

BELT TROUBLESHOOTING

What to check when a V-belt is replaced:

There are many reasons that a V-belt fails. If a problem caused the failure of one V-belt, that problem must be corrected or the new V-belt will also fail in a short period of time.

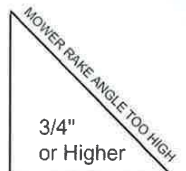
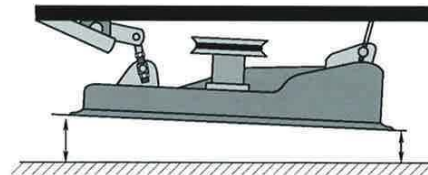
- Check for bent idler pulley brackets
- Check mower rake to determine proper mower V-belt alignment
- Check for a bent mower deck causing improper alignment
- Check for binding idler pulleys
- Check V-belt alignment in the drive – adjust idler pulley position to correct alignment
- Check mandrel shaft for bearing wear or binding
- Check pulley for wear, deformation or stones jammed in the pulley V
- Check V-belt guards and V-belt guides for possible wear spots against V-belt
- Check for obstructions in mower decks (including grass build up)

Check the failed V-belt for:

- Wear patterns
- Deformation
- Cuts
- Burned section
- Oil saturation of V-belt cover
- V-belt pulled apart

Any time you are replacing a broken belt, try to determine the root of the belt failure. Failure to determine the root cause of the belt failure and correcting it, may cause repeated service calls.

- Are you installing the correct belt number for the model you are working on?
- Is there grass build up, sticks, or trash on top of the mower deck that is causing the belt to jump off the pulley or break? Is there a stone jammed in the pulley groove? Instruct the customer to inspect.
- Are the mandrel or idler pulleys damaged or worn? Inspect the mandrel pulleys to make sure the pulley grooves are not bent or damaged. Inspect all idler pulleys to ensure they are not damaged or the idler bearings are not bad or frozen up and need to be replaced.
- The mower drive belt is stretched and slipping when moving.
- Is the mower deck set with excessive deck rake that is causing short mower belt life? Excessive deck rake on a mower will cause the belt to run at much higher than normal belt angles, which will cause the belt to wear out or fail prematurely. All decks should have a slight rake angle front-to-back $1/8''$ to $1/2''$ lower at the front blade tip than at the rear of the blade, with an optimum or best setting at $1/4''$ rake.
- For an operator who maintains a low mowing height – the rake should be reduced to the minimal dimension of $1/8''$. This will give the optimum deck belt alignment in the low mowing height, and maximise belt life.



V-BELT FAILURES – SYMPTOMS & CAUSES

Installation cut

Simple but true. Pulleys and belt keepers can have razor sharp edges, and the action of prying the belt over them can leave this damage.

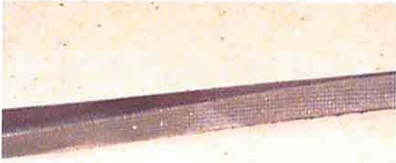
Be aware and take care during installation .



Oil damage

Non attention to a leaking oil seal can see result in a belt being soaked with oil.

The belt, while still appearing normal, will swell and feel tacky and spongy.



Slippage

The belt shows glazing on it's sidewalls, or the sidewall fabric is polished smooth.

The fabric could be worn from the sidewalls, and there may also be evidence of excessive heat.



Generally this is due to:

- incorrect tension;
- a worn out belt;
- a belt that is of the incorrect length (too long);
- a belt that is the wrong section (too thin); or
- a worn pulley is allowing the belt to bottom out in the pulley V.

V-BELT FAILURES – SYMPTOMS & CAUSES

Abrasion due to idler pulley lock up

Wear will show on the width of the belt, with the material carbonised and cracked.

A failed bearing within the idler pulley will often be the cause.



Rupture or extreme wear

Evidence will be apparent of excessive pressure on the cords of the belt. The belt will be separating with the cords fracturing within it, and fraying on the ends. Excessive wear may be evident on the sides of the belt's V.



This damage may be due to:

- an obstruction or foreign object between the belt and pulleys;
- poor idler pulley alignment;
- worn or damaged pulley grooves; or
- incorrect routing of the belt around the belt guides

Fracture due to shock load

The belt is broken or pulled apart abruptly, and does not have a smooth cut appearance.

The material fracture is rough, but the reinforcement cords are well defined. They may be exposed from the end of the broken belt.

This damage may be due to:

- engaging the PTO when entering heavy grass at high ground speed;
- engaging the PTO at full throttle when in heavy grass; or
- entering a patch of thick, lush grass at excessive ground speed.



V-BELT FAILURES – SYMPTOMS & CAUSES

Spin burn

There is evidence of high friction between the belt and a pulley or keeper.

Causes of this damage could be:

- an incorrectly adjusted belt keeper, which is not allowing the belt to disengage;
- inadequate belt tensioner spring tension;
- engaging the mower deck in heavy grass in the lowest mowing position;
- an incorrect belt with an aggressive compound that is wrong for the application;
- a belt that is slightly long; or
- a belt that is too short, which suffers spin burn in the disengaged state.

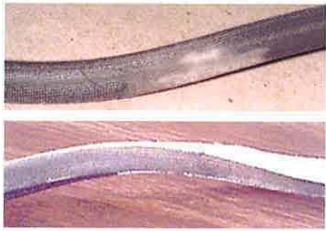


Belt deforming or turning in drive

The belt may be deformed and have lost its wedge shape. Its cross section will appear distorted or rounded. If refitted, it will quickly turn in the drive again.

Causes of this damage could be:

- a deformed pulley, perhaps with a jammed stone, that is causing vibrations;
- a belt with cords broken inside the belt, causing stretched sections to appear;
- a pulley with the sides separating from the hub; or
- a pulley that is out of alignment and is rolling the belt. The belt and idler pulley alignment must be checked in the highest and lowest settings to ascertain that alignment is correct.

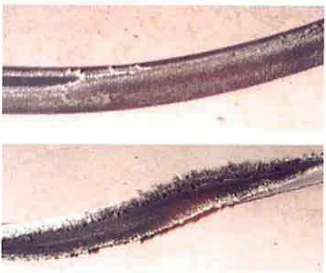


Rubbing on a belt guide

The belt's fabric cover will be frayed, with wear showing on one side of the belt.

Causes for this damage may be:

- a belt keeper being in an incorrect position and/or too close to the belt;
- a foreign object caught in a belt guide or the deck; or
- an incorrect length belt that is causing the belt to rub against the frame or belt guide.



PRO-ACTIVE MEASURES TO MINIMISE DAMAGE TO BELTS & CLUTCHES

An astute operator will be aware of some sound operating techniques to apply, that will minimise loading on belts and clutches. Engage the deck out of the load, (either with deck raised, or prior to entering the area of grass to be cut), with the engine speed set to about half throttle.

This will minimise the risk of a shock load being applied to the machine's belts, and high current load on an electric clutch. Ensure full throttle detent speed is restored once the deck is engaged.

DECK BELT FAILURE CAUSED BY A LOW MOWING HEIGHT

Check list

1. Mowing Conditions

- Are they attempting to mow dense grass too low, and to the full width of the deck's cut? If so, suggest cutting less width and raising the deck height setting.
- Are they mowing at an excessive ground speed? Suggest a slower speed.
- Are they engaging the deck clutch correctly? Ask them to demonstrate their method and provide tactful correction if appropriate.

2. Guide Wheels

- If the deck is fitted with guide wheels, are they positioned correctly? Guide wheels should be just clear of the ground with the deck set in the lowest position.
- Incorrect guide wheel setting can increase deck drive belt misalignment, and this misalignment will be exacerbated in the low mowing position.

3. Deck Idler Pulley Alignment

Has this been checked? Look at the highest and lowest deck settings to ensure that the deck belt is not trying to run off the idler pulleys. If this looks to be the case, add or remove spacer washers to adjust the pulley's position.

4. Deck Alignment

- Excessive rake increases the misalignment between the engine pulley and deck pulleys in the lowest mowing position (front engine tractor type mowers).
- Reduce the rake to 1/8" to improve the pulley alignment. Shorten the front suspension linkage lengths as per deck adjustment instructions to reduce rake.