

# HEAVY-DUTY BELTS

## Maintenance & Replacement Troubleshooting Guide

### BELTS MATTER

#### Don't let a belt failure leave you stranded.

When Belts on your vehicle operate in harsh conditions. They are subject to extreme temperature changes, environmental contaminants, high tensile loads and constant flexing when the engine is running. Due to age and wear, belts should be inspected every 60,000 miles and replaced every 90,000\*.

V-Belts are normally tensioned by means of the accessory's adjustable/movable shafts, or an adjustable non-tensioned idler pulley. A tensioning pulley is used only in exceptional cases. A Multi V-Belt, by contrast, usually operates in combination with tensioning pulleys and idlers. This is due to the belt's length and because it wraps around several accessory drive components. Stretch Multi V-Belts do not use a tensioner. They generally have to be installed using a special tool.



### BELT MAINTENANCE AND REPLACEMENT

Items are noted as follows: **Cause (C)**, **Solution (S)**

#### 1. Uneven rib wear



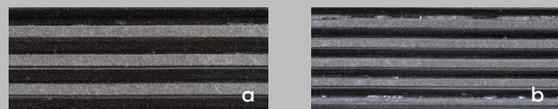
##### (C1) Belt pulleys not aligned

(S1) Align misaligned pulleys and idlers or change, if necessary. Change belt

##### (C2) Severe belt vibrations

(S2) Check OAP, TVD and tensioner and change, if necessary. Change belt

#### 2. Edge formation on ribs (a) & abrasive material in ribs (b)



##### (C1) Belt pulleys not aligned

(S1) Check drive, align misaligned pulleys and idlers or change, if necessary. Change belt

##### (C2) OAP or TVD defective

(S2) Check function of OAP, TVD and tensioner, change, if necessary. Change belt

##### (C3) Belt was laterally offset when mounting on ribbed pulleys

(S3) Change belt, ensure belt is correctly seated



### 3. Pronounced wear of ribs or flanks



**(C1) Pulleys, idlers or accessory units defective or tight**

(S1) Change defective parts and belt

**(C2) Belt pulleys not aligned**

(S2) Align pulleys and idlers and change, if necessary. Change belt

**(C3) High level of slip**

(S3) Check belt length, change belt, set correct tension

**(C4) Pulley profile worn**

(S4) Change pulleys and belt

**(C5) Severe belt vibrations**

(S5) Check OAP, TVD and tensioner and change, if necessary. Change belt

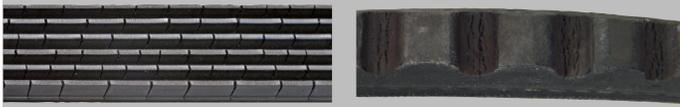
### 4. Damage to ribs



**(C1) Foreign objects in belt drive**

(S1) Check all components for damage, clean or change, if necessary; change belt, remove foreign objects

### 5. Rib material cracks & breaks off



**(C1) Belt tension too low or too high**

(S1) Change belt, set correct tension

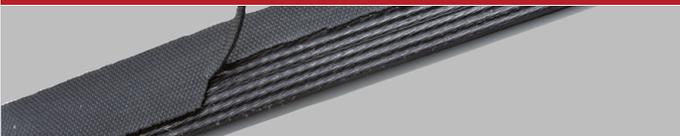
**(C2) Lifetime exceeded**

(S2) Change belt

**(C3) Belt gets too hot**

(S3) Remedy cause (e.g., engine temperature too high, check fan function, tight ancillary components), change belt

### 6. Tension member torn out of belt back or flank



**(C1) Alignment fault as a result of offset mounting of belt on ribbed pulleys**

(S1) Change belt, ensure correct positioning of belt

**(C2) Belt runs against solid edge at side**

(S2) Check belt can run unhindered, align misaligned pulleys and idlers and change, if necessary. Change belt

**(C3) Pretension too high**

(S3) Change belt, set correct tension

### 7. Belt failure caused by chemical effect of service materials



**(C1) Bubbling of elastomer compound and decomposition of vulcanization**

(S1) Repair leaks in engine or engine compartment (e.g., leaks of oil, fuel, coolant etc.), clean pulleys, change belt

### 8. Damage to back



**(C1) Reverse idler defective or tight**

(S1) Change reverse idler, change belt

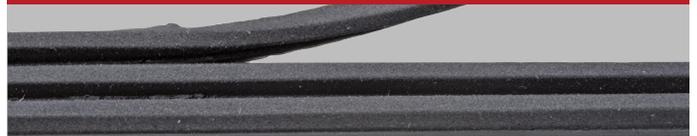
**(C2) Idler outer ring damaged by foreign objects**

(S2) Check drive for foreign objects, change idler, change belt

**(C3) Idler outer ring forms edge because of wear**

(S3) Change idler, change belt

### 9. Detached ribs



**(C1) Alignment fault as a result of offset mounting of belt on ribbed pulleys**

(S1) Change belt, ensure correct positioning of belt

**(C2) Belt pulleys not aligned**

(S2) Align misaligned pulleys and idlers or change, if necessary. Change belt

**(C3) As a result of severe vibration belt jumps to offset position**

(S3) Check function of OAP, TVD and tensioner, change if necessary. Change belt

**(C4) Foreign objects (small stones) in belt pulley**

(S4) Remove foreign objects, change belt pulley, if necessary. Change belt

### 10. Hardened, polished flanks



**(C1) Incorrect pretension**

(S1) Change belt, set correct tension

**(C2) Incorrect set composition with V-Belts**

(S2) Always change a complete belt set

**(C3) Incorrect flank angle with V-belts**

(S3) Change belt, ensure that correct belt is used