

# SKF TKBA 11



## Table of contents

Safety recommendations .....	3
EU Declaration of Conformity .....	4
UK Declaration of Conformity .....	5
1. Introduction.....	6
2. Principle of operation.....	7
3. Battery installation .....	8
4. Mounting the units .....	9
5. Power on .....	10
6. Alignment condition check.....	10
7. Correcting misalignment .....	10
8. Troubleshooting and maintenance.....	17
9. Technical data.....	18
10. Spare parts.....	19



## Safety recommendations

- Always turn off the power of the driven machine before you start working on.
- Always read and follow the operating instructions.
- Never stare directly into the laser beams.
- Never aim the laser beams into another person's eyes.
- Opening the housing of the laser unit may result in hazardous light exposure and void the warranty.
- Take care not to pinch your fingers when mounting the units on pulleys or sprockets.
- 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.

## EU Declaration of Conformity TKBA 11

We, SKF Maintenance Products, Meidoornkade 14, 3992 AE Houten, The Netherlands herewith declare under our sole responsibility that the products described in these instructions for use, are in accordance with the conditions of the following Directive(s):

EMC DIRECTIVE 2014/30/EU

RoHS DIRECTIVE (EU) 2015/863

and are in conformity with the following standards:

Immunity:

EN 61000-6-2:2005 - Immunity for Industrial Environments,

IEC 61000-4-2:2001, IEC 61000-4-3:2008

Emission:

EN 61000-6-3:2007 - Emission Standard for Residential,

Commercial and light Industrial Environments,

EN 55011:2016

The laser is classified in accordance with the

USA FDA Standard 21 CFR, Ch 1, Part 1040.10 and 1040.11

Houten, The Netherlands, May 2023



Guillaume Dubois

Manager Quality and Compliance



## UK Declaration of Conformity TKBA 11

We, SKF Maintenance Products, Meidoornkade 14, 3992 AE Houten, The Netherlands herewith declare under our sole responsibility that the products described in these instructions for use, are in accordance with the conditions of the following Directive(s):

Electromagnetic Compatibility Regulations 2016 (2016 No. 1091)  
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (2012 No. 3032)  
and are in conformity with the following standards:

Immunity:

EN 61000-6-2:2005 - Immunity for Industrial Environments,  
IEC 61000-4-2:2001, IEC 61000-4-3:2008

Emission:

EN 61000-6-3:2007 - Emission Standard for Residential,  
Commercial and light Industrial Environments,  
EN 55011:2016

The laser is classified in accordance with the  
USA FDA Standard 21 CFR, Ch 1, Part 1040.10 and 1040.11

The person authorised to compile the technical documentation on behalf of the manufacturer is SKF (U.K.) Limited, 2 Canada Close, Banbury, Oxfordshire, OX16 2RT, GBR.

Houten, The Netherlands, May 2023



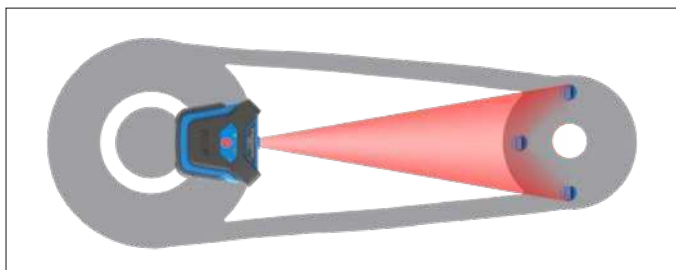
Guillaume Dubois  
Manager Quality and Compliance

**UK  
CA**

## 1. Introduction

Precise alignment of belt / pulley driven machinery, chain / sprocket, or any other power transmission like timing belts for example, is essential to reduce both pulley or chain and belt or sprocket wear. It can help reduce machinery vibration, which in turn leads to improved machine performance. Good pulley or chain alignment can help reduce unscheduled downtime, and can improve the reliability of your equipment.

The SKF Belt Alignment Tool TKBA 11 offer an easy and accurate method to adjust the machinery so that pulleys or sprockets are accurately aligned.

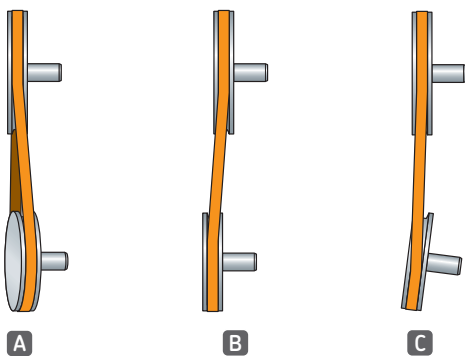


## 2. Principle of operation

The TKBA 11 consist of one laser emitting unit that attaches magnetically to the side of the driving pulley or sprocket and three passive targets that also attach magnetically for the driven pulley or sprocket. The transmitter unit emits a laser line that is projected onto the three passive targets ideally and strategically positioned.

The passive targets have reference lines. The laser line is then visible to the passive targets for a reading on the different possible misalignment scenarios, greatly increasing the accuracy and the ease of performing the alignment.

Depending on the position and orientation of the laser line projected on the three targets, 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 reference lines on the three targets.



**Fig. 1** – *Different types of pulley misalignment*

<b>A</b>	Vertical angle misalignment
<b>B</b>	Parallel misalignment
<b>C</b>	Horizontal angle misalignment

### 3. Battery installation

The TKBA 11 is powered with 3 × AAA alkaline batteries.

To insert the new batteries:

- Locate the back of the unit on the round end of the emitting unit.
- Remove the slotted head screw (→ **fig. 2**).
- Carefully insert three new batteries in the holder taking care to observe polarity. Replace the cover back onto the unit and refit the screw



**Fig.2** – Battery door

#### **NOTE:**

Remove the batteries if the transmitter unit is to remain unused for an extended period.



## 4. Mounting the units

The TKBA 11 is equipped with powerful magnets, allowing the operator to mount the system on almost any pulley or sprocket face.

Mount the units on the pulley or bracket faces to be aligned.

- The three passive targets should be mounted onto the pulley or sprocket to be moved or adjusted.
- The laser emitting unit should be mounted on the stationary pulley or sprocket.

The user must determine which pulley is movable and which is stationary. The movable pulley or sprocket is often the smallest one, and is often mounted on the motor shaft. In some cases both pulleys or sprockets and shafts may need to be adjusted to achieve the desired alignment.

For non-ferrous pulleys or sprocket, it is possible to use a small bar clamp (G clamp).



**Fig.3** – Units mounted on pulleys

## 5. Power on

To turn the laser line on, use the main red switch located on the front of the transmitter unit.

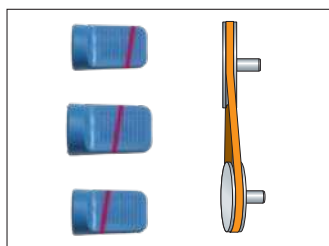
## 6. Alignment condition check

The laser line on the three passive targets show the vertical angle misalignment, parallel misalignment or offset. Horizontal angle misalignment is indicated by the offset position of the laser line on the three passive targets with the same distance.

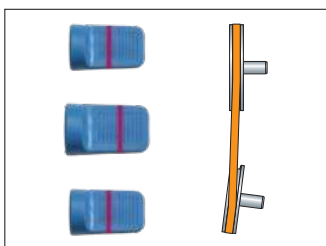
Before aligning the pulleys or sprockets, it is important that the pulleys or sprockets are mounted correctly on the shafts and that the shafts are straight.

Buckled pulleys will have a detrimental effect on the alignment quality.

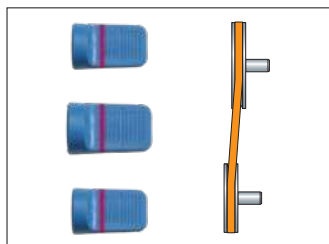
## 7. Correcting misalignment



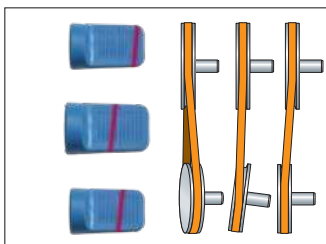
*Display of vertical angle misalignment*



*Display of horizontal angle misalignment*



*Display of parallel misalignment*



*Display of all three misalignments combined*

**Fig.4** – Correction misalignment using actual targets

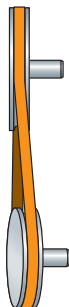


Fig.5 – Display of vertical angle misalignment

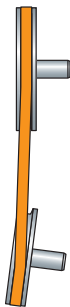


Fig.6 – Display of horizontal angle misalignment

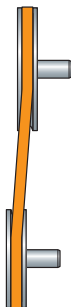


Fig.7 – Display of parallel misalignment (offset)

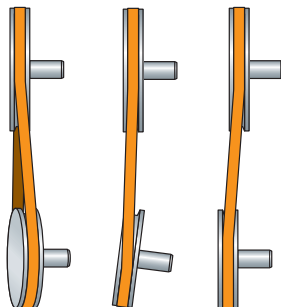
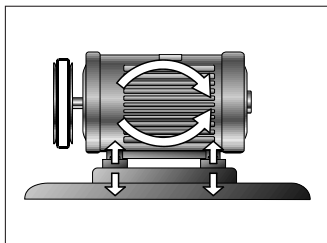


Fig.8 – Display of all three misalignments combined

**Step 1:**

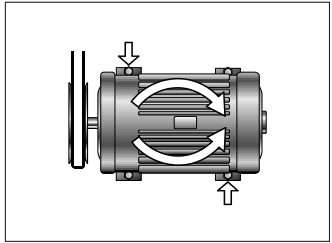
Correct vertical angle misalignment by shimming the moveable machine using stainless steel shims such as SKF TMAS shims. Correction of this angular misalignment can be observed on the three passive targets. Place shims beneath the front or rear feet of the moveable machine until the laser line is parallel to the reference lines.



**Fig.9** – Vertical angle misalignment correction

**Step 2:**

Correct horizontal angle misalignment by adjusting the moveable machine laterally. This can be viewed on the three passive targets during adjustment. 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.

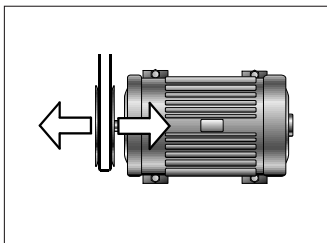


**Fig.10** – *Horizontal angle misalignment correction*

### Step 3:

Correct parallel misalignment (Offset) by adjusting the moveable pulley or machine axially.

This correction can be observed on the three passive targets. Move one of the pulleys on its shaft until the laser line exactly matches the three reference lines.



**Fig.11** – Parallel misalignment as found and after correction

If Steps 1, 2 and 3 are followed then the alignment of the belt drives should be completed quickly. However, one alignment correction may affect other alignment conditions. Steps 1, 2 and 3 may need to be repeated until the system is completely aligned.

Good alignment is achieved when the laser line on the three passive units coincide with the same reference line in the center of the targets.

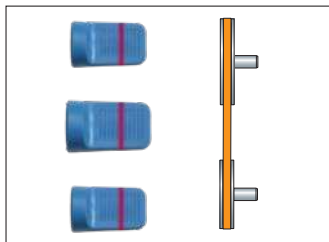


Fig.12 – Pulleys perfectly aligned

**NOTE:**

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

**⚠ WARNING:**

Switch OFF the transmitter unit and remove all units BEFORE starting machinery.



## 8. Troubleshooting and maintenance

### No laser line

- Check that the batteries are inserted correctly in the transmitter unit.
- Replace the batteries.
- Ensure that the laser window in the transmitter unit is not obstructed by dirt. If necessary, clean with cotton cloth.

### Lost calibration

If the tool loses its calibration, return the complete tool to SKF for repair.

### Heavy impacts

The transmitter unit is equipped with sensitive optical components. Heavy impacts can affect the function and accuracy of the unit. Handle with care and ensure that the laser window is kept clean and free from dirt.

## 9. Technical data

<b>Designation</b>	<b>TKBA 11</b>
<b>Transmitter unit</b>	
Type of laser	Red laser diode
Laser	1x Built-in class 2 laser, <1mW, 635nm
Laser line length	2.4 m at 2 m (7.9 ft at 6.6 ft)
Measurement Accuracy Angular	Better than 0.02° at 2 m (6.6 ft)
Measurement Accuracy Offset	Better than 0.5 mm (1/50" in)
Measurement distance	50 mm to 3 m (2 in to 10 ft)
Control	Laser ON/OFF button
Housing Material	ABS polymer and Aluminium base powder coat finish
<b>Receiver unit</b>	
Housing material	ABS
<b>Fixtures</b>	
Mounting	Magnetic, side mounted
<b>Battery and power</b>	
Battery	3 × AAA Alkaline type (Rechargeable too)
Operation time	Emitting unit: 32h (continuous operation)
<b>Operating Requirements</b>	
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to +60 °C (-4 to +140 °F)
Relative Humidity	10 to 90% RH non-condensing
IP rating for indication	IP 40
<b>Dimensions</b>	
Transmitter unit	98 × 97 × 52 mm (3.9 in × 3.8 in × 2 in)
Receiver unit	Passive targets: 40 × 25 mm (1.6 × 0.99 in)
Carrying case size A	260 × 85 × 180 mm (10.3 × 3.4 × 7.0 in)
<b>Weight</b>	
Transmitter unit	250 g (0.55 lb) with batteries
Receiver unit (3 pcs)	35 g (0.08 lb)
Total weight (incl. case)	0.84 kg (1.85 lb)

**Case contents**

1 × TKBA 11 transmitter unit

3 × TKBA 11 TARGET passive targets

3 × AAA batteries

1 × Printed instructions for use

## 10. Spare parts

Designation	TKBA 11
TKBA TARGETS	3 x passive targets
TKBA 11-CA	Toolcase with inlay for TKBA 11



[skf.com](https://skf.com) • [skf.com/mapro](https://skf.com/mapro)

© SKF is a registered trademark of the SKF Group.

© SKF Group 2023

The contents of this publication are the copyright of the publisher and may not be reproduced (even extracts) unless prior written permission is granted. Every care has been taken to ensure the accuracy of the information contained in this publication but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

**MP5528 EN** • 2023/08