

# SKF Shaft Alignment Tool Vertical machines app

Flange mounted machines





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# 1. Using the Vertical shaft alignment app

“SKF Shaft alignment”



## SKF Shaft Alignment Tool

### Vertical machines app

Flange mounted machines

## 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 Main menu

Start the app by tapping on the *Shaft Alignment 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 alignment

Tap on the *plus sign* (“+”) to start a new alignment. If an alignment is in progress you will be asked if you want to start a new alignment or resume the current one.

### c. Settings

Access the editable settings.

### d. Machine library

Access the library for machines and reports.

### e. Help

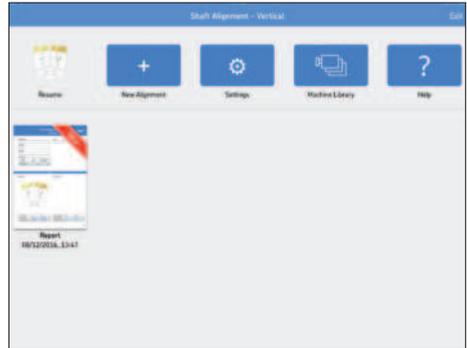
Access help videos and the Instructions For Use document.

### 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.



## 1.3 Settings

### a. Report template

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

### b. Angular error

Angular Error expressed as /100mm [mils/"] or as coupling gap. For gap, specify the Coupling Diameter when entering the Distances in the Machine Information view.

### c. Sensor values

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

### d. Measurement options

Enable Automatic Measuring

Measuring procedure without manually tapping the *record* button. It lets you bypass the need to manually tap the *record* button for the second and the third measurement.

Use Fixed Angles

Measuring procedure with three fixed positions each separated 90°. It lets you measure without use of the angular sensors.

### e. Extended filter length

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

### f. Hardware

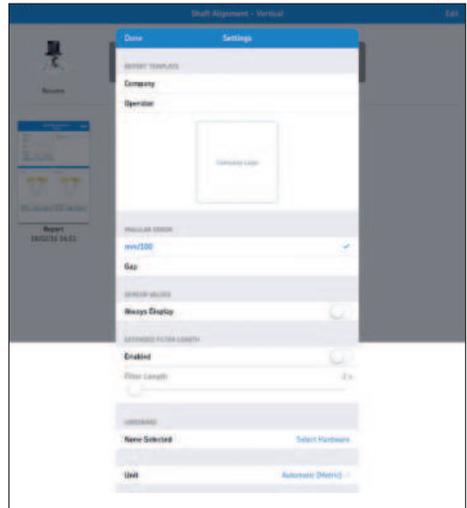
The connected measuring units. Tap *Select Hardware* if you want to select other units.

### g. 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.

### h. Done

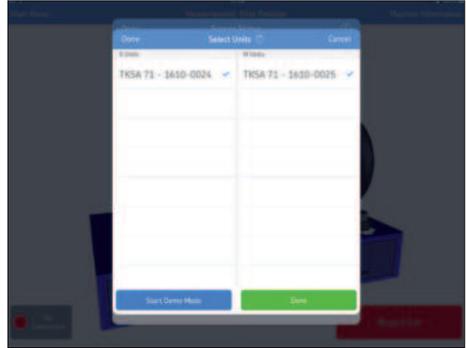
Complete any changes in Settings by tapping *Done*.



## 1.4 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.

## 1.5 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 while recording data in the three measurement positions.

### a. Search

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

### b. QR code scan

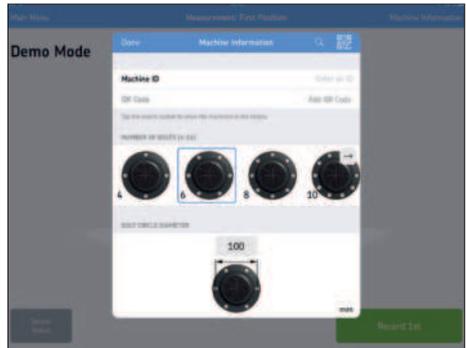
Tap the *QR code icon* to scan for codes that are associated with machines in the library. If found, the machine info will be filled out for that machine.

### 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. Number of bolts

Select number of bolts on the flange (4–16).

#### e. Distances

Bolt circle diameter and the distances from S and M to the point where the offset will be measured.

If you want the angle expressed as the coupling gap, you also need to specify the diameter of the coupling (see the Settings section to activate the Gap option).

Tap on *each measurement* to select and specify new distance measurements using the appearing keypad. The distances entered from the previous alignment will be the default values.

1. Measure and enter the diameter of the bolt circle.
2. Measure and enter the distance between the center of the rods on the stationary side and the center of the coupling.
3. Measure and enter the distance between the center of the coupling and the center of the rods on the movable side.

#### f. Machine Photo

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

#### g. Tolerances

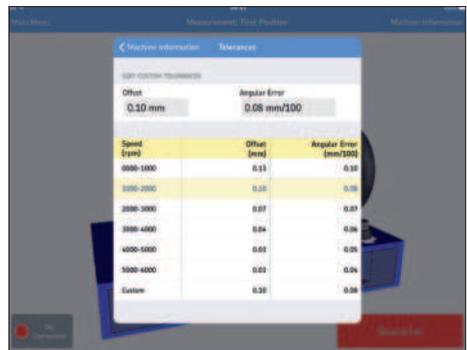
The built-in tolerance values can be used based on the RPM speed of the machine you are aligning. Select the appropriate tolerances by tapping the *row in the table* or choose *custom tolerance values* by tapping *Custom*.

#### h. 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.

#### i. Done

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



## 1.6 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.

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

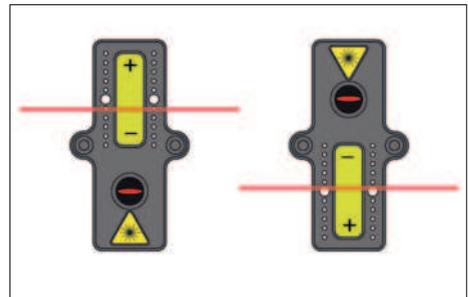
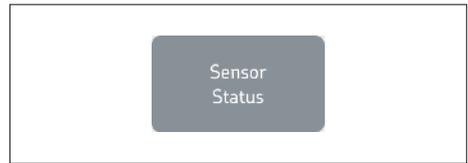
The detector values show the distances between the center of the detectors and where the laser beams hit the detectors.

### d. Select hardware

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

### e. Done

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



## 1.7 Measuring procedure

The measuring procedure is to make manual measurements in three rotational positions, described in detail further down in this section. This means that the operator turns the shaft into each position and taps a *record button* to measure the shaft alignment data.

### The measuring

Record measurements in three different rotational positions. Mark one of the bolts as the position for the first measurement. The subsequent second and third positions are separated by  $90^\circ$ , clockwise from the position that was marked as the first one.

The bolt at the first position is illustrated in blue color and the three measurement positions are marked with triangles. Now position the Measurement units at the blue marked bolt with the adhering green triangle.

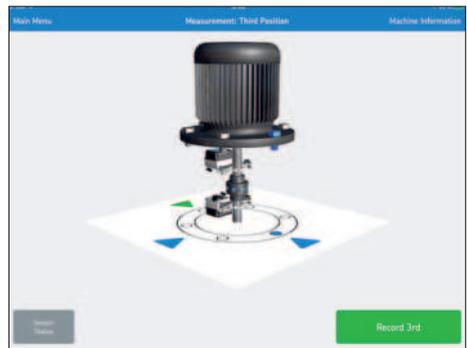
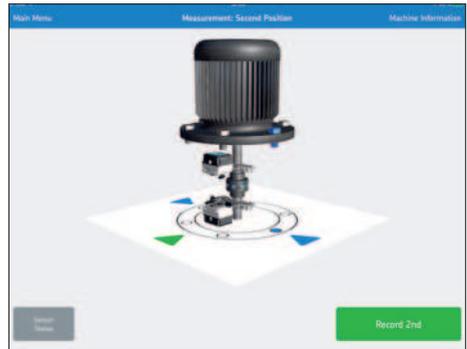
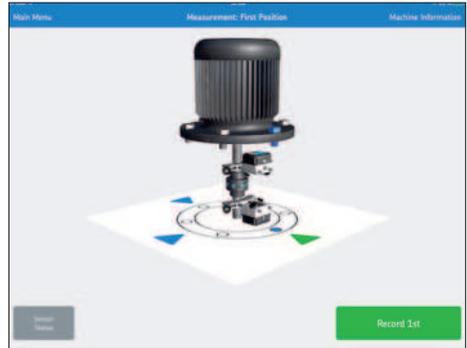
#### Tap record 1st.

The display shows a simulation of the  $90^\circ$  rotation, of the Measurement units, to the second position. Now turn the units to this position.

#### Tap record 2nd.

The display shows a simulation of the  $90^\circ$  rotation, of the Measurement units, to the second position. Now turn the units to this position.

#### Tap record 3rd.



## 1.8 “As Found” measuring results

The parallel offset and angular misalignment results for the vertical and horizontal axes, or planes, are shown in a combined view.

### a. Remeasure

If required, select Remeasure to cancel the results and make a new set of measurements.

### b. Adjust

Perform vertical and horizontal corrections. The green Adjust button indicates that some values are out of tolerance and correction is needed.

### c. Alignment Done

Accept the results by tapping *Alignment Done*. This creates a report which is placed below the main menu. Note that it is possible to resume the alignment after Alignment Done has been selected.



The values are compared with the selected tolerances and the symbols to the right, of the offset and angular misalignment values, indicate if the values are within tolerance.

Within tolerance: ✓

Out of tolerance: ✗

## 1.9 Angular correction

If the angular results are out of tolerance, you need to correct the shimming. Based on the angular misalignment values, the system calculates the correction values at the bolts.

The highest bolt need no extra shimming, but the other bolts need to be shimmed up to that level. After the correction, or if no correction is needed, tap *Shimming Done*.



### 1.10 Horizontal correction

Leaving the Measuring units at the third measurement position will open for the right panel to be live updated. Move the machine according to the arrow and observe the offset misalignment value that is updated continuously. Align the machine and tap *Toggle Direction*.

The display shows a 90° rotation and switches the live updated panel to be on the left side. Turn the units to this position and then align the machine according to the arrow and the offset value on the left panel.

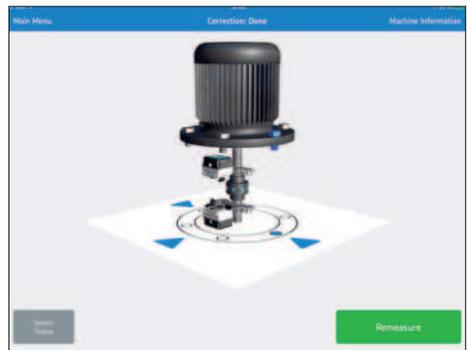
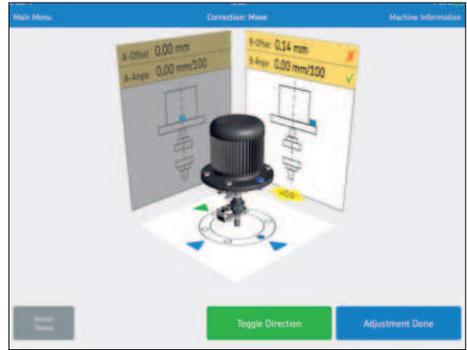
After the correction, or if no correction is needed, tap *Adjustment Done*.

Alignment is now complete and to confirm the result there is a need to re-do the measurement.

**Tap remeasure.**

### 1.11 Verify the alignment

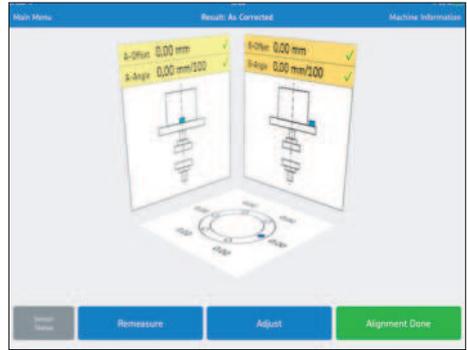
The system requires that a new measurement is made to verify the alignment. This step is mandatory.



### 1.12 “As Corrected” measuring results

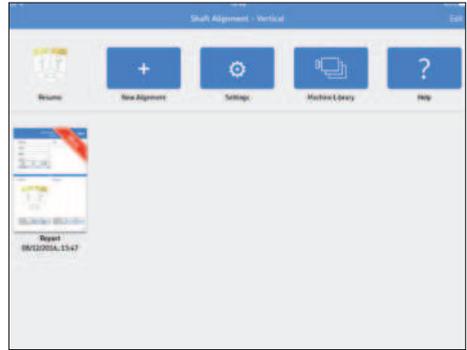
When the Alignment Done button is green, the machines are aligned within the chosen tolerances. If this is not the case, tap *Adjust* to correct the misalignment.

Tap *Alignment Done* to exit to the main screen and to automatically create a report.



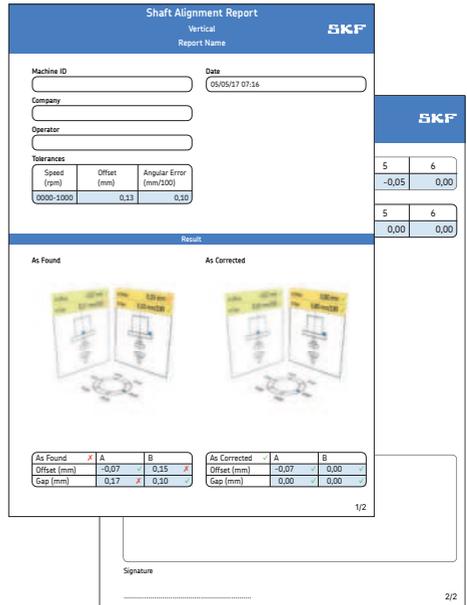
## 1.13 Report

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* field 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

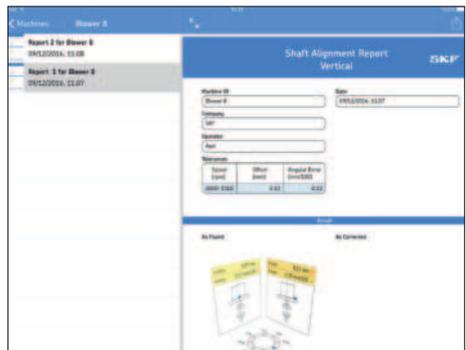
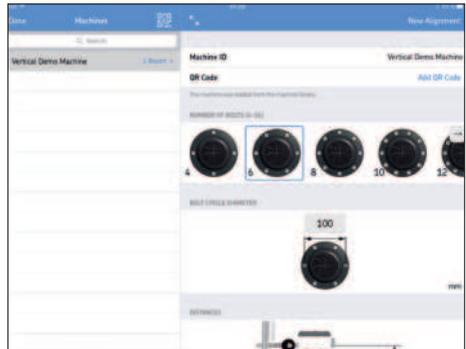
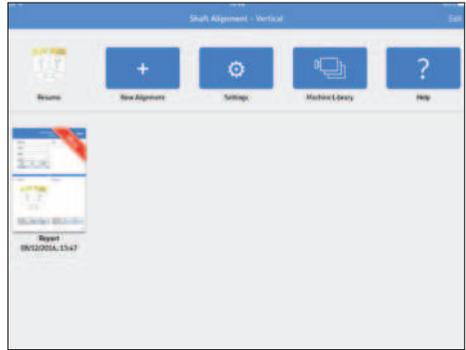
Tap the *number of reports* to display a list with corresponding reports with the date for each report.

### 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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