

SCANIA

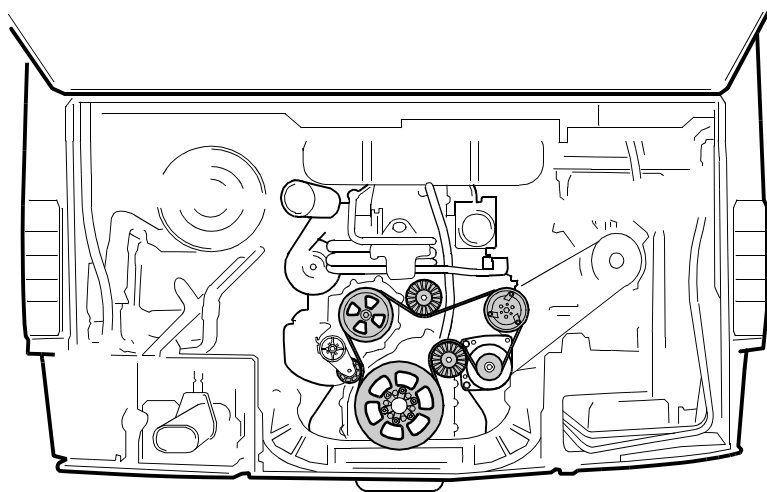
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Issue 1 en

Belt transmission

Bus

Work description



124 092

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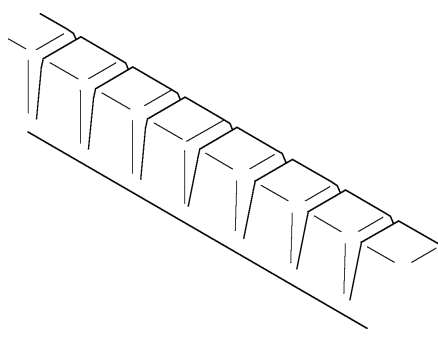
General

The belt transmission drives the coolant pump, the AC compressor and the alternators. Three different types of belts are used, depending on the type of bus and whether the bus is equipped with an AC compressor.

V-belt

The V-belt is a toothed, wedge-shaped, FO-type belt. V-belts of FO type have better properties than standard belts on the market.

The belt tensioning is obtained by using the alternator attachment point.

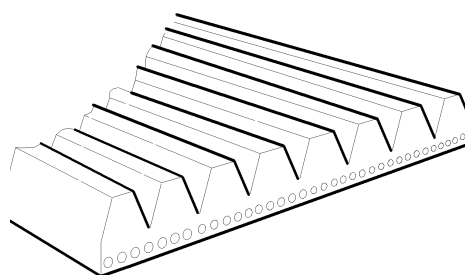


V-belt

Poly-V-belt

The belt is a poly-V belt; a flat belt with small V-shaped grooves on the inside. This kind of belt allows trailing wheels on the outside to raise the winding angle on the pulleys.

In order to get the correct belt tension an automatic belt tensioner is used.

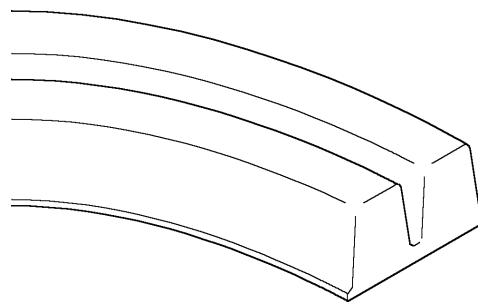


Poly-V-belt

Multi belt

Fitted on K bus with AC. The AC compressor is then driven by a multi belt.

The belt is tensioned using the air bellows on the AC compressor shelf.



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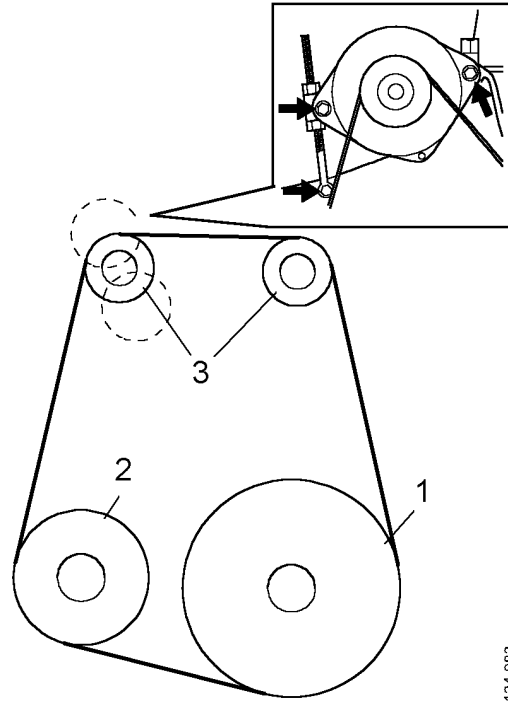
Multi belt

V-belt

Belt drive for F bus

9 litre engine with two alternators

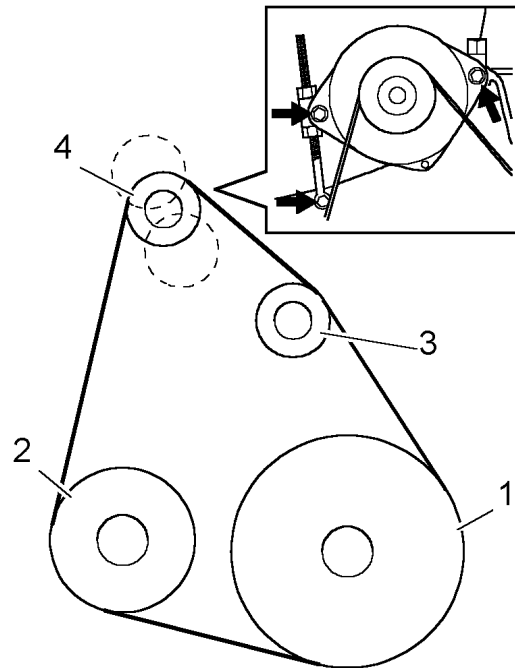
- 1 Crankshaft
- 2 Coolant pump
- 3 Alternator



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9 litre engine with one alternator

- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller (from chassis no. 3 132 943)
- 4 Alternator

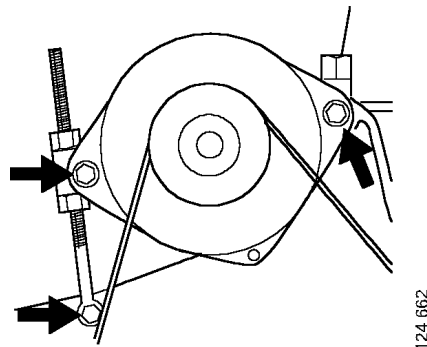


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Renewing V-belts

When renewing V-belts, take the following into account:

- Use original FO type V-belts. V-belts of FO type have better properties than standard belts on the market.
- Always renew V-belts in pairs, even if only one V-belt is broken. Use V-belts in pairs.
- Inspect the pulleys. Remove corrosion, dirt, oil and grease.
- Renew pulleys with damaged belt grooves.
- Inspect the V-belts. A damaged V-belt has a short service life. A V-belt with oil, for example, can easily slip.
- Check the belt tension.



The arrows show the alternator attachment points.

Checking belt tension

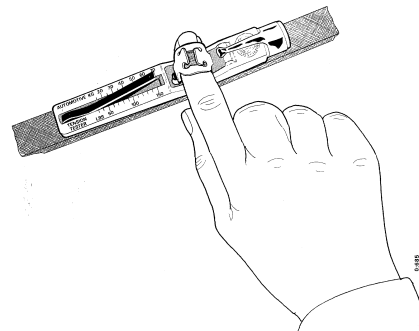
If the belt tension is too high the pulleys and bearings are put under stress, which reduces the service life of the V-belts. If the belt tension is too low, the belt will slip during high engine output. Slip leads to poor charging, incorrect engine speed indication, incorrect input values to the tachograph and to poor cooling.

Tools

Number	Description	Location
587 495	Belt tension gauge Krikrit	Maintenance trolley

Measuring

- 1 Reset the gauge by depressing the gauge arm.
- 2 Place the gauge on the V-belt between two pulleys.
- 3 Press until a click can be heard from the gauge.
- 4 Read the measurement.



Recommended belt tension for FO belts

New belt	370 N
Used belt	310 N

New V-belts have a higher belt tension because belts lose tension throughout their service life.

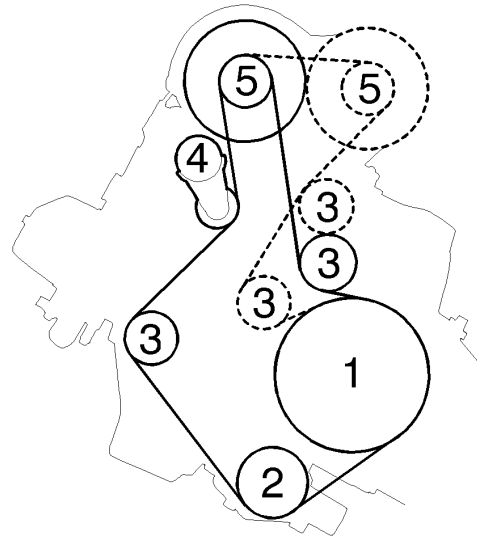
Poly-V-belt

Belt drive for N and L buses

9 litre engine without AC

The areas with broken lines indicate options with two alternators.

- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator

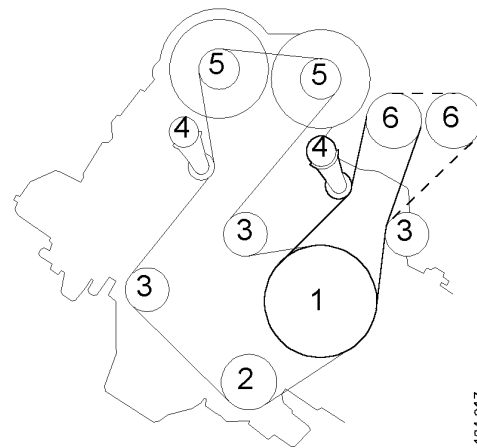


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9 litre engine with AC

The areas with broken lines indicate options with two AC compressors.

- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator
- 6 AC compressor



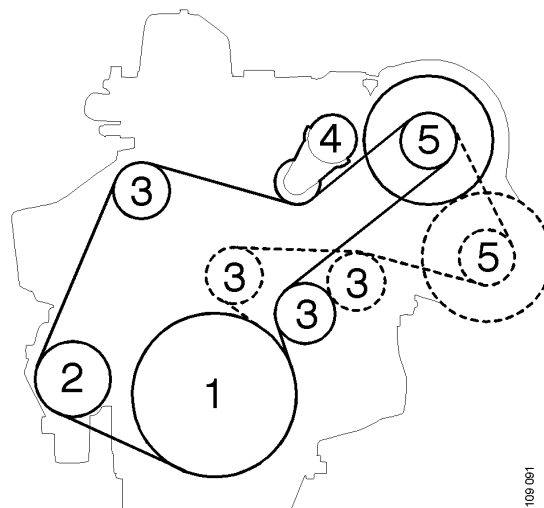
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Belt drive for K bus

9 litre engine without AC

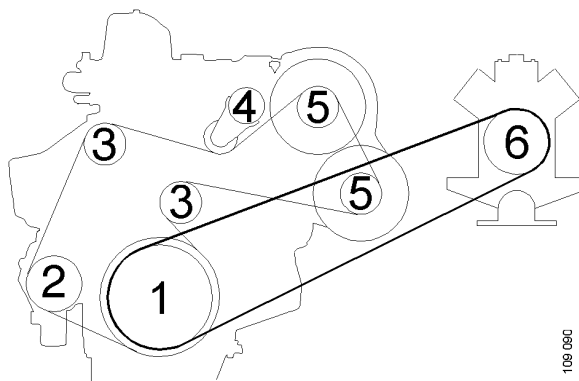
The areas with broken lines indicate options with two alternators.

- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator



9 litre engine with AC

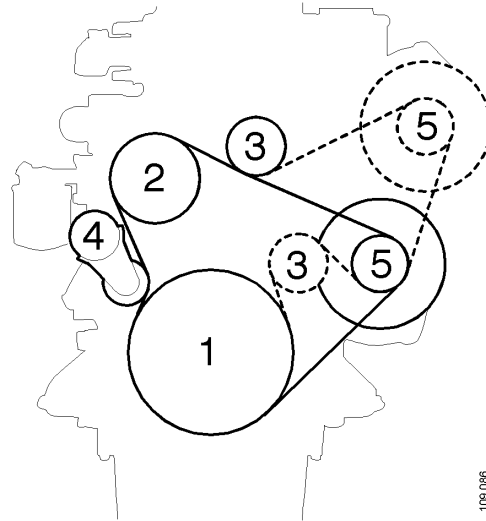
- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator
- 6 AC compressor



11 and 12 litre engines without AC

The areas with broken lines indicate options with two alternators.

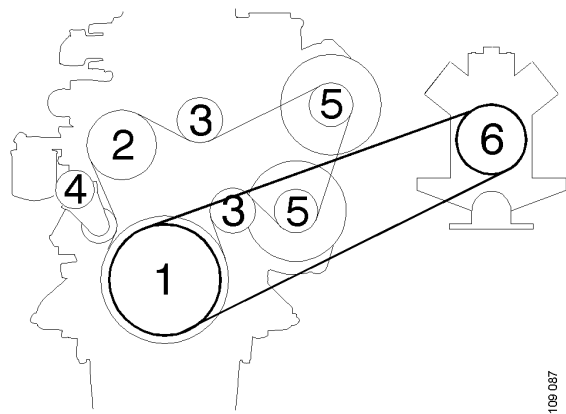
- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator



11 and 12 litre engines with AC

The areas with broken lines indicate options with two alternators.

- 1 Crankshaft
- 2 Coolant pump
- 3 Idler roller
- 4 Belt tensioner
- 5 Alternator
- 6 AC compressor



Automatic belt tensioner

The belt tensioner must not be adjusted, opened, repaired or modified in any way. If the belt tensioner does not provide sufficient tensioning of the poly-V-belt, it must be renewed.

The poly-V-belt must be removed before the belt tensioner retaining bolt is slackened. The index pin (restricting the belt tensioner angular movement) is not designed to withstand the spring force and may thus break unless the belt tensioner retaining bolt is tightened.



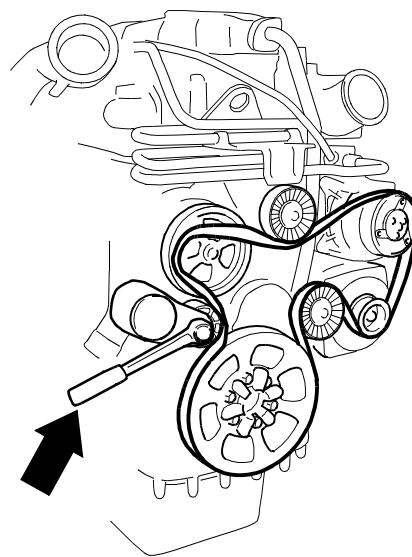
WARNING!

If the index pin breaks, the belt tensioner arm will move out. There is a risk of personal injury since the spring force on the tensioner is high.

Fitting the poly-V-belt

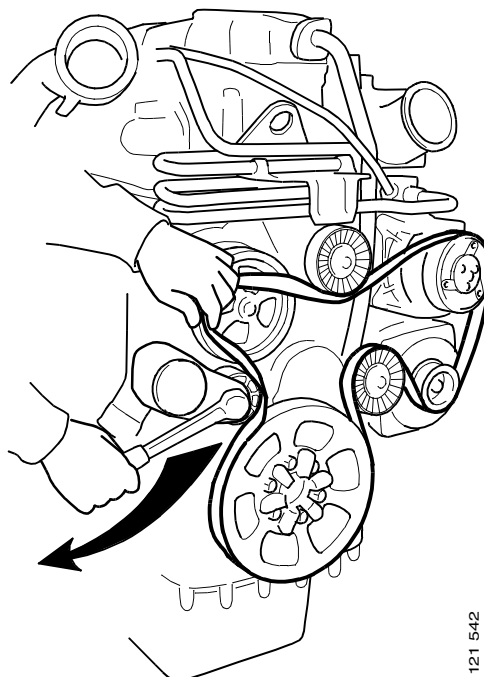
Below is a general description in order to facilitate fitting of the poly-V-belt. The illustrations show a 12 litre engine but the procedure is the same for all engines with poly-V-belts.

- 1 Fit a ratchet handle in the belt tensioner.
- 2 Fit the poly-V-belt.



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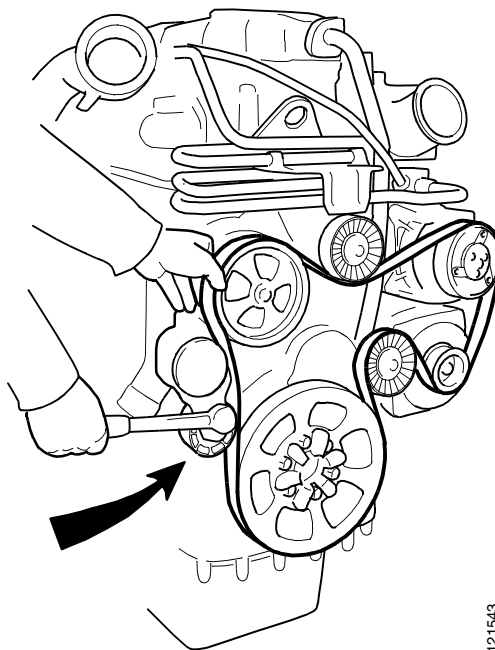
- 3 Keep the poly-V-belt tensioned so that it stays in place, at the same time as pressure on the belt tensioner is relieved with the ratchet handle.



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- 4 Fit the poly-V-belt around the remaining pulley.
- 5 Keep the poly-V-belt in position and release the belt tensioner.

Note: Check that the belt is correctly routed on all pulleys and idler rollers.



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Noise in the belt drive

Checks to be made

Run the engine with full load on the belt drive, i.e. with the fan, alternator and, if fitted, the AC switched on. Run the engine at idling speed, full speed and with rapid acceleration.

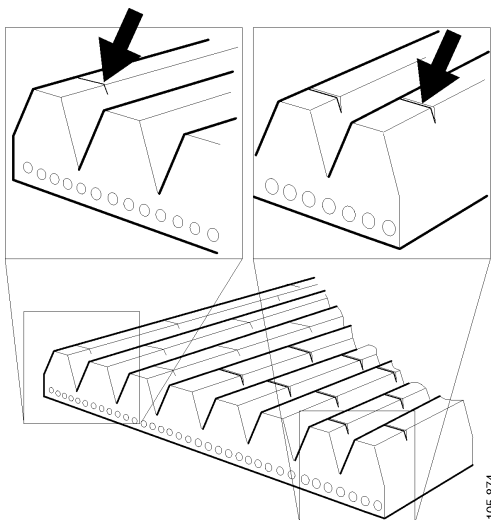
Proceed as follows in case of noise

- 1 Slacken the poly-V-belt.
- 2 Check the poly-V-belt for cracks and wear according to the instructions in the section Checking the poly-V-belt.
- 3 Check the belt drive rollers by turning them. The rollers should turn easily without jamming or noise.
- 4 Check the belt tensioner by slowly pressing it from the poly-V-belt until it stops. Then, slowly bring the belt tensioner back to the initial position. Repeat 2-3 times. Jamming or jerking of the belt tensioner is not permissible.

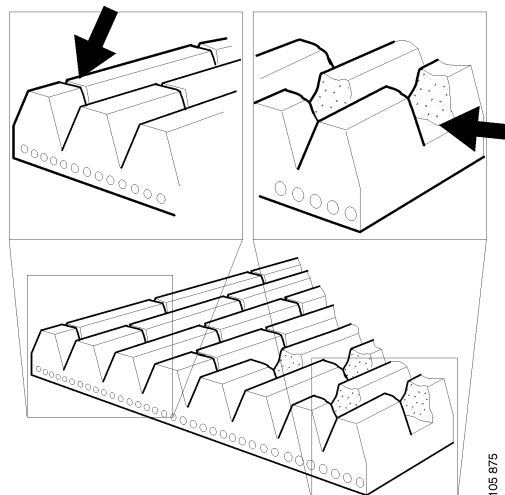
Checking the poly-V-belt

IMPORTANT! Do not change the direction of rotation when the poly-V-belt is refitted.

- Mark the direction of rotation of the poly-V-belt.
- Detach the poly-V-belt from the pulleys.
- Be careful when checking the poly-V-belt. If the poly-V-belt has one or more cracks, renew it.

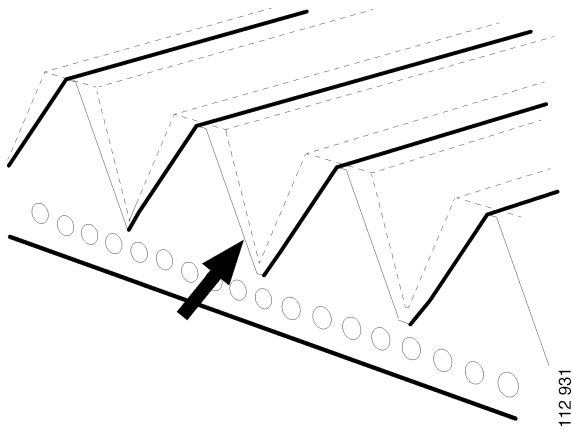


Small surface cracks are acceptable.

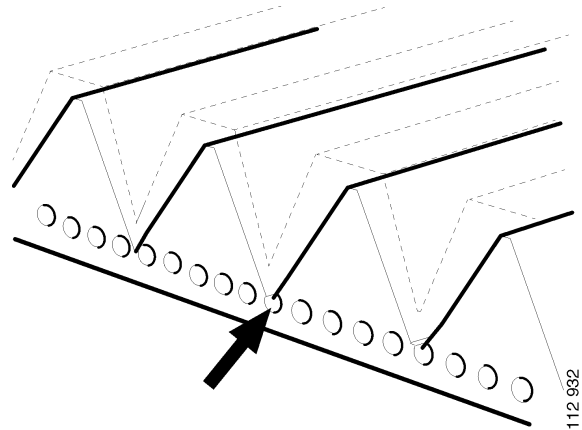


If there are large cracks or if pieces are missing, renew the belt.

- Also check wear on the poly-V-belt.



The poly-V-belt shows signs of wear. Can be refitted.

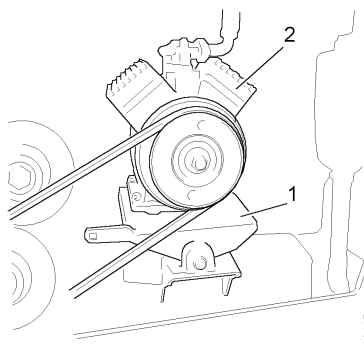


The poly-V-belt is worn down to the chord. Renew the poly-V-belt.

AC on K bus

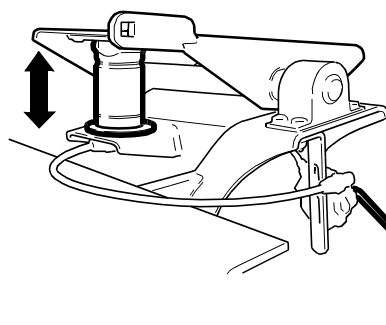
Shelf for AC compressor

On K buses with AC, the AC compressor is located on a shelf alongside the engine. The AC compressor is driven by a separate belt drive. The belt which drives the AC compressor is a belt of multibelt-type.



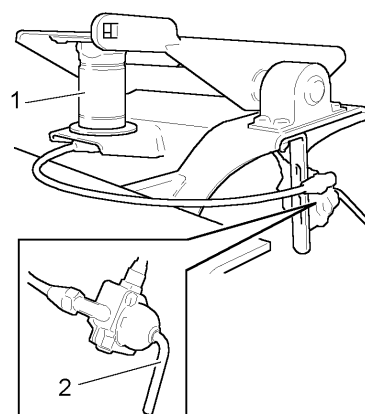
- 1 Shelf for AC compressor
- 2 AC compressor

There are air bellows under the AC compressor which keep the multi belt tensioned by tilting the AC compressor shelf.



The air bellows obtain air through a valve which is located next to the AC compressor.

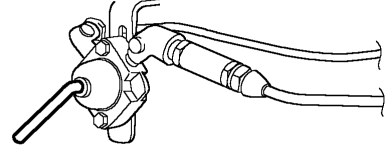
When renewing a multi belt, the air bellows are drained by turning the knob on the valve.



- 1 Air bellows
- 2 Valve

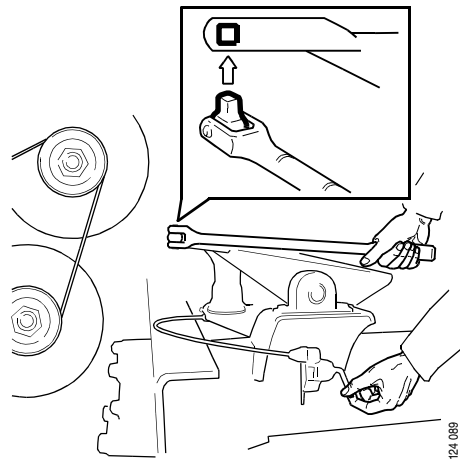
Removing the multi belt

- 1 Turn the knob downwards and air will be drained from the air bellows.



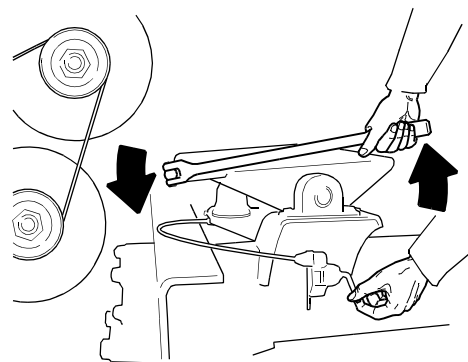
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- 2 Fit a tommy bar in the square 1/2 inch hole in the AC compressor shelf.



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- 3 Tilt the entire AC compressor shelf by pulling up the tommy bar and hooking up the multi belt.

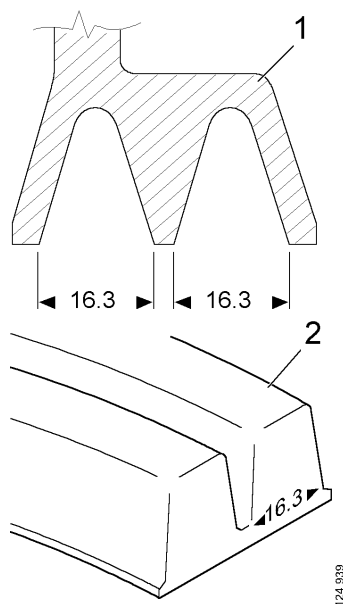


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Fitting the multi belt

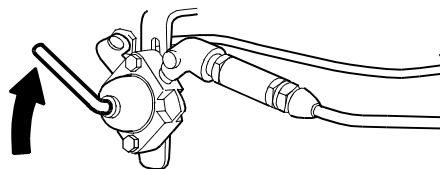
Note: The belt length is defined where grooves in the pulleys are 16.3 mm wide.

The outside of the pulleys can also be measured to obtain the correct belt length.



- 1 Pulley
- 2 Multi belt

- 1 To tension a multi belt, fit in reverse order and turn the knob upwards so that the air bellows are inflated.



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