

Massey Ferguson®

9186 Rotary Disc Header

SERVICE MANUAL 4283484M1

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DRIVES

BELT REPLACEMENTS

General Information

Banded Drive Belt

FIG. 1: A banded drive belt is made of two or more V-belts (of a standard cross section size) banded together at the top with a tie band (1). The V-belts and the tie band are vulcanized together to form a multiple strand banded belt.

The cross section and spacing of the strands are such that the banded belt operates on standard sheaves.

The tie band clears the top of the sheaves so that each belt strand has full wedging capacity in the sheave grooves, just as a single belt. The banded belt operates at the same tension as matched belts on an regular multiple strand V-belt drive.

Most V-belt drives operate without any problem, requiring only regular maintenance. There are times where forces acting on the drive can cause belts to whip, turn over, or come off the sheaves. The banded belt was designed to correct these belt stability problems which are most frequently caused by intermittent or shock loading of the drive.

Banded belts have standard dimensions and cross section sizes and are made to order, with the number of strands being determined by the power needs of the drive. Spacing between the strands of the belt are the same as the Rubber Manufacturers Association (RMA) standard spacing for multiple groove sheaves.

NOTE: Never pry off a belt, as the sheave can be damaged. Prying off belts also adds risk of injury.

Installation

FIG. 2: Order a new belt by the part number, not by measuring the old belt.

Time must be taken to make sure the selection of the proper size belts for the different sheaves is correct.

(A) Indicates the wrong belt installed.

(B) Indicates the correct belt installed.

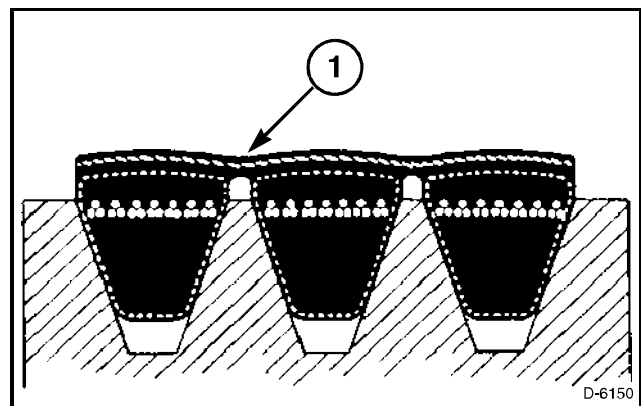


FIG. 1

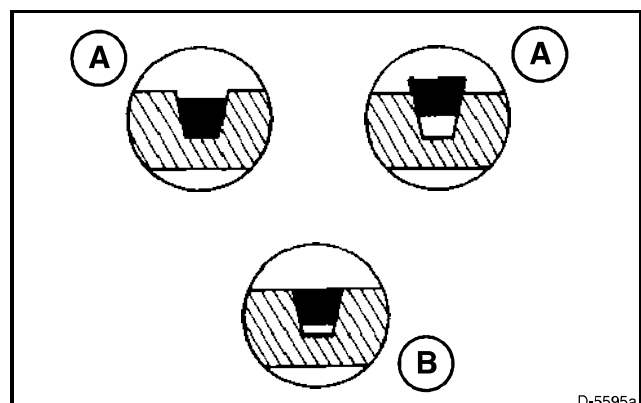


FIG. 2

Drives

FIG. 3: Replace all belts on multiple belt drives. Never replace a single belt or part of a multiple belt drive. If a new belt is used with old belts, the load will not be divided evenly between the belts. Mixing new and old belts can lead to early belt failure and not even sheave wear.

(A) Indicates a new belt position.

(B) Indicates a used belt position.

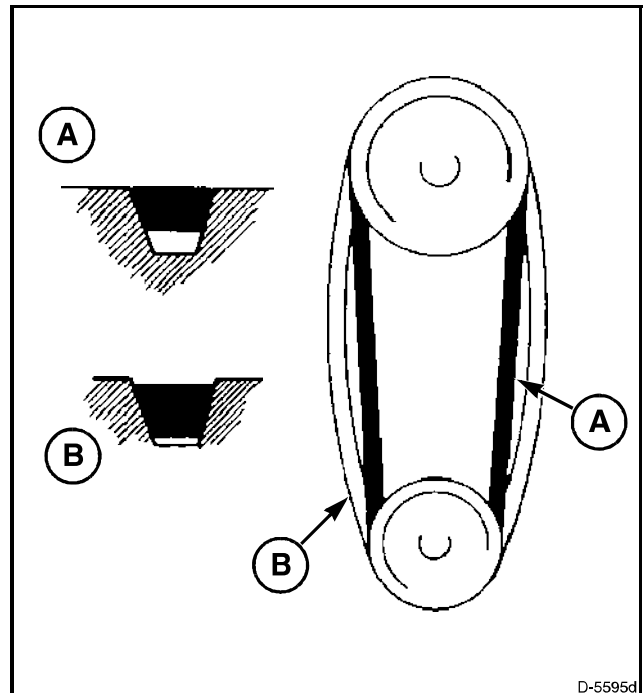


FIG. 3

FIG. 4: When replacing a belt, never force a belt over the rim of a pulley. Do not pry or use force to install the belt (A). This can break the cords in the belt. Loosen the tensioner before installing the new belt. If the belt still can not be easily installed, run the belt over the rim while rotating the pulley (B).

Tighten the belts making sure the belts are at the correct tension. More belts are damaged by not enough tension than by too much tension. But, do not over tension the belt as this damages the belt tensile members and puts an additional load on the shafts and bearings.

Rotate the belt drive three revolutions. Check the belt tension and adjust as necessary.

Check the drive alignment and adjust as necessary.

Install the guards or shields.

Start the drive, looking and listening for any not normal noise or vibration. If possible, stop the drive and check the bearings and sheaves for excessive heat. If the bearings and sheaves are too hot the belt tension can be too high or the bearings are not properly lubricated or failing. Temperature can be checked with an infrared pyrometer.

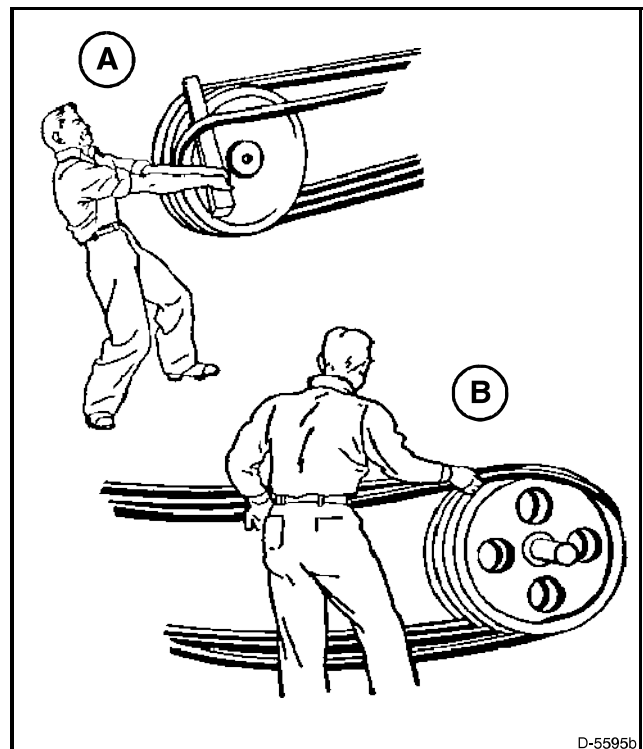


FIG. 4

Belt Sheave Alignment

FIG. 5: Check the sheave and shaft alignment. Running the belts with the sheaves out of alignment will cause severe side wear.

Not aligned belt drives will be louder than properly aligned drives since interference is where the belts engage the sheave.

To check the alignment use a long straight edge (1) made of wood, metal, or any rigid material. Line the straight edge along the outside face of both sheaves. If the drive is properly aligned, the straight edge will contact each sheave evenly. The straight edge must touch the two outer edges of each sheave for a total of four points of contact.

Shafts not in alignment (C) will show up as a gap (2) between the outside face of the sheave and the straight edge.

Check for tilting or shafts not aligned by using a bubble level. For proper alignment, the bubble must be in the same position as measured on each shaft.

Not aligned correctly Parallel (A).

Not aligned correctly Angular (B).

Rotate the drive and look for excessive sheave movement. If excessive sheave movement is seen inspect the sheave and shaft. If no problem can be seen, remove and install the sheave. Not correctly mounted sheaves or out of round sheaves are some times the root of vibration or more severe problems. A dial indicator can be used to measure side to side sheave movement or diameter vibration by holding the dial indicator up to the sheave sidewall or the top of the belt inside the pulley groove.

IMPORTANT: Always turn off the machine before using the dial indicator. Rotate the drive by hand to make measurements.

Belt Run In Procedure

A run in procedure is needed for all belt drives so that the best belt life can be reached.

A run in procedure is made of starting the drive and operating the drive under full load for up to 24 hours. After the belts have run-in, stop the drive and check the belt tension.

Running the belts under full load for an extended period of time will seat the belts into the sheave grooves.

Belt tension will drop after the first run-in and seating procedure. This is normal. Adjust the belt tension as necessary.

Since tension in belts will drop after the first run-in and seating procedure, failure to check and tension the belt will result in low belt tension and belt slippage. This slippage will result in early belt failure.

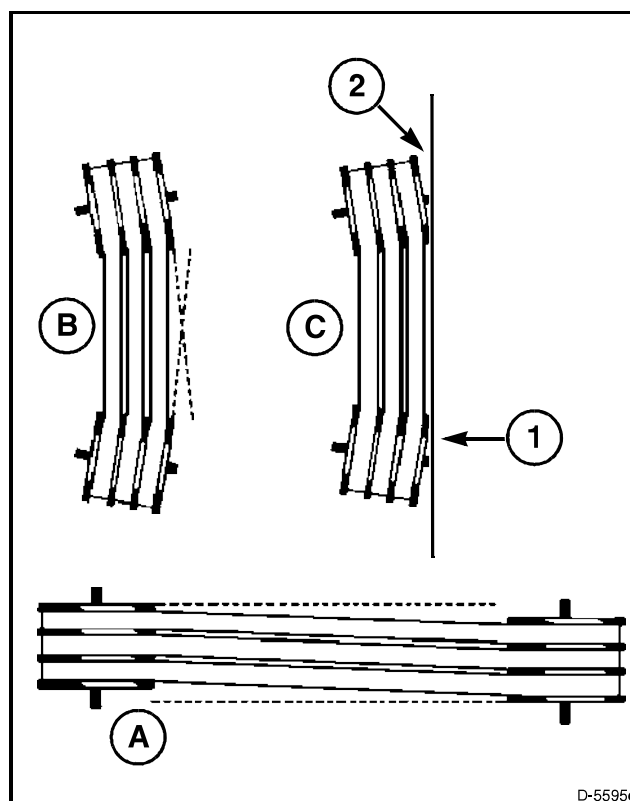


FIG. 5

Drives

Helper Roll Drive

Replacement

FIG. 6: The helper roll drive belts (1) are located on the right-hand side of the header.

Loosen the tensioner nut (2).

Loosen the tensioner adjustment nut (3) until the tensioner pulley (4) is to the end of the slot in the idler support.

Remove the helper roll drive belts.

To install the new drive belts, loosen the tensioner bolt or remove the tensioner if there is not enough room to install the helper roll drive belts.

Tighten the hardware attaching the tensioner only enough to remove the slack. Do not tighten the hardware attaching the tensioner until the belt tension is adjusted.

Adjustment

FIG. 7: Check the tension of the helper roll drive belts (1) between the drive pulley (2) on the lower hay conditioner roll, and the helper roll pulley (3). The tension is correct when there is 3 mm (0.12 in) deflection at mid span with 14 N (3.1 lb) of force.

To adjust the tension, loosen the tensioner nut (4). Tighten the tensioner strap nut (5) to move the position of the tensioner. When the tension on the helper roll drive belts is correct, tighten the tensioner nut.

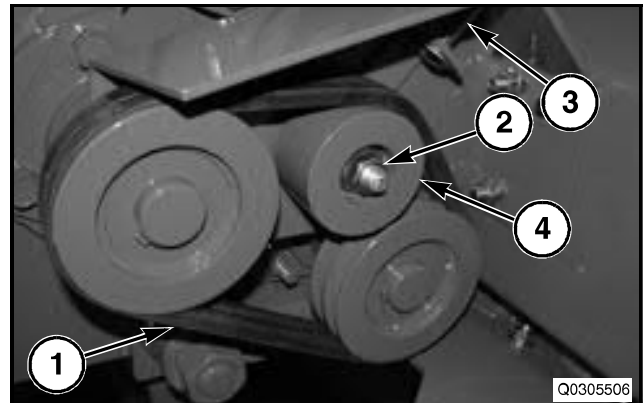


FIG. 6

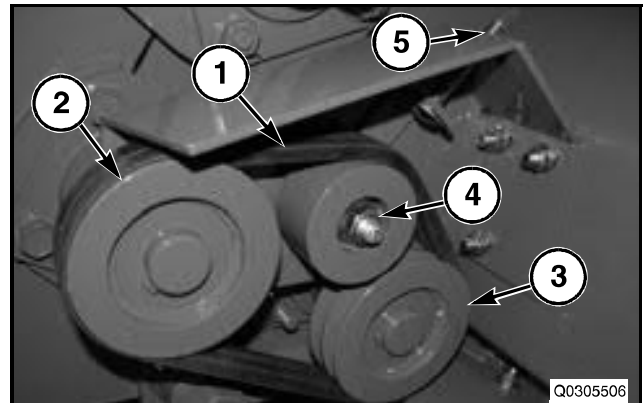


FIG. 7

Left-Hand Drive Belt

General Information

The removal and installation process for the left-hand side of the machine is the same for the left-hand side of the double conditioner machine.

NOTE: Never pry off a belt, as the sheave can be damaged. Prying off belts also adds risk of injury.

Removal

FIG. 8: Open the left-hand shield.

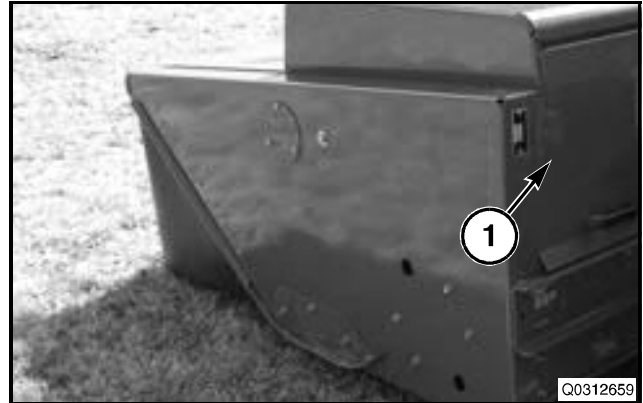


FIG. 8

FIG. 9: Count the quantity of the washers (1) on the pivot bolt (2).

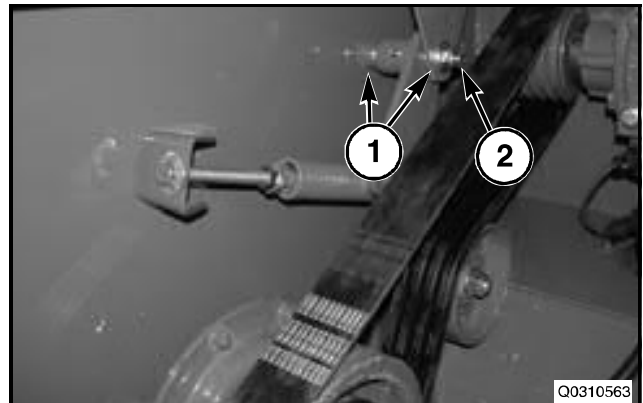


FIG. 9

FIG. 10: Hold the spring plug (1) and loosen the jam nut (2).

Loosen the adjustment bolt (3) to decrease the tension on the belt (4).

Remove the tensioner pulley (5) from the arm.

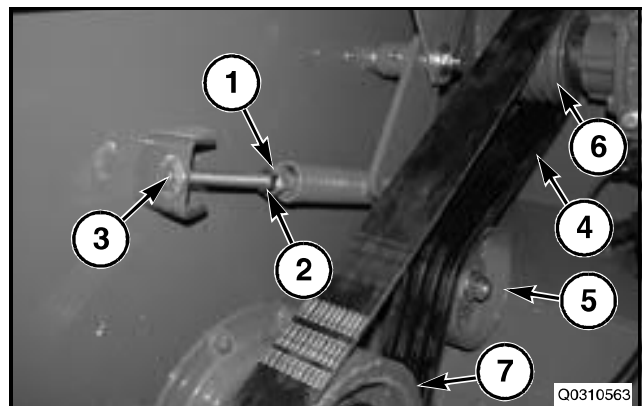


FIG. 10

Drives

FIG. 11: To expose the drive and the driven sheaves, remove the three washer head screws (1) retaining the cover plate (2).

Remove the cover plate.

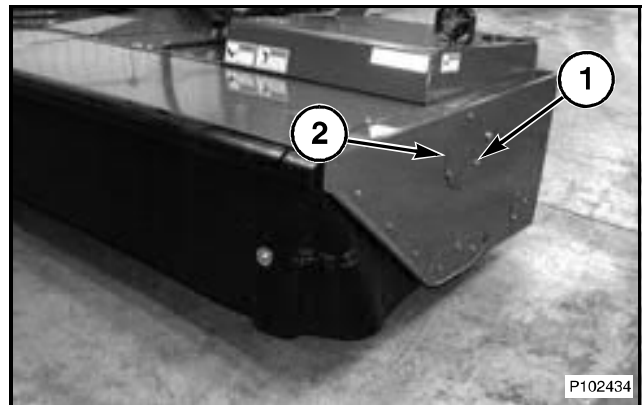


FIG. 11

FIG. 12: Move the belt on the gearbox header drive sheave (1) one rib at a time toward the side panel (2).

NOTE: Never pry off a belt, as the sheave can be damaged.

Twist the backside of the belt and remove the belt from the drive sheave using the hole in the side panel for clearance.

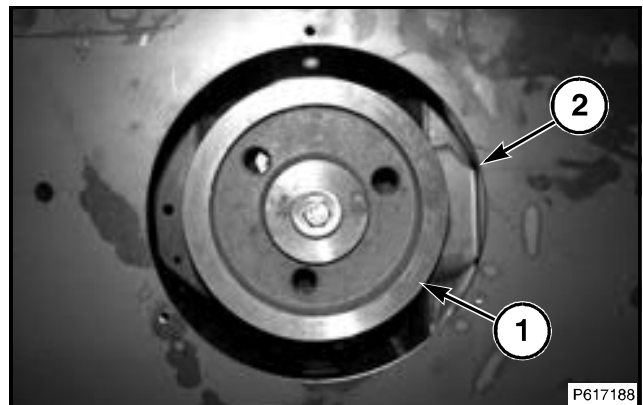


FIG. 12

FIG. 13: Remove the four bolts (1) and washers from the timing flange (2) on the yoke of the top hay conditioner roll drive shaft. Slide the yoke off the gearcase shaft.

If necessary, rotate the clamp yoke (3) on the lower hay conditioner roll drive.

NOTE: This will provide a gap between the clamp yoke and gearcase sheave to remove and install the belt.

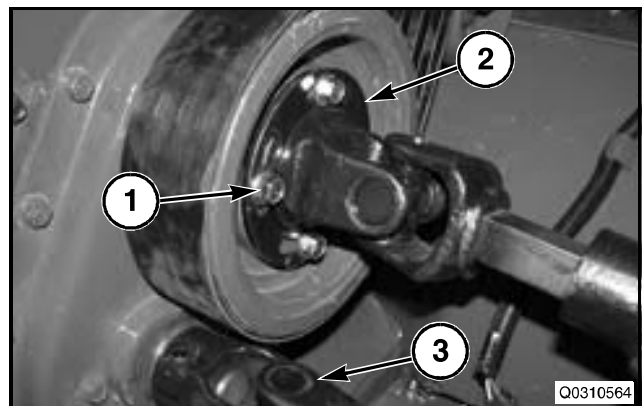


FIG. 13

FIG. 14: Move the belt (1) on the gearcase sheave (2) one rib at a time toward the center of the machine.

Remove the belt from the gearcase sheave.

Remove the belt from the header.

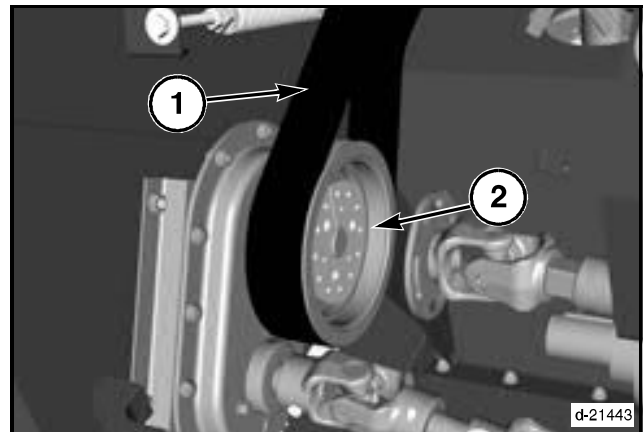


FIG. 14

Inspection

Check belts for excessive wear, tearing, breaking and unraveling.

Belts that are running hot, running in a hot environment, or from slipping will harden and form cracks from the bottom of the belt up.

Inspect for oil or grease leaking on the drive. This can indicate over lubricated parts or a fluid leak. If this material gets on rubber belts, the belts can increase in size and become distorted, causing an early belt failure.

Belts must be replaced if there are signs of cracking, fraying, or not normal wear.

Inspect the old belt for any not normal wear. Excessive or not normal wear can indicate problems with the drive or past maintenance procedures.

Inspect the sheaves for not normal or excessive wear, damage, distortion, and pitting. If surfaces show pitting or excessive wear, the sheave must be replaced.

Check the sheaves for deposits of dirt and dust in the bottom of the grooves. Clean the sheaves with a damp cloth. Do not sand or scrape the grooves to remove debris.

Check the sheave alignment. For long belt life the sheaves must be aligned properly.

Inspect all parts and replace as needed.

Drives

Installation

FIG. 15: Put the new belt (1) into position in the header.

Install the new belt on the gearcase sheave (2).

Move the belt on the gearcase sheave one rib at a time toward the end of the machine.

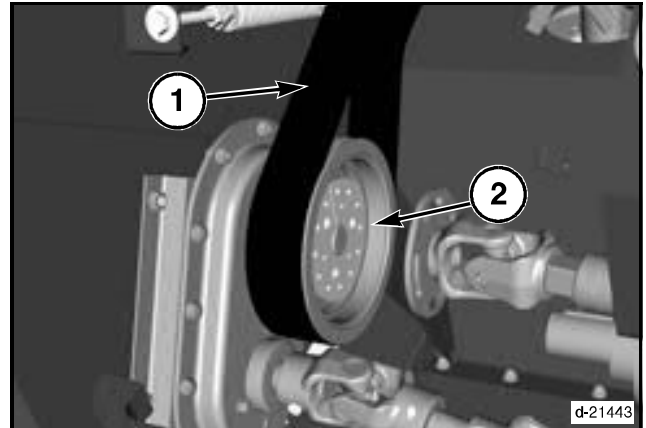


FIG. 15

FIG. 16: Install the opposite end of the belt (1) one rib at a time on the gearbox sheave (2).

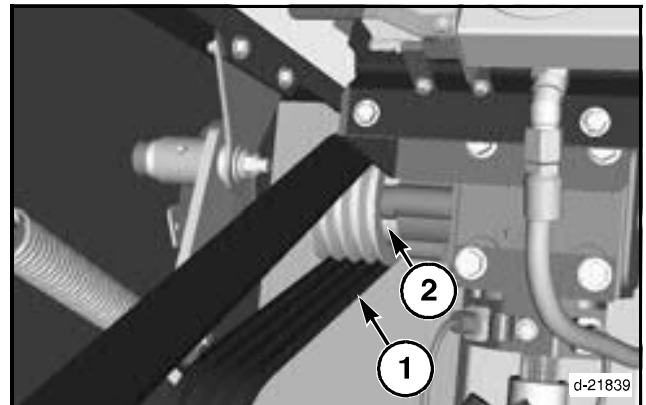


FIG. 16

FIG. 17: Install the tensioner pulley to the arm (1).

Tighten the top lock nut.

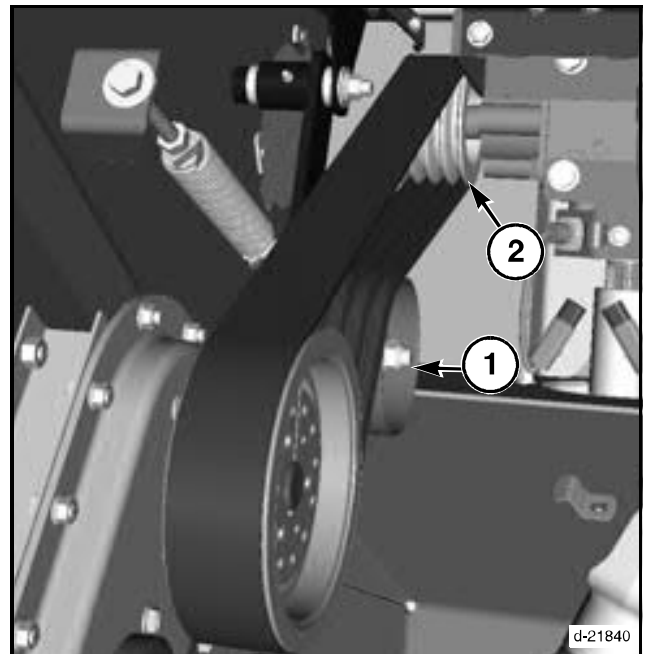


FIG. 17

FIG. 18: Align both sheaves (1) and the tensioner pulley (2).

To align the idler sheave, remove/add washers (3) to the idler sheave or idler mount plate (4).

Adjust the gearbox header drive sheave (5) as needed.

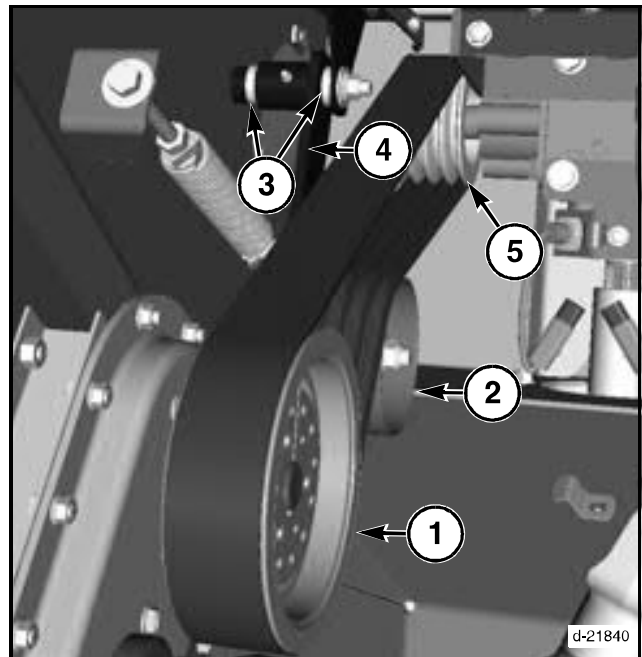


FIG. 18

FIG. 19: Install the access cover (1).



FIG. 19

FIG. 20: Install the timing flange (1) with the four bolts (2) and washers.

Do not tighten the bolts at this time.

Refer to the adjustments in the next procedure to time the hay conditioner rolls.

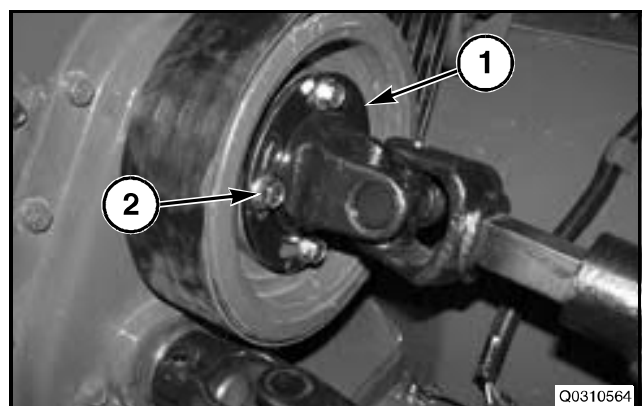


FIG. 20

Drives

Adjustments

FIG. 21: Hold the spring plug (1) in the tensioner spring (2) and loosen the jam nut (3) on the adjusting bolt (4). Adjust the spring so the dimension from the inside of the hook to the end of the spring plug is 200 mm (7.87 in). Hold the plug and tighten the jam nut.

NOTE: Too much tension can cause premature belt failure.

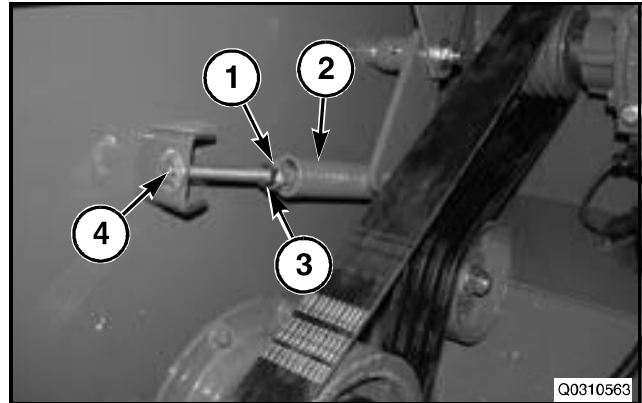


FIG. 21

FIG. 22: The hay conditioner roll timing must be set correctly for proper conditioning. If the hay conditioner rolls are out of time, header vibration and increased component wear can occur. The hay conditioner roll timing is adjusted with a timing flange.

To set the hay conditioner roll timing:

Loosen the bolts (1) in the timing flanges (2) at the left-hand end of the header.

NOTE: On double conditioner headers, the timing flanges for the front rolls are located on the left-hand side of the header. The timing flanges for the rear rolls are located on the right-hand side of the header.

Rotate the top hay conditioner roll counterclockwise until contact is felt. Make a mark on both the timing flange and sheave.

Rotate the top hay conditioner roll clockwise until contact is felt. Make another mark on the sheave in alignment with the mark on the timing flange.

Rotate the top hay conditioner roll until the mark on the timing flange is centered between the marks on the sheave.

Tighten the bolts in the timing flange to 59 Nm (44 lbf ft). Be careful not to move the timing flange when tightening the bolts.

FIG. 23: Close the left-hand shield.

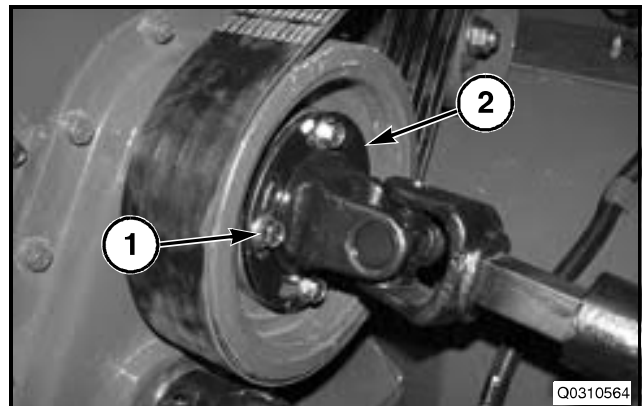


FIG. 22

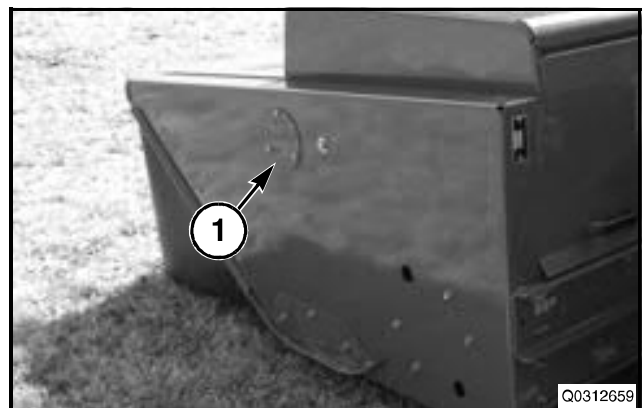


FIG. 23

Right-Hand Drive Belt

General Information

The following procedures will complete the removal and installation process for the right-hand side of the double conditioner machine.

NOTE: Never pry off a belt, as the sheave can be damaged. Prying off belts also adds risk of injury.

Removal

FIG. 24: Lift up the shield on the right-hand side.

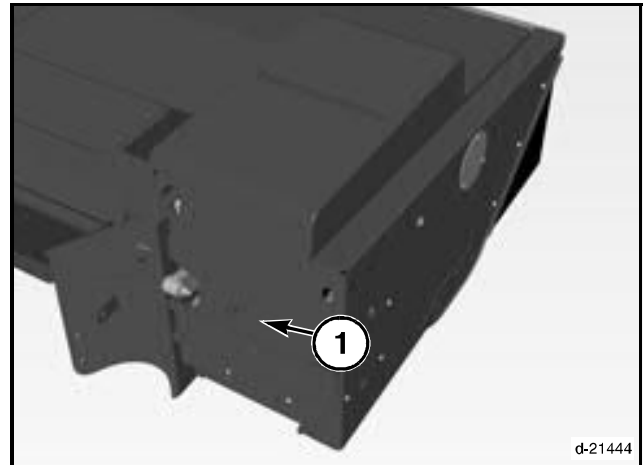


FIG. 24

FIG. 25: To expose the drive and the driven sheaves, remove the three washer head screws retaining the cover plate (1).

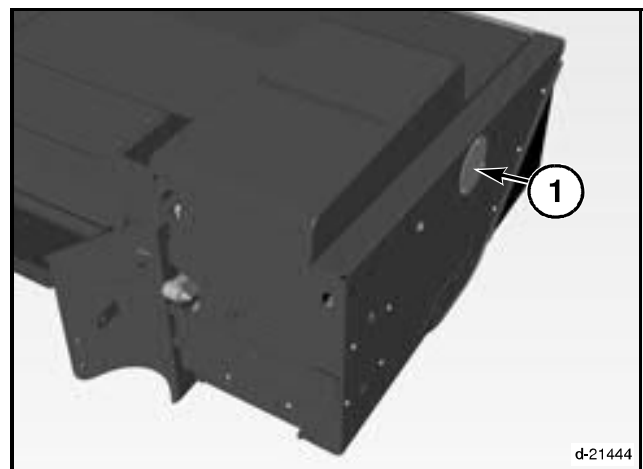


FIG. 25

Drives

FIG. 26: Hold the spring plug (1) and loosen the jam nut (2).

Loosen the adjustment bolt (3) to decrease the tension on the belt (4).

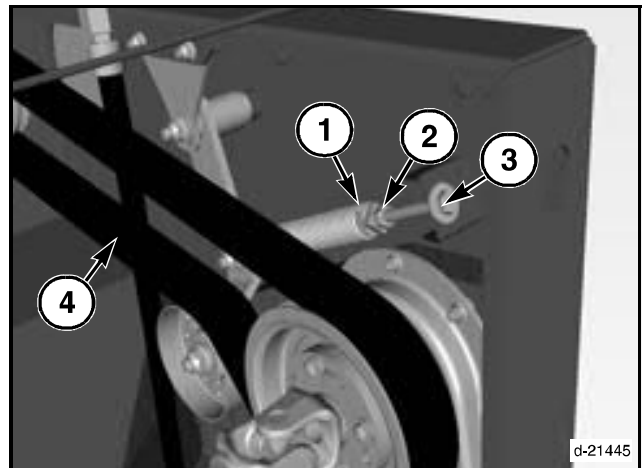


FIG. 26

FIG. 27: Move the belt (1) on the gearbox header drive sheave (2) one rib at a time toward the side panel (3).

NOTE: Never pry off a belt, as the sheave can be damaged.

Twist the backside of the belt and remove the belt from the drive sheave using the hole in the side panel for clearance.

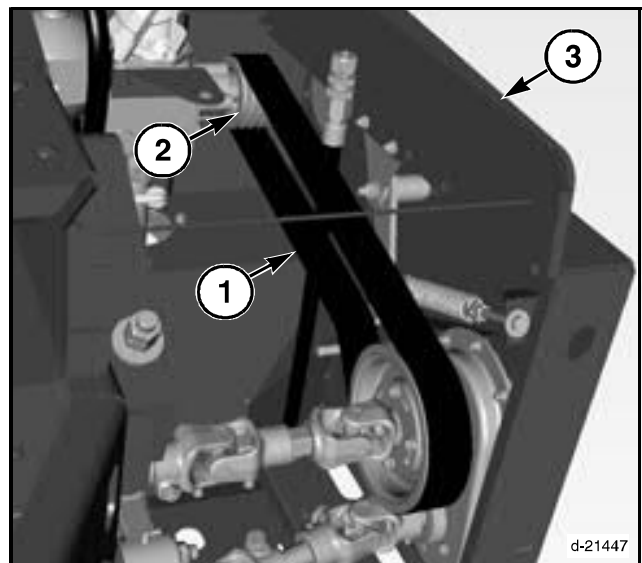


FIG. 27

FIG. 28: Remove the four bolts (1) and washers from the timing flange (2) on the yoke of the top hay conditioner roll drive shaft. Slide the yoke off the gearcase shaft.

If necessary, rotate the clamp yoke (3) on the lower hay conditioner roll drive.

NOTE: This will provide a gap between the clamp yoke and gearcase sheave to remove and install the belt.

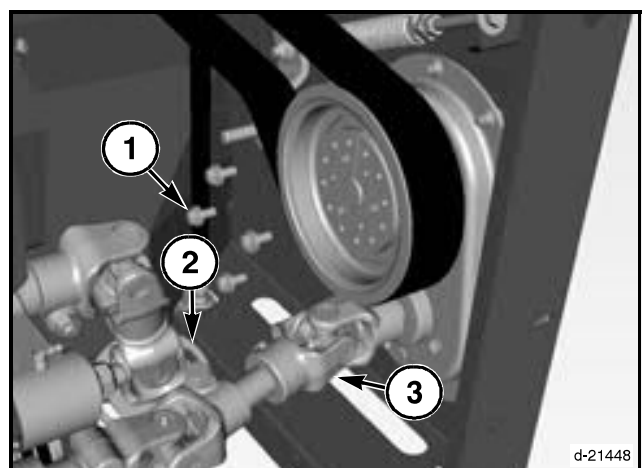


FIG. 28

FIG. 29: Move the belt (1) on the gearcase sheave (2) one rib at a time toward the center of the machine.

Remove the belt from the gearcase sheave.

Remove the belt from the header.

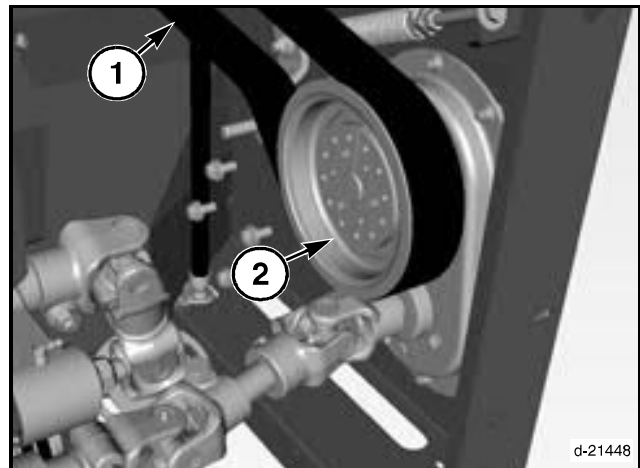


FIG. 29

Inspection

Check belts for excessive wear, tearing, breaking and unraveling.

Belts that are running hot, running in a hot environment, or from slipping will harden and form cracks from the bottom of the belt up.

Inspect for oil or grease leaking on the drive. This can indicate over lubricated parts or a fluid leak. If this material gets on rubber belts, the belts can increase in size and become distorted, causing an early belt failure.

Belts must be replaced if there are signs of cracking, fraying, or not normal wear.

Inspect the old belt for any not normal wear. Excessive or not normal wear can indicate problems with the drive or past maintenance procedures.

Inspect the sheaves for not normal or excessive wear, damage, distortion, and pitting. If surfaces show pitting or excessive wear, the sheave must be replaced.

Check the sheaves for deposits of dirt and dust in the bottom of the grooves. Clean the sheaves with a damp cloth. Do not sand or scrape the grooves to remove debris.

Check the sheave alignment. For long belt life the sheaves must be aligned properly.

Inspect all parts and replace as needed.

Drives

Installation

FIG. 30: Align both sheaves and the tensioner pulley (1).

To align, add or remove washers for the tensioner pulley or adjust the gearbox header drive sheave (2).

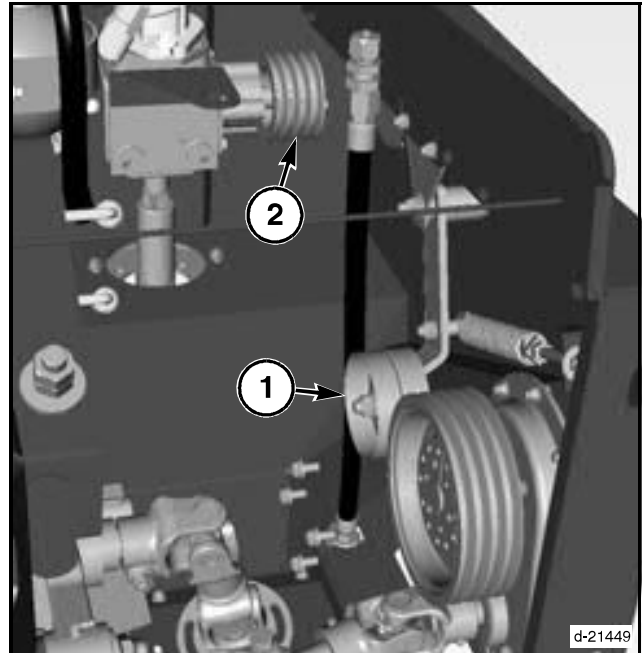


FIG. 30

FIG. 31: Put the new belt (1) into position in the header.

Install the new belt on the gearcase sheave (2).

Move the belt on the gearcase sheave one rib at a time toward the end of the machine.

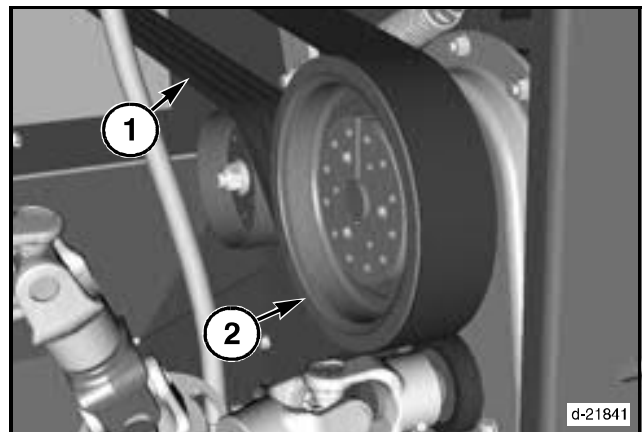


FIG. 31

FIG. 32: Install the opposite end of the belt (1) one rib at a time on the gearbox sheave (2).

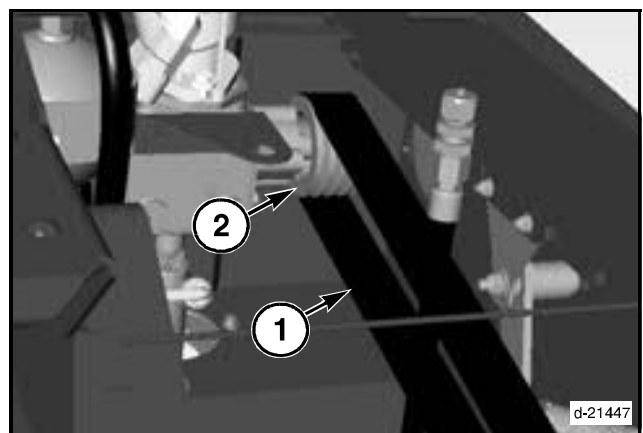


FIG. 32

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