Practical Tips

Original quality – the best replacement

Power Transmission Group
Original Equipment quality products – safe, reliable and efficient

**CONTI-V MULTIRIB® multiple V-ribbed belts**

The CONTI-V MULTIRIB® multiple V-ribbed belt for standard 1) and serpentine 2) drives in cars and commercial vehicles is extremely safe, reliable and efficient. When fitted in serpentine drives with automatic tensioning, this belt does not need to be retightened.

**CONTI®-SF fan belts**

The CONTI®-SF fan belt for standard drives 1) in passenger cars and commercial vehicles is maintenance-free, safe, reliable and efficient. This belt does not need to be retensioned once fitted properly.

**Size designation (example)**

- **CONTI-V MULTIRIB® multiple V-ribbed belts**
  - 6 PK 1980
    - 6 number of ribs
    - PK profile designation/
      - spacing of ribs 3.56 mm
    - 1980 effective length (mm)

- **CONTI®-SF fan belts**
  - AVX 10 x 950
    - AVX profile
    - 10 belt width (mm)
    - 950 total length (mm)

1) 2 to 3 pulley drives with a fixed tensioning pulley
2) assemblies lying in one plane and driven by one belt

**Tensioning pulleys, idler pulleys**

When opting for multiple V-ribbed belts made by ContiTech, you are choosing a superior product in original equipment quality. To ensure the quality of our products and kits, we only use tensioning pulleys and idlers made by leading suppliers of original equipment. These matching components of a belt drive system ensure that the multiple V-ribbed belt provides the correct tension, guidance and power transmission.

Multiple V-ribbed and fan belts/Kits
Changing a multiple V-ribbed belt

If the belt drive has an automatic tensioning system:

- Use appropriate tools to move the tensioner to “belt removal”.
- Secure the tensioner in this position. (1)
- Make sure you are familiar with the belt configuration (drawing a sketch helps).
- Remove the belt.
- Check tensioner, back idler pulleys and belt pulleys for any wear or damage. (2)
- Ensure you have the correct belt size. First place it over the plain and flanged pulleys (3), and then push it over the smooth back idler pulleys. (4)
- Check that the belt is properly seated in the grooves.
- Release the tensioner securing mechanism with a suitable tool and move the tensioner against the belt. Remove all tools.
- Check that the belt is properly seated on all pulleys.
- Start the engine and watch that the belt is running along its intended path.

- Turn off the engine. Use the Krikit 2 or Krikit 3 tension gauge to check the belt tension on the taut section of the belt (5). If the tension is incorrect, check the tensioning system against the manufacturer’s data.
- Dispose of the replaced belt in an environmentally friendly way.

If the belt drive includes a fixed tensioning pulley:

- Release the tensioning system and move it into the drive unit.
- Make sure you are familiar with the belt configuration (drawing a sketch helps).
- Remove the belt.
- Check tensioner, back idler pulleys and belt pulleys for any wear or damage.
- Ensure you have the correct belt size. First place it over the plain and flanged pulleys, and then push it over the smooth back idler pulleys.
- Check that the belt is properly seated in the grooves.
• Use the Krikit 2 or Krikit 3 tension gauge to check the belt tension on the taut section of the belt. (5)

New multiple V-ribbed belts
Profile PK: 12-14 kg/rib

Used multiple V-ribbed belts
Profile PK: 9-10 kg/rib

• Let the engine run for a few minutes, then switch it off. Check the tension and make any necessary adjustments.
• Dispose of the replaced belt in an environmentally friendly way.

Safety tips

• When installing belts, only use the correct tool (not a screwdriver). The belt must be installed without the use of force.
• Belt dressing or similar materials should be used only in emergencies to eliminate noises.
• Never allow caustic or corrosive liquids to come into contact with the belt drive, as they could damage the plastic parts.
• Check that the belt pulleys are in flawless condition (no dirt, rust or burrs) and are the correct size for the belt profile.
• Ensure that the pulleys are properly aligned parallel to the axis.
• V-belt drives in sets contain belts in matched lengths. If any one belt fails, all belts must be replaced.

Changing a fan belt

Changing fan belts is similar to changing multiple V-ribbed belts with a fixed tensioning pulley. Use the Krikit 1 tension gauge to adjust the belt tension (6).

New fan belts
Profile AVX 10: 40 kg
Profile AVX 13: 55 kg

Used fan belts
Profile AVX 10: 25-30 kg
Profile AVX 13: 40-45 kg
Problem – Diagnosis – Solution: Building on experience

Checklist Multiple V-ribbed belts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension</td>
<td>• Tensioning system?</td>
</tr>
<tr>
<td>Damage to the back of the belt</td>
<td>• Back idler pulleys/ Back idler roller bearings?</td>
</tr>
<tr>
<td></td>
<td>• Foreign matter?</td>
</tr>
<tr>
<td>Unacceptable wear on belt ribs – cracks/separations</td>
<td>• Foreign matter?</td>
</tr>
<tr>
<td></td>
<td>• Mounting of pulleys?</td>
</tr>
<tr>
<td></td>
<td>• Pulley alignment?</td>
</tr>
<tr>
<td></td>
<td>• Ageing?</td>
</tr>
<tr>
<td>Dirt accumulation</td>
<td>• Leaks in the engine or engine compartment?</td>
</tr>
<tr>
<td>Drive noises</td>
<td>• Tension?</td>
</tr>
<tr>
<td></td>
<td>• Pulley alignment?</td>
</tr>
<tr>
<td></td>
<td>• Dirt accumulation?</td>
</tr>
</tbody>
</table>

Checklist Fan belts

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension</td>
<td>• Tension system?</td>
</tr>
<tr>
<td>Wear on flanks</td>
<td>• Pulley alignment?</td>
</tr>
<tr>
<td></td>
<td>Mounting of pulleys?</td>
</tr>
<tr>
<td>Cracks/separations</td>
<td>• Foreign matter?</td>
</tr>
<tr>
<td></td>
<td>• Ageing?</td>
</tr>
<tr>
<td>Dirt accumulation</td>
<td>• Leaks in the engine or engine compartment?</td>
</tr>
<tr>
<td>Drive noises</td>
<td>• Tension?</td>
</tr>
<tr>
<td></td>
<td>• Pulley alignment?</td>
</tr>
<tr>
<td></td>
<td>• Dirt accumulation?</td>
</tr>
<tr>
<td>Problem and cause</td>
<td>Multiple V-ribbed belts/fan belts</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Hardened, polished flanks</td>
<td>Incorrect tensioning</td>
</tr>
<tr>
<td></td>
<td>Incorrect tensioning</td>
</tr>
<tr>
<td>Uneven wear on ribs</td>
<td>Pulleys are not aligned</td>
</tr>
<tr>
<td></td>
<td>Substantial belt vibrations</td>
</tr>
<tr>
<td>Running noises from belt</td>
<td>Insufficient tension</td>
</tr>
<tr>
<td></td>
<td>Belt past its useful life</td>
</tr>
<tr>
<td></td>
<td>Belt past its useful life</td>
</tr>
<tr>
<td></td>
<td>Belt past its useful life</td>
</tr>
<tr>
<td></td>
<td>Belt excessively tensioned</td>
</tr>
<tr>
<td></td>
<td>Belt excessively tensioned</td>
</tr>
<tr>
<td>Crack in the belt after a short running time</td>
<td>Tension members damaged as a result of incorrect fitting</td>
</tr>
<tr>
<td></td>
<td>Belt excessively tensioned</td>
</tr>
<tr>
<td>Dirt accumulation on the belt</td>
<td>Leaks in the engine or engine compartment (e.g. escape of oil, antifreeze etc.)</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Problem and cause</th>
<th>Multiple V-ribbed belts</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage to the back of the belt</td>
<td>Back idler pulley defective (sluggish, surface damaged, e.g. by foreign matter)</td>
<td>Change the belt, replace the back idler pulleys</td>
</tr>
<tr>
<td>Unacceptable wear of belt ribs</td>
<td>Pulleys/idlers/ assemblies defective (sluggish)</td>
<td>Replace pulleys/idlers/ assemblies, change the belt</td>
</tr>
<tr>
<td></td>
<td>Pulleys not aligned</td>
<td>Align or replace pulleys, change the belt</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Problem and cause</th>
<th>Fan belts</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened, polished flanks (different tension values for belts of sets)</td>
<td>Pulleys not aligned</td>
<td>Examine the drive, line up non-aligned pulleys and fit a new set of belts</td>
</tr>
<tr>
<td></td>
<td>Tension member of belt damaged by incorrect fitting</td>
<td>Change the belt, fitting it correctly</td>
</tr>
<tr>
<td></td>
<td>Mismatching of belts</td>
<td>Always replace a complete set of belts</td>
</tr>
<tr>
<td>Excessive wear on flanks/flanks brittle</td>
<td>Excessive slip</td>
<td>Change the belt, adjust the tension correctly</td>
</tr>
<tr>
<td></td>
<td>Pulleys not aligned</td>
<td>Examine the drive, line up or, if necessary, replace any non-aligned pulleys</td>
</tr>
<tr>
<td></td>
<td>Pulley grooves with uneven wear</td>
<td>Line up or, if necessary, replace any non-aligned pulleys</td>
</tr>
</tbody>
</table>
CONTI SYNCHROBELT® timing belts in three different basic profiles (trapezoidal, HTD, STD) ensure synchronous power transmission. They are reliable, quiet and maintenance-free. They are used in passenger car engines to drive camshafts, fuel injection pumps and balancing shafts.

**ContiTech Practical Tips**

Top-class products – safe to use, low noise, zero maintenance

CONTI SYNCHROBELT® trapezoidal timing belts

<table>
<thead>
<tr>
<th>Profile</th>
<th>t (mm)</th>
<th>hₕ (mm)</th>
<th>hₛ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA</td>
<td>9.525</td>
<td>4.1</td>
<td>1.9</td>
</tr>
<tr>
<td>LAH</td>
<td>9.525</td>
<td>4.5</td>
<td>2.3</td>
</tr>
</tbody>
</table>

CONTRI SYNCHROBELT® HTD timing belts

<table>
<thead>
<tr>
<th>Profile</th>
<th>t (mm)</th>
<th>hₕ (mm)</th>
<th>hₛ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTD 9.525 M</td>
<td>9.525</td>
<td>5.6</td>
<td>3.45</td>
</tr>
</tbody>
</table>

CONTRI SYNCHROBELT® STD timing belts

<table>
<thead>
<tr>
<th>Profile</th>
<th>t (mm)</th>
<th>hₕ (mm)</th>
<th>hₛ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD 8 M</td>
<td>8.0</td>
<td>5.3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The right timing belts and timing belt kits for all vehicles are listed in the comprehensive ContiTech application guide for passenger cars and in TecDoc, the electronic data catalogue (CD ROM).
Tensioning pulleys, idler/guide pulleys

With timing belts from ContiTech, you are opting for a top product in original equipment quality. To ensure the quality of our products and kits we only use tensioning, idler and guide pulleys made by leading suppliers of original equipment. These matching components of a control drive ensure the correct tensioning, guiding and power transmitting of timing belts.

Configuration of a timing belt

CONTI SYNCHROBELT® KIT

Depending on the application, this product combines timing belts, tensioning pulleys, idler and/or guide pulleys in a single pack. Replacing the timing belt and its matching parts at the same time gives extra engine reliability and means greater safety for the motorist. There are also benefits for the garage: no need to order individual parts, all items are perfectly matched, and there’s sturdy packaging to protect the products before they are used.

Be on the safe side

In modern engines timing belts and matching components are subjected to a great deal of stress. High rotational speeds, vibrations and extreme temperatures can easily have a negative effect on the functioning of parts, e.g. ball bearings. Cracks below the metal surface, overheating and worn-out sealing rings of ball bearings lead to increased metal wear and even the jamming of pulleys. So they can easily cause belt damage. If a timing belt snaps when the engine is running, the engine can sustain irreparable damage. So it is strongly recommended that timing belts and matching components are replaced at the same time, just to be on the safe side.
Changing the belt correctly – for 100% drive function

Changing a timing belt

1. Disconnect the earth cable from the battery.
2. Remove all drive belts, pulleys or hoses that could get in the way when the timing belt is removed.
3. Remove the timing belt cover.
4. Turn the crankshaft in the running direction of the engine as far as top dead centre, and bring marking on the engine case into line with the marking on the crankshaft vibration damper and the camshaft. (1)
5. Loosen the adjusting screw of the tensioning pulley.
6. Pull the tensioning pulley away from the timing belt and screw the tensioning pulley tight again. (2)
7. Remove the timing belt.
8. Check tensioner, smooth back idler pulleys, belt pulleys for wear or damage. If necessary replace them. (3)
9. Adjust all markings until they are properly aligned.
10. Place the new timing belt on the pulleys.
11. Loosen the adjusting screw of the tensioning pulley, allowing the pulley to move freely.
12. Turn the adjusting screw carefully into its final position (make proper allowance for the spring pressure). If the tensioning pulley is not automatic, tension the timing belt as specified by the vehicle manufacturer, using the tensioning device provided for this. (4)
13. Check the alignment of the markings.
14. Rotate the crankshaft by at least two complete revolutions in the running direction of the engine to ensure the timing belt is properly tensioned by the tensioning pulley.
15. Check the alignment of the markings once again.
16. Put the tensioning pulley in its intended position and tighten the screws with the specified torque setting. (5)
17. Refit the timing belt cover as well as all drive belts, pulleys and hoses that were removed.
18. Reconnect the earth cable to the battery.
19. Start the engine.
20. Make any adjustments that are necessary.

Timing belts
Profiles of timing belts and timing belt pulleys

<table>
<thead>
<tr>
<th>Code</th>
<th>Belt profile</th>
<th>Pulley profile</th>
<th>Examples of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA</td>
<td></td>
<td>🕒</td>
<td>Audi, Citroën, Fiat, Ford, Mazda, Opel/Vauxhall, Peugeot, Renault, Volvo, VW</td>
</tr>
<tr>
<td>LAR</td>
<td></td>
<td>🕒</td>
<td>Audi, Fiat, Ford, Lada, Lancia, Mitsubishi, Opel/Vauxhall, Rover, Vauxhall, VW</td>
</tr>
<tr>
<td>LAN</td>
<td></td>
<td>🕒</td>
<td>Fiat, VW</td>
</tr>
<tr>
<td>LAH</td>
<td></td>
<td>🕒</td>
<td>Audi, Fiat, Ford, Opel/Vauxhall, Peugeot, Porsche, Renault, Volvo, VW</td>
</tr>
<tr>
<td>LAHR</td>
<td></td>
<td>🕒</td>
<td>Audi, Bedford, Mitsubishi, VW</td>
</tr>
<tr>
<td>LAHN</td>
<td></td>
<td>🕒</td>
<td>Audi, VW</td>
</tr>
<tr>
<td>HTD</td>
<td>🕒</td>
<td>🕒</td>
<td>BMW, Citroën, Honda, Mazda, Opel/Vauxhall, Porsche, Renault, Rover, Volvo, VW</td>
</tr>
<tr>
<td>9.525 M</td>
<td>☌</td>
<td>☌</td>
<td>Ford, Lada, Volvo</td>
</tr>
<tr>
<td>HTDN</td>
<td>🕒</td>
<td>🕒</td>
<td>Opel/Vauxhall</td>
</tr>
<tr>
<td>9.525 M</td>
<td>☌</td>
<td>☌</td>
<td>Daihatsu, Honda, Mazda, Mitsubishi, Renault, Rover, Suzuki, Volvo</td>
</tr>
<tr>
<td>HTDA</td>
<td>🕒</td>
<td>🕒</td>
<td>Daihatsu, Mazda, Nissan, Rover, Subaru, Suzuki</td>
</tr>
<tr>
<td>9.525 M</td>
<td>☌</td>
<td>☌</td>
<td>Mazda, Toyota</td>
</tr>
<tr>
<td>HTDA</td>
<td>🕒</td>
<td>🕒</td>
<td>Audi, Ferrari, Fiat, Lancia, Land-Rover, VW</td>
</tr>
<tr>
<td>8 M</td>
<td>☌</td>
<td>☌</td>
<td>Fiat, Lancia</td>
</tr>
<tr>
<td>STDN</td>
<td>🕒</td>
<td>🕒</td>
<td>Ford, Fiat, Citroën, Peugeot, Rover</td>
</tr>
<tr>
<td>8 M</td>
<td>☌</td>
<td>☌</td>
<td>Fiat, Renault</td>
</tr>
<tr>
<td>CHDN</td>
<td>🕒</td>
<td>🕒</td>
<td>Citroën, Honda, Land-Rover, Peugeot, Rover</td>
</tr>
<tr>
<td>9.525 M</td>
<td>☌</td>
<td>☌</td>
<td></td>
</tr>
</tbody>
</table>

Safety tips

- When fitting belts, only use the correct tool. The belt must be placed in position manually. In no circumstances may timing belts be forced, e.g. with rim levers, on to toothed pulleys or rolled over flanged pulleys. Such action would damage the tension member.
- Never allow caustic or corrosive liquids to come into contact with the belt drive, as they could damage the plastic parts.
- Keep the belt well away from oil mist, dripping oil and other chemicals!
- Always comply with the installation instructions of the vehicle manufacturer! These are printed in the owner’s manual in the section explaining how to change a timing belt.
- Fill in the sticker accompanying every new ContiTech timing belt and stick it in the engine compartment where it can easily be seen.
- Regardless of which components are defective – whether tensioning pulley, idler pulley or guide pulley – all these components must be replaced!
Problem – Diagnosis – Solution: Ensuring a smooth operation

Checklist Timing belts

Changing interval
Tension • Tensioning system?
Damage to the back of the belt • Idler pulleys?
• Tensioning pulleys?
• Foreign matter?
Unacceptable wear of tooth profile • Toothed pulleys?
• Assemblies?
• Pulley alignment?
• Foreign matter?
Cracks/separations • Toothed pulleys?
• Assemblies?
• Foreign matter?
• Pulley alignment?
Edge wear • Pulley alignment?
• Flanged pulley?
Dirt accumulation • Leaks in the system components of the engine?
Drive noises • Tension?
• Pulley alignment?
• Assemblies?
• Idler/tensioning pulleys?
<table>
<thead>
<tr>
<th>Problem and cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Running noises from belt</strong></td>
<td>① ② Adjust tension properly</td>
</tr>
<tr>
<td>① Tension too high: Belt whines, whistles</td>
<td>① ② Adjust tension properly</td>
</tr>
<tr>
<td>② Tension too low: Belt knocks against covering</td>
<td>① ② Adjust tension properly</td>
</tr>
<tr>
<td><strong>Edge wear</strong></td>
<td>① ② Check drive, line up or, if necessary, replace any non-aligned pulleys, change the belt</td>
</tr>
<tr>
<td>① Belt not parallel to axis: Belt runs against flanged pulley</td>
<td>① ② Check drive, line up or, if necessary, replace any non-aligned pulleys, change the belt</td>
</tr>
<tr>
<td>② Wheels axially off-centre: Timing belt cannot be properly aligned</td>
<td>① ② Check drive, line up or, if necessary, replace any non-aligned pulleys, change the belt</td>
</tr>
<tr>
<td>③ Flanged pulley has flaws</td>
<td>① ② Check drive, line up or, if necessary, replace any non-aligned pulleys, change the belt</td>
</tr>
<tr>
<td>④ Bearing play in components</td>
<td>① ② Check drive, line up or, if necessary, replace any non-aligned pulleys, change the belt</td>
</tr>
<tr>
<td><strong>Fabric wear in the tooth root</strong></td>
<td>① ② Replace idler/tensioning pulleys, change the belt</td>
</tr>
<tr>
<td>① Belt excessively tensioned</td>
<td>① ② Replace idler/tensioning pulleys, change the belt</td>
</tr>
<tr>
<td>② Belt is overheating</td>
<td>① ② Replace idler/tensioning pulleys, change the belt</td>
</tr>
<tr>
<td>③ Timing belt pulley is worn out</td>
<td>① ② Replace idler/tensioning pulleys, change the belt</td>
</tr>
<tr>
<td><strong>Unacceptable wear of tooth flanks/ base separating and tooth shearing</strong></td>
<td>① ② Remove foreign matter, check covering is seated properly, change the belt</td>
</tr>
<tr>
<td>① Tension too high/too low</td>
<td>① ② Remove foreign matter, check covering is seated properly, change the belt</td>
</tr>
<tr>
<td>② Trapped foreign matter</td>
<td>① ② Remove foreign matter, check covering is seated properly, change the belt</td>
</tr>
<tr>
<td>③ Jammed timing belt pulley or tensioning pulley</td>
<td>① ② Remove foreign matter, check covering is seated properly, change the belt</td>
</tr>
<tr>
<td><strong>Teeth and fabric separating from belt body</strong></td>
<td>① Repair leak(s), change the belt</td>
</tr>
<tr>
<td>① Leaks in the engine or engine compartment (e.g. escape of oil, antifreeze etc.)</td>
<td>① Repair leak(s), change the belt</td>
</tr>
<tr>
<td><strong>Running marks on teeth side</strong></td>
<td>① Remove foreign matter, change the belt, check the cover is seated properly</td>
</tr>
<tr>
<td>① Foreign matter in timing belt drive</td>
<td>① Remove foreign matter, change the belt, check the cover is seated properly</td>
</tr>
<tr>
<td>② Flaws in teeth of timing belt pulley caused by foreign matter or tools during fitting</td>
<td>① Remove foreign matter, change the belt, check the cover is seated properly</td>
</tr>
<tr>
<td>③ Timing belt damaged before/during fitting</td>
<td>① Remove foreign matter, change the belt, check the cover is seated properly</td>
</tr>
<tr>
<td><strong>Cracks on back of timing belt</strong></td>
<td>① ② Change the belt, check the covering is seated properly</td>
</tr>
<tr>
<td>① Ambient temperature too high/low</td>
<td>① ② Change the belt, check the covering is seated properly</td>
</tr>
<tr>
<td>② Contact with foreign media</td>
<td>① ② Change the belt, check the covering is seated properly</td>
</tr>
<tr>
<td>③ Back idler pulley sluggish</td>
<td>① ② Change the belt, check the covering is seated properly</td>
</tr>
<tr>
<td>④ Ageing</td>
<td>① ② Change the belt, check the covering is seated properly</td>
</tr>
<tr>
<td><strong>Timing belt snaps</strong></td>
<td>① ② Change the belt and fit it correctly</td>
</tr>
<tr>
<td>① Foreign matter in the drive</td>
<td>① ② Change the belt and fit it correctly</td>
</tr>
<tr>
<td>② Contact with foreign media</td>
<td>① ② Change the belt and fit it correctly</td>
</tr>
<tr>
<td>③ Excessive tensioning</td>
<td>① ② Change the belt and fit it correctly</td>
</tr>
<tr>
<td>④ Belt was crimped before/during fitting</td>
<td>① ② Change the belt and fit it correctly</td>
</tr>
<tr>
<td><strong>Defective system components</strong></td>
<td>① ② Replace the idler, tensioning and/or guide pulley</td>
</tr>
<tr>
<td>① Bearing play</td>
<td>① ② Replace the idler, tensioning and/or guide pulley</td>
</tr>
<tr>
<td>② Damaged running surface</td>
<td>① ② Replace the idler, tensioning and/or guide pulley</td>
</tr>
</tbody>
</table>