

Deck and Belt Diagnostic



Reference Manual

 **Husqvarna**

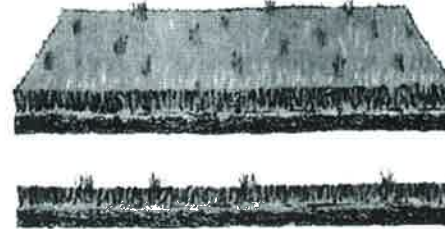
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CONDITIONS

CAUSES

Stingers

Occasional blades of uncut grass

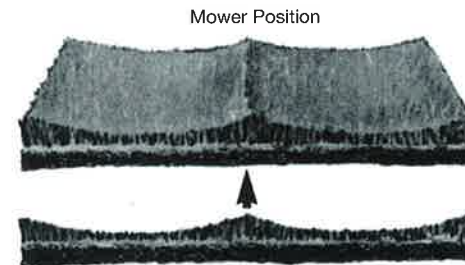


Remedy Index

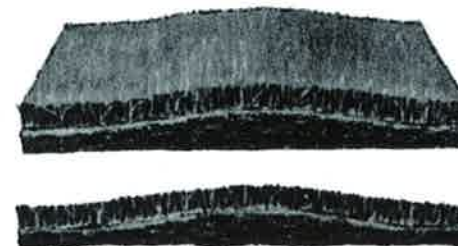
- 3 Low engine RPM
- 6 Ground speed too fast
- 2 Dull blades, incorrect sharpening
- 10 Wet or long grass (or both)
- 1 Deck plugged, grass accumulation

Uneven Cutting

Wavy, hi-low, rough or scalloped grass



- 1 Deck mounted improperly
- 1 Too much blade angle (deck rake)
- 2 Dull blades, worn blade lift
- 1 Deck plugged, grass accumulation
- 11 Bent spindle mount area
- 2 Blade upside-down



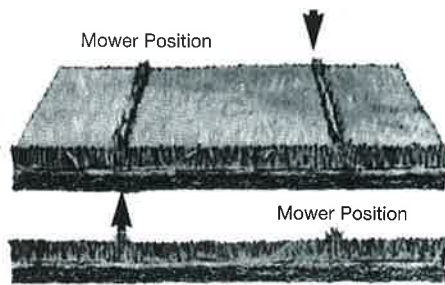
- 8 Uneven ground

CONDITIONS

CAUSES

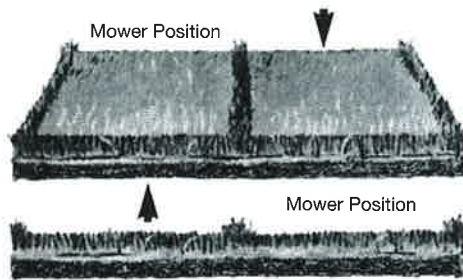
Streaking

Leaving a strip of uncut grass



Remedy Index

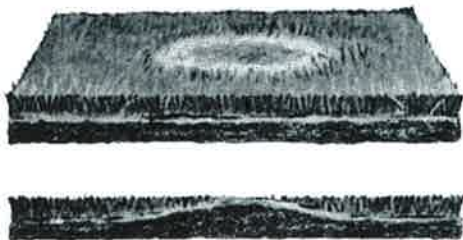
- 2 Dull or worn blades
- 2 Incorrect sharpening
- 2 Incorrect blade length
- 3 Low engine RPM
- 4.5 Belt slipping
- 1 Deck plugged, grass accumulation
- 6 Ground speed too high
- 10 Wet or long grass (or both)
- 2 Bent blades



- 9 Not enough overlapping between cutting rows

Scalping

Hitting dirt or cut too close to the ground



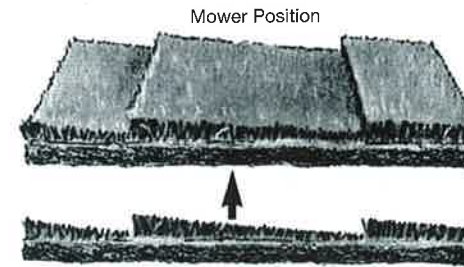
- 8 Rough terrain
- 6 Ground speed too fast
- 7 Cutting too low
- 1 Incorrect pitch or level
- 1 Low tyre pressure
- 1 Deck mounted improperly

CONDITIONS

CAUSES

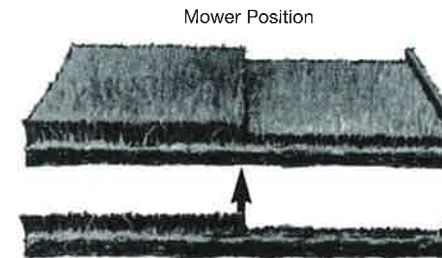
Stepped Cutting

Leaving a strip of uncut grass

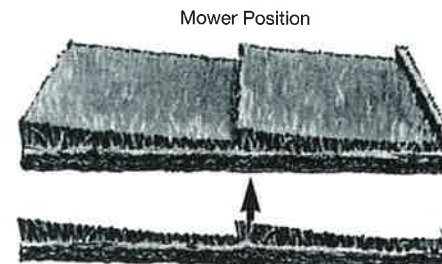


Remedy Index

- 1 Deck mounted improperly
- 1 Wheels uneven
- 1 Tyre pressure not equal
- 12 Bent deck (spindle mounting surface)
- 1 Tractor deck brackets bent or out of adjustment



- 2 Bent blade
- 11 Wrong spindle
- 11 Internal spindle failure
- 11 Bent deck (spindle mounting surface)
- 11 Incorrect spindle mounting



- 11 Bent spindle mounting area
- 11 Bent spindle assembly
- 11 Internal spindle failure
- 12 Bent deck housing

REMEDY

1. Deck – Be sure that the mower deck is properly mounted and levelled side to side and front to back rake is set for best cutting results.

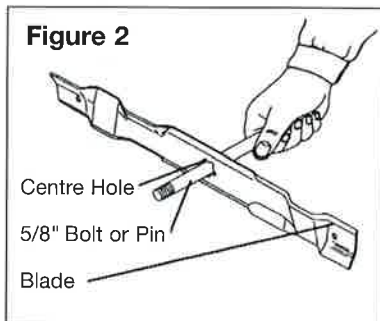
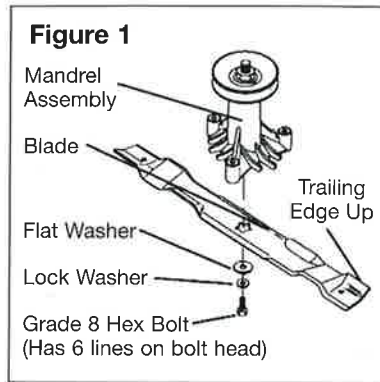
Make sure the deck gauge wheels (if fitted) are mounted and set correctly. Be sure that the underside of the deck is clean and free from a build up of grass. Cutting wet grass increases the need for cleaning and will affect the discharge and bagging capacity of the mower.

Tyre pressure can alter the cut of the mower. Set the tyre pressure according to the operator's manual.

2. Blades – Make sure that blades are mounted correctly and that the proper blades are used. Replace worn or bent blades. Sharpening – **We do not recommend sharpening.** It is a job for a qualified technician. Your dealer has the expertise and experience for the procedure. In the event you do, keep the original cutting edge contour. Remove the blade from the mower to sharpen. (See Figure 1 for blade removal; Figure 2 for sharpening) Balancing – Use the centre hole and the 5/8 inch bolt. Sharpen the heavy end until the blade is balanced. Mounting – Mount the blades with the trailing edge up. A grade 8 heat treated bolt is used. 30-35 foot – pounds of torque.

3. Engine Speed – Always operate the engine at full throttle when mowing to assure better mowing performance and proper discharge of material.

4. Belt Tension – On tractors with adjustable systems, check tension of belts and make adjustments in the idlers. Belt slippage reduces the life of the belts and also reduces cutting performance.



REMEDY

5. Service and Lubrication – Service the tractor every 25 hours. See Owner's Manual and Service Log Book for details. This is best done by an authorised servicing dealer.

6. Ground Speed – Regulate the ground speed with the transmission gear selector. Use a lower gear. The speed will vary with the height and density of the grass and smoothness of the lawn. The deck may plug or the engine lug down if the ground speed is too fast.

7. Cutting Height – Adjust the mower so that it cuts off only the top one third (1/3) of the grass (see Figure 3). For heavy mulching reduce the width of the cut on each pass and mow slowly.

8. Rough Ground – When mowing rough ground raise the cutting height and slow the ground speed to avoid blades hitting the ground.

9. Overlap – Overlap the cut by 4 inches to prevent streaking rows.

10. Mowing Conditions

Wet grass – Do not mow wet grass.
Wait until thoroughly dry.

Tall grass – Mow tall grass twice to achieve correct height.

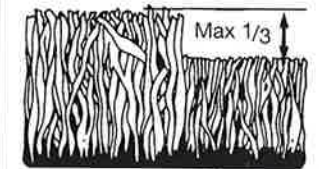
11. Spindles – Spindle housings flanges may be bent. The shaft or bearings may be worn. Repair or replace as required – check alignment with new blades.

12. Housing – Straighten the spindle mounting pad or replace the housing.

The Doctor is in

We hope this brochure has helped you diagnose and correct any cutting problems you might have. Also, your friendly Husqvarna Power Equipment Retailer will be happy to help.

Figure 3



Depend on us
At Husqvarna you will find the personal service and products you need.
Always use original Husqvarna replacement parts and accessories.

MULCHING INFORMATION

(Mulching tips are also applicable to machines with catchers)

Mulching generally produces a greener and healthier lawn, mulching particles decompose and absorb into the root system within a fortnight. Moisture is retained and nutrients are added with this process. Mulching is also a time and cost effective strategy for a commercial lawn care operator – reducing time spent emptying collectors and expenses incurred through rubbish tip fees.

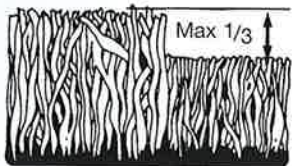
Mulcher function

The grass should not be allowed to get too long, therefore two or three weekly cuttings may be needed to have the mulching system working properly in the lush growing season. A mulching mower differs from a conventional mower in the way that its deck is deeper, and it has specially designed multi-pitch blades. The deck and blade features create air suction to hold grass upright, and once cut, the grass is held in suspension in the deck chamber to be chopped again several times into a finer state.

Mulching and Mowing tips

(Mowing tips also applicable to machines with catchers)

- Keep the mower housing free of built up grass and debris. Clean after each use.
- The special mulching blade will recut the grass clippings many times, reducing them in size, which allows them to fall onto the lawn and disperse into the grass inconspicuously. These clippings biodegrade quickly to provide nutrients to the lawn. Mulching at the highest engine (blade) speed delivers the best 'cutting' action from the blades.
- Avoid cutting a lawn while it is wet. Wet grass tends to clump and interfere with the mulching action. Early afternoon is the best time to mow a lawn. Generally, by this time the grass has dried and the newly cut area will not be over-exposed to direct sunlight.
- Best results can be achieved by adjusting the mower cutting height so that the mower cuts off only the top third of the grass blades.



In an extremely heavy mulching operation, it is best to reduce the width of the cut and the mower ground speed.

- Certain types of grass and grass conditions may require a second time to completely process and hide the clippings. In this instance, mow at right angles to the initial cut path.
- Change the cutting pattern from week to week. By mowing north to south one week, then east to west the next, you can help prevent matting and graining of the lawn.

Summary: 10 Tips for Mulching or Catcher Mowing to achieve the best quality cut and finish

- Mow more often – every 5 days in normal conditions, every 7 when drier.
- Mow at an easy pace that allows the mulching function to operate effectively.
- Have the engine at full throttle to ensure correct blade speed and best result.
- Ensure the mower deck is clean, without built up debris.
- Ensure the blades are sharp – they will cut cleaner.
- Mow when the grass is dry, to avoid clumping and poor cutting results.
- Mow at a higher setting, trying to take off only 1" to 1 1/2" with each mow.
- If the grass is tall, mow twice. First at a high setting, then at a lower setting.
- Keep the lawn clean, healthy and fertilised.
- Read your Owner's Manual to derive optimum performance from the mower by understanding its operation.

Ride on mowers and ground speed.

On a hydrostatic machine, use the transmission motion control lever or pedal to regulate the ground speed. Use the gear selector lever to lower the speed on the manual shift machine. The mowing speed needs to be regulated to allow for the height and density of the grass, as well as undulations and surface changes in the lawn area.

Excessive ground speed can cause the deck, discharge chute or grass catcher tube to plug with grass or the engine to overload. It is also likely to leave the lawn with a poor visual appearance.

Mulching Kits to suit ventilated decks

Mulching Kit	36" Deck	MK360
Mulching Plate	36" Deck	MP36A
Mulching Kit	38" Deck	MK380
Mulching Plate	38" Deck	MP38A
Mulching Kit	42" Deck	MK420
Mulching Plate	42" Deck	MP42A
Mulching Kit	48" Deck	MK48
Mulching Kit	54" Deck	MK54

Note: Mulching Kit includes blades. Mulching Plate is plate only.

RECOMMENDED CUTTING HEIGHT

If you refer to the Owner's Manual, the average recommended settings are approximately 2 1/2" off the ground for the cool seasons and 3" off the ground for hot seasons. At these recommended settings there would be no abnormal stress on the blades, deck or deck belt.

Please remember these points:

- The recommended mowing height for our machines in constant use is 2" to 3" above the ground.
- If the grass is long and the ground is rough the mowing height should be set at least 3" above the ground.
- Our mowers have been engineered so that at a mowing height of between 2" and 3" above the ground, optimum belt alignment is achieved.
- The optimum grass cutting, grass catching and mulching efficiency is also achieved when ride-on mowers are used at mowing heights 2" to 3" above the ground.
- Blade wear and damage can **increase by up to 60%** when a ride-on mower is used with mowing heights below 1 1/2" above the ground.
- Deck, mandrel and deck drive belt damage also increases dramatically when ride-on mowers are used with deck mowing heights below 1 1/2" above the ground.

WHY O.E.M. V-BELTS ARE PREFERRED

O.E.M. or Original Equipment Manufacturer V-belts are designed for the characteristics of the individual drive system. This means the V-belt will last longer and work properly. OEM V-belts should be used only in the drive for which the V-belt was designed.

Aftermarket V-belts

Aftermarket V-belts fall into four categories: auto parts V-belts, fractional horsepower electric motor V-belts, lawn and garden V-belts, and agricultural replacement V-belts.

Auto parts V-belts are designed specifically for cars and trucks. These V-belts have polyester cords which are designed to shrink when the V-belt gets hot as it starts to slip. These V-belts have minimal covers and only a few cords. They are designed for low horsepower at high RPM with NO misalignment of pulleys.

Fractional Horsepower Electric Motor V-belts usually have designations like 4L or 3L. The 'L' is for light duty. Normally this belt is for one (1) horsepower or less and has polyester cords.

Lawn and Garden aftermarket replacement V-belts normally have kevlar cords and an aggressive V-belt cover. These V-belts may or may not give good service life. The aggressive V-belt cover will usually grab in the drive system. This may result in front end lift off (wheelies), or may result in the drive pulley burning the drive cover off. The aftermarket V-belts are normally found in one inch increments. If a V-belt is too long, it's life is shortened. If the aftermarket V-belt is too short, the V-belt may not declutch when needed.

Agricultural aftermarket replacement V-belts are similar to the Lawn and Garden replacement V-belts but with larger cross section and are designed for larger pulley diameters.

Husqvarna Outdoor Products recommend the use of OEM V-belts only which have the correct length, V-belt cover, and cord construction. The correct length maximises the service life of the V-belt. The V-belt cover specified gives the slippage or traction required for the drive. The V-belt cords are appropriate for the force the V-belt will transfer and the shock loads expected.

How are OEM V-belts customised?

OEM V-belts are designed for the specific drive application. Many things can be changed. The V-belt is a wedge. The power is transmitted through the angled sides of the V-belt. The angle of the side walls is different on some OEM V-belts. This is done to achieve a desired drive characteristic. For this reason, it is not a good idea to use OEM V-belt in a place other than its designated application.

There are different belt cords that can be used. the cord is selected for the load or force the V-belt will transfer in a specific application.

Kevlar is the strongest cord which will normally be a Yellow colour. Kevlar is by weight stronger than steel and will not stretch. It is widely used in products that require strength and light weight such as bullet proof vests.

V-BELT CHARACTERISTICS

Fiberglass cord may be used where maximum strength is not required. The fiberglass cord will be a reddish brown colour and will not stretch.

Polyester filament cord may be used where there should be a moderate force. The Polyester filament is dyed and may be different colours from different manufacturers. On american built tractors and tillers, the Polyester filament is a cream/white colour. Polyester filament cords will shrink if they get hot and can stretch. polyester is a good shock absorber and may be used in applications where there are high shock loads and length stability is not critical.

Polyester staple cord or rayon cord are used in lesser quality V-belts and are often found in aftermarket belts. These cords are not used on our tractors.

The V-belt cover must be matched to the application.

A **White Cover** is specified to allow for an element of belt slippage and transmission take up. The White Cover V-belt is a cotton/polyester blend. If you find one of these V-belts failed with a hard black residue in the engine pulley, remove the residue or replace the pulley. Never replace a white cover V-belt with a black cover V-belt. CRT tillers must have a white cover V-belt to allow the V-belt drive to slip when the tines hit obstructions. On CRT tillers, the White Cover V-belt also eliminates tine creep and wheel creep. (White belts are normally canvas covered and used on clutches/transmissions.)

A **Salt and Pepper Cover** is used when increased V-belt traction is needed.

A **Black Cover** is used on V-belt drives requiring even higher traction for mower drives and tillers. In operation this V-belt is black and sticky from rubber in the canvas V-belt cover. Most aftermarket V-belts have this type of cover.

A **Cut Side V-belt** with no cover may be used in some applications. A cut side V-belt gives excellent grip in the pulley but is very aggressive on engagement.

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.

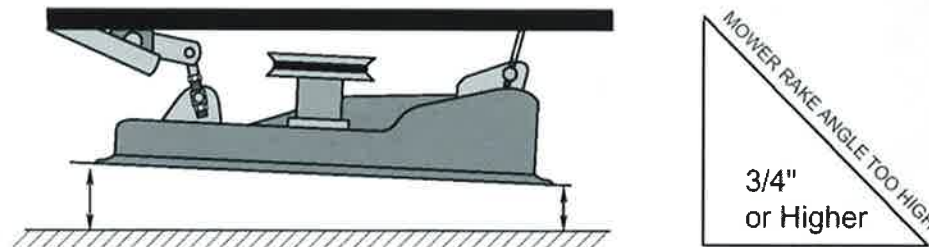
- Check for bent idler pulley brackets
- Check mower rake to determine proper mower V-belt alignment
- Check for a bent mower deck causing improper alignment
- Check for binding idler pulleys
- Check V-belt alignment in the drive – adjust idler pulley position to correct alignment
- Check mandrel shaft 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.

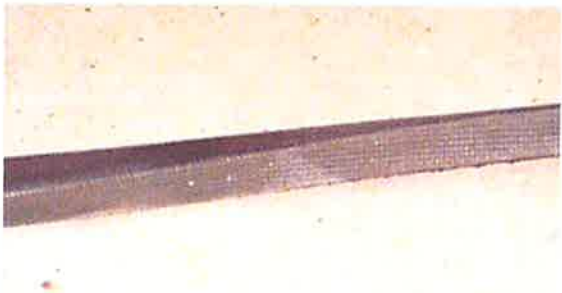
Be aware and take care during installation .



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.

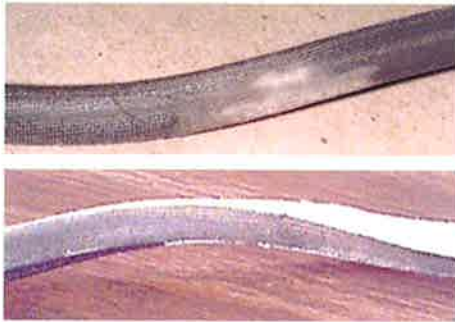


Belt deforming or turning in drive

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.