SKF TKRT 31

Instructions for use

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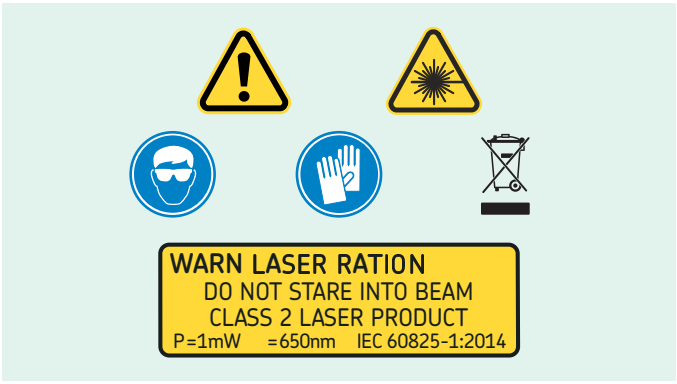
Original instructions



READ THIS FIST
Safety precautions

Read this instruction for use fully. Follow all safety precautions to avoid personal injury or property damage during equipment operation.
SKF cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect equipment operation. In case of any uncertainties as regards the use of the equipment contact SKF.

This device is used for inspecting the movement of rotating and vibrating objects. It may only be used in accordance with these instructions.
The device must not be opened. Modifications to the device are not permitted. The manufacturer shall not be liable for damage resulting from incorrect use or use contrary to the intended use. Warranty claims will also be invalidated in this event.

⚠ WARNING:

Risk of injury!

- Moving objects should not be approached without care.
- Do not touch moving objects directly, under any circumstance.
- The device may not be used in potentially explosive areas.

- Laser class 2
- The SKF Tachometer TKRT 31 is fitted with a class 2 laser. This is located at the front of the device.
- The laser beam can damage eyes.
- For this reason, do not stare directly at the laser beam and never direct it at people or animals.
- Wavelength: 650 nm, output: 1 mW.

Warranty void!

- Do not expose the equipment to rough handling or heavy impacts.
- Always read and follow the operating instructions.
- Opening the housing of the instrument may result in hazardous mishandling and voids warranty.
- The equipment should not be used in areas where there is a risk for explosion.
- Do not expose the equipment to high humidity or direct contact with water.
- All repair work should be performed by an SKF repair shop.

Correct disposal!

- =• The electronic components in the device contain environmentally harmful substances.
  They must be disposed of in accordance with the environmental regulations in the country of use.

NOTE:

- Suitable for use in residential, commercial and industrial area.

EU Declaration of Conformity
TKT 31

We, SKF MPT, 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
and are in conformity with the following harmonized standards:
EN 301 489-1:2017-02 (V2.1.1) – Radio interference characteristics
EN 301 489-17:2017-02 (V3.1.1) – Broadband Data Transmission Systems
EN 301 489-1:2017-02 (V2.1.1) – Immunity characteristics
EN 55032:2012/AC:2013 (Limit class B) – Radiated test
EN 61000-4-2:2009 – Electrostatic discharge immunity test (ESD)
EN 61000-4-3:2006+A1:2008+A2:2010 – Radiated, radio-frequency electromagnetic field immunity test
EN 61000-4-8:2010 – Power frequency magnetic field immunity test

EU RADIO EQUIPMENT DIRECTIVE 2014/53/EU
and the following harmonized standards:
EN 300 328 (V2.1.1) - Wideband Data Transmission equipment operating in the 2.4 GHz band.
Bluetooth LE: FCC ID A8TBM78ABCDEFGH

EU RoHS DIRECTIVE (EU) 2015/863 and the following harmonized standard:
EN IEC 63000:2018: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The laser is classified in accordance with the EN 60825-1:2014

Houten, The Netherlands, September 2022

CE

Guillaume Dubois
Manager Quality and Compliance

UK Declaration of Conformity
TKT 31

We, SKF MPT, 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) and are in conformity with the following harmonized standards:
EN 301 489-1:2017-02 (V2.1.1) – Radio interference characteristics
EN 301 489-17:2017-02 (V3.1.1) – Broadband Data Transmission Systems
EN 301 489-1:2017-02 (V2.1.1) – Immunity characteristics
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and the following harmonized standards:
EN 300 328 (V2.1.1) - Wideband Data Transmission equipment operating in the 2.4 GHz band.
Bluetooth LE: FCC ID A8TBM78ABCDEFGH

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (2012 No. 3032) and the following harmonized standard:
EN IEC 63000:2018: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The laser is classified in accordance with the EN 60825-1:2014

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, September 2022

UK CA

Guillaume Dubois
Manager Quality and Compliance

1. Instructions for use

These operating instructions are an integral part of the device. They must be stored in an easily accessible location and passed on to subsequent users. Ask your supplier if there is something you do not understand.

⚠ WARNING:
Read the operating instructions thoroughly and follow the instructions provided. These operating instructions contain important information about installing, starting up and operating the tachometer.
Pay particular attention to the safety information and warnings to prevent injuries and product damage.

The manufacturer reserves the right to continue to develop this device without documenting all developments. Your supplier will be pleased to inform you as to whether these operating instructions are current.

Content of the box:
- Tachometer: SKF Tachometer TKRT 31
- Contacts: extension, 2 cone tips and 2 wheels
- Operating instructions
- 2 batteries AA (all types, rechargeable too)
- Stripes of reflective tape
- Case

Description:
A - ON OFF Button
B - Batteries compartment: 2 batteries AA must be used
C - Laser out / Connector
D - Accessories

Fig. 1 – *Tachometer SKF TKRT 31*

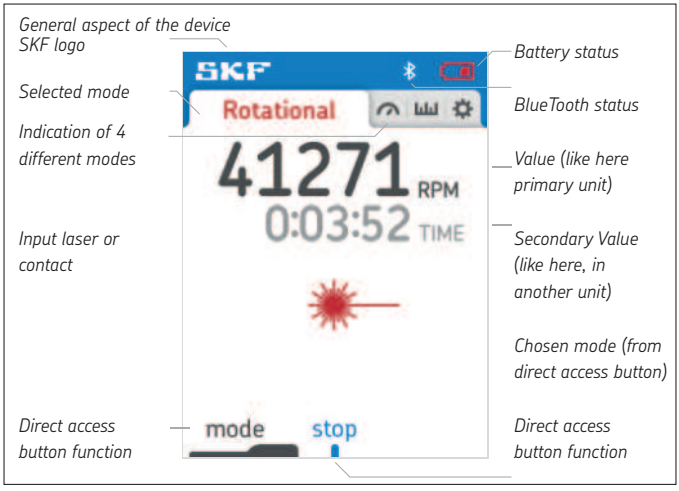

Fig. 2 – *Wireframe*

1. Direct access button left
2. Direct access button right
3. Direct access button center

Fig. 3 – *Buttons*

2. Technical data

Designation	TKT 31
General	
Memory	Yes, 5 slots
Low battery indicator	Yes
Auto switch off	Yes
Measurement	
Optical modes	rpm and Hz
Contact modes	rpm and Hz, meters, feet, inch, per min and per sec
Speed capture feature	Maximum, minimum or average rate
Linear Speed	Meters, feet, inch, per min and per sec
Optical Measurement	
Rotational speed range	1 to 99999 r/min
Accuracy	±0.01% of reading ±1 digit
Measuring distance	25 mm to 1200 mm *(1 in. - 47 in.)*
Angle of operation	±30°
Laser sensor	built-in class 2 laser
Contact Measurement	
Rotational speed range	Max. 20000 rpm for 36000 sec
Accuracy	±0.1% of reading ±1 digit (>120 rpm or "high accuracy")
"low accuracy" at < 120 rpm:	
< 20 rpm -> ~±4%,	(low update rate)
< 40 rpm -> ~±4%,	(measuring 1/6 rotation)
< 60 rpm -> ~±2%,	(measuring 2/6 rotation)
< 80 rpm -> ~±1.33%,	(measuring 3/6 rotation)
< 100 rpm -> ~±1.0%,	(measuring 4/6 rotation)
< 120 rpm -> ~±0,8%,	(measuring 5/6 rotation)
> 120 rpm -> <±0,1%,	(measuring full rotation)
Contact adaptors	Included with removable cones & wheels
Power source	2 x AA batteries, rechargeable ones can be used
Run time ca.	8h (20% Display brightness, 50% Laser-On, 50% Bluetooth-On); 3h30 (100% Display brightness, 50% Laser-On, 50% Bluetooth-On)
Display	Multi-line backlight TFT
Display update	Continuous
Controls	Direct selector switches

Housing material	ABS (plastics)
Product dimensions	295 × 70 × 38 mm *(11.6 × 2.8 × 1.5 in.)*
Case dimensions	260 × 85 × 180 mm *(10.2 × 3.3 × 7.1 in.)*
Unit weight	270 g *(0.6 lb)*
Total weight (incl. case)	850 g *(1.9 lb)*
Operating temperature	0 to 40 °C *(32 to 104 °F)*
Storage temperature	–20 to +45 °C *(–4 to +113 °F)*
Type of protection for indication only	IP 40

3. Getting started:

- Unscrew the battery compartment screw
- Insert all two AA batteries respecting the polarity
- Close the lid and tighten the screw.
- Start the instrument by pressing the red ON/OFF button

Anytime when the screen below is displayed, press any button to start measuring speeds or distances. The device will be ready to start measuring, with the laser or with the contact accessories. For this reason, do not direct it at people or animals.

The device will start at the function that was set most recently, as well as the last units used.
Please follow the steps below when setting up the device:
Direct the device at a moving object and use the desired mode: measuring speeds or distances.

Fig. 4 – *Starting screen*

4. General usage

The tachometer offers four different menus to operate it. By pressing the left button (button 1), the tachometer moves from one menu to the next.

Symbol	Name	Description
	Rotational speed	Rotational speed menu with the laser or with contact tips. The Speed mode is activated automatically when contact or laser signal is detected.
	Linear speed	Linear speed menu to be used only with wheels. Make sure to select the right wheel size in order to have the right unit.
	Distance	Distance menu to be used only with wheels. Make sure to select the right wheel in order to have the right unit
	Setting	Menu to change the settings of the tachometer to the preferences of the operator.

The first time you switch ON the tachometer, you will be asked to select the units you prefer: metric or imperial. You can always change it later in the setting menu.

4.1 otational Speed

After starting the instrument, the first menu is rotational speed, in RPM or in Hz, and these units can be chosen in the Settings menu. Speed can be measured both using laser (and reflective tape), or using the available tips included in the case with the TKRT Tachometer. The Tachometer detects automatically if the laser is being used or if a tip is being used. When a tip is used, the laser is not activated.

The speed measurement can be used in two different ways:

A. Short press (< 0.5 s) on button 3 “measure” activates the laser and starts a continuous measurement. Another short press turns the measurement off.

B. Long and continuous press (> 0.5 s) on button 3 “measure” activates the laser as long as the button is pressed.

Fig. 5 – *Example*

- Units can be changed in the Settings.
- When measuring, a dot is used to indicate decimals.
- Measuring time appears when a measurement starts, when a signal is detected from the laser or a tip.
- Laser icon is displayed when the laser is used to measure a speed.

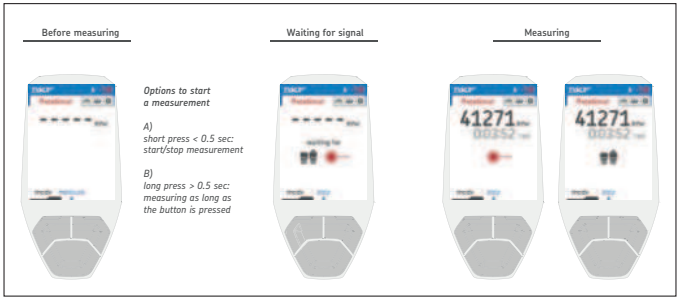

Fig. 6 – *Example*

Fig. 7 – *Graph display*

During the speed measurement, the tachometer records the measured speed values. After the speed measurement, the statistics of the measurement are shown (min, max, average and time). You can toggle between graph and values by pressing the right button (Button 2).

The Menu can be changed by pressing the left button (button 1).

4.1.1 Laser mode

The laser mode allows the tachometer to determine the speed remotely.
The laser requires a reflective surface mounted on the rotating machine such as the supplied reflective tape.
Using the laser helps to quickly determine the speed of the rotating object and record the measured speeds.
A red laser symbol on the screen indicates that the laser is active.

⚠ WARNING:

Never point the laser at people, animals or mirror surfaces. The laser beam can damage eyes.
In order to make a proper measurement, attach small reflective target to machine shaft (typically 6 mm x 25 mm).

- Start machine and point the tachometer towards the target.
- Press and/or hold the center button (Button 3) to suit application and/or hold continuously.
- Aim laser beam onto target
- Read off rpm or Hz, releasing button will hold last reading.
- Last rpm or Hz reading will be held in display.

4.1.2 Contact mode

The tachometer is supplied with different tips for different purposes:
male or female conical end.

Fit contact adapter into the tachometer and ensure a good connection.

- Start machine and make clean contact with the recess in shaft end.
- Contact the shaft end via the rubber cone, ensure a steady firm pressure is applied and that the instrument is in line accurately with the machine shaft.
- Press and/or hold measure centre button (Button 3) as required & read speed.
- Releasing the button will hold the reading automatically.

4.2 Linear Speed

- Fit contact wheel as chosen for user's application.
- Press "measure" or keep the "measure" button pressed, now place the contact wheel on the moving surface and read the linear speed, ensure wheel is vertical to the moving surface.
- Press "stop" or release the "stop" button to stop the measurement, the tachometer will then hold the last reading on the display.
- The instrument retains selected measurement mode for further linear measurements after switching off the tachometer, until used to a different mode.

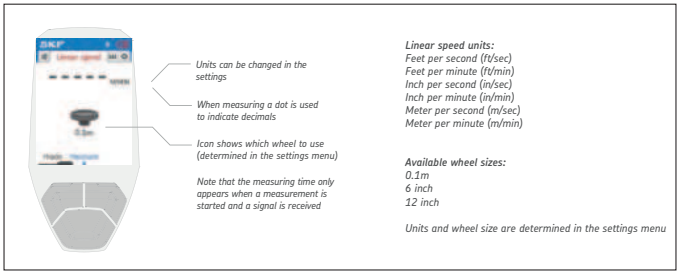

Fig. 8 – *Units and wheels*

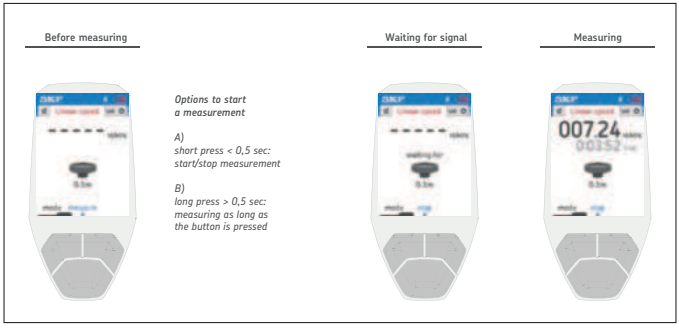

Fig. 9 – *Example*

Fig. 10 – *Graph display*

During the speed measurement, the tachometer records the measured speed values. After the speed measurement, the statistics of the measurement are shown (min, max, average and time). You can toggle between graph and values by pressing the right button (Button 2).

The Menu can be changed by pressing the left button (button 1).

4.3 Distance

- Fit contact wheel as chosen for user's application.
- Press "measure" or keep the "measure" button pressed, now place the contact wheel on the moving surface and read the linear rate, ensure wheel is vertical to the moving surface.
- Press "stop" or release the "stop" button to stop the measurement, the tachometer will then hold the last reading on the display.
- The instrument retains selected measurement mode for further distance measurements after switching off the tachometer, until used to a different mode.

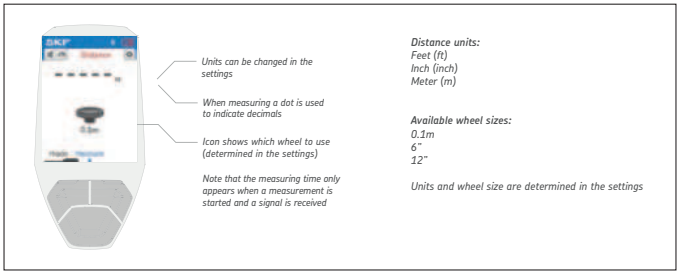

Fig. 11 – *Units and wheels*

During the distance measurement, the tachometer records the measured distance over time. After the measurement, the statistics of the measurement are shown (distance and time). You can toggle between graph and values by pressing the right button (Button 2).

The Menu can be changed by pressing the left button (button 1).

4.4 Settings

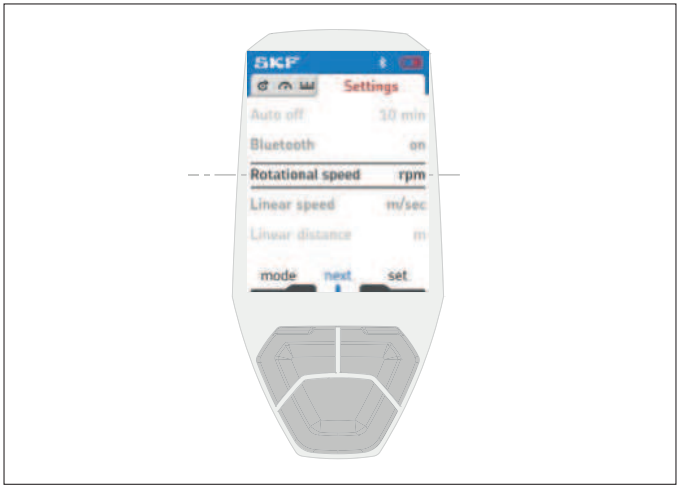

Fig. 12 – *Settings*

Different settings can be scrolled through by using the centre button (Button 3). Change values of the settings by pressing direct access buttons.

Name	Options	Description
Rotational Speed	Rpm / Hz	Select the rotational speed unit, 1 Hz = 1 round per second
Linear Speed	in/sec - in/min ft/sec - ft/min m/sec - m/min	Select the linear speed unit, metric or imperial
Distance	inch - ft - m	Select the distance unit, metric or imperial
Wheel size	0.1 m - 6 in - 12 in (option)	Select the required wheel for user's application
Display Brightness	20-40-60-80-100 %	Change the display brightness
Auto off	off / 5 min / 10 min	Select if the tachometer should turn off automatically and after how many minutes
Bluetooth	on / off	Turn the Bluetooth module on and off
Memory	5 slots	The last 5 measurements are saved and replaced automatically, chronologically

5. Bluetooth

The tachometer is equipped with a Bluetooth module. The Bluetooth functionality is not active.

6. Symbols

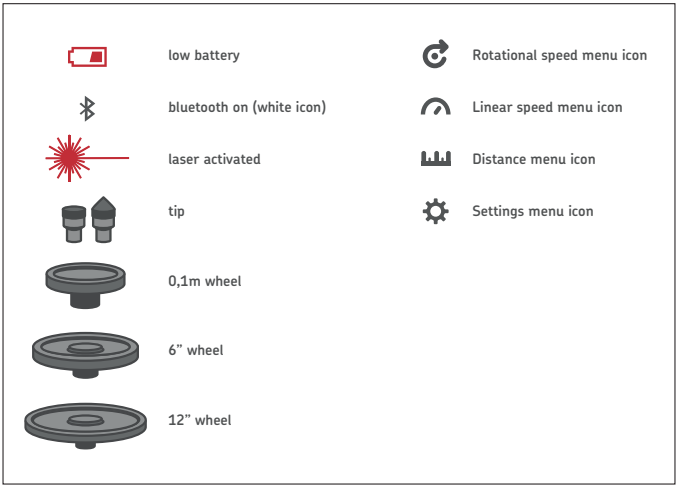

Fig. 13 – *Symbols*

7. Troubleshooting

Problem	Solution
Display is dirty	Use a wet cotton swab to clean the display area and a clean, dry cotton cloth to remove any water remains. Do not wash the display with too much water or solvents.
Menu is frozen	Remove the batteries and wait for 1 minute before placing them back. Start the device and check that everything works.
Too short operating time	Replace batteries with new batteries. Check if another brand offers better performance. Do not store the tachometer in very hot or cold environments. Turn on the auto off function or reduce the screen brightness to conserve battery power.

8. Spare parts and accessories

Designation	TKT 31
TKRT RTAPE	Reflective tape
TKRT TIPS	Wheels and Cones set
TKRT WHL12	wheel (C=12 in)
TKRT 31-CA	Toolcase with inlay for TKRT 31
TDTC 1/A	General toolcase without inlay, size A

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