NTN SNR

TIMING AND ACCESSORY Ranges

Diagnostic Expert

Analysis & Recommendations

MAJOR CAUSES OF TIMING BELT FAILURES:

1. Uneven breakage
2. A clean break
3. Detached or separation of the belt teeth
4. Ripped teeth
5. Split teeth
6. Loss of teeth and material
7. Worn belt
8. The back of the belt is split
9. Wear on the edge
10. Molten belt
11. Automatic tensioners
12. Overheated roller
13. Mounting bracket broken (or reduced operating clearance)
14. Broken screw
15. The roller is not positioned correctly
16. Seizure and / or unusual noise
17. Corrosion of the track
18. Damaged mounting bracket
19. Oil leaks
20. Misalignment and early failure of the actuator
21. Damaged seal
22. Unusual vibration from the roller arm

GENERAL RECOMMENDATIONS

- Do not store the belts in sunlight
- Never fold, turn or twist a belt
- Do not force the belt onto pulleys
- Always use the correct tools when fitting belts
- Follow the recommended tension (use specific tools, for tensioners, direction of roller tension, and rotation of engine)
- Pay strict attention to the manufacturers' specifications and specialist documents on applications and their wear
- Tighten fastening screws, paying attention to the published tightening torque
- Check the condition of all mating components in the belt path (rollers, pumps and pulleys)
- Check the condition of the casings and remove all un-used parts
- In all cases a belt change is needed, we can not re-use a belt

1 UNEVEN BREAKAGE

EVIDENCE

- The belt is torn diagonally

PROBABLE CAUSES

- Over tightened belt
- Jammed by another part
- Contamination solid or liquid

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

use visual inspection e.g. to check for wear

2 A CLEAN BREAK

EVIDENCE

- The belt is ripped apart

PROBABLE CAUSES

- Defective material
- Use of unsuitable tools
- The belt was twisted
- Contamination solid or liquid

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

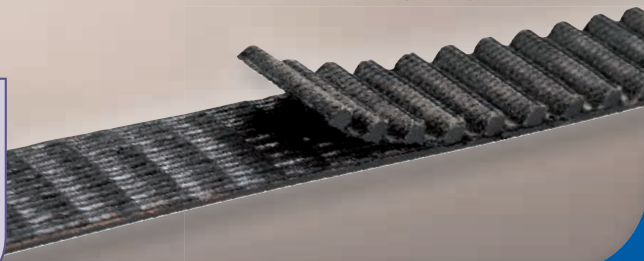
3 DETACHED OR SEPARATION OF THE BELT TEETH

EVIDENCE

- Detached or separation of the belt teeth

PROBABLE CAUSES

- Low belt tension – loss of tension
- An obstruction by an unknown component
- Contamination solid or liquid
- Incorrect tools used during fitting



NTN-SNR ADVICE

- Check the mounting of the tensioner
- Eliminate any leakages
- Observe the general recommendations relating to the assembly

4 RIPPED TEETH

EVIDENCE

- Loss of teeth

PROBABLE CAUSES

- Complete or partial hardening of a timing component

NTN-SNR ADVICE

- Do not install the belt on seized parts or those with excessive play
- Observe the general recommendations relating to the assembly

5 SPLIT TEETH

EVIDENCE

- Splits at the base of the teeth

PROBABLE CAUSES

- Belt is under tensioned
- An obstruction by an unknown component
- Incorrect tools used during fitting

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

6 LOSS OF TEETH AND MATERIAL

EVIDENCE

- The teeth have detached themselves from the fabric of the belt

PROBABLE CAUSES

- Low belt tension - loss of tension
- An obstruction by an unknown component
- Contamination by liquid

NTN-SNR ADVICE

- Eliminate leaks
- Observe the general recommendations relating to the assembly

7 WORN BELT

EVIDENCE

- Internal structure of the belt is visible

PROBABLE CAUSES

- Belt tension too tight
- Worn pulleys
- Operating temperature is too high

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly
- Check the engine is cool
- Check and replace worn pulleys

8 THE BACK OF THE BELT IS SPLIT

EVIDENCE

- Cracks on the back of the belt

PROBABLE CAUSES

- Temperature too low or too high
- Ageing of the belt
- Contact with an unknown component

NTN-SNR ADVICE

- Check if other parts are overheating
- Replace the belt
- Check the condition of the housing
- Check the engine is cool

9 WEAR ON THE EDGE

EVIDENCE

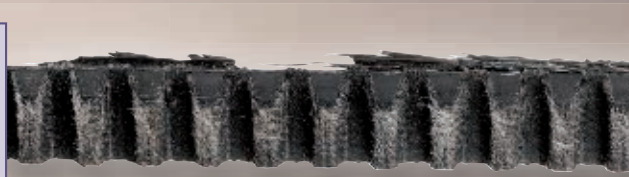
- Reduction in belt width
- One-sided wear of belt

PROBABLE CAUSES

- Misalignment of pulleys /or tensioner
- Contact with an unknown part

NTN-SNR ADVICE

- Replace the belt
- Observe the general recommendations relating to the assembly



10 MOLTEN BELT

EVIDENCE

- The internal structure of the belt is revealed on the back

PROBABLE CAUSES

- Excessive tension
- Obstruction by external parts

NTN-SNR ADVICE

- Change the blocked items
- Observe the general recommendations relating to the assembly

11 AUTOMATIC TENSIONERS

EVIDENCE

- Under tightened =
  Lower stop marked or broken
- Over tightened =
  Upper stop marked or broken

PROBABLE CAUSES

- Incorrect tension

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

12 OVERHEATED ROLLER

EVIDENCE

- The roller is disassembled and miscoloured

PROBABLE CAUSES

- Excessive tension
- Obstruction by external parts (heat has spread from the back of the belt)

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

13 MOUNTING BRACKET BROKEN (OR REDUCED OPERATING CLEARANCE)

EVIDENCE

- Broken centre of the roller

PROBABLE CAUSES

- Lubricated screw
- Over tightening that has caused a breakage of the support surface

NTN-SNR ADVICE

- Observe the general recommendations relating to the assembly

14 BROKEN SCREW

EVIDENCE

- The screw has split apart

PROBABLE CAUSES

- Lack of tightening
- Metal fatigue of the screw from back and forth movement of the roller. The screw was subject to shear stresses

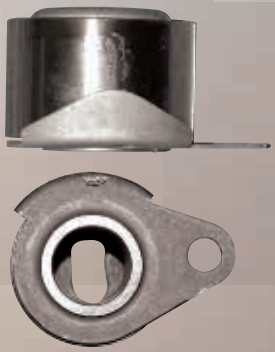
NTN-SNR ADVICE

- Tighten the screws to the exact recommended torque
- Lubricate the unthreaded shank of the screw but not the threads

15 THE ROLLER IS NOT POSITIONED CORRECTLY

EVIDENCE

- Tensioner indexing is not correct
- Circular marking
- Purple discolouration
- Seizure of the roller and friction on the belt



PROBABLE CAUSES

- Incorrect tension, bad index position on the engine housing
- Crushed roller plate by contact from centering on the engine

NTN-SNR ADVICE

- Change the belt
- Observe the general recommendations relating to the assembly

16 SEIZURE AND / OR UNUSUAL NOISE

EVIDENCE

- Extensive corrosion

PROBABLE CAUSES

- Omission of the protection cap when fitting, allowing water and dust to enter the bearing
- The grease is degraded by the contamination and cannot correctly lubricate the internal elements

NTN-SNR ADVICE

- Always fit the cap provided for the roller
- Check the correct position of deflectors

17 CORROSION OF THE TRACK

EVIDENCE

- Significant deposits of pollution

PROBABLE CAUSES

- The grease is degraded by the contamination and cannot correctly lubricate the internal elements

NTN-SNR ADVICE

- Avoid using high pressure washers on the engine
- Check the correct installation of deflectors and engine casings

18 DAMAGED MOUNTING BRACKET

EVIDENCE

- Distortion or absence of the mounting arm

PROBABLE CAUSES

- Incorrect tightening or loosening of the joint

NTN-SNR ADVICE

- Tighten the screw to the recommended torque
- Lubricate the unthreaded shank of the screw but not the threads

19 OIL LEAKS

EVIDENCE

- Leaks from the actuator

PROBABLE CAUSES

- Mishandling /shocks when fitting the part
- Using an unspecified actuator

NTN-SNR ADVICE

- Use the correct length of belt
- Observe the general recommendations relating to the assembly

20 MISALIGNMENT AND FAILURE OF THE ACTUATOR

EVIDENCE

- Damaged actuator

PROBABLE CAUSES

- Washer not fitted during fitting, leading to misalignment of the actuator and early failure
- Under or over tightening of the joint

NTN-SNR ADVICE

- Do not forget to refit the washer

21 DAMAGED SEAL

EVIDENCE

- Seal on the roller is damaged

PROBABLE CAUSES

- Mishandling /shocks when fitting the part

NTN-SNR ADVICE

- Fit all parts supplied with the roller
- Replace the damaged roller with a brand new roller

22 UNUSUAL VIBRATION FROM THE ROLLER ARM

EVIDENCE

- Spring broken
- Premature wear of the roller

PROBABLE CAUSES

- Length of the belt is incorrect
- Obstruction by external parts

- Check and replace as required, the free wheel pulley and the alternator pulley damper

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