

# Alignment

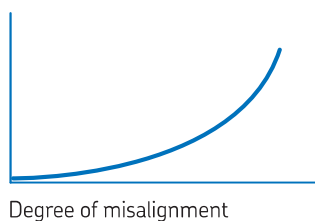
Accurate shaft alignment really matters

## Reduce machinery breakdowns and increase your uptime

It's a fact. Shaft misalignment is a major contributor to rotating machinery breakdowns. Accurately aligning shafts can prevent a large number of machinery breakdowns and reduce unplanned downtime that results in a loss of production. In today's challenging environment of reducing costs and optimising assets, the necessity of accurate shaft alignment is now greater than ever.

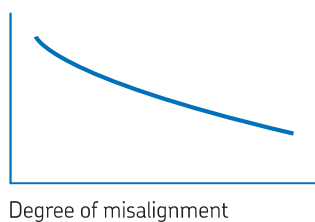
### Reducing misalignment saves energy

Extra energy consumption



### Reducing misalignment increases bearing life

Bearing life

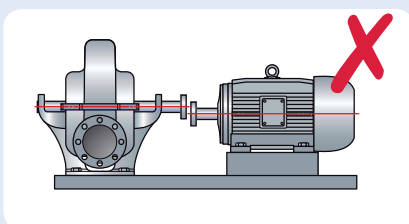


## What is shaft misalignment?

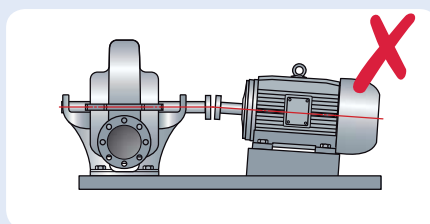
Machines need to be aligned in both the horizontal and vertical plane. The misalignment can be caused by both parallel or angular misalignment. The possible consequences of shaft misalignment are serious to any company's bottom line and include:

- Increased friction and thereby energy consumption
- Premature bearing and seal failure
- Premature shaft and coupling failure
- Excessive seal lubricant leakage
- Failure of coupling and foundation bolts
- Increased vibration and noise

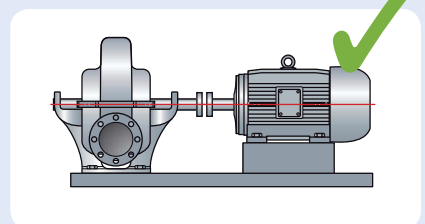
### Parallel misalignment (or offset)

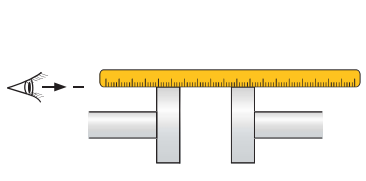
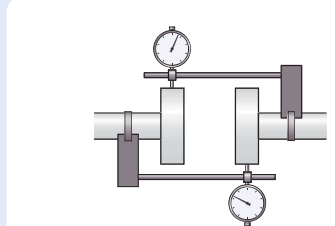
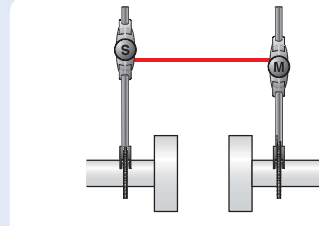


### Angular misalignment



### Correct alignment



Straight edge	Dial indicators	Laser shaft alignment
		
Accuracy: --	Accuracy: ++	Accuracy: ++
Speed: ++	Speed: --	Speed: +
Ease of use: ++	Ease of use: --	Ease of use: +

## What methods can be used to align shafts?

In general, it's clear that laser alignment systems are quicker and easier to use than dial indicators, have better accuracy and don't require special skills to get accurate results virtually every time.

### Which type of laser alignment system should be considered?

Before purchasing a system, identify the applications where it is to be used and make a list of requirements. Buying an expensive system that can accommodate virtually every need can be a costly mistake, as the technicians need to be skilled in using it.

The majority of alignment tasks consist of such things as a horizontally placed electric motor with a pump or fan with a single coupling. For such tasks, the technician needs a system that is quick and easy to use and doesn't need a long set up time.

### What can SKF offer?

SKF has developed, after extensive consultation with users, a range of affordable, easy to use shaft alignment tools that are suitable for a majority of alignment tasks.





New technology makes shaft alignment easier and more affordable

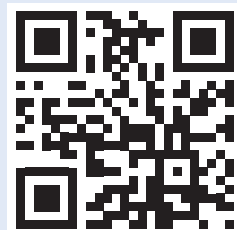
## SKF Shaft Alignment Tool TKSA 11

The SKF TKSA 11 heralds a new generation of shaft alignment tools. Using mobile devices, the instrument intuitively guides the user through the whole alignment process. With a focus on the core alignment tasks, the TKSA 11 is designed to be a very easy-to-use instrument that results in accurate alignment and is especially suitable for entry level shaft alignment. The SKF TKSA 11 is the first instrument on the market that uses inductive proximity sensors, enabling accurate and reliable shaft alignment to be affordable for every budget.

- Live view of the instrument and motor position makes the measurement and horizontal alignment intuitive and easy.
- The TKSA 11 App offers a fully functional demonstration mode allowing the complete alignment process to be experienced without the need to purchase the TKSA 11.
- The TKSA 11 is designed to give a fast return on its investment and is also affordable for almost every budget.
- Mobile devices allow high resolution graphics, intuitive usage, automatic software updates and display unit choice.
- By using inductive proximity sensors, the measurement is no longer affected by bright sunlight, influence of backlash is reduced and the instrument becomes more robust. All enabling the TKSA 11 to deliver highly accurate and reliable alignments.
- Automatic alignment reports give a complete overview of the alignment process and results. Reports can easily be shared via email or cloud services.



Available on the  
App Store





The advanced laser shaft alignment system with enhanced measuring and reporting capabilities

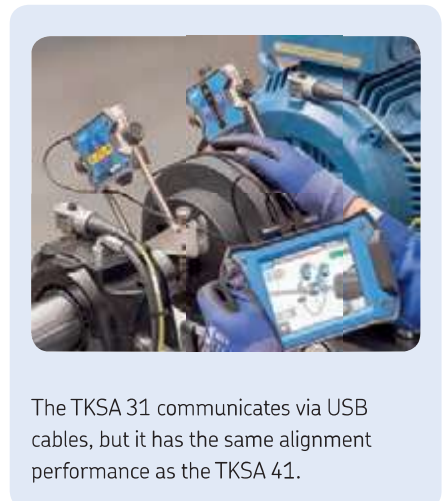
## SKF Shaft Alignment Tools TKSA 31 and TKSA 41

The TKSA 31 and TKSA 41 are advanced laser alignment solutions with large sized detectors and bright lasers that allow precise measurements in even the most challenging conditions. The ergonomic display unit with intuitive touch screen navigation makes your alignments fast and easy, whilst innovative features increase the alignment convenience and performance. With the focus on improving alignment practices, the SKF Shaft Alignment Tools TKSA 31 and TKSA 41 are the industry's best value alignment solutions.

- Automatic measurement enables hands-free measurements by simply rotating the heads in the right position.
- Automatic reports are generated after each alignment and can be customised with notes and operator information. All reports can be exported as pdf files.
- Live view supports intuitive positioning of measuring heads and facilitates horizontal and vertical alignment corrections.
- Machine library gives an overview of all registered machines and allows easy access to previous alignment reports.

### TKSA 41 only:

- Wireless communication improves instrument handling and measurement convenience.
- Free measurement allows measurements with limited rotational freedom to start at any angle and finish with an angular sweep of just 90°.
- Built-in camera allows machine pictures to be added to alignment reports or to the machine library.
- QR code recognition simplifies machine identification. Scanning a registered QR code opens the machine in the library and a new alignment can be started or previous reports reviewed.



The TKSA 31 communicates via USB cables, but it has the same alignment performance as the TKSA 41.



## TKSA 60

The wireless laser shaft alignment tool with built-in alignment expert.

The TKSA 60 is an extremely rugged wireless laser shaft alignment tool that can be used in harsh environments. The system provides instant expertise with a built-in step-by-step alignment process, from preparation, inspection and evaluation through correction, reporting and analysis. The system incorporates the latest alignment knowledge and decades of SKF experience of rotating equipment.



## TKSA 80

The advanced laser shaft alignment tool to increase your alignment knowledge.

For effective machine alignment, the measurement is only 5% of the process. Users often find themselves encountering difficulties by skipping some important alignment steps. The TKSA 80 system has a complete built-in alignment process to increase users' knowledge of alignment. The programme takes users from preparation and evaluation all the way through to correction and finally a report of the result. With a 7 inch screen, the TKSA 80 can accommodate large machine train alignment jobs. It offers a unique database to store the machine set-up data for future use, visual inspections on oil leakage, oil level, foundation bolt status and wear indications.

	TKSA 11	TKSA 31	TKSA 41	TKSA 60	TKSA 80
<b>Overall system performance</b>	+	++	++	+++	+++
<b>System ruggedness</b> Usability of the instrument in tough industrial environments.	+	+	+	++	++
<b>User interface</b> Input and interaction with the display device.	iOS	touch screen	touch screen	keypad	keypad & touch screen
<b>QR code recognition</b> QR labels can be used to simplify the machine identification and increase the usage convenience.	-	-	✓	-	-
<b>Measurement type</b> The "9-12-3" measurement demands pre-defined measurement positions, whereas the "free" measurement allows user selectable measurement positions.	9-12-3	9-12-3	free	free	free
<b>Minimal shaft rotation</b> Describes the minimal required shaft rotation angle to perform alignment measurements.	180°	140°	90°	60°	60°

	TKSA 11	TKSA 31	TKSA 41	TKSA 60	TKSA 80
<b>Automatic measurement</b> Alignment measurements can be performed hands-free without display unit interaction.	-	✓	✓	-	-
<b>Wireless measuring heads</b>	✓	-	✓	✓	✓
<b>Maximum measurement distance</b> Maximum distance between the measuring heads.	18,5 cm	2 m*	4 m	10 m	10 m
<b>Soft foot correction</b> The soft foot tool helps to find and correct a soft foot, so that the machine can stand evenly on all feet.	-	✓	✓	✓	✓
<b>Live alignment correction</b> Live feed values are shown to facilitate the horizontal motor movement and vertical chock adjustment.	only horizontal	✓	✓	✓	✓
<b>Automatic alignment report</b> Reports are automatically generated after each alignment and can be exported as PDF files.	✓	✓	✓	✓	✓
<b>Camera</b> Photos can be added to the report.	✓**	-	✓	-	-
<b>Machine library</b> Overview of all registered machines and previous alignment reports.	-	✓	✓	✓	✓
<b>Thermal growth calculation</b>	-	-	-	✓	✓
<b>Vertical machine alignment</b> Alignment of machines with vertical shafts.	-	-	-	✓	✓
<b>Swap view</b> Enables graphics to be swapped from one side of the machines to the other to accommodate the user position.	-	-	-	✓	✓
<b>Machine train alignment</b> Enables the alignment of up to 5 machines in a line.	-	-	-	-	✓
<b>Run-out check</b> The system reminds users to perform a simple measurement to look for bent shafts.	-	-	-	-	✓

\* With USB cables supplied    \*\* Depending on display device



Shaft alignment is recommended for almost every industry, as it enables machine uptime to be significantly improved and maintenance costs to be reduced. The TKSA 11 focuses on industries where these shaft alignment benefits have not yet been realised and helps customers profit from correctly aligned shafts.

Technical data			
Designation	TKSA 11	TKSA 31	TKSA 41
Description	New technology makes shaft alignment easier and more affordable	The modern laser shaft alignment tool for economic machine maintenance	The advanced laser shaft alignment system with enhanced measuring and reporting capabilities
<b>Measuring unit(s)</b>			
Sensors type	2 × inductive proximity sensors	29 mm (1.1 in.) CCD with line laser Class 2	29 mm (1.1 in.) CCD with line laser Class 2
Electronic inclinometers	Yes, ±0.5°	Yes, ±0.5°	Yes, ±0.5°
Communication	Wireless, Bluetooth 4.0 LE	Wired, USB cables	Wireless, Bluetooth 4.0 LE or Wired, USB cables
Measuring distance	0 to 185 mm (0 to 7.3 in.)	0,07 to 2 m (0.23 to 6.6 ft.) *	0,07 to 4 m (0.23 to 13.1 ft.)
Measuring accuracy	<2%	<0,5% ±5 µm	<0,5% ±5 µm
Operating time	18 hours of continuous use	N/A	16 hours of continuous use
Battery and charging	LiPo battery, rechargeable via micro USB (5 V)	N/A	LiPo battery, rechargeable via micro USB (5 V)
Dimensions	105 × 55 × 55 mm (4.1 × 2.2 × 2.2 in.)	120 × 90 × 36 mm (4.7 × 3.5 × 1.4 in.)	120 × 90 × 36 mm (4.7 × 3.5 × 1.4 in.)
Weight	155 g (0.34 lb)	180 g (0.4 lb)	220 g (0.5 lb)
<b>Operating device</b>			
Operating device	iPod Touch 5th generation minimum recom.; iPhone 4S minimum; iPad mini or iPad 3rd generation minimum (all not included)	5.6" colour resistive touchscreen LCD	5.6" colour resistive touchscreen LCD
Software/App update	via Apple Store	via USB stick	via USB stick
Display orientation flip	Portrait mode only	No	Landscape mode flip
Operating time	N/A	8 hours of continuous use (100% backlight)	8 hours of continuous use (100% backlight)
Battery and charging	N/A	LiPo battery, rechargeable via power adapter with EU, US, UK, AUS plugs supplied	
Dimensions	N/A	205 × 140 × 60 mm (8.1 × 5.5 × 2.4 in.)	205 × 140 × 60 mm (8.1 × 5.5 × 2.4 in.)
Weight	N/A	420 g (0.9 lb)	640 g (1.4 lbs)
<b>Complete system</b>			
Fixture	2 × aluminum V-brackets	2 × aluminum V-brackets	2 × aluminum V-brackets
Shaft diameters	20 to 160 mm (0.8 to 6.3 in.) up to 320 mm (12.6 in.) with optional extension chains (not included)	20 to 150 mm (0.8 to 5.9 in.) up to 300 mm (11.8 in.) with optional extension chains (not included)	20 to 150 mm (0.8 to 5.9 in.) up to 300 mm (11.8 in.) with optional extension chains (not included)
Standard chains supplied	480 mm (18.9 in.)	400 mm (15.8 in.)	400 mm (15.8 in.)
Maximum recommended coupling height	55 mm (2.2 in.) with standard rods 175 mm (6.9 in.) with optional extension rods (not included)	105 mm (4.2 in.) with standard rods 195 mm (7.7 in.) with optional extension rods (not included)	105 mm (4.2 in.) with standard rods 195 mm (7.7 in.) with extension rods
Rods supplied	2 × 80 mm (3.1 in.) standard rods per bracket	2 × 150 mm (5.9 in.) threaded standard rods per bracket	2 × 150 mm (5.9 in.) threaded standard rods per bracket + 4 × additional 90 mm (3.5 in.) extension rods
Alignment method	3 measurements 9-12-3 alignment method	3 measurements 9-12-3 alignment method, automatic measurement	3 measurements 9-12-3 alignment method, automatic measurement, free measurement
Operating temperature	0 to 45 °C (32 to 113 °F)	0 to 45 °C (32 to 113 °F)	0 to 45 °C (32 to 113 °F)
Storage temperature	-20 to +70 °C (-4 to +158 °F)	-20 to +70 °C (-4 to +158 °F)	-20 to +70 °C (-4 to +158 °F)
Relative humidity	10 to 90% non condensing	10 to 90% non condensing	10 to 90% non condensing
IP rating	IP54	IP54	IP54
Carrying case dimensions	360 × 110 × 260 mm (14.2 × 4.3 × 10.2 in.)	530 × 110 × 360 mm (20.9 × 4.3 × 14.2 in.)	530 × 110 × 360 mm (20.9 × 4.3 × 14.2 in.)
Total weight (incl. case)	2,1 kg (4.6 lbs)	4,75 kg (10.5 lbs)	4,75 kg (10.5 lbs)
Calibration certificate	Supplied with 2 years validity	Supplied with 2 years validity	Supplied with 2 years validity
Warranty	2 years standard warranty (+ 1 additional year upon registration)	2 years standard warranty (+ 1 additional year upon registration)	2 years standard warranty (+ 1 additional year upon registration)
Case content	Measuring unit; 3 reference bars; 2 shaft brackets with chains; micro USB to USB charging cable; measuring tape 2 m (6.6 ft.); printed certificate of calibration and conformance; printed quick start guide (English); SKF carrying case	2 measuring units (M&S); display unit; 2 shaft brackets with chains; chain tightening rod; power supply with country adapters; 2 micro USB to USB cables 1,5 m (60 in.); measuring tape; printed certificate of calibration and conformance; quick start guide (EN); SKF carrying case	2 measuring units (M&S); display unit; 2 shaft brackets with chains; chain tightening rod; 4 extension rods 90 mm (3.5 in.); power supply with country adapters; 2 micro USB to USB cables 1,5 m (60 in.); measuring tape; printed certificate of calibration and conformance; quick start guide (EN); SKF carrying case

Note: Additional accessories are available such as extension chains, extension rods, sliding brackets, magnetic brackets, offset brackets. More information about spare parts and accessories can be found in the instructions for use. Please contact SKF or your authorised SKF distributors for more details.

\* Measuring distances up to 4 m (13.1 ft.) are possible with longer USB cables.

## Technical data

Designation	TKSA 60	TKSA 80
Description	The wireless laser shaft alignment tool with built-in alignment expert.	The advanced laser shaft alignment tool to increase your alignment knowledge.

### Measuring units

Housing material	Chassis: aluminium Sides: glass filled PBT	Chassis: aluminium Sides: glass filled PBT
Laser class	2	2
Maximum laser power	1 mW	1 mW
Distance between measuring units	Maximum: 10 m (33 ft) N/A	Maximum: 10 m (33 ft) N/A
Type of detectors	Linear CCD with length 36 mm (1.4 in.)	Linear CCD with length 36 mm (1.4 in.)
Connectivity	Low-power, industrial wireless network, 802.15.4 compliant	Low-power, industrial wireless network, 802.15.4 compliant
Rod/fixing bar	4 off 90 mm (3.5 in.), 4 off 150 mm (5.9 in.) Can be screwed together to increase length	4 off 90 mm (3.5 in.), 4 off 150 mm (5.9 in.) Can be screwed together to increase length
Environmental protection	IP 65	IP 65
Battery type	2 × AA Alkaline or rechargeable battery	2 × AA Alkaline or rechargeable battery
Dimensions	96 × 93 × 36 mm (3.8 × 3.7 × 1.4 in.)	96 × 93 × 36 mm (3.8 × 3.7 × 1.4 in.)
Weight	326 g (11.5 oz)	326 g (11.5 oz)

### Display unit

Housing material	PC/ABS plastic	PC/ABS plastic
Display type	10,9 cm (4.3 in.) diagonal colour LCD. Daylight viewable	7 inch diagonal colour LCD. Daylight viewable with touch screen
Environmental protection	IP 65	IP 65
Drop test	1,2 m (3.9 ft) to military standard	1,2 m (3.9 ft) to military standard
Battery type	Rechargeable Li-ion battery and external power supply	Rechargeable Li-ion battery and external power supply
Operating time	10 hours continuous	10 hours continuous
PC connection	USB	USB
Displayed resolution	0,01 mm	0,01 mm
Dimensions	234 × 132 × 48 mm (9.2 × 5.2 × 1.9 in.)	276 × 160 × 53 mm (9.2 × 5.2 × 1.9 in.)
Weight	680 g (22.9 oz)	1 060 g (37.3 oz)

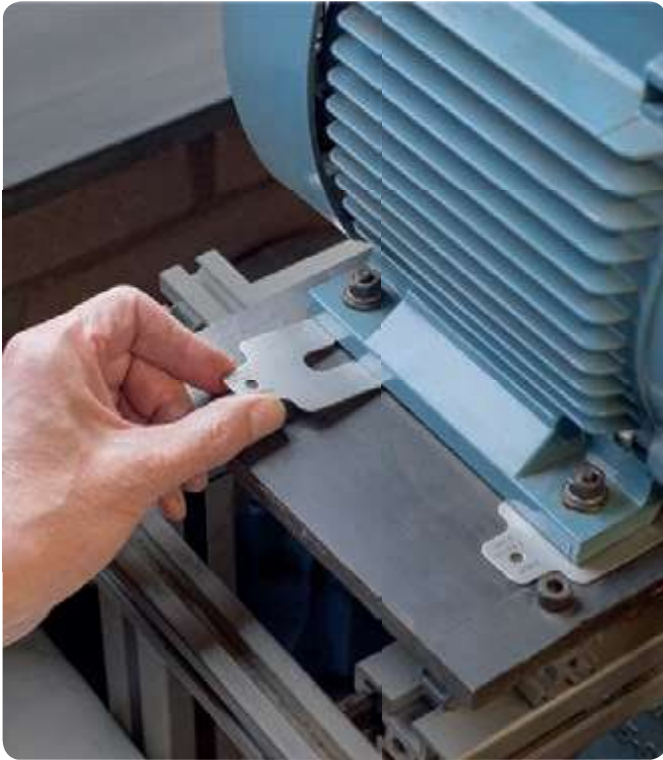
### Complete system

Contents	Display unit (battery included); 2 measuring units; 2 mechanical shaft fixtures; 2 adjustable chains with tightening pin; 2 extension chains; Rods: 4 × 90 mm (3.5 in.), 4 × 150 mm (5.9 in.); USB cable; Charger for display unit; Measuring tape; Screw driver; Tommy bar; Quick start guide; CD with instruction to use; Carrying case.	Display unit (battery included); 2 measuring units; 2 mechanical shaft fixtures; 2 adjustable chains with tightening pin; 2 extension chains; Rods: 4 × 90 mm (3.5 in.), 4 × 150 mm (5.9 in.); USB cable; Charger for display unit; Measuring tape; Screw driver; Tommy bar; Quick start guide; CD with instruction to use; Carrying case.
PC download	USB	USB
Storage memory	1 000 alignments	1 000 alignments
Soft foot check	By laser or manually	By laser or manually
Alignment tolerance check	Yes	Yes
User editable tolerances	Yes	Yes
Shaft diameter range	up to 300 mm (11.8 in.)	up to 300 mm (11.8 in.)
Chain included for shaft diameters	30–300 mm (1.2–11.8 in.)	30–300 mm (1.2–11.8 in.)
Displacement measurement accuracy	±5 µm ±0.5%	±5 µm ±0.5%
Temperature range	–10 to +50 °C (14–122 °F)	–10 to +50 °C (14–122 °F)
Operating humidity	<90%	<90%
Carrying case dimensions	534 × 427 × 207 mm (21 × 16.8 × 8.15 in.)	534 × 427 × 207 mm (21 × 16.8 × 8.15 in.)
Total weight (incl. case)	7,3 kg (16.1 lb)	7,6 kg (16.8 lb)
Warranty	1 year	1 year

### Optional parts

Magnetic base	For shafts >300 mm (11.8 in.)	For shafts >300 mm (11.8 in.)
Magnetic V-brackets	For mounting the measuring units in limited spaces or for large diameter shafts	For mounting the measuring units in limited spaces or for large diameter shafts
Extension brackets	For mounting the measuring units in limited spaces	For mounting the measuring units in limited spaces





For accurate vertical machinery alignment

## SKF Machinery Shims TMAS series

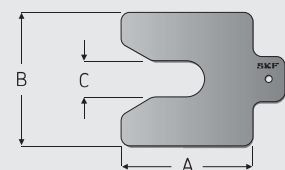
Accurate machine adjustment is an essential element of any alignment process. SKF single slot pre-cut shims are available in five different dimensions and in ten different thicknesses.


- Made of high quality stainless steel, allowing re-use
- Easy to fit and to remove
- Close tolerances for accurate alignment
- Thickness clearly marked on each shim
- Fully de-burred
- Pre-cut shims are supplied in packs of 10 and complete kits are also available





### Technical data


Designation	Number of shims per set	A	B	C	Thickness	Designation	Number of shims per set	A	B	C	Thickness
		mm	mm	mm	mm			mm	mm	mm	mm
TMAS 50-005	10	50	50	13	0,05	TMAS 75-005	10	75	75	21	0,05
TMAS 50-010	10	50	50	13	0,10	TMAS 75-010	10	75	75	21	0,10
TMAS 50-020	10	50	50	13	0,20	TMAS 75-020	10	75	75	21	0,20
TMAS 50-025	10	50	50	13	0,25	TMAS 75-025	10	75	75	21	0,25
TMAS 50-040	10	50	50	13	0,40	TMAS 75-040	10	75	75	21	0,40
TMAS 50-050	10	50	50	13	0,50	TMAS 75-050	10	75	75	21	0,50
TMAS 50-070	10	50	50	13	0,70	TMAS 75-070	10	75	75	21	0,70
TMAS 50-100	10	50	50	13	1,00	TMAS 75-100	10	75	75	21	1,00
TMAS 50-200	10	50	50	13	2,00	TMAS 75-200	10	75	75	21	2,00
TMAS 50-300	10	50	50	13	3,00	TMAS 75-300	10	75	75	21	3,00
TMAS 100-005	10	100	100	32	0,05	TMAS 125-005	10	125	125	45	0,05
TMAS 100-010	10	100	100	32	0,10	TMAS 125-010	10	125	125	45	0,10
TMAS 100-020	10	100	100	32	0,20	TMAS 125-020	10	125	125	45	0,20
TMAS 100-025	10	100	100	32	0,25	TMAS 125-025	10	125	125	45	0,25
TMAS 100-040	10	100	100	32	0,40	TMAS 125-040	10	125	125	45	0,40
TMAS 100-050	10	100	100	32	0,50	TMAS 125-050	10	125	125	45	0,50
TMAS 100-070	10	100	100	32	0,70	TMAS 125-070	10	125	125	45	0,70
TMAS 100-100	10	100	100	32	1,00	TMAS 125-100	10	125	125	45	1,00
TMAS 100-200	10	100	100	32	2,00	TMAS 125-200	10	125	125	45	2,00
TMAS 100-300	10	100	100	32	3,00	TMAS 125-300	10	125	125	45	3,00
TMAS 200-005	10	200	200	55	0,05						
TMAS 200-010	10	200	200	55	0,10						
TMAS 200-020	10	200	200	55	0,20						
TMAS 200-025	10	200	200	55	0,25						
TMAS 200-040	10	200	200	55	0,40						
TMAS 200-050	10	200	200	55	0,50						
TMAS 200-070	10	200	200	55	0,70						
TMAS 200-100	10	200	200	55	1,00						
TMAS 200-200	10	200	200	55	2,00						
TMAS 200-300	10	200	200	55	3,00						





<b>TMAS 50/KIT</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
		Size (mm)	Quantities								
		50 x 50	20	20	20	20	20	20	20	20	20


<b>TMAS 75/KIT</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
		Size (mm)	Quantities								
		75 x 75	20	20	20	20	20	20	20	20	20


<b>TMAS 100/KIT</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
		Size (mm)	Quantities								
		100 x 100	20	20	20	20	20	20	20	20	20

<b>TMAS 340</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00	
		Size (mm)	Quantities									
		100 x 100	20	20	20	20	20	20	20	20	20	10
		125 x 125	20	20	20	20	20	20	20	20	20	10

<b>TMAS 360</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00	
		Size (mm)	Quantities									
		50 x 50	20	20		20		20		20	20	20
		75 x 75	20	20		20		20		20	20	20
100 x 100	20	20		20		20		20	20	20		

<b>TMAS 380</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
		Size (mm)	Quantities								
		50 x 50	20	20	20	20	20	20	20	20	20
75 x 75	20	20	20	20	20	20	20	20	20	10	

<b>TMAS 510</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00	
		Size (mm)	Quantities									
		50 x 50	20	20	20	20	20	20	20	20	20	10
		75 x 75	20	20	20	20	20	20	20	20	20	10
100 x 100	20	20	20	20	20	20	20	20	20	10		

<b>TMAS 720</b>		Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00	
		Size (mm)	Quantities									
		50 x 50	20	20	20	20	20	20	20	20	20	20
		75 x 75	20	20	20	20	20	20	20	20	20	20
		100 x 100	20	20	20	20	20	20	20	20	20	10
125 x 125	20	20	20	20	20	20	20	20	20	10		

Consists of TMAS 340 + TMAS 380



## Achieving a precise and controllable horizontal adjustment

### SKF horizontal adjustment tool

Using laser shaft alignment equipment usually requires the machine to be repositioned in both the vertical and horizontal planes, to achieve a good alignment result. The SKF horizontal adjustment tool, TMAH series, helps achieve a precise and controllable horizontal adjustment.



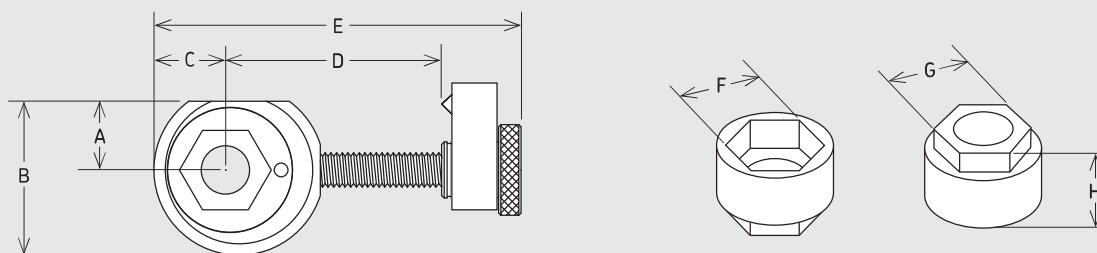
Enables accurate horizontal adjustment movements of 25 microns or less, suitable for laser alignment equipment accuracy.

The TMAH uses a special eccentric socket arrangement that enables rotary movement to be translated to linear movement at the motor foot. The result is a precise and controllable horizontal movement of the motor to the desired alignment position.

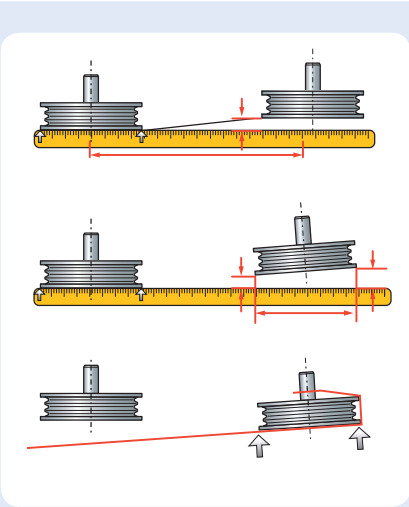
- Heavy hammers, pry or crow bars are no longer required to move the motor horizontally, making the adjustment easier and safer
- Welded jack-bolt assemblies are no longer required to move each motor foot horizontally. This also eliminates the need to repair the jack-bolts due to rust or corrosion
- Quick and easy to fit, operate and remove
- Is a complementary product to SKF TMA5 machinery alignment shims

#### Dimensions

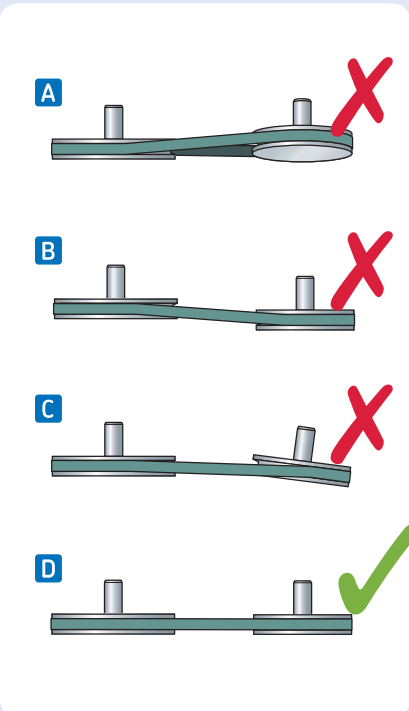
Designation	A		B		C		D		E		F		G		H	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
TMAH 13	14	0.55	31	1.22	14-17	0.55-0.67	21-50	0.83-1.97	95	3.74	13	0.51	17	0.67	20	0.79
TMAH 17	20	0.79	43	1.69	20-22	0.79-0.87	22-55	0.87-2.17	107	4.21	17	0.67	24	0.94	21	0.83
TMAH 19	23	0.90	52	2.05	24-26	0.94-1.02	22-82	0.87-3.23	137	5.39	19	0.75	30	1.18	27	1.06
TMAH 24	23	0.90	52	2.05	24-26	0.94-1.02	22-82	0.87-3.23	137	5.39	24	0.94	30	1.18	27	1.06
TMAH 30	35	1.38	70	2.75	30-32	1.18-1.25	38-134	1.50-5.28	187	7.36	30	1.18	36	1.42	39	1.53
TMAH 36	35	1.38	70	2.75	30-32	1.18-1.25	38-134	1.50-5.28	187	7.36	36	1.42	36	1.42	39	1.53
TMAH 46	44	1.73	89	3.50	40-43	1.57-1.69	48-156	1.89-6.14	229	9.02	46	1.81	46	1.81	45	2.16



# SKF Belt Alignment Tools



Measuring parallel and angular misalignment using a straight edge or a piece of string



- A** Vertical angle misalignment
- B** Parallel misalignment
- C** Horizontal angle misalignment
- D** Correct alignment

One of the common reasons for unplanned downtime of belt-driven machinery is pulley misalignment. Pulley misalignment can increase wear on pulleys and belts as well as increasing the noise and vibration level, that can result in unplanned machinery downtime. Another side effect of increased vibration is premature bearing failure. This too can cause unplanned machinery downtime.

## Traditional belt alignment methods

These methods are usually visual in combination with a straight edge and/or length of string. Although quick to perform, they are often inaccurate.

## Laser belt alignment methods

Using a laser belt alignment tool is quicker and more accurate than traditional methods. Belt alignment tools can either align the pulley faces or the pulley grooves.

## Accurate pulley and belt alignment can help you:

- Increase bearing life
- Increase machinery uptime, efficiency and productivity
- Reduce wear on pulleys and belts
- Reduce friction and thereby energy consumption
- Reduce noise and vibration
- Reduce costs of replacing components and machinery downtime



Belt-driven machinery downtime caused by misalignment is a thing of the past

## SKF TKBA Series

SKF offers a range of three different belt alignment tools to enable accurate alignment for almost all applications. The tools are designed to be easy to use without any special training. The laser position indicates the nature of misalignment allowing easy and accurate adjustment.



### TKBA 10 and TKBA 20

Versatile tools for pulley and sprocket alignment

The SKF TKBA 10 and TKBA 20 allow pulleys and sprockets to be aligned on the side face. The unit magnetically attaches to the inside or outside face of almost any belt pulley or chain sprocket and has no small parts or targets that can get lost. A laser line is projected from the transmitter unit to the reflector unit mounted on the opposite pulley. A reference line on the reflector unit directly indicates the offset and vertical angle misalignment. The reflected laser line shown on the transmitter unit shows the horizontal angle misalignment of all three.

- Powerful magnets allow fast and easy attachment
- Facilitates simultaneous adjustment of tension and alignment
- Can be used on almost all machines using V belts, banded belts, ribbed belts and most other belts as well as chain sprockets
- SKF TKBA 10 utilises a red laser and can be used for distances up to 3 m (10 ft)
- SKF TKBA 20 utilises a highly visible green laser and can be used for distances up to 6 m (20 ft). It can even be used outdoors in sunny conditions
- Sturdy aluminium housings help ensure assembly stability and accuracy during the alignment process



### TKBA 40

Highly accurate tool for V-belt pulley alignment

The SKF TKBA 40 aligns V-belt pulleys in the grooves. V-guides and powerful magnets allow the TKBA 40 to be fitted in the grooves of the pulley. With only two components, a laser-emitting unit and a receiver unit, the belt alignment tool is easy and fast to attach. The three-dimensional target area on the receiver unit allows the easy detection of misalignment as well as its nature; whether it is horizontal, vertical, parallel or a combination of all three.

- Powerful magnets allow fast and easy attachment
- Three-dimensional target area simplifies the alignment process
- Facilitates simultaneous adjustment of tension and alignment
- V-guides facilitate the alignment of a wide range of V-belt pulleys
- Aligns grooves of a V-belt pulley rather than its face, allowing optimum alignment of pulleys of unequal width or with dissimilar faces
- A maximum operating distance of 6 m (20 ft) accommodates many applications
- Special side adaptor allowing alignment of multi-ribbed and timing belt pulleys as well as sprockets is available as accessory



TKBA 10



TKBA 20

Also available from SKF

SKF Belt Tension System



SKF Belt Frequency Meter



For additional information, please refer to our publications 6804 EN (6702 EN) and 6479 EN or online at: [www.skfptp.com](http://www.skfptp.com)

### Technical data

Designation	TKBA 10	TKBA 20	TKBA 40
Type of laser	Red laser diode	Green laser diode	Red laser diode
Laser	1 × Built-in class 2 laser, <1 mW, 635 nm	1 × Built-in class 2 laser, <1 mW, 532 nm	1 × Built-in class 2 laser, <1 mW, 632 nm
Laser line length	2 m at 2 m (6.6 ft at 6.6 ft)	2 m at 2 m (6.6 ft at 6.6 ft)	3 m at 2 m (9.8 ft at 6.6 ft)
Measurement accuracy angular	Better than 0,02° at 2 m (6.6 ft)	Better than 0,02° at 2 m (6.6 ft)	Better than 0,2°
Measurement accuracy offset	Better than 0,5 mm (0.02 in.)	Better than 0,5 mm (0.02 in.)	Better than 0,5 mm (0.02 in.)
Measurement distance	50 mm to 3 000 mm (2 in. to 10 ft)	50 mm to 6 000 mm (2 in. to 20 ft)	50 mm to 6 000 mm (2 in. to 20 ft)
Control	Laser on/off rocker switch	Laser on/off rocker switch	Laser on/off switch
Housing material	Aluminum, powder coat finish	Aluminum, powder coat finish	Extruded aluminium
Dimensions			
Transmitter unit	169 × 51 × 37 mm (6.65 × 2.0 × 1.5 in.)	169 × 51 × 37 mm (6.65 × 2.0 × 1.5 in.)	70 × 74 × 61 mm (2.8 × 2.9 × 2.4 in.)
Receiver unit	169 × 51 × 37 mm (6.5 × 2.0 × 1.5 in.)	169 × 51 × 37 mm (6.5 × 2.0 × 1.5 in.)	96 × 74 × 61 mm (3.8 × 2.9 × 2.4 in.)
Reflector dimensions	22 × 32 mm (0.9 × 1.3 in.)	22 × 32 mm (0.9 × 1.3 in.)	N/A
Weight			
Transmitter unit	365 g (0.8 lbs)	365 g (0.8 lbs)	320 g (0.7 lbs)
Receiver unit	340 g (0.7 lbs)	340 g (0.7 lbs)	270 g (0.6 lbs)
Mounting	Magnetic, side mounted	Magnetic, side mounted	Magnetic, groove mounted (optional side adapter TMEB A2)
V-guides	N/A	N/A	Size 1: 22 mm, short rods (3× pairs) Size 2: 22 mm, long rods (3× pairs) Size 3: 40 mm, short rods (3× pairs) Size 4: 40 mm, long rods (3× pairs)
Battery	2 × AAA Alkaline type IEC LR03	2 × AAA Alkaline type IEC LR03	2 × AA Alkaline type IEC LR03
Operation time	25 hours continuous operation	8 hours continuous operation	20 hours continuous operation
Carrying case dimensions	260 × 85 × 180 mm (10.3 × 3.4 × 7.0 in.)	260 × 85 × 180 mm (10.3 × 3.4 × 7.0 in.)	260 × 85 × 180 mm (10.3 × 3.4 × 7.0 in.)
Total weight (incl. case)	1,3 kg (2.9 lbs)	1,3 kg (2.9 lbs)	1,3 kg (2.9 lbs)
Operating temperature	0 to 40 °C (32 to 104 °F)	0 to 40 °C (32 to 104 °F)	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to +60 °C (-4 to +140 °F)	-20 to +60 °C (-4 to +140 °F)	-20 to +65 °C (-4 to +150 °F)
Relative humidity	10 to 90% RH non-condensing	10 to 90% RH non-condensing	10 to 90% RH non-condensing
IP rating	IP 40	IP 40	IP 40
Calibration certificate	Valid for two years	Valid for two years	Valid for two years