

SKF



SKF TKBA 40

Instructions for use
Mode d'emploi
Bedienungsanleitung
Instrucciones de uso
Manuale d'istruzioni

Bruksanvisning
Gebruiksaanwijzing
Instruções de uso
使用说明书
Инструкция по эксплуатации

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English	2
Français	14
Deutsch	26
Español	38
Italiano	50
Svenska	62
Nederlands	74
Português	86
中文	98
Русский	110

Table of contents

EC-declaration of conformity.....	3
Safety recommendations.....	4
1. Introduction.....	5
1.1 Principle of operation.....	5
2. Belt alignment tool	6
2.1 Technical data	6
2.2 Application range.....	8
3. Instructions for use	9
3.1 Selecting V-guides	9
3.2 Attaching laser units	9
3.3 Power on	9
3.4 Determining the type of misalignment.....	10
3.5 Alignment	11
4. Troubleshooting.....	13
4.1 No laser line	13
4.2 Lost calibration	13
5. Maintenance.....	13
5.1 Handle with care	13
5.2 Batteries	13
5.3 Spare part and accessory	13

EC-declaration of conformity

We,

SKF Maintenance Products
Kelvinbaan 16
3439 MT Nieuwegein
The Netherlands

herewith declare that the following product:

SKF Belt Alignment Tool TKBA 40

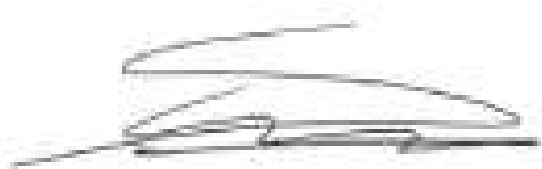
has been designed and manufactured in accordance with:
EMC DIRECTIVE 2004/108/EC as outlined in the harmonized norm for

Emission: EN 61000-6-3:2007,
Immunity: EN 61000-6-2:2005, EN 61000-4-2, -3:2008

The laser is classified in accordance with the International
Standard IEC-60825-1:2007, USA FDA Standard 21 CFR, Ch 1,
Part 1040.10 and 1040.11 except for deviations pursuant to laser notice
No. 50, dated June 24, 2007.

EUROPEAN ROHS DIRECTIVE 2011/65/EU

Nieuwegein, The Netherlands,
October 2013



Sébastien David
Manager Product Development and Quality



Safety recommendations

- Always turn off the power of the drive machine before you start working.
- Always read and follow the operating instructions.
- Although the laser diode in the laser unit has an output power of less than 1 mW, never stare directly into the laser transmitter.
- Never aim the laser beam into another person's eyes.
- Opening the housing of the laser unit may result in hazardous light exposure and voids the warranty.
- Take care not to pinch your fingers when mounting the units on the pulley.
- The equipment should not be used in areas where there is a risk of explosion.
- Never expose the equipment to high humidity or direct contact with water.
- Have all repair work performed by an SKF repair shop.



1. Introduction

Precise alignment of belt driven machinery is essential to increase belt and pulley life, reduce vibration, and reduce energy costs.

The SKF TKBA 40 Belt Alignment Tool offers an easy and accurate method to adjust the machinery so that the grooves of the V-belt pulleys are accurately aligned.

1.1 Principle of operation

The TKBA 40 consists of two units that attach magnetically to the grooves of each pulley. One unit, the laser unit, emits a laser line that is projected onto the receiver unit. The receiver unit has three target areas with three reference lines, the top reference line and the two bottom reference lines. Depending on the laser pattern projected on the target area, it is possible to determine the type of misalignment and how to correct it. Belt alignment is easily performed by adjusting the moveable machine(s) until the laser line coincides with the three reference lines on the receiver unit.

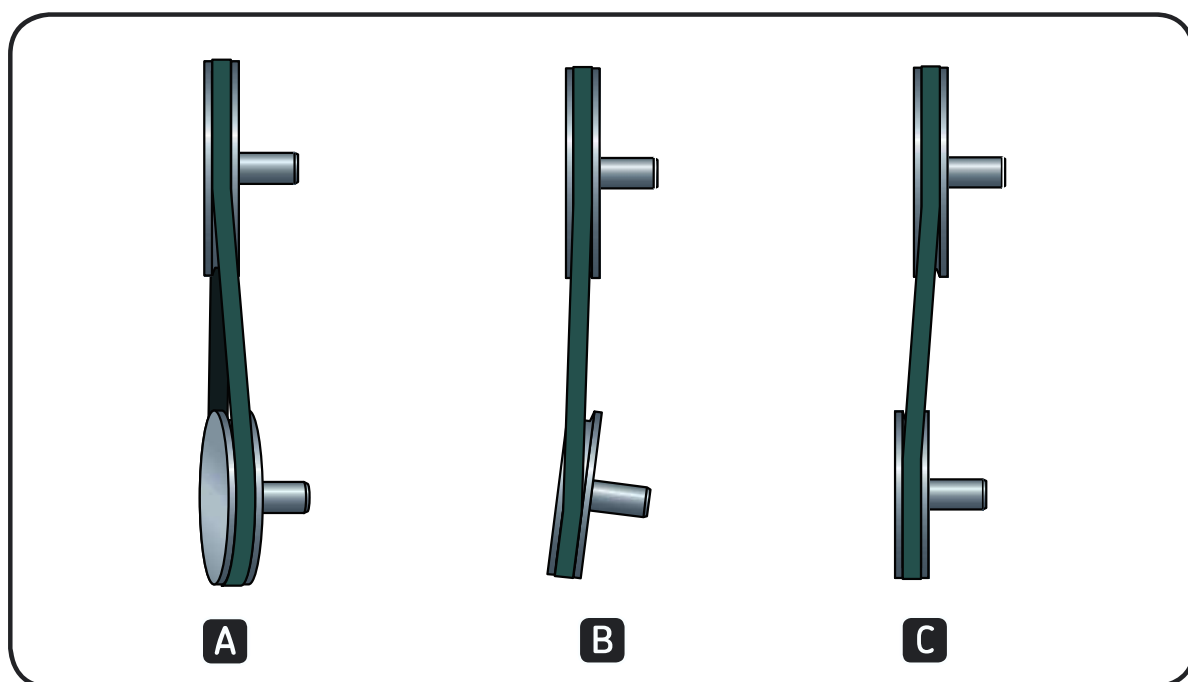


Fig 1 Different types of pulley misalignment

A	Vertical angle misalignment
B	Horizontal angle misalignment
C	Parallel misalignment

2. Belt alignment tool

2.1 Technical data

Transmitter Unit	
Type of laser	Red laser diode
Laser	1× Built-in class 2 laser, <1mW, 632nm
Laser line length	3 m at 2 m (9.8 ft at 6.6 ft)
Measurement Accuracy Angular	Better than 0,2°
Measurement Accuracy Offset	Better than 0,5 mm (0.02 in.)
Measurement distance	50 mm to 6 000 mm (2 in. to 20 ft)
Control	Laser on/off switch
Housing Material	Extruded aluminium
Colour	Silver, blue, black
Transmitter unit dimensions	70 × 74 × 61 mm (2.8 × 2.9 × 2.4 in.)
Transmitter unit weight	320 g (0.7 lbs)

Receiver Unit	
Housing Material	Extruded aluminium
Colour	Silver, grey, blue
Reflector dimensions	N/A
Receiver unit dimensions	96 × 74 × 61 mm (3.8 × 2.9 × 2.4 in.)
Receiver unit weight	270 g (0.6 lbs)

Fixtures	
Mounting	“Magnetic, groove mounted (optional side adapter TMEB A2)”
V-guides	Size 1: 22 mm, short rods (3× pairs) Size 2: size 22 mm, long rods (3× pairs) Size 3: size 40 mm, short rods (3× pairs) Size 4: size 40 mm, long rods (3× pairs)

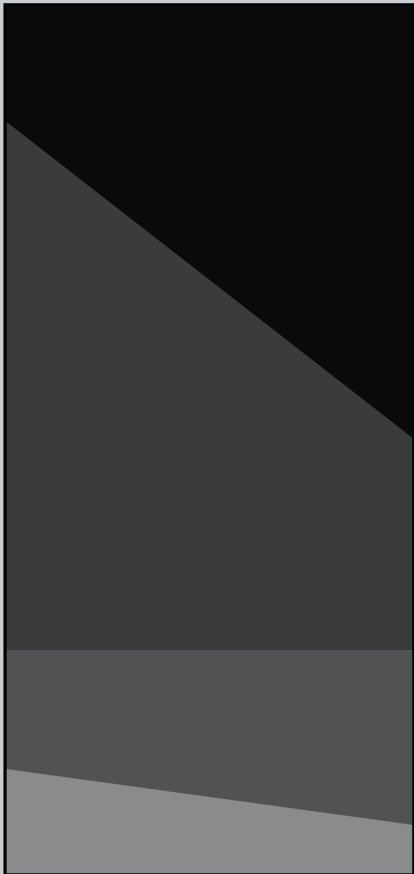
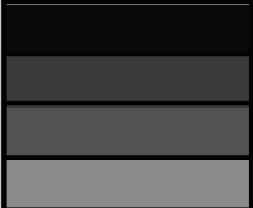
Battery and Power	
Battery	2× AA Alkaline type IEC LR06
Operation time	20 hours continuous operation

Size and Weight	
Carrying Case dimensions	260 × 180 × 85 mm (10.2 × 7.1 × 3.3 in.)
Total weight (incl. case)	1,3 kg (2.9 lbs)

Operating Requirements	
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	–20 to +65 °C (–4 to +150 °F)
Relative Humidity	10 to 90% RH non-condensing
IP rating	IP 40
Calibration certificate	Valid for two years

Case contents	
	1× TKBA 40 transmitter Unit 1× TKBA 40 receiver Unit 2× AA batteries 4× sizes of V-guides, 3× of each size 1× printed Instructions for Use 1× Calibration certificate

2.2 Application range

V-guides selection chart				
Pulley groove width (mm)	Belt profile	Min. Ø (mm)	Pulley datum diameter	Max. Ø (mm)
6	Y/6	75		700
8	8	75		900
9	3V/9N	85		900
9,7	SPZ	85		900
10	Z/10, ZX/X10	80		900
12,7	SPA	85		900
13	A/13, AX/X13	80		900
15	5V/15N	90		1300
16,3	SPB	90		1300
17	B/17, BX/X17	90		1300
20	20	140		1300
22	SPC, C22, CX/X22	140		1300
25	25, 8V/25N	300		1800
32	D/32	300		1800
40	E/40	300		1800
V-guide 1: 5 – 22 mm short rod				
V-guide 2: 5 – 22 mm long rod				
V-guide 3: 22 – 40 mm short rod				
V-guide 4: 22 – 40 mm long rod				

3. Instructions for use

3.1 Selecting V-guides

Four sizes of V-guides are supplied with the TKBA 40 to fit pulley grooves of most widths and types. Should you need to exchange the V-guides for the smaller or larger one, select and attach the appropriate V-guides as shown in figure 2.

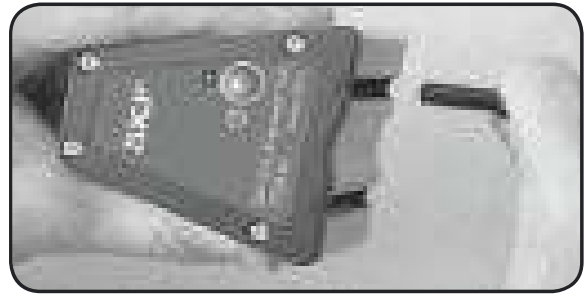


Fig 2 Fitting or removal of V-guides

3.2 Attaching laser units

The units are provided with strong magnets and V-guides. Place the V-guides of the first unit in the groove of the first pulley and press the unit firmly until the magnet secures it to the pulley.

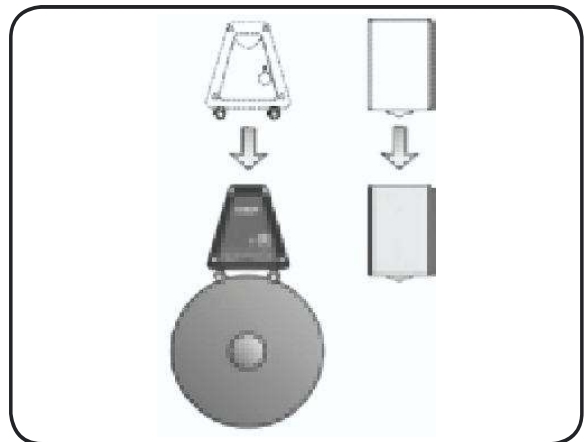


Fig 3 Mounting the unit

Place the second unit in the opposite groove of the second pulley. Position both units facing each other as shown in figure 4.



Fig 4 Units on pulleys

3.3 Power on

Switch on the laser unit by pressing the ON/OFF button.

3.4 Determining the type of misalignment

The laser line emitted from the laser unit will now appear on the receiver unit. The pattern will vary depending on the type of misalignment, as shown in figure 5, 6, 7 and 8.

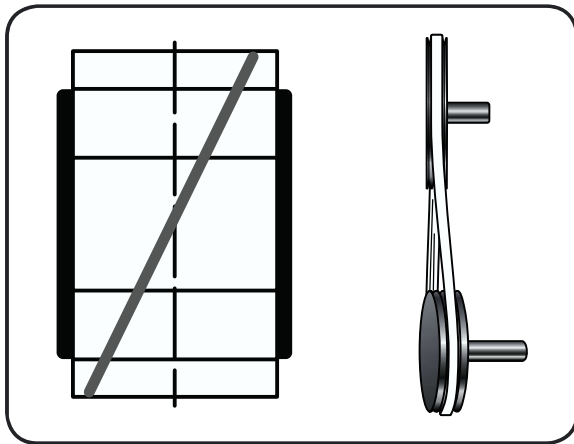


Fig 5 Display of vertical angle misalignment

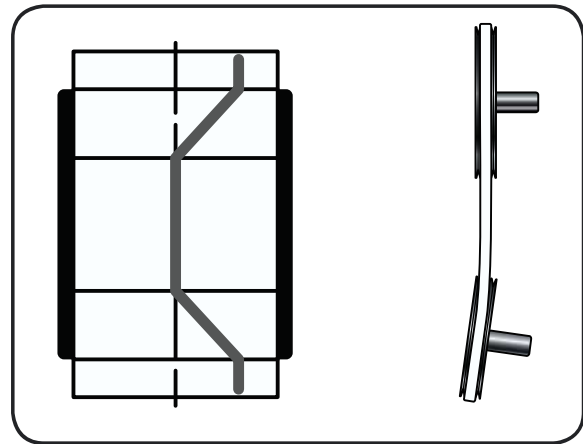


Fig 6 Display of horizontal angle misalignment

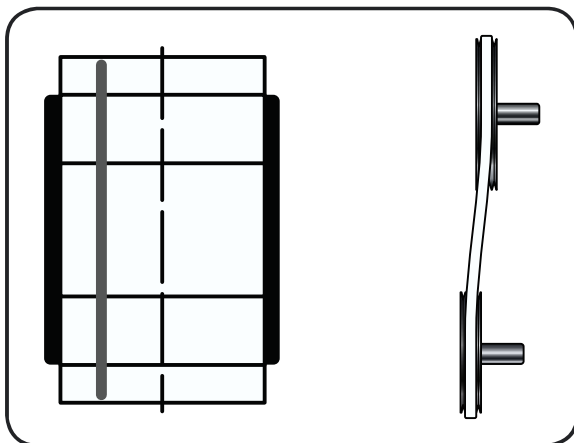


Fig 7 Display of parallel misalignment

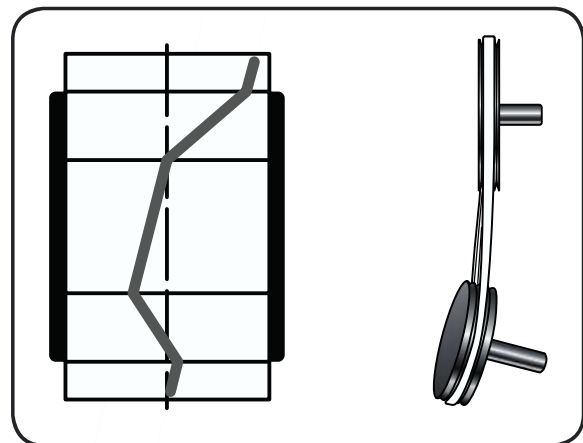


Fig 8 Display of all three misalignments combined

3.5 Alignment

Before aligning the pulleys it is important that the pulleys are mounted correctly on the shafts and that the shafts are straight. Buckled pulleys will have a detrimental effect on the alignment quality. Adjust one (or both) pulley machine(s) step by step until the laser line hit the three reference lines of the receiver unit.

Step 1. Elimination of vertical angle misalignment

Place shims beneath the front or rear feet of the moveable machine until the laser line is parallel to the reference lines (as per figure 11).

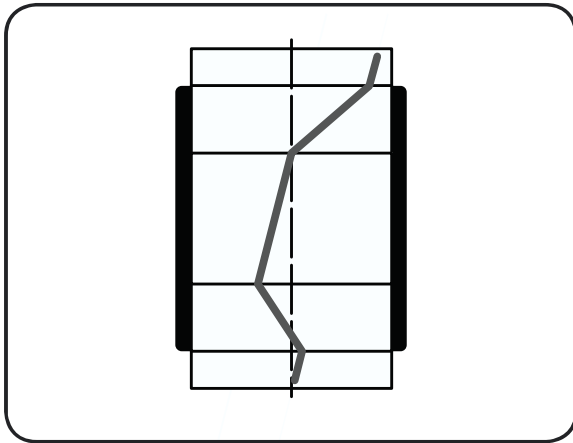


Fig 9 Pulleys with all three misalignments combined

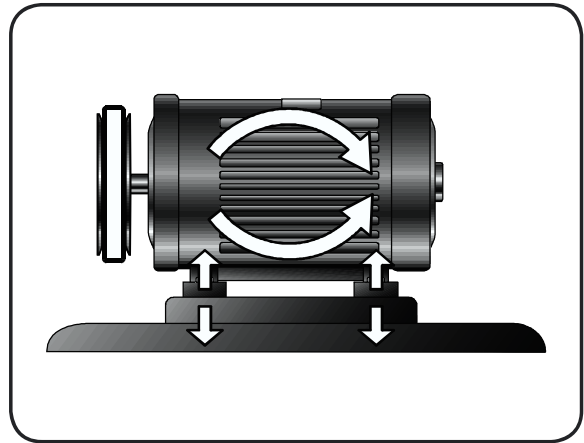


Fig 10 Vertical angle alignment

Step 2. Elimination of horizontal angle misalignment

Move the machine until the laser line is positioned equidistantly from the three reference lines, the top reference line and the two bottom reference lines (as per figure 13).

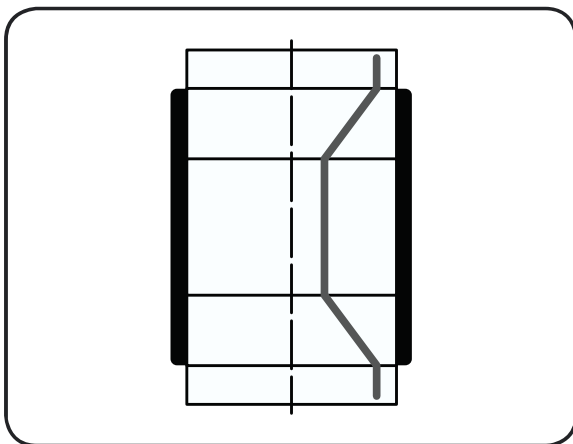


Fig 11 Pulleys with combined horizontal angle and parallel misalignments

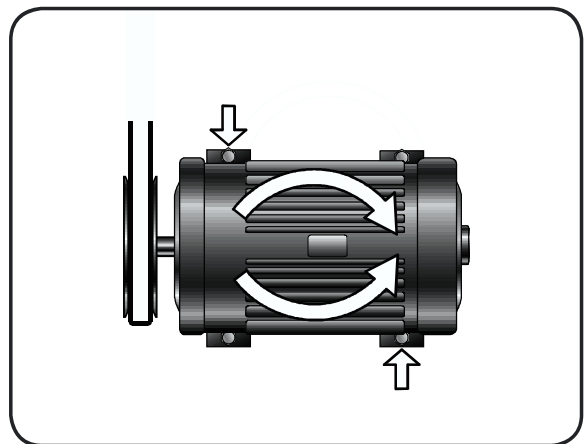


Fig 12 Horizontal angle alignment

Step 3. Elimination of parallel misalignment

Move one of the pulleys on its shaft until the laser line exactly matches the three reference lines (as per figure 15).

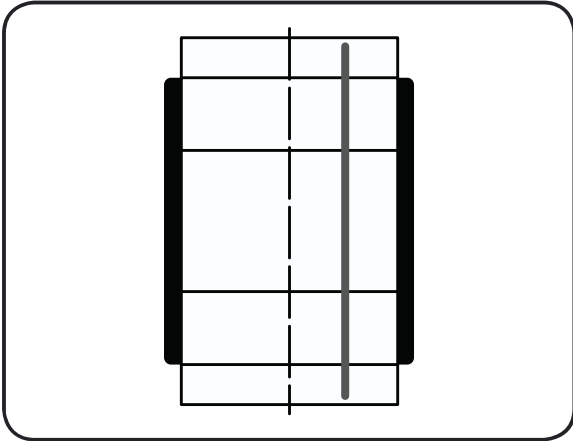


Fig 13 Pulleys with parallel misalignment

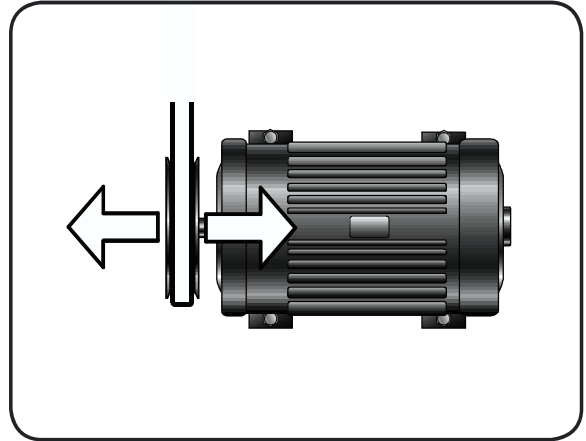


Fig 14 Parallel alignment

The pulleys are now successfully aligned.

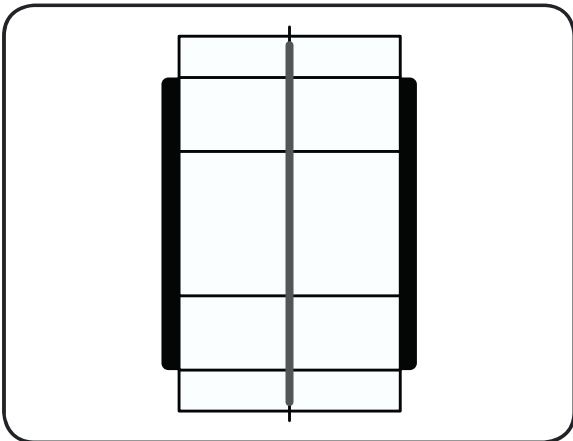


Fig 15 Pulleys perfectly aligned

Note:

When tightening the belt, check the horizontal angle alignment and adjust if necessary.

Warning:

Switch OFF the laser unit and remove both units BEFORE starting machinery

4. Troubleshooting

4.1 No laser line

- Check that the batteries are inserted correctly in the laser unit.
- Replace the batteries.
- Make sure the optic of the laser unit is not obstructed by dirt.
If necessary, clean with cotton cloth.

4.2 Lost calibration

If for some reason, such as heavy impact, the laser unit loses its calibration, return the TKBA 40 to SKF for repair.

5. Maintenance

5.1 Handle with care

The laser unit is equipped with sensitive optical components.
Handle it with care. Keep the optic of the laser unit free from dirt.

5.2 Batteries

The laser unit is powered by two LR03 (AAA) batteries. Most LR03 (AAA) batteries can be used, including rechargeable NiCd cells, but alkaline batteries have the longest life span. Remove the batteries if the laser unit is to remain unused for an extended period.

5.3 Spare part and accessory

Designation	Description
TKBA G2	Set of V-guides (3 pieces of each size)
TMEB A2	Side adapter

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