TIMING AND ACCESSORY Ranges
Diagnostic Expert
Analysis & Recommendations
# MAJOR CAUSES OF TIMING BELT FAILURES:

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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
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
**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
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
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
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
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
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
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
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
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
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
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
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
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
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