AMK AMKASYN

VARIABLE SPEED DRIVES

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Subject to technical changes

Replacement of encoder belts without resetting the commutation angle / reference run

The replacement of an encoder belt on the SKWS13-250 can be carried out without the motor shaft needing to be clamped tight and without the encoder needing to be recalibrated (required the motor's freedom of movement).

If the points of these instructions are not followed exactly, the commutation angle can be lost. If this happens, then the motor needs to be removed and the encoder has to be recalibrated. After the re-installation of the motor the machine zero point needs to be reset and programmed.

Required tools:

- Set of Allen keys
- 2 waterproof felt markers of different colours
- Frequency gauge to determine the belt tension

Required material:

- Belt AMK part no. 102177
- Loctite 241
- Adhesive tape

The following safety instructions must be paid heed to:

Work may only be performed on stationary motors that have been unplugged from the mains. There is a **risk of death** if ignored!
Improper behaviour can lead to bodily injury and material damage.
Warning and information signs on the motor, as well as national/international, local and system-specific regulations and requirements must be observed.

The disassembly and assembly of the motor may only be performed by trained technicians using suitable aids and methods.
Suitable tools and equipment must be used!
Knocks, e.g. by a hammer or the like are not permitted!

The parts and elements built into the motor are manufactured with high precision and therefore need to be handled with caution and care.

Keep all work clean!

Attention: **Carry out the following work on the motor not when it is warm, but when it is at room temperature (less than 40 °C).**

The following steps need to be taken:

1. **Remove end cover**
   The end cover can be removed by loosening the rearward screws (shaft cover can remain on the cover).

2. **Mark encoder belt**

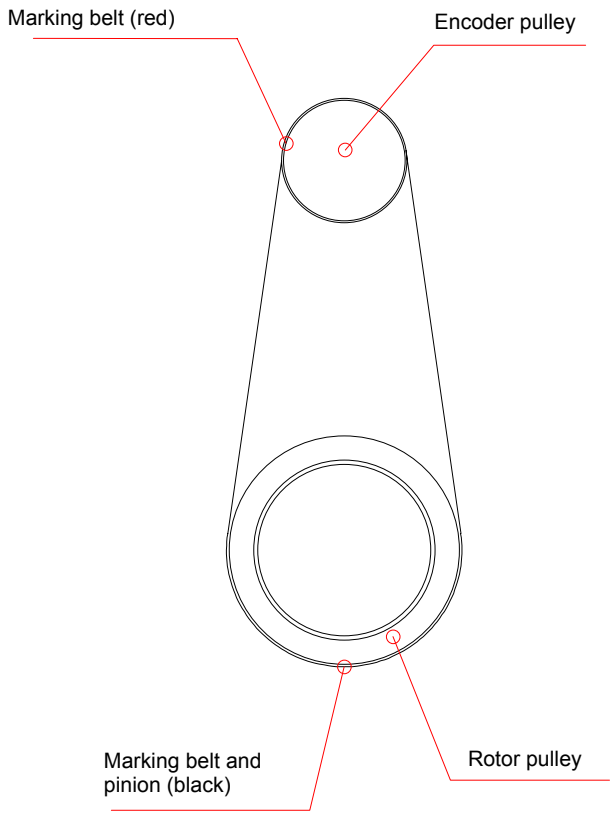

Fig. 1

Mark the encoder belt and the pulley and on motor shaft side and encoder pinion side with 2 different colours as shown in the figure above. (1 dot each on belt and pulley on the same tooth; precision ±0.5 mm)

3. **Transfer rotor pinion position to the encoder pinion**
   Turn motor shaft **clockwise** until the belt point of the motor pulley rests against the encoder pinion. Transfer a dot with the same colour as on the belt (diagram: black) to the encoder pulley (precision ±0.5 mm). After that turn back **counter-clockwise**, until the belt dots meet with the encoder pulley and motor pinion.

4. **Mark belt orientation**
   For that mark colour on the belt on the front side that is further away from the motor.

5. **Dismantle belt**

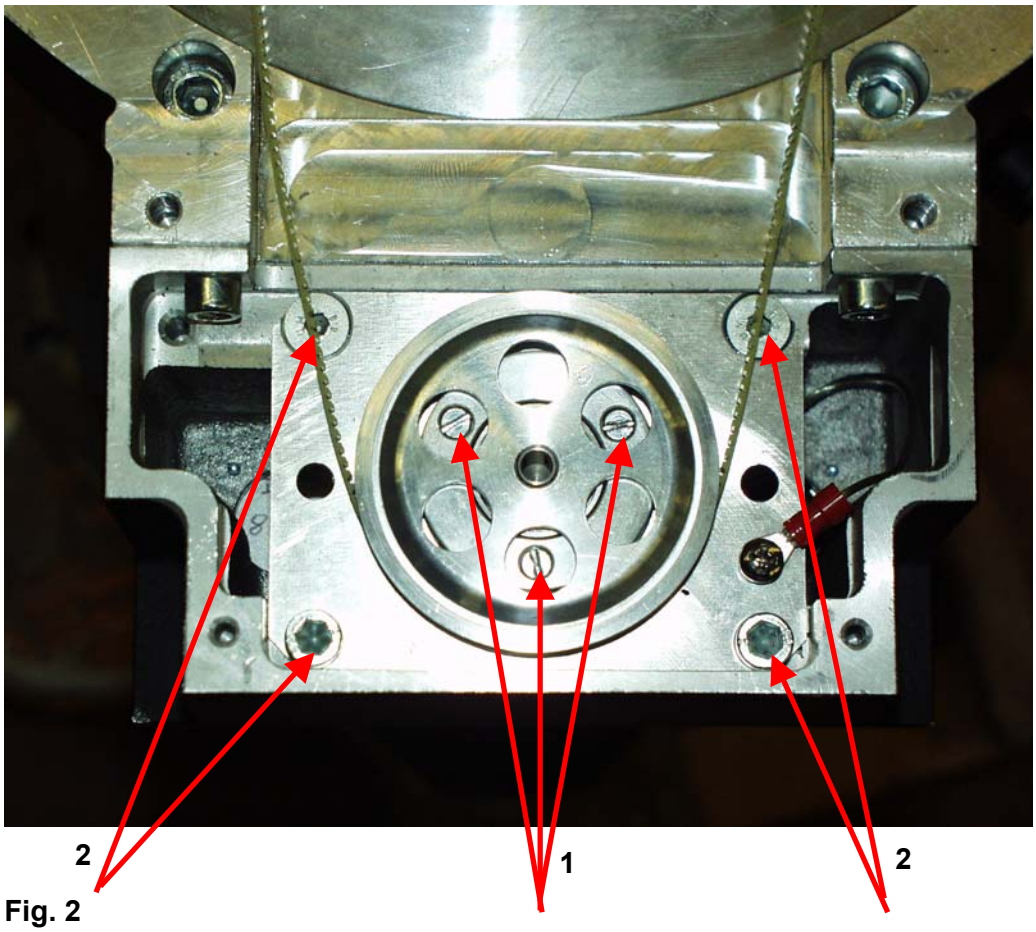

Fig. 2

Loosen encoder attachment (3 screws that can be reached by the encoder pinion; see arrow 1) and relax the belt, loosen encoder holding plate (2x countersunk screw below the belt and 2x cylinder head screw; see arrow 2) and move encoder incl. mounting plate outwards and towards the motor shaft to remove the old belt. (Attention: Belt breaks if it cannot be lifted over the flanged wheels without tension)

Attention: **Encoder pulley** can now be easily turned and **has to stop** within a rotation. Therefore secure with adhesive tape.

6. **Transfer belt marking from the old belt to the new belt**

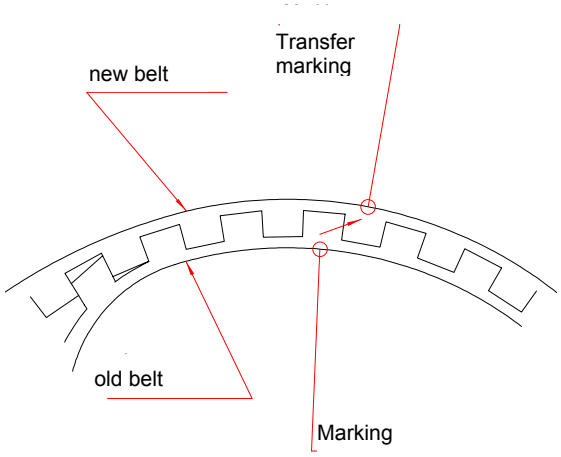

Fig. 3

For that turn one belt inside out so that the teeth point outwards and place it in the range of one of the two marking into the teeth of the other one. Transfer the marking exactly to the tooth (**Note: belt - and thereby the marking - is offset by half a tooth division**).
Press the toothing of booth belts into each other using your fingers and pull the belt through to the 2nd marking. Transfer 2nd marking in the same direction as previously by colour as on the belt.

7. **Transfer belt orientation**
Place both belts with the toothing inwards on each other so that both marking match. Then transfer the marking to the front side.

8. **Place belt on rotor pinion**
Place the new belt on the shaft pinion according to the marking for the motor shaft (same colour!) so that the front-sided marking can be seen. (For that the motor shaft and the encoder pinion have to be positioned as shown in Fig. 2)

9. **Place belt on encoder pinion**
Place the belt onto the encoder pinion so that the corresponding marking lies precisely at the division. (Attention: Belt will be damaged if it cannot be lifted over the flanged wheels without tension) Remove thereby the tape applied at point 5. Please ensure that the belt does not jump at the motor pinion.

10. **Fasten encoder**
Screw tight the encoder mounting plate (see Fig. 2, arrow 2).
Tension belt temporarily by the long holes on the encoder attachment.
Secure all screws with Loctite 241.

11. **Check pinion positions**
    Rotate motor shaft (turn at key width by forked spanner **clockwise**) to check whether the marking from point 3 comes to rest at precisely the division on the encoder pulley. (If necessary loosen belt and let belt “jump”.)

12. **Tighten belt**
    Tighten belt to 175 Hz using the belt tension gauge. For that the three screws displayed in Fig. 2 (arrow 1) are loosened or tightened.

13. **Attach end cover**
    Screw on end cover including shaft cover.