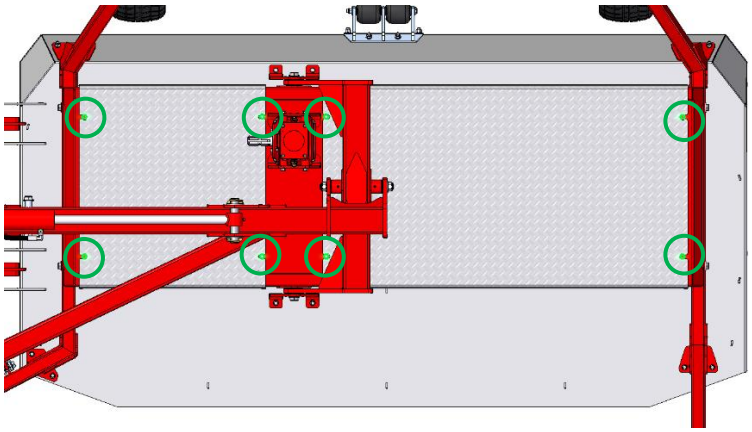
trimax MOWING SYSTEMS	SPARE PARTS INSTRUCTIONS #69
Date Created: 19-Jun-2019	**Product:** Vulcan
Title: Spindle Rebuild	**Part Number:** 504-001-050

SAFETY! Before attempting to make any adjustments or carry out maintenance on the mower, review the hazard identification table (section 3a of your Operator Manual) and take all necessary precautions.

Set the decks down on level ground.

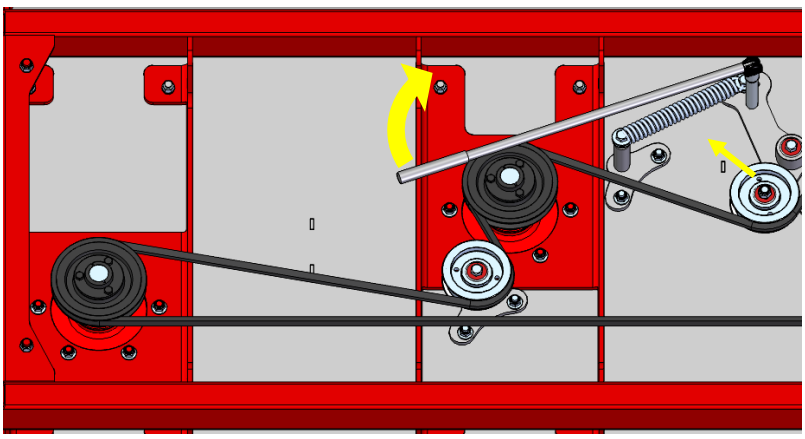
In order to drop the spindles out from under the decks, a cut height of at least 30mm [1 ¼”] is required.



DRIVE BELT REMOVAL

Using a 19mm (3/4”) socket or spanner, remove the transmission covers from the deck to be worked on.

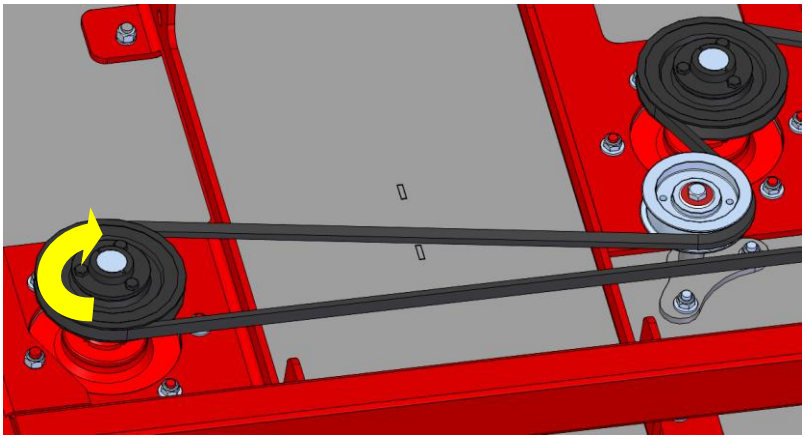
There are 2 covers per deck, and 4 nuts per cover. These nuts are highlighted in green.



Remove the drive belt from the spindle to be worked on.

To remove the belt, begin by having a second person apply tension to the idler arm and spring with a Power Bar with a ½” drive, as shown. This will slacken the belt enough to remove it.

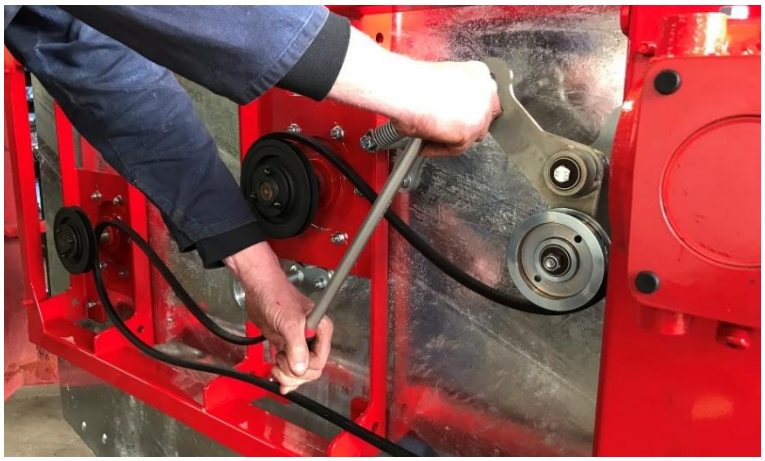
A belt on the left deck is shown here but slackening off the tension is a very similar process across all belts.



While a second person holds tension on the Power Bar, apply an upward force to the belt so that the belt comes out of the pulley groove slightly.

While doing this, rotate the pulley as shown.

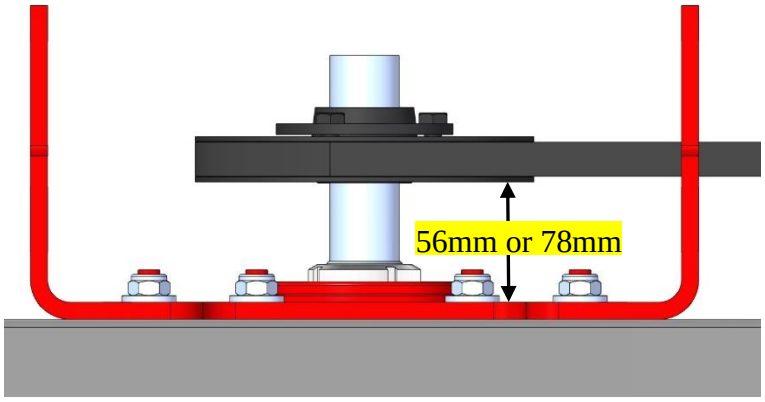
Be careful not to allow fingers to become caught between the belt and pulley as this can be very painful.



Continue to rotate the pulley and pull upward on the belt until the belt comes free of the pulley.

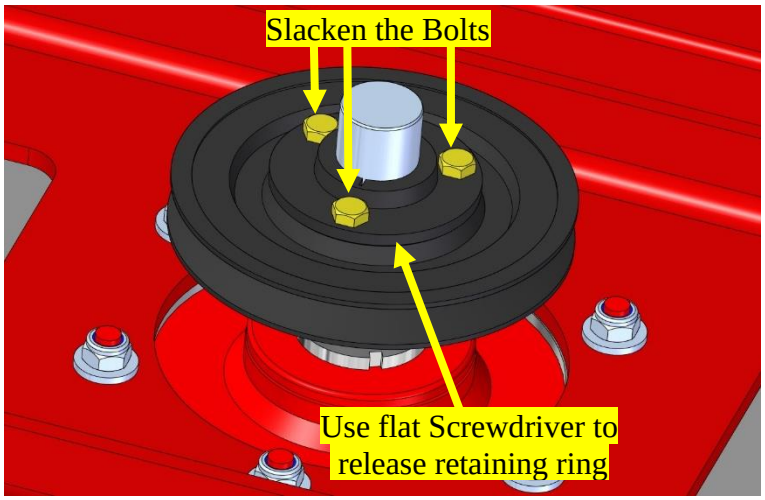
Tension can now be released from the Power Bar.

The belt need not be removed from the mower but should be inspected and replaced if necessary.



Spindle pulley height measurements on the Vulcan mower are 56mm for the lower belt and 78mm for the upper belt.
This measurement is from the bottom of the Spindle Pulley to the top of the Spindle Mounting plate.

Take note of the pulley height before removing.

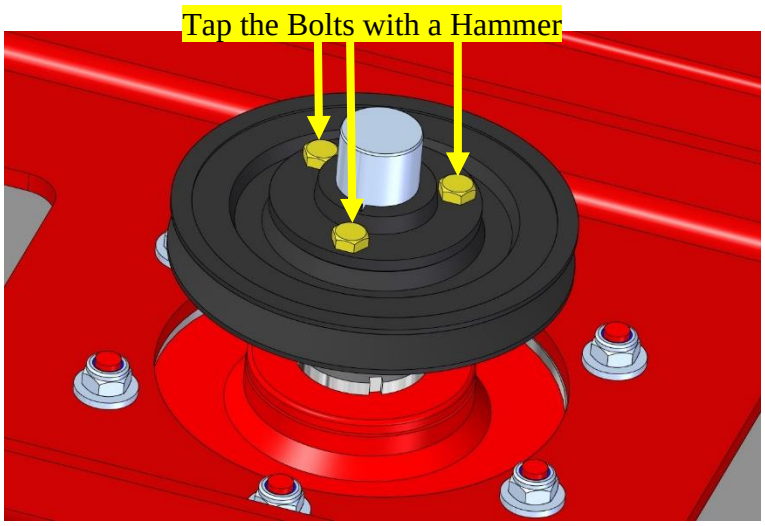


SPINDLE PULLEY REMOVAL

To remove a single spindle pulley, slacken the three M8 x 20 Bolts fitted through the Retaining by around **10mm (3/8")**

Fit a flat bladed screwdriver between the Pulley and Retaining Ring. Use the screwdriver as a lever to release the Retaining Ring from the Biloc Bush.

Work around the Pulley evenly while doing this until the Retaining Ring is loose on the Bush.

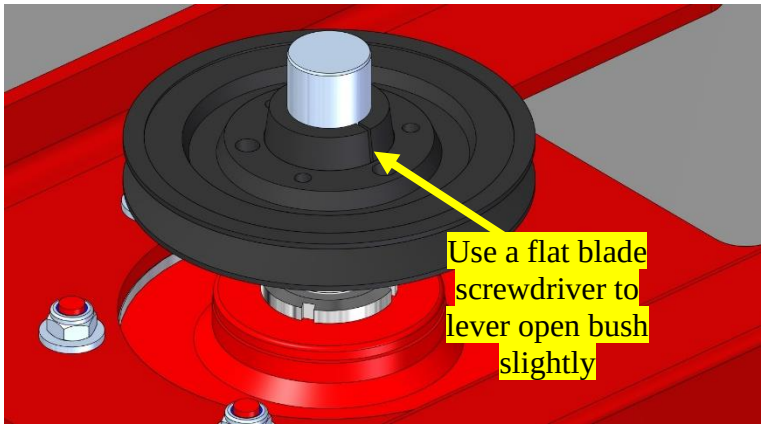


Tap each of the Bolt Heads firmly with a hammer.

Work around the Pulley evenly while doing this until the Pulley is loose on the Bush.

Remove the three M8 x 20 Bolts from the Pulley.

Remove the Retaining Ring.

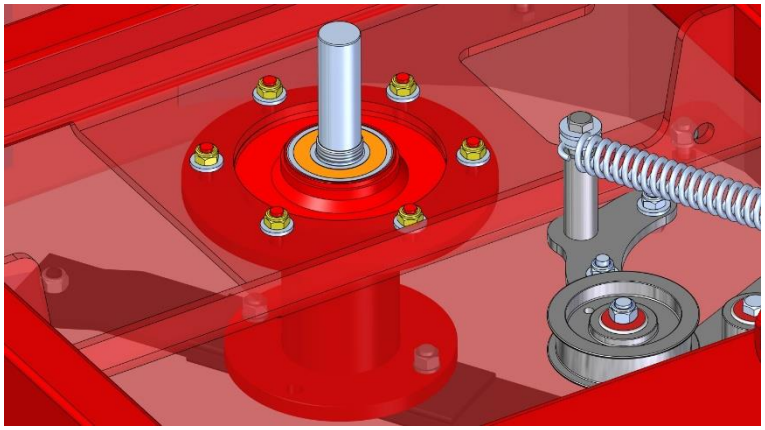


Insert a flat blade screwdriver into the slot in the Biloc Bush.

Use this as a lever to gently prise the Biloc Bush open slightly.

With the screwdriver still in place, slide the Bush up and off the Spindle Shaft.

Remove the Pulley from the Spindle Shaft.

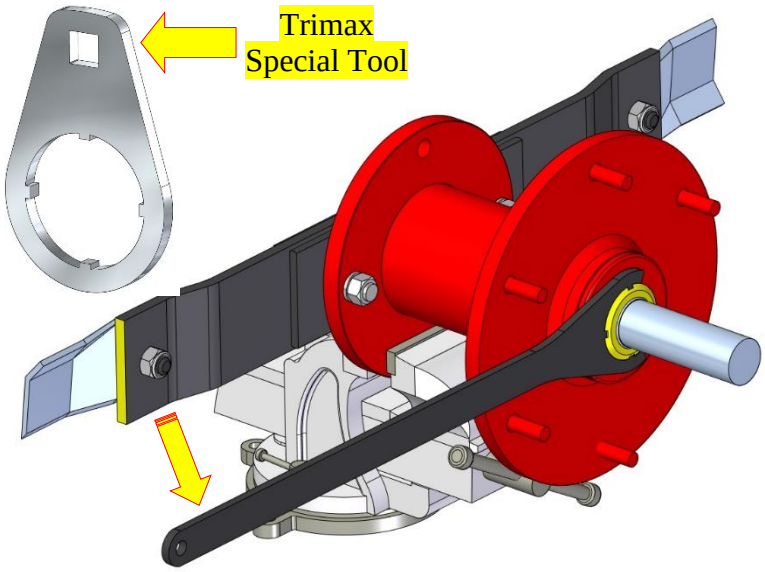


Vulcan Spindle Bearings can be replaced with the spindle left attached to the deck.

Removing the spindle from the deck is preferred in order to gain better access.

In this procedure the spindle is removed from the deck.

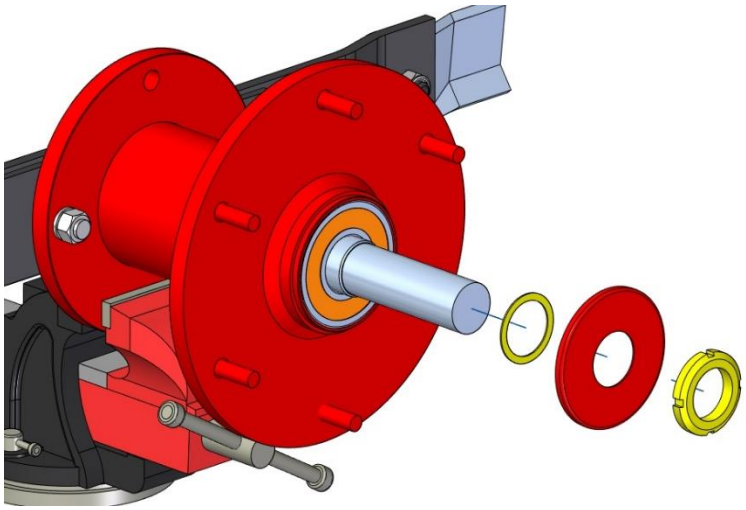
To remove the spindle, undo the six M10 nuts as shown in yellow.



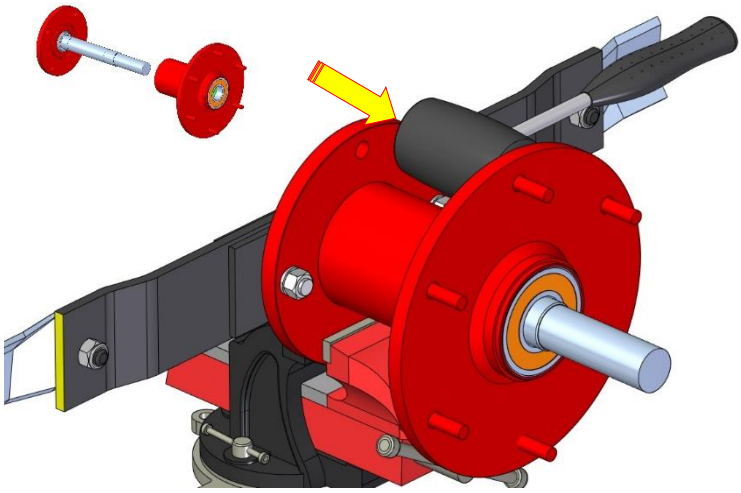
Place the spindle in a workbench vice as shown.

Using a C-Spanner loosen the top nut shown in yellow.

A “Crows Foot” style C-Spanner is available from Trimax (inset).
Part Number **450-000-135.**



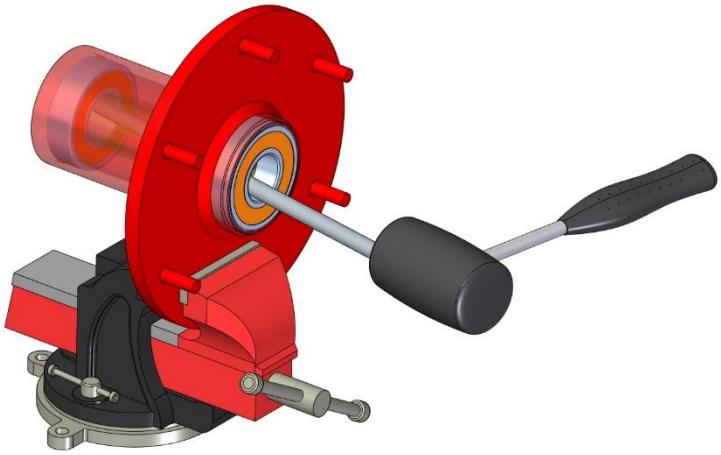
Remove the Top Nut, Spindle Cap and Spacer Shim



Tap the back of the spindle flange.

Use a soft-faced hammer or an ordinary hammer with a block of wood to dislodge the Housing.

Withdraw the housing from the shaft.

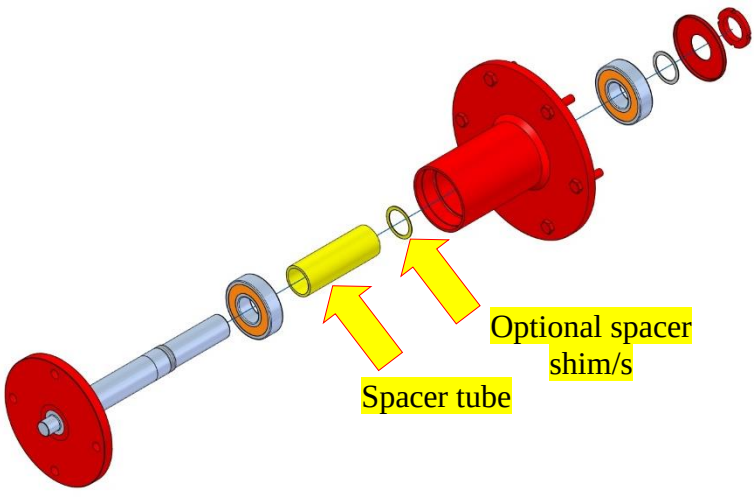


REMOVE THE BEARINGS

Use a hammer and a soft metal drift for removing the bearings.

Position the drift against the bottom bearing and drive it out.

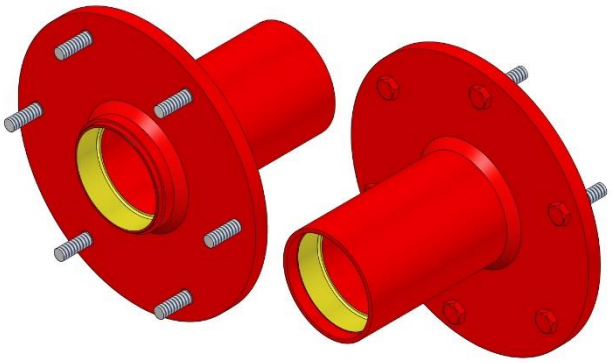
Work around the diameter to knock the bearing out evenly.



Retrieve the spacer tube from inside the housing.

Note:
When removing the bearing spacer tube, check for any shims. Make sure to put the shims back in place when re-assembling.

Use the soft drift and hammer to drive out the top bearing in a similar fashion.

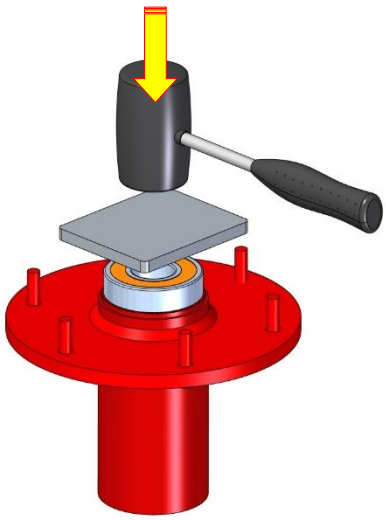


Clean the surfaces where the new bearings are to be seated as shown in yellow.

FIT NEW SPINDLE BEARINGS

A spindle bearing kit is available from Trimax Parts. (Part # **407-000-028**)
It contains:

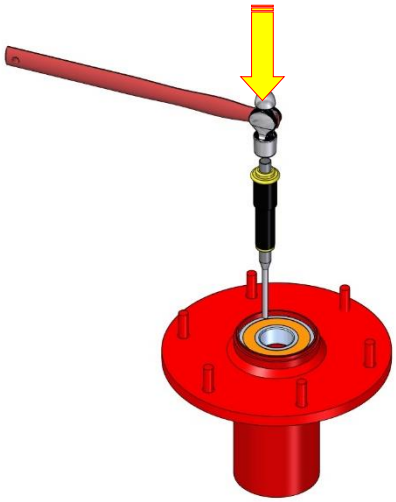
- two bearings
- a new nut
- a sachet of Loctite 222 retaining compound.



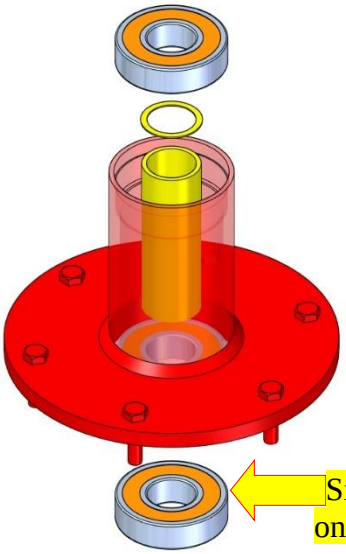
Unpack one bearing and fit it to the top of the spindle housing.

Place the housing on a workbench.

Using a flat plate on top of the bearing, hit it down evenly into the housing until it is flush with the housing surface.



Use a suitable flat-faced drift and a hammer to drive the bearing home evenly against its housing stop.

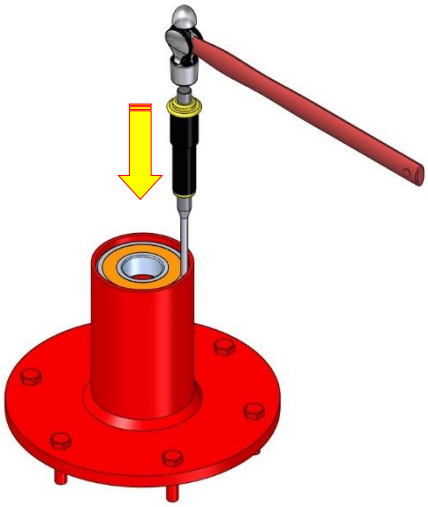


Place the housing on a workbench with an **old bearing directly underneath the newly installed bearing** as shown.

Insert the Bearing Spacer Tube and any optional spacer shims that were found on dis-assembly.

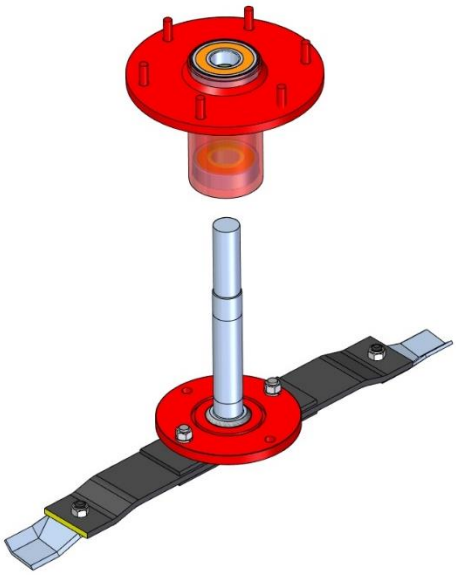
Unpack one bearing and fit it to the bottom of the housing.

Using a flat plate on top of the bearing, hit it down evenly into the housing until it is flush with the housing surface.



Use a suitable flat-faced drift and a hammer to drive the bearing home evenly against its housing stop.

Note:
Ensure the Spacer Tube and any optional shims are centrally located as the bearing seats home.

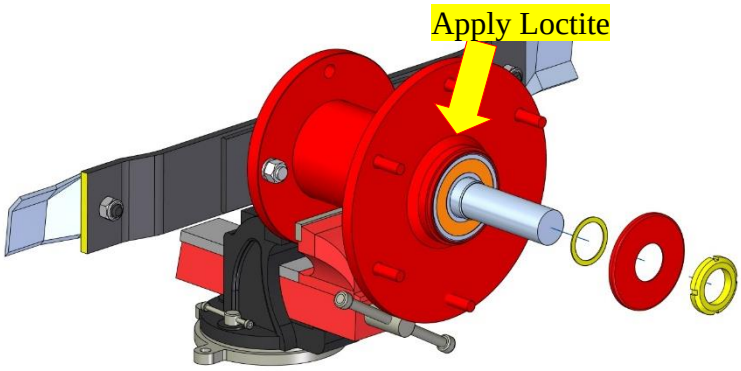


REFIT SPINDLE SHAFT

Centre the spacer tube and hold it in position from the top with one hand.

Fit the shaft through the bottom bearing.

If necessary, use a soft hammer to drive the housing down onto the shaft.

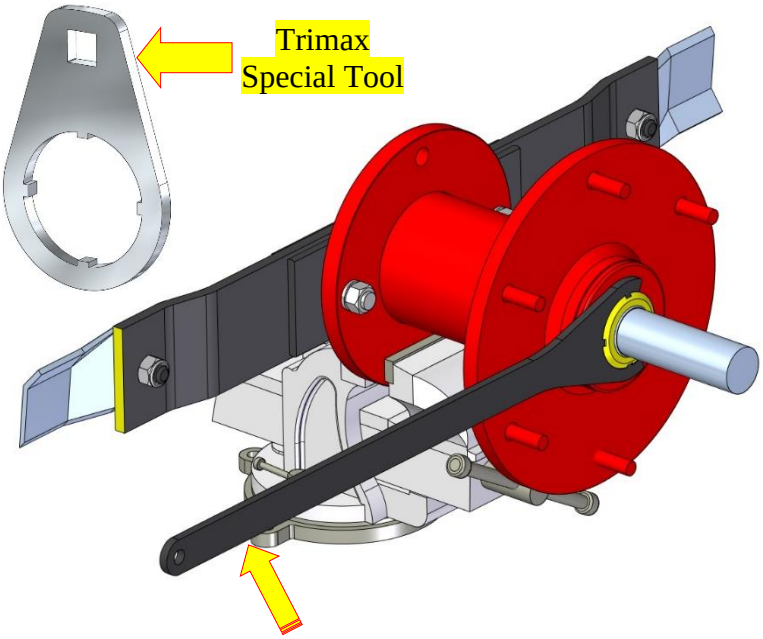


Place the Spindle into a vice as shown.

Snip the corner off the packet and smear Loctite onto the thread on the shaft.

Reassemble the Spacer Shim, Spindle Cap and Nut.

Make sure that the flat side of the nut faces the cap.

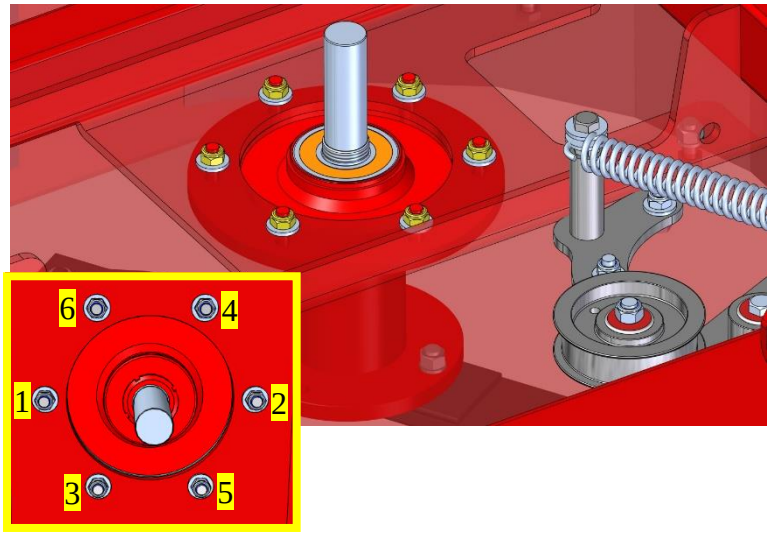


Using a C-Spanner torque the top nut to **80 Nm (60 ft-lb)** shown in yellow.

A Spindle Top Slotted Nut Tool can be purchased from Trimax Parts (inset).
Part number 450-000-135.
Use a ½" drive extension in conjunction with a torque wrench.

A universal C-spanner designed to operate in the size range 32-77mm [1 ¼" – 3"] can also be used.

Check that the spindle turns freely.



Install the spindle into the deck.
Fit the M10 Heavy Flat Washers and M10 Nyloc Nuts.

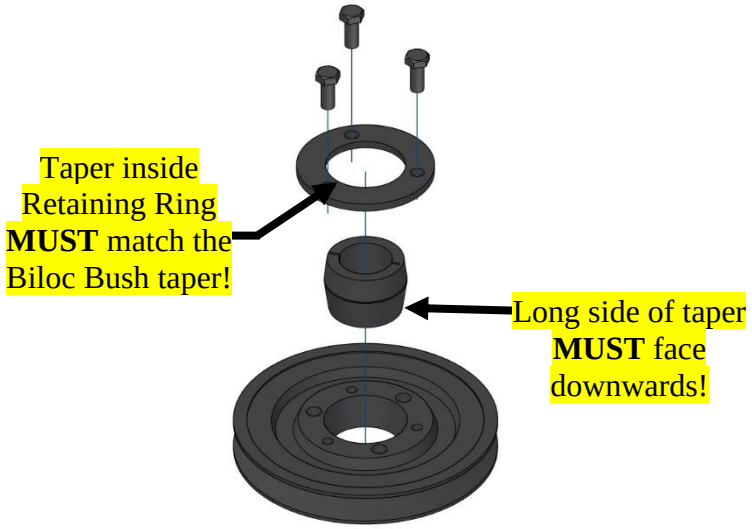
Torque to 43 Nm (32 ft-lbs) in a criss-cross fashion as shown inset.

ASSEMBLE BILOC PULLEY:

Clean the Taper in the centre of the Pulley using Wax and Grease Remover and a Clean Cloth.

Clean the Biloc Bush using Wax and Grease Remover and a Clean Cloth.

Note:
A Spindle Pulley is shown opposite

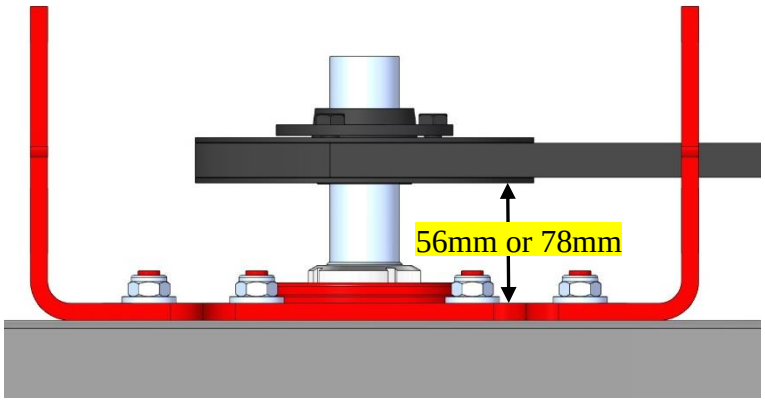


Assemble the Spindle Pulley as shown using the 140mm Pulley.

The **LONG** taper side of the 32mm Biloc bush **MUST** face downwards!

The Taper inside the Retaining Ring **MUST** match the Taper of the Biloc Bush!

DO NOT tighten the M8 x 25 bolts at this stage!

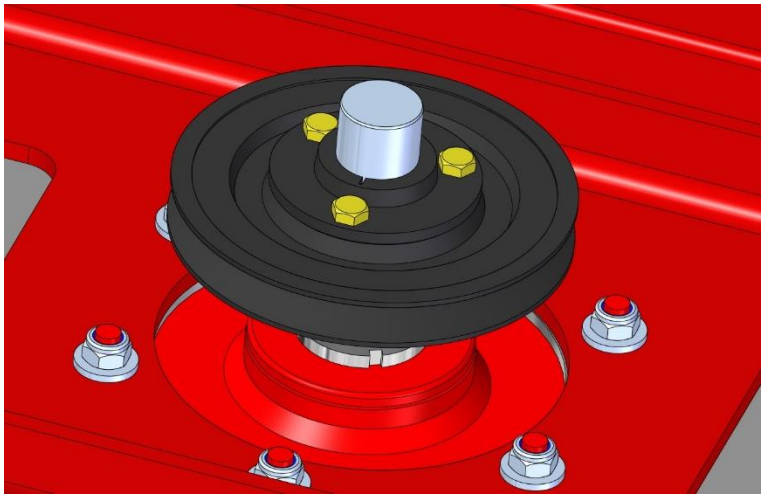


FIT THE SPINDLE PULLEY

Use the measurement taken earlier to set the Pulley distance from the Spindle Plate.

Nip up the Bolts when in position.

IMPORTANT:
Measure from the Spindle Plate to the **UNDERSIDE** of the Spindle Pulley.



Note:
The three M8 bolts need only be tightened to a low torque. Overtightening will distort the Retaining Ring.

Tighten the three M8 x 20 bolts on the Spindle Pulley. Use an open-ended ring spanner or special tube socket.

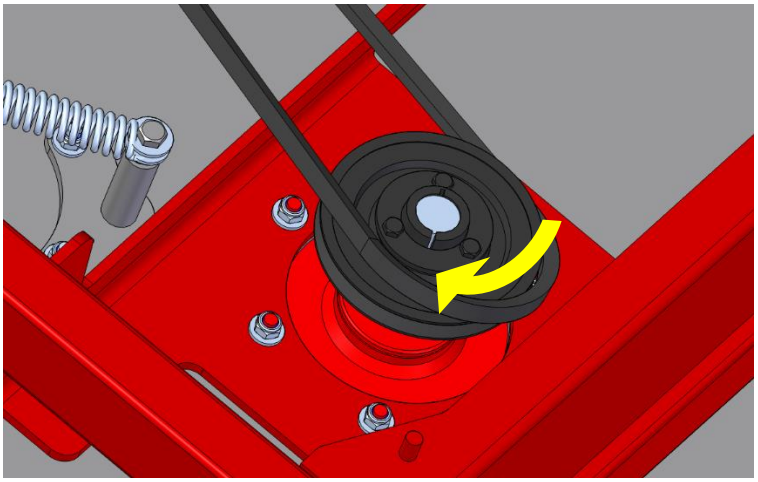
Ensure the bolts are tightened evenly and gradually!

Tap the Retaining Ring between the Bolts with a Hammer and retighten.

FIT THE DRIVE BELT

To fit the belt over the Spindle Pulley, use a Power Bar and ½" drive to tension the Tensioner Pulley Arm, and create enough slack to fit the belt as shown.

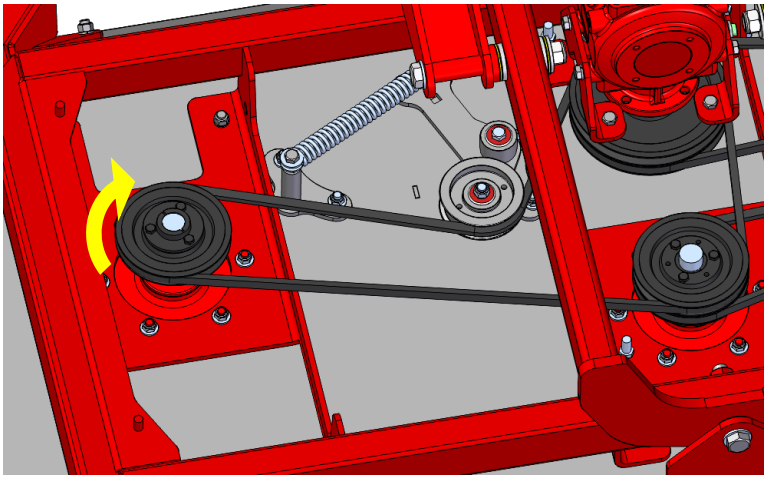
A Left-Hand Belt on the Rear Deck is shown here but all belts are re-fitted in a similar way.



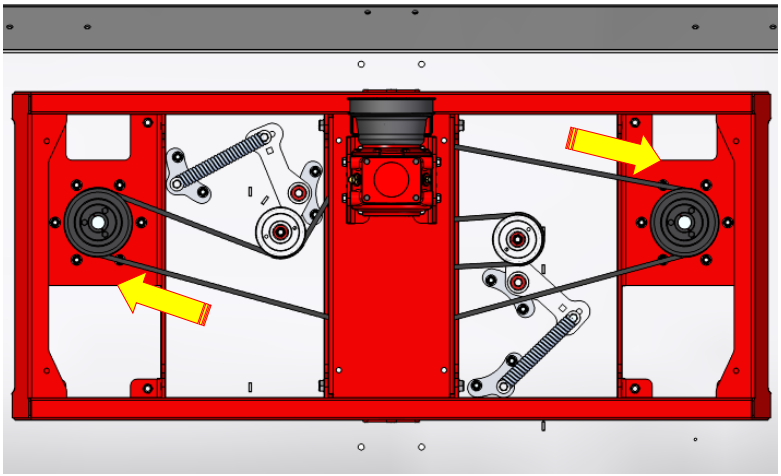
With a second person holding tension on the Power Bar, align the belt so that part of the belt is slotted into the pulley groove and part of the belt is over the top lip of the pulley, as shown.

Rotate the pulley so that the friction between the belt and pulley draws the belt into place.

Be extremely careful not to trap fingers between the pulley and belt!



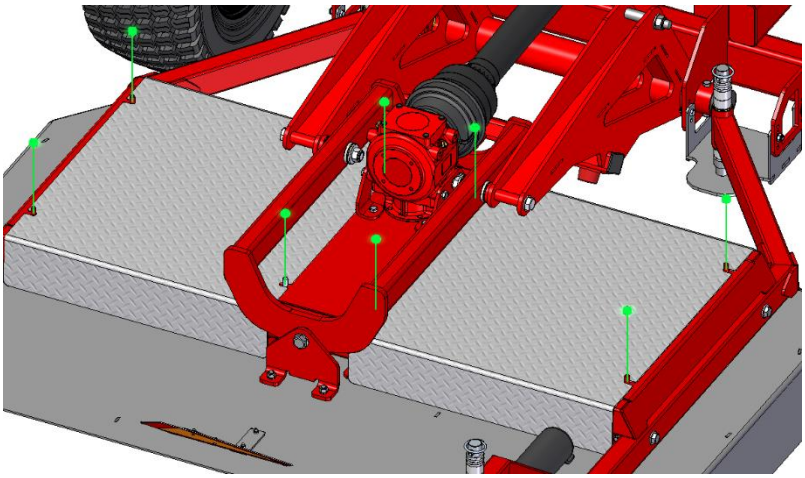
Once the belt is in place, continue to rotate the pulley or pull on the belt as this will cause the belt to seat correctly into the pulleys.



Pull on the Belts and observe the driveline.

Ensure that **ALL** Belts and Pulleys rotate.

Ensure that the Belts do not foul on other components.



FIT THE COVERS

Remove any tools left behind inside the transmission chamber.

The transmission covers can now be replaced. Ensure the self locking nuts, shown in green, are tightened to secure the cover in place.

This process is now complete.