SKF Shaft Alignment Tool
Soft foot app

Instructions for use

Table of contents

1. Using the Soft foot app 2

1.1 How to change the app language 2
1.2 Soft foot overview 3
1.3 Principle of operation 3
1.4 Main menu 4
1.5 Settings 5
1.6 Select units 6
1.7 Machine information 7
1.8 Sensor status 8
1.9 Measuring procedure 9
1.10 “As Found” measuring results 10
1.11 Correction 10
1.12 “As Corrected” measuring results 11
1.13 Report 12
1.14 Machine library 13

Original instructions

1. Using the Soft foot app

“SKF Shaft alignment”

SKF Shaft Alignment Tool
Soft foot app

1.1 How to change the app language

The app will adapt to the language and date format currently used by the operating device.

- To change the language of an iOS device, tap: *Settings --> General --> Language & Region*

- To change the language of an Android device:

1. Open the **Settings** app.
2. Under **Controls** tab, select **Language and input**.
3. Tap on **Language English**.
4. Select your preferred language.
5. The tablet switches immediately to the new language.

NOTE: The alignment apps are available in 8 languages. The app uses the same language that is used as the system language of the TKSA DISPLAY.
If the app does not support the selected language, English is used as the default alternative.

1.2 Soft foot overview

Soft foot is the common term used for the improper contact between a machine housing, and the baseplate used to support it.
It is a major cause of repeatability problems in shaft alignment measurements.

Causes of Soft foot conditions:

- Twisted machinery foundations or baseplates.
- Twisted or damaged machinery feet.
- Improper amount of shims under machine feet or bent or deformed shim.
- Dirt or other unwanted materials under machine feet.

1.3 Principle of operation

The TKSA 51 and TKSA 71 are both Line Laser Shaft Alignment Systems.
This type of system has two measuring units that are mounted on each shaft, or on each side of the coupling.
While loosening and tightening each of the four bolts, the movements will be registered and shown in the displaying device.
Corrections of the machine feet can be made instantly and by performing a Remeasure it is straightforward to confirm the adjustments.
Movement information from the measuring units is wirelessly communicated through Bluetooth Low Energy to the displaying device, which calculates and advises corrective adjustments of the machine feet.

1.4 Main menu

Start the app by tapping on the *Soft foot app icon*, found on the home screen of the device. This will take you to the main menu.

IMPORTANT: Make sure you have read the instructions for use for your TKSA hardware.

a. Resume
If you have an ongoing alignment you will find it to the left in the main menu, with the possibility to resume it.

b. New Measurement
Tap on the *plus sign* ("+") to start a new measurement . If a current measurement is in progress you will be asked if you want to start a new measurement or resume the current one.

c. Settings
Access the editable settings.

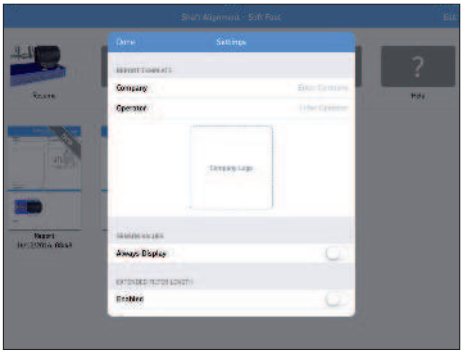
d. Machine library
Access the library for machines and reports.

e Help
Access help videos and the Instructions For Use document.

f. Edit
The reports can be deleted via Edit, which is located in the upper right corner of the view. Delete reports by tapping on *Edit*, then tap the *reports* to be deleted and finish by tapping the *trash can* symbol in the upper left corner of the view.

g. Reports
Previously created reports are shown as miniatures below the main menu buttons. Tapping a *report* will open it for viewing, editing, printing and e-mailing.

1.5 Settings



a. Report template
Company, Operator and Logo is additional information that is included in generated reports.

b. Sensor values
Sensor values is an option to display the detector readings and rotational angles during the measurement.

c. Extended filter length
Measurement values are filtered over time, allowing accurate measurements in the presence of external disturbances, or instance laser beam deflection due to air disturbances. The Extended filter length option enables the sample time to be increased up to 20 seconds.

d. Hardware
The connected measuring units. Tap *Select Hardware* if you want to select other units.

e. Unit
For the ability to change between metric and imperial measuring units. The displayed unit is normally based on the system unit, but you can override this and change between metric and imperial units.

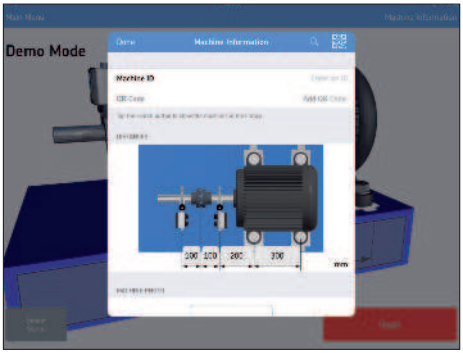
f. Done
Complete any changes in Settings by tapping *Done*.

1.6 Select units

The Bluetooth wireless communication will establish a connection between the device and the two measuring units. You will be informed if there is a need to turn on Bluetooth on the device.

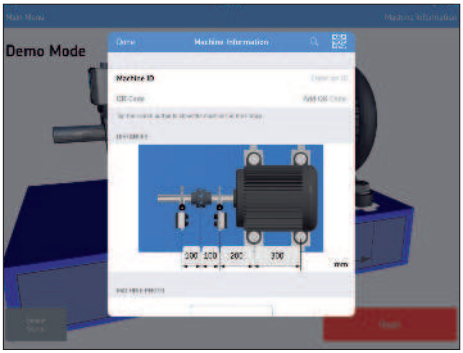
NOTE: That the first time, you have to select the measuring units that you want to use in the system. Connect to the measuring units by tapping one *S (stationary)* unit and one *M (movable)* unit in the lists. The app will remember your chosen measuring units and will attempt to connect to these units at your next alignment.

The app features a Demo Mode which allows most functionalities to be tested without having physical measuring units available. The Demo Mode option is found at the bottom of the Select Units view.



1.7 Machine information

The Machine Information view is displayed when a new measurement has been initiated. The view is also reachable from the upper right corner of the screen.



a. Search

Tap the *magnifying glass* to search for machines in the library.

b. QR code scan

Tap the *QR code icon* to scan for codes that are associated with machines in the library. If found, the machine info will be filled out for that machine.

c. Machine ID

Enter a machine name that will be the identification of the machine.

The Machine ID can be associated to a QR code. Tap *Add QR code* and scan the label with the camera. For a machine ID that is associated with a QR code you have the possibility to remove the QR code.

d. Distances

Enter the four distances for the machine to be measured. Tap on the *distance* to select and specify a new value. The distances entered from the previous measurement will be the default values.

1. Measure and enter the distance between the center of the rods on the stationary side and the center of the coupling.
2. Measure and enter the distance between the center of the coupling and the center of the rods on the movable side.
3. Measure and enter the distance between the rods of the movable side and the front feet (center of feet).
4. Measure and enter the distance between the front and back feet (center of feet).

e. Machine photo

Add a photo to be associated with the machine (optional).

f. Report Information

Enter a report name that will be the identification of the report.

Add up to four Report Photos that will be added to the last page of the report.

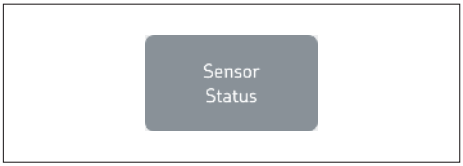
g. Done

Complete any changes in Machine Information by tapping *Done*.

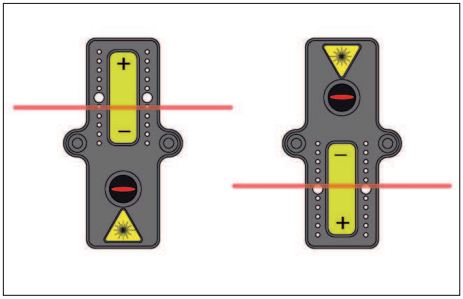
1.8 Sensor status

The Sensor Status appears if you have a warning or stop issue during the setup. It also appears if you tap the *warning / stop sign* or the Sensor Status button in the lower left corner of the screen during a measurement.
If a warning appears, Setup Assistance at the bottom of the view provides help to correct any issues. Warning signs can be ignored, but a stop sign is shown when it is not possible to read essential sensor values.

Warnings are shown when:
- Battery level is below 10% of full charge.
- Laser beam is more than 2 mm *[80 mils]* from the center target during the setup.
- Laser beam is too close to the edge of the detector.
- Rotational angle difference is more than 2° between measuring units.



Stops signs are shown when:
- There is no Bluetooth connection.
- No laser beam is detected.



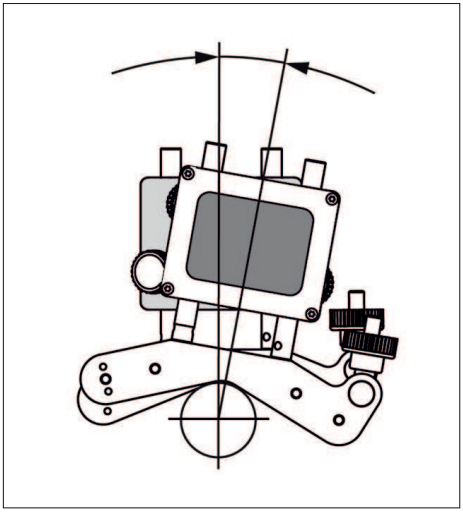
TIP: The Sensor Status can be used to review temporary data, on the detector values and the rotation angles, during the measurement.
When the results are shown, lasers are turned off and no detector values are available in this view.

a. Serial number and connected status
Serial number and connected status indicate if any measuring units are connected.

b. Battery level
Indicates the charge levels for the internal batteries.

c. Detector
The detector values show the distances between the center of the detectors and where the laser beams hit the detectors.

d. Rotational angle and angle difference
The rotational angles and angle differences can be used for precise positioning of the two facing measuring units.



e. Select hardware
Lists the connected measuring units. Tap *Select Hardware* if you want to select other units.

f. Done

When no warnings are displayed tap *Done* to proceed to the measurement.

1.9 Measuring procedure

Place the Measuring Units in the upright position (0° ±5°).

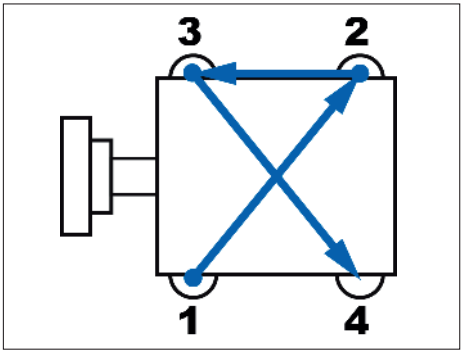
If a red arrow is shown, between the measuring units, this means that the axes have not been rotated to an optimal position, where the soft foot data will be recorded.
Turn the shaft until the arrow disappears.

The software will automatically position the 3-dimensional view of the machine to focus on the current task at hand, but the user also has the possibility to rotate the modeled machine manually if preferred.

Record loose and tightened values for each foot. Tighten each bolt, using a bolt torque pattern like this one. This will minimize the effect of any remaining soft foot. The app will follow this order and the screen will guide you to the correct foot.

The record button collects measurement data for the current foot. These are the colors of the record button during a measurement:

- **Green:** The button is green when the measuring units are positioned within 0° ± 5° and the bolt animation is complete.
- **Red:** The button is red when the measuring units are positioned outside the acceptable range (0° ± 5°) or when the bolt animation has not completed yet. It is not possible to record any measurement values in this state.



1.10 “As Found” measuring results

The movement that occurs when a loose machine is tightened will be registered by the measuring units. The app calculates how big this movement is at the each foot and displays the result.

a. Correction

If needed, performe vertical corrections by tapping *Corrections*.

b. Done

Accept the “As Found” results by tapping *Done*. This creates a report wich is placed below the main menu.

NOTE: That it is possible to resume the measurement after Done has been selected.

1.11 Correction

In the example, two of the feet values are significantly larger than the other two.
This is a common soft foot issue, where two of the feet have better contact with the machine foundation than the other two.
Shim the feet with the highest values.

a. Assistance

Shows suggestions for correction.

The lasers are turned of during the correction so perform a Remeasurement to update the values.

b. Remeasure

After the corrections: Tap *Remeasure* and perform a new measurement, which will record new soft foot values.

c. Done

Accept the “As Found” results by tapping *Done*. This creates a report wich is placed below the main menu.

NOTE: That it is possible to resume the measurement after Done has been selected.

1.12 “As Corrected” measuring results

a. Remeasure

Performe a remeasurement to display the current values after the correction.

b. Done

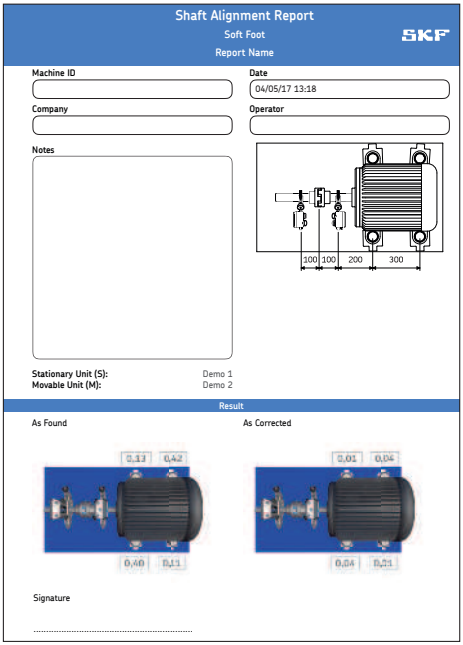
Accept the “As Corrected” results by tapping *Done*. This completes the report, which previously contained only the “As Found” results.

1.13 Report

The reports are automatically generated as PDF files and they are displayed on the main menu, with the most recent alignment in the upper left corner. A report automatically contains measuring data for both the “As Found” and “As Corrected” results when a complete alignment has been performed.

a. Edit report

The report contains information from the measurement and can be completed with additional information. Tap anywhere in the report to edit.

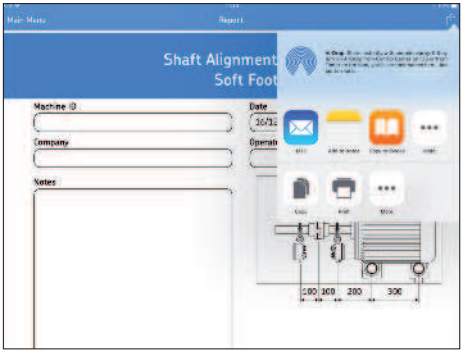


b. Signature

Tap the *Signature fiel*d and write your signature in the opening Sign Report view. If a signed report is to be edited then the editor will be informed of a signature removal. The user will have to confirm this before editing is possible.

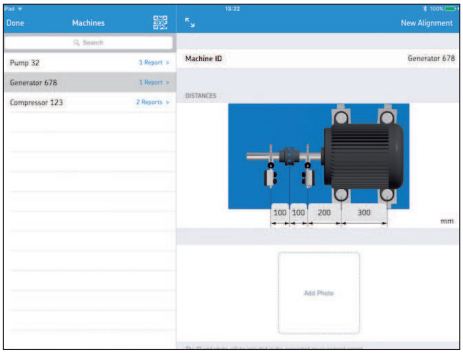
c. Share report

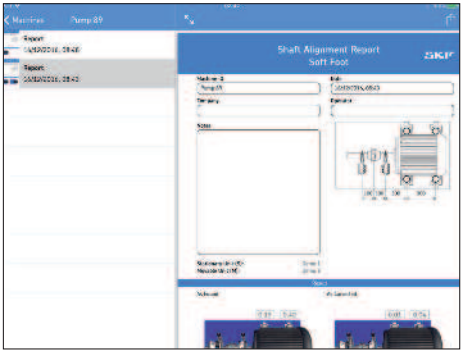
While viewing a report it is possible to share it through for instance email or by printing it. The sharing functionality is available in the upper right corner of the view.



1.14 Machine library

The Machine library is a convenient way to search and select previously measured machines and reports.





a. Machine library

Displays a list with Machine ID and the Reports from previously measured machines.

b. Search

Tap the *search field* to sort out the Machine ID's in the list.

c. Machine info

Select a Machine ID to view the corresponding machine info.

d. New alignment

Tap to use the shown machine info as a *template for a new measurement*.

e. List of reports

Tap the *number of reports* to display a list with corresponding reports with the date for each report.

f. Report

Select a report to view it.

g. Share report

While viewing a report it is possible to share it through for instance email or by printing it.
The sharing functionality is available in the upper right corner of the view.

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MP5468 EN · 2018/02