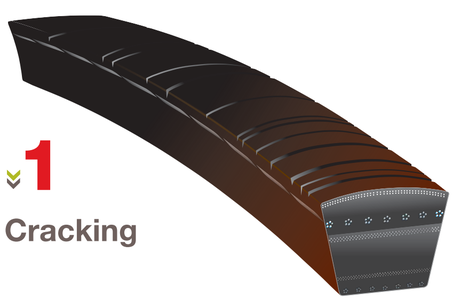
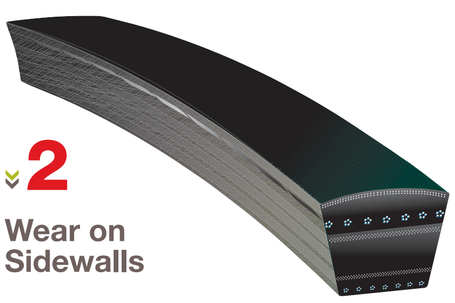
V-BELTS
Drive Failure Analysis

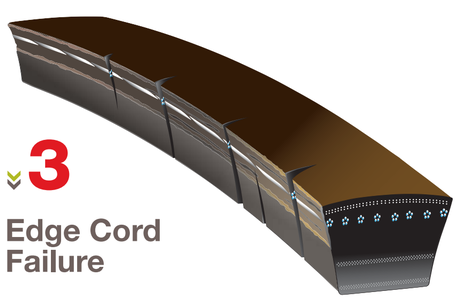
This chart is designed to more accurately identify and troubleshoot V-belt drive problems and failures.



1 Cracking



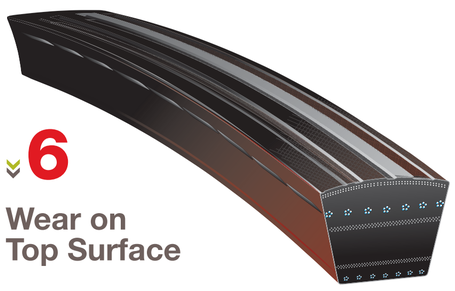
2 Wear on Sidewalls



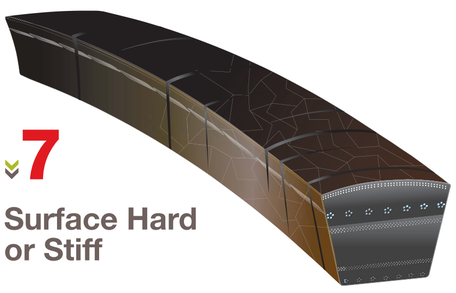
3 Edge Cord Failure

4 Wear on Top Corner

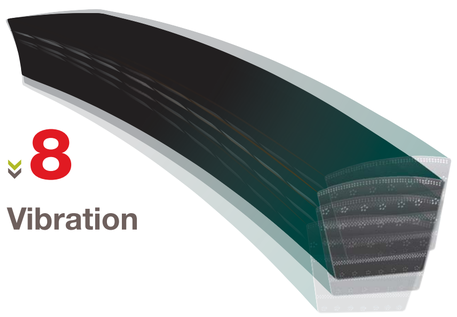
5 Surface Flaking Sticky or Swollen



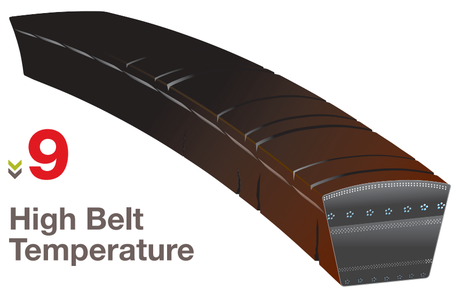
6 Wear on Top Surface



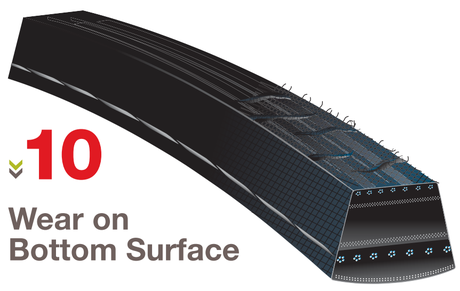
7 Surface Hard or Stiff



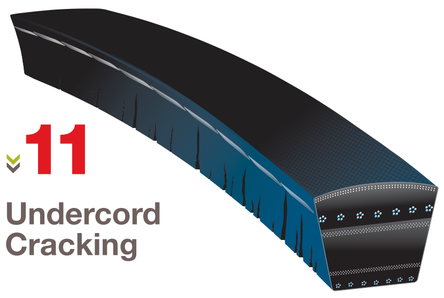
8 Vibration



9 High Belt Temperature



10 Wear on Bottom Surface

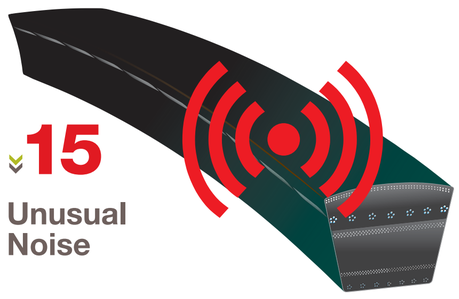


11 Undercord Cracking

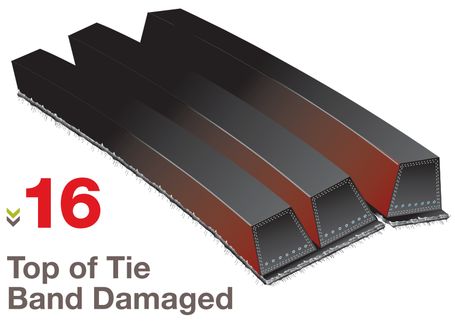
12 Turns Over or Comes Off Drive

13 Undercord Sidewall Burn or Hardening

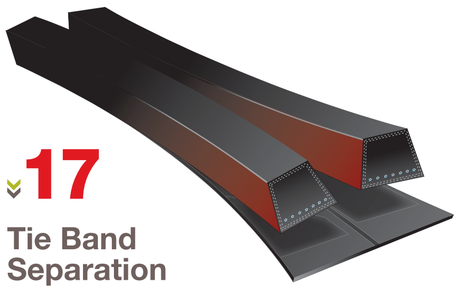
14 Wear on Bottom Corner



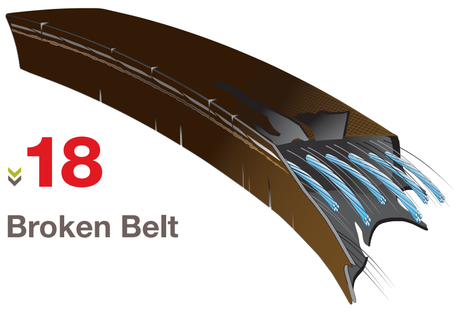
15 Unusual Noise



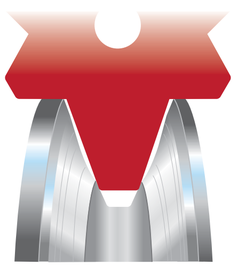
16 Top of Tie Band Damaged



17 Tie Band Separation



18 Broken Belt

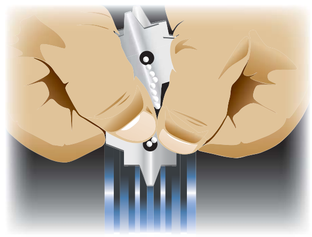


Worn Pulleys

Worn pulley will decrease the life of belts and drive components over time. Some signs of worn pulley grooves are obvious with groove sidewall cupping. Another sign that pulley grooves are wearing is a polished appearance with grooves or ridges on the pulley groove sidewalls. Worn or damaged pulleys should be replaced immediately.

Belt & Pulley Gauges

Gates offers pulley gauges that aid in determining the correct belt or pulley cross section. Pulley gauges are also used to indicate excessive pulley groove wear.



Product No.
7401-0015

	Symptom	Probable Cause	Corrective Action
1	Cracking	(1) Pulleys too small for belt section. (2) Belt slip. (3) Backside idler diameter too small. (4) Improper belt storage. (5) Excessive hot or cold temperature.	(1) Use larger diameter pulleys. (2) Retension to manufacturer's recommendations. (3) Increase backside idler to acceptable diameter. (4) Don't coil belt too tightly, kink or bend. Avoid heat and direct sunlight. (5) Control drive environment.
2	Wear on Sidewalls	(1) Belt slip. (2) Pulley misalignment. (3) Worn pulleys. (4) Incorrect belt.	(1) Retension to manufacturer's recommendations. (2) Realign drive. (3) Replace pulleys. (4) Replace with correct belt size.
3	Edge Cord Failure	(1) Pulley misalignment. (2) Damaged tensile member. (3) Worn or incorrect pulleys.	(1) Check alignment and correct. (2) Follow correct installation procedure. (3) Replace pulleys for correct belt/pulley match.
4	Wear on Top Corner	(1) Belt-to-pulley fit incorrect. (2) Belt rubbing against guard or drive structure.	(1) Use correct belt/pulley match. (2) Remove obstruction.
5	Surface Flaking, Sticky or Swollen	(1) Oil or chemical contamination.	(1) Do NOT use belt dressing; eliminate sources of oil, grease, or chemical contamination.
6	Wear on Top Surface	(1) Belt rubbing against guard. (2) Damaged idler.	(1) Repair or replace guard. (2) Repair or replace idler.
7	Surface Hard or Stiff	(1) Hot drive environment. (2) Belt slip.	(1) Improve ventilation to drive. (2) Retension to manufacturer's recommendations.
8	Unusual Vibration	(1) Incorrect belt. (2) Poor equipment structural design. (3) Excessive pulley eccentricity. (4) Loose drive components.	(1) Use correct belt/pulley match. (2) Check structure for adequate strength and rigidity. (3) Replace defective pulley. (4) Check machine components, guards, motor mounts, motor pads, bushings, brackets and framework for adequate strength, stability and installation.
9	High Belt Temperature	(1) Hot drive environment. (2) Slipping.	(1) Improve ventilation to drive. (2) Retension until slipping stops.

	Symptom	Probable Cause	Corrective Action
10	Wear on Bottom Surface	(1) Belt bottoming against pulley groove bottom. (2) Worn pulleys. (3) Debris in pulleys.	(1) Use correct belt/pulley match. (2) Replace pulleys. (3) Clean pulleys.
11	Undercord Cracking	(1) Pulleys too small for belt section. (2) Belt slip. (3) Backside idler diameter too small. (4) Excessive hot or cold temperature. (5) Improper belt storage.	(1) Use larger diameter pulleys. (2) Retension to manufacturer's recommendations. (3) Increase backside idler to acceptable diameter. (4) Control drive environment. (5) Don't coil belt too tightly, kink or bend. Avoid heat and direct sunlight.
12	Turns Over or Comes Off Drive	(1) Shock loading or vibration. (2) Foreign material in groove. (3) Sheave misalignment. (4) Worn pulley grooves. (5) Subminimal diameter pulley.	(1) Check drive design; use PowerBand® (joined) belts. (2) Shield grooves and drive. (3) Realign drive. (4) Replace pulleys. (5) Replace pulley with correct diameter.
13	Sidewall Burning or Hardening	(1) Belt slip. (2) Worn pulleys. (3) Under-designed drive. (4) Shaft movement.	(1) Retension to manufacturer's recommendations. (2) Replace pulleys. (3) Redesign to manufacturer's recommendations. (4) Check for center distance changes.
14	Wear on Bottom Corner	(1) Belt-to-pulley fit incorrect. (2) Worn pulleys.	(1) Use correct belt/pulley match. (2) Replace pulleys.
15	Unusually Loud Drive	(1) Incorrect belt for pulleys. (2) Incorrect tension. (3) Worn pulleys. (4) Debris in pulleys. (5) Pulley misalignment.	(1) Use correct belt size and type. (2) Check belt tension and adjust. (3) Replace pulleys. (4) Clean pulleys; improve shielding; remove rust, paint; or remove dirt from grooves. (5) Realign drive.
16	Top of Tie Band Damaged	(1) Interference with guard. (2) Backside idler malfunction. (3) Debris in pulleys.	(1) Check and adjust guard. (2) Replace or repair backside idler. (3) Clean pulleys.
17	Tie Band Separation	(1) Improper groove spacing. (2) Worn or incorrect pulleys. (3) Pulley misalignment.	(1) Use pulleys manufactured to industry specifications. (2) Replace pulleys. (3) Realign drive.
18	Broken Belt	(1) Under-designed drive. (2) Belt rolled or pried onto pulley. (3) Object falling into drive. (4) Severe shock load.	(1) Redesign to manufacturers recommendations. (2) Use drive centre distance adjustment when installing. (3) Provide adequate guard or drive protection. (4) Redesign to accommodate shock load.

www.gatesaustralia.com.au

496-3018

The Driving Force in Power Transmission®

A Tomkins Company