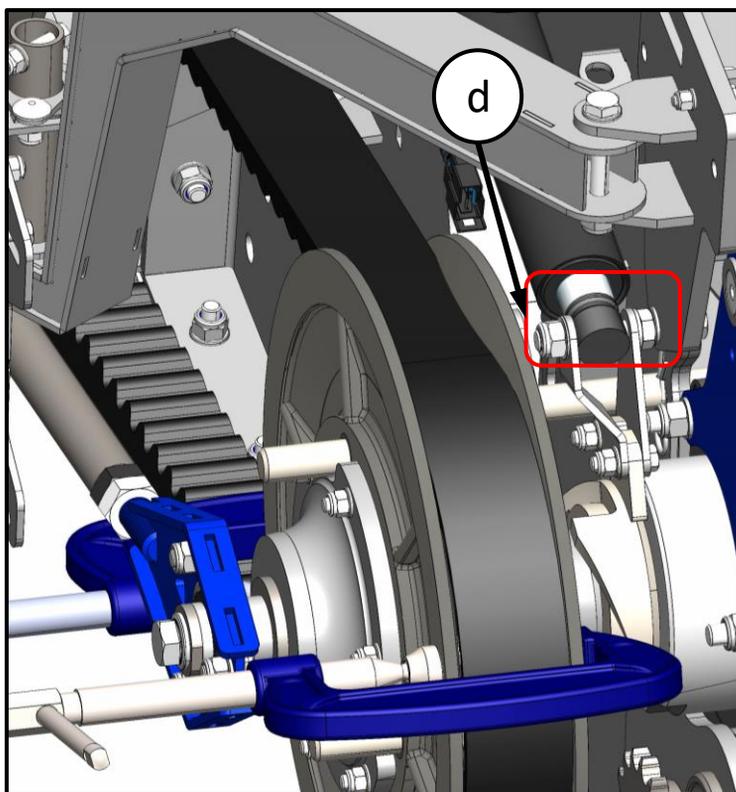


3. Attach two G-clamps to either side of the pulley (ensure not to over tighten the clamps, they are only to hold the rear pulley from opening itself under the belt tension).



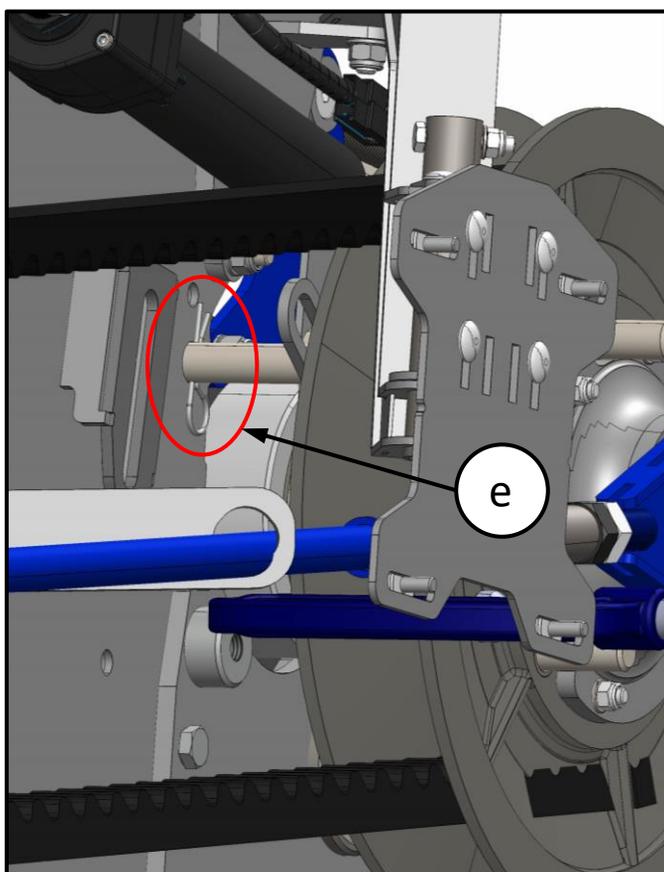
4. Remove, the guard mounting plate (b) by removing fasteners (c)

Variable Speed Drive Checks



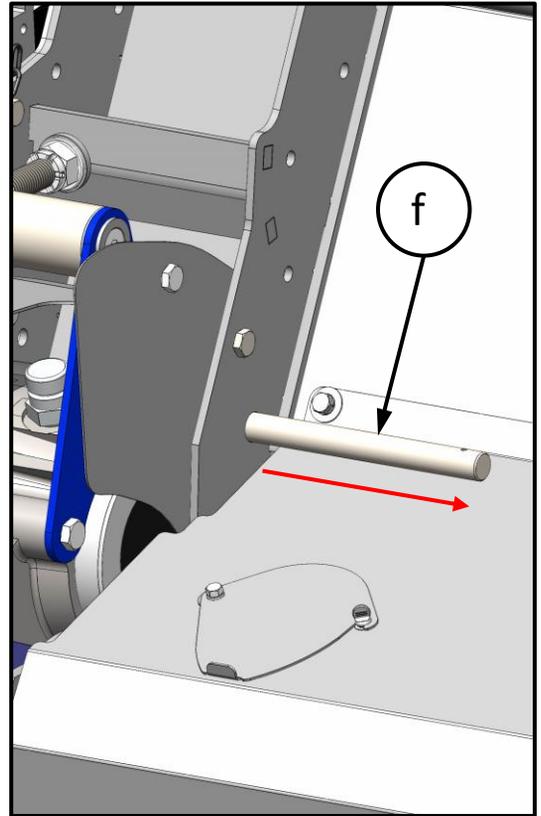
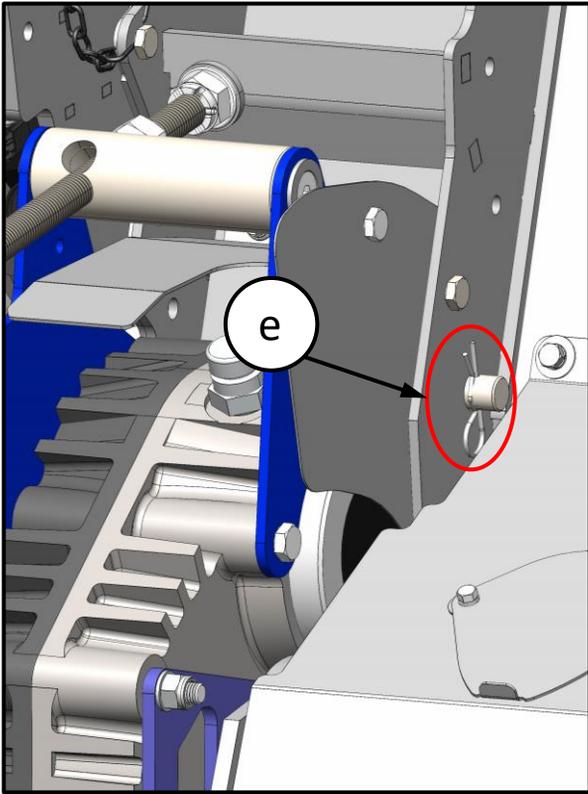
5. Without running the Header, Press the “-” button on the Shelbourne monitor to retract the linear actuator sufficiently to remove fastener (d)

6. With the fastener (d) removed, the actuator can be tied up out of the way and the actuator cam assembly is now free to rotate within approximately 120° of rotation.

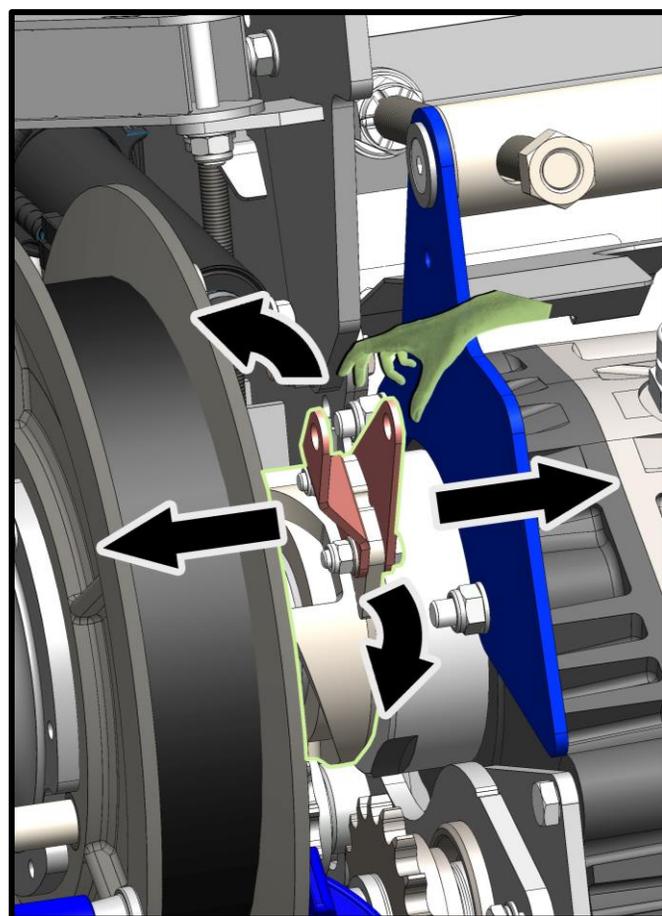
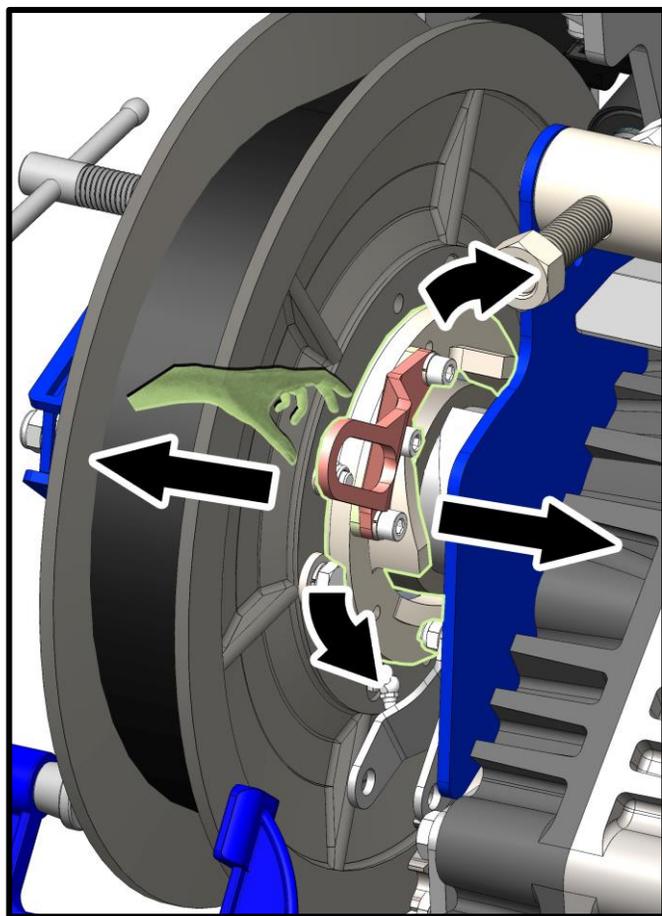


7. To free the static cam, remove R-clips (e) either side of the cam retaining bar and slide bar (f) out so that the static cam on the pulley is free to rotate. – **SEE IMAGES ON THE NEXT PAGE ALSO.**

Variable Speed Drive Checks



Variable Speed Drive Checks



8. At this stage both cams are free to rotate to check for smooth rotation and wear in the bearings.

Check bearings for radial movement as well as any side shift movement, if the bearings run rough or there is side movement then contact your dealer to replace them immediately.



If failed bearings are not changed it may cause potential damage to the machine and possible risk of fire.

To re-assemble repeat steps in reverse order, close guard and run the machine through its speed range on the Shelbourne monitor before working.

Variable Speed Drive Checks

Check Rear Pulley Hub Wear

This process must be carried out prior / during variable speed pulley bearing replacement.

Two methods are shown, on the machine and pulleys removed.

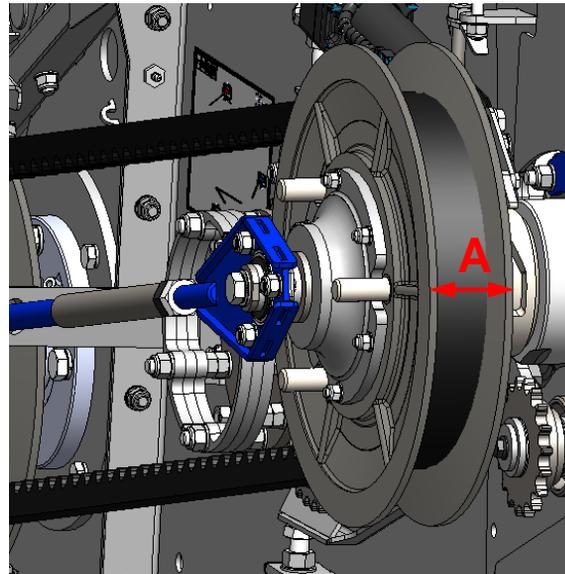
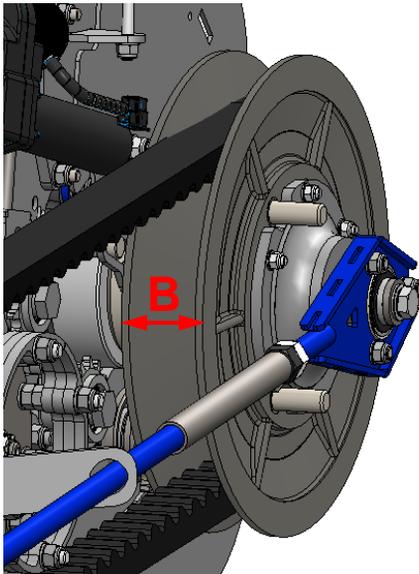
Method 1: Pulley fully functioning on machine

1. Run the Stripping Rotor to your typical operating speed (Combine at full revs).

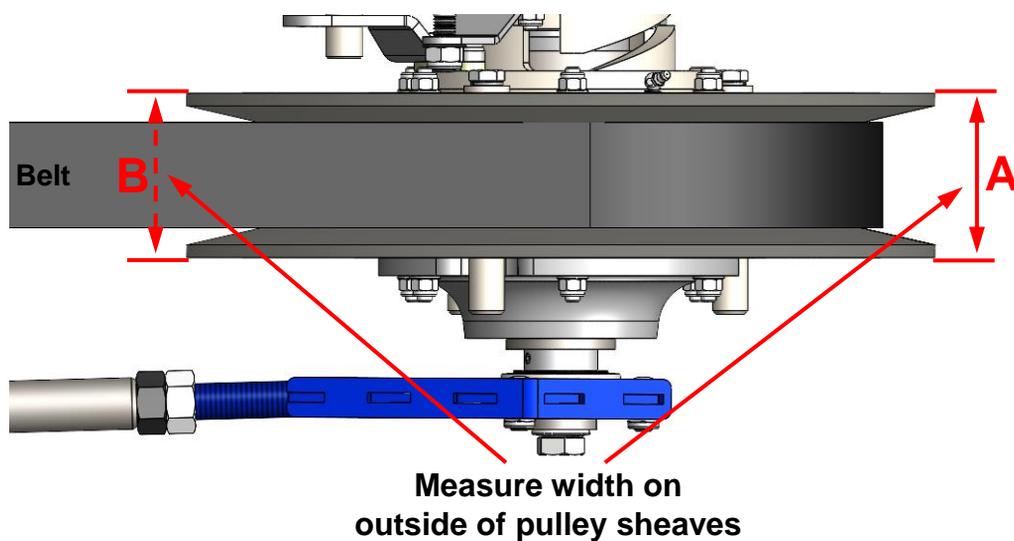


Stop the machine and implement the safe stop procedure

2. Open drive guard fully or remove from the machine for best access.
3. Record measurements (using table on page 3) from rear (A) and front (B) of pulley as shown.



Variable Speed Drive Checks



4. Close guard, run header and increase rotor speed by a 50rpm increment (Combine at full revs) using the “+” button on the Shelbourne monitor.



Stop the machine and implement the safe stop procedure

5. Repeat steps 2 and 3.
6. Close guard, run header and reduce rotor speed to 50rpm less than your typical operating speed (Combine at full revs) using the “-” button on the Shelbourne monitor.
7. Repeat steps 2 and 3.

Measurement	A	B	Variation (A-B)
Example	79mm or 3.110”	78mm or 3.070”	1mm or 0.040”
Typical Rotor Operating Speed: _____rpm			
+ 50rpm			
- 50rpm			

Variable Speed Drive Checks

If pulley width variation is measured at greater than 2mm or 0.080" (5/64") at any speed, it is recommended the pulley hubs are replaced.

Replacement pulley assembly: KIT-01463



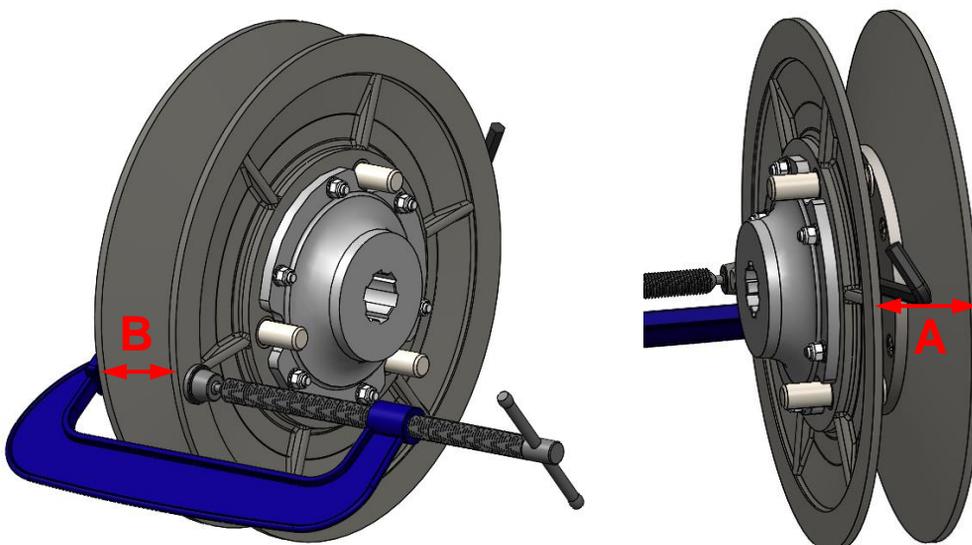
Excessive variable speed pulley hub wear can lead to premature cam bearings failure and may cause potential damage to the machine and possible risk of fire.

Method 2: Pulley removed from machine / disassembled

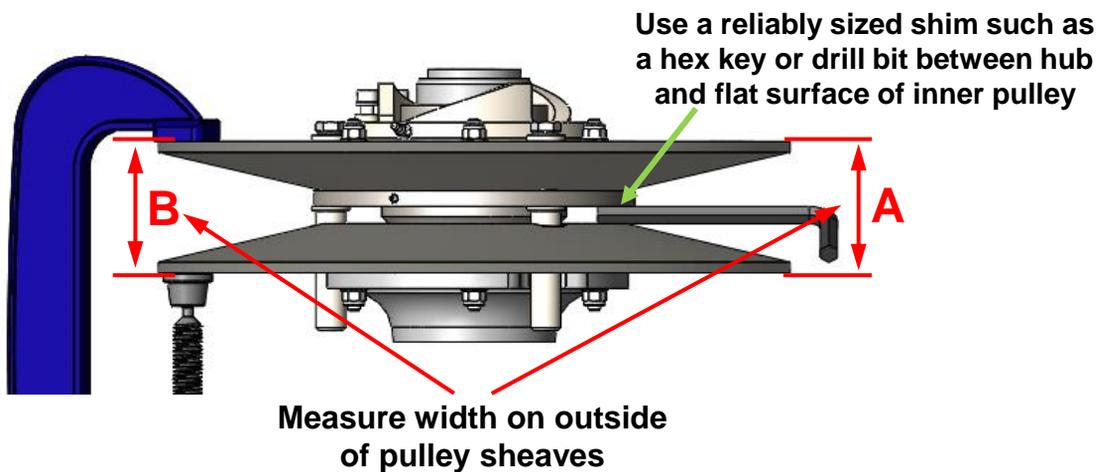


Stop the machine and implement the safe stop procedure

1. Remove rear pulley assembly from the machine.
2. Using a clamp and appropriate size shim (listed in results table on page 5). Position clamp and shim as shown in diagram below. Apply light tension to clamp. Do NOT overtighten.



Variable Speed Drive Checks



3. Take measurements at 'A' and 'B' as shown in diagram. Record results in table below.
4. Repeat steps 2 & 3 for the three shim sizes. Calculate and record Variation.

Shim Size	A	B	Variation (A-B)
Example	79mm or 3.110"	78mm or 3.070"	1mm or 0.040"
6.5mm - 1/4"			
11mm - 7/16"			
14mm - 9/16"			

If pulley width variation is measured at greater than 2mm or 0.080" (5/64") at any shim size, it is recommended the pulley hubs are replaced.

Replacement pulley assembly: KIT-01463



Excessive variable speed pulley hub wear can lead to premature cam bearings failure and may cause potential damage to the machine and possible risk of fire.

Variable Speed Drive Checks

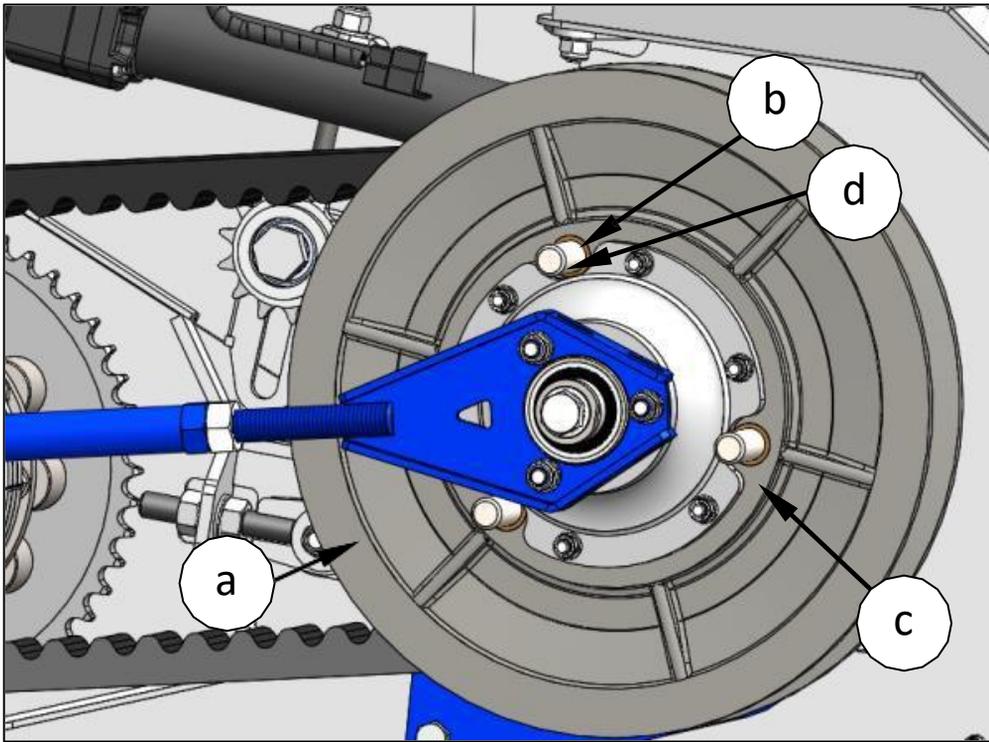
Check pulley bushes and pins for wear

The wear bushes and pins in the gearbox pulley should be regularly inspected for wear.

Run the machine at idle and speed up the rotor speed to maximum using the monitor, (see Section 8.1.4). This will fully close the gearbox pulley sheaves (a).



Stop the machine and implement the safe stop procedure



Inspect the three wear bushes (b). They should be replaced before the pulley sheave (c) begins to wear. Inspect pulley pins (d) for excessive wear.

To replace bushes and pins the gearbox pulley will need to be removed and stripped, contact your Shelbourne dealer



Replace all guards

Variable Speed Drive Checks

Check Gearbox Oil Level

The gearbox oil level should be checked daily. There are two versions of the gearbox with the sight glass and drain plug in different positions.

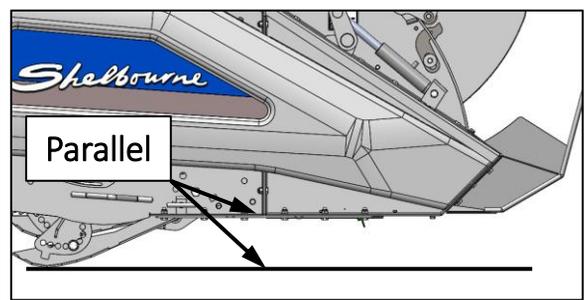
NOTE: Only use fully synthetic gear oil, grade SAE 75W-90. Change oil annually.



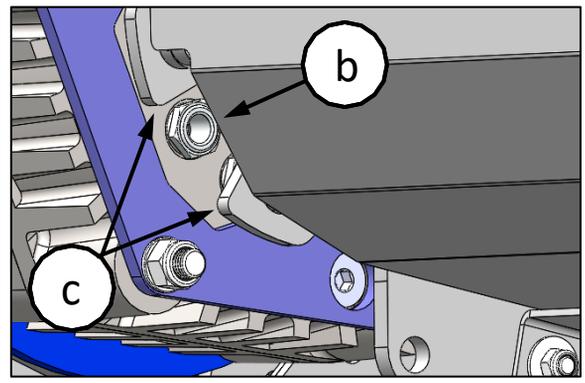
Stop the machine and implement the safe stop procedure

Side position sight glass & drain plug gearbox

Check the oil with the Stripper Header lowered near the ground with the machine side plate parallel to the ground. In this position, the sight glass should be at least half covered in oil. If no oil is visible fill until the sight glass is just covered.

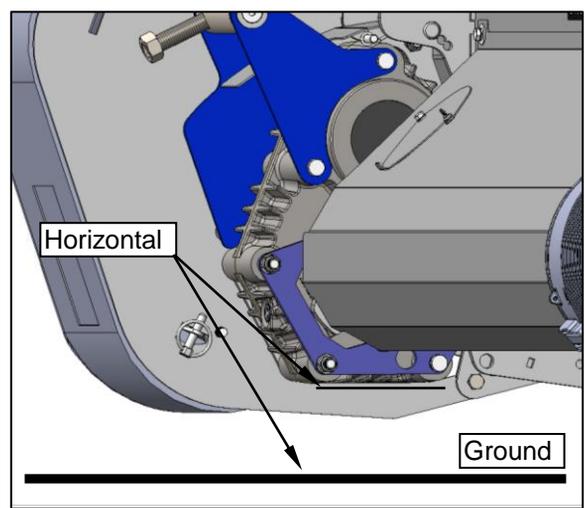


View the oil level in the sight glass (b) that is most visible through the viewing area (c).



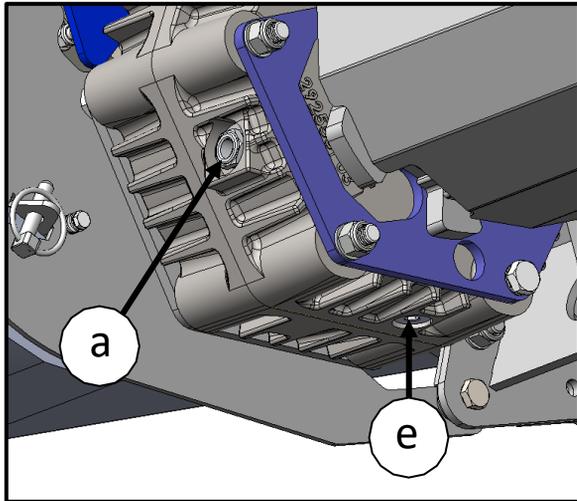
Rear position sight glass & bottom drain plug gearbox

To check the oil level the bottom face of the gearbox needs to be horizontal to the ground. This can be simply done when the Stripper Header is fitted to a combine by raising or lowering the feeder house as required.



Variable Speed Drive Checks

Rear position sight glass & bottom drain plug gearbox

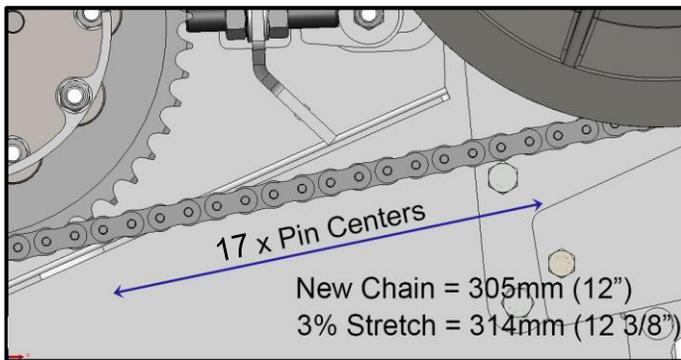


In this position, the sight glass (a) should be at least half covered in oil. If no oil is visible fill until the sight glass is just covered.

Check Auger Chain Drive

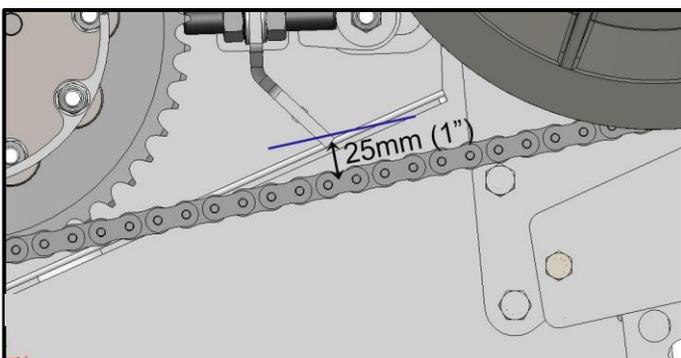


Stop the machine and implement the safe stop procedure



Chain stretch

The chain should be replaced once the length has increased by 3%. This can be calculated by measuring the chain when taught between 17 pin centres. New chain would measure 305mm (12") and 3% stretch 314mm (12 3/8")



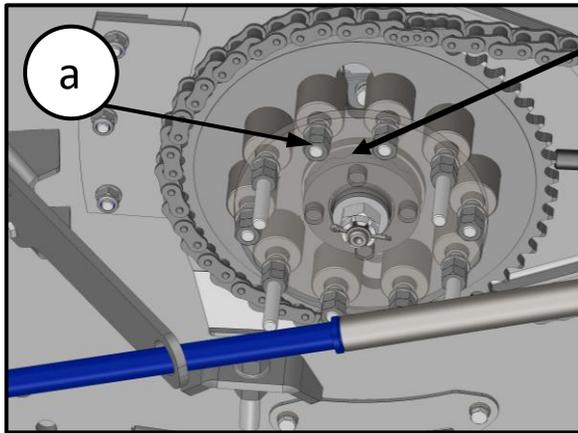
Chain tensioning

To adjust the tension, slightly loosen the idler spindle, then turn the nut on the adjusting stud to raise the idler sprocket to correctly tension chain giving 25mm (1") of movement by hand on the lower span between the auger & drive sprocket.

Ensure chain is not over tensioned when finally tightening idler spindle.

Variable Speed Drive Checks

Check Auger Slip Clutch



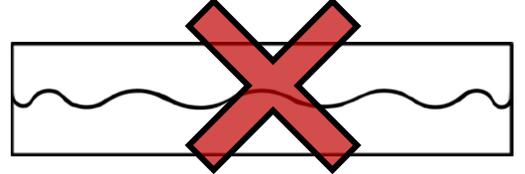
Check fasteners (a) are tight

Check the condition of Auger slip clutch plates.

OK



REPLACE

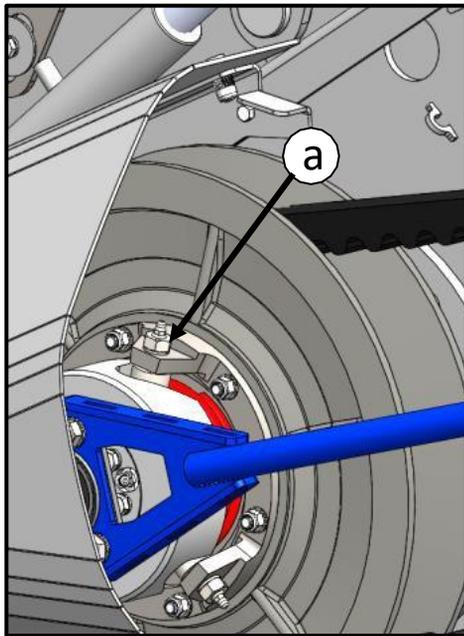


If replacing, also check the bronze thrust washer and replace it if worn thin.



If the auger slip clutch is allowed to continually slip then it may cause potential damage to the machine and possible risk of fire.

Front pulley cam follower bearings



Stop the machine and implement the safe stop procedure

Check all 3 cam follower bearings condition and ensure the locking nuts (a) are tight

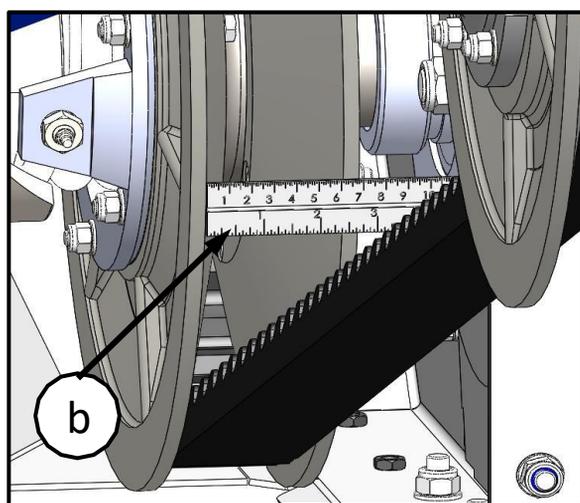
Variable Speed Drive Checks

Check Variable Speed Pulley Settings

Run the header and slow the variable speed drive all the way down by pressing the “-” button on the Shelbourne monitor.



Stop the machine and implement the safe stop procedure



Open the left-hand drive guard and measure the gap between the rotor pulley sheaves (b) This should measure 61mm (2 13/32”).

To achieve the correct gap the gearbox pulley will need to be moved by pivoting the gearbox . If the front pulley gap is greater than 61mm the gearbox will need to be rocked forward, if it is less than 61mm the gearbox and rear pulley will need to be rocked back

See the operator's manual , section 9.3.1, for a full description.

Inspect the belt for signs of wear and cracking.

Prevent the Build Up of Crop Material



It is recommended to clean out crop material from the left hand drive guard, the fixed corner guard and around the gearbox daily, to avoid potential damage to the machine and possible risk of fire.