

SKF Axios



User Manual

Part Number **15V-090-00097-100**

Revision **A – June 2022**



Read this manual carefully before using the product. Failure to follow the instructions and safety precautions in this manual can result in serious injury, damage to the product or incorrect readings. Keep this manual in a safe location for future reference.

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General Product Information

General information such as datasheets and catalogues are published on the [Condition Monitoring Systems](#) site on SKF.com. Supporting product information can also be downloaded from the [SKF Technical Support](#) self-service web portal.

Product Support Contact Information

Product Sales – For information on purchasing condition monitoring products, services and support on products out of warranty, please contact your [local SKF sales office](#) or [distributor](#).

Technical Support – SKF's Technical Support Group can be reached during normal business hours via phone. Always check the [self-service web portal](#) before contacting your nearest Technical Support Group (TSG) to see if the answer is already published. You may search the vast knowledge base within the self-service web portal for answers to commonly asked questions (FAQ), how-to articles, technical specs, installation and user manuals, best practices and more.

If further assistance is needed, click on **Open a support case** from within the self-service web portal.

Otherwise, [TSG](#) can be reached during normal local business hours by phone, and live chat (login required).

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6 Managing Sensors and Sensor positions

Sensors collect the data from your equipment, then SKF Axios uses that data to detect developing abnormalities. Where you mount a sensor (the position) is extremely important for collecting and analyzing data.

To get a more detailed picture of your asset's health, you might need to collect data from multiple positions on your asset. You can place sensors on up to 20 positions on each asset. If you have complex machinery with more than one potential point of failure, we recommend that you collect data from multiple positions.

6.1 Positioning a sensor

To detect abnormalities in machine components, mount sensors in all locations where temperature and vibration can be measured effectively.

To achieve the greatest accuracy:

- Mount the sensor directly onto the housing of the target component.
- Minimize the length of the vibration transmission path (the distance between the source of vibration and sensor).
- Avoid mounting the sensor where its measurements may oscillate due to natural frequencies, such as on sheet metal covers.

Vibration will attenuate up to 30–36" (75–90 cm) from the source.

Attributes of the vibration transmission path that can reduce the transmission path length include:

- the number of mounting surfaces, which can cause signal reflection
- materials such as rubber or plastic, which can absorb vibration

Note: SKF Axios sensors are 3-axis vibration sensors. The X, Y, and Z marks indicate the directions of the 3 three axes. Therefore, it is not necessary to align any particular axis with the direction of the asset's vibration.

The following example of an electric motor pump set shows sensor locations, with four positions: two on the motor and two on the pump.

Positioning a sensor

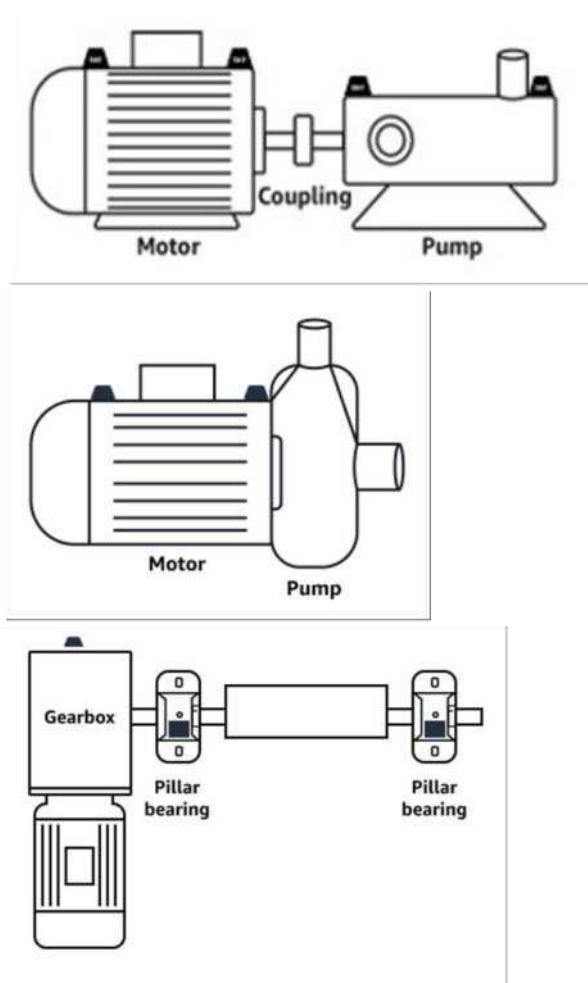


Figure 24 Two sensors example

For complex equipment with multiple moving parts (such as gearboxes), position the sensor to minimize the length of the transmission path from the primary vibration source. Note that vibration is reduced when it is transmitted between adjacent parts of equipment, so the shortest distance between the sensor and the source of vibration is not always the best option.

The following example of a gearbox shows how vibration can be transmitted through equipment in this way, along with a potential location for a sensor to detect this vibration.

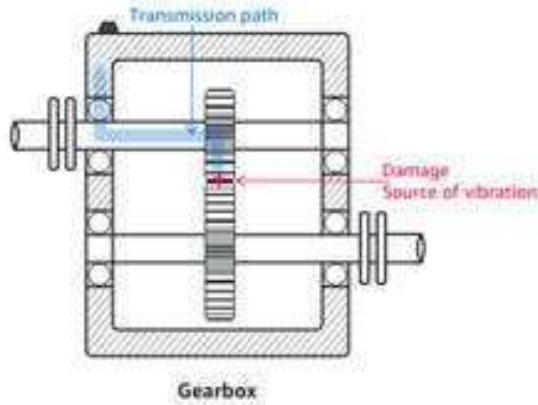


Figure 25 Gearbox vibration transition

For other types of equipment, the best position can be less obvious. For example, when placing a sensor to monitor bearings, position it close to the bearing's load zone, which is based on the direction of the load on the bearings as shown below.

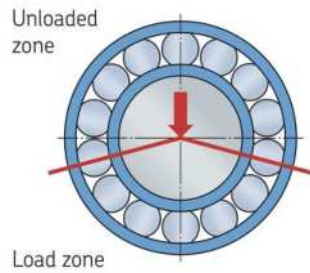


Figure 26 Load zone

Different types of loads on the bearings result in different load zones. Placing the sensor as close as possible to the center of the load zone is most likely to provide the best data.

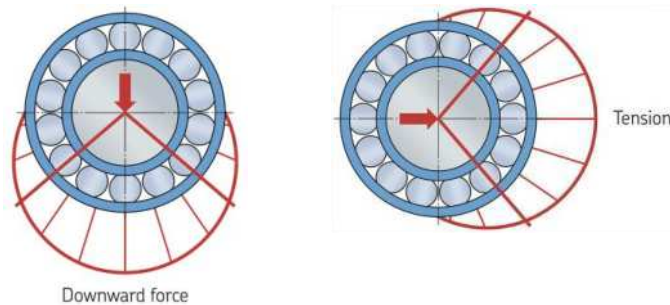


Figure 27 Different load zones

6.2 Mounting a sensor to an asset

The temperature and vibration detectors are located on the base of the SKF Axios sensors. Any area of the base is effective as a target contact area, but the contact area must be at least 30 x 25 mm (1 in x 1¼ in) for reliable detection. Center the target contact area over the mounting location for the most reliable results. The circular aluminium sensor (in the center of the target contact area) conducts heat directly from the asset's surface to the temperature sensing mechanism inside the SKF Axios sensor.

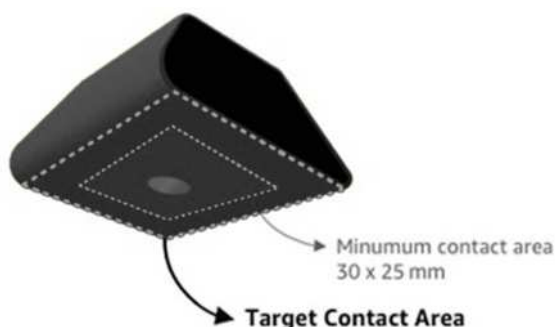


Figure 28 Target contact area

If you are uncertain of where to mount your sensor, see [Positioning a sensor](#).

Important safety warning:



When installing sensors, check and obey applicable safety regulations. You are solely responsible for safely installing the sensor on any equipment or machine part. To mount a sensor, use industrial adhesive. Always consult and obey the adhesive manufacturer's safety and handling instructions.

For more information about the recommended adhesive, see [Loctite 454 Technical Information](#) or [Loctite 3090 Technical Information](#), as appropriate.

To mount a sensor

1. Remove all oil and grease from the position on the asset where you want to mount the sensor.
2. If the surface that you're mounting the sensor to is flat and relatively smooth, apply a thin layer of adhesive such as Loctite 454 to the bottom of the sensor, maximizing the area that will be in contact with the asset.

If the surface is rounded or somewhat uneven, apply a slightly more liberal layer of adhesive such as Loctite 3090 to the bottom of the sensor. The layer

of adhesive can bridge distances of up to 5 mm (0.2 in) between the surface and the sensor if necessary.

3. Hold the sensor to the mounting location on the machine part for 30 seconds, pressing firmly.

If you're mounting the sensor on a curved surface, put a small amount of additional adhesive on each side for better contact between the sensor and the surface. Based on the surface and the adhesive used, your results should look like the following.

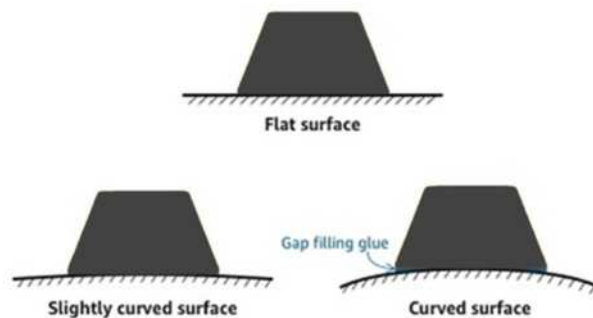


Figure 29 Different surfaces - example

6.3 Pairing a sensor to an asset

After you've added an asset, pair it to one or more of the sensors to monitor its health. Each sensor is mounted on the asset in its own position. When you pair a sensor to an asset, you record the type of position. You will often need to monitor multiple locations on a large asset to get a clear picture of its health. You can place up to 20 sensors at different positions on an asset. Less complex assets might require only one or two sensors.

Each sensor measures the temperature and vibration at its position. You can name a position anything you like, and you can change the name later if necessary. For guidelines that SKF recommends, please see [Appendix C: Guidelines to help you name your Assets and Positions](#).

For more information on where to place sensors, see [Positioning a sensor](#).

Important note: After you pair a sensor to an Asset, SKF Axios establishes a baseline for that position. The baseline tells SKF Axios how the asset performs under normal conditions. SKF Axios uses this information to identify abnormal conditions. During this time, SKF Axios assumes that conditions are normal and may produce alerts if the vibration or temperature levels are above ISO thresholds.

Pairing a sensor to an asset

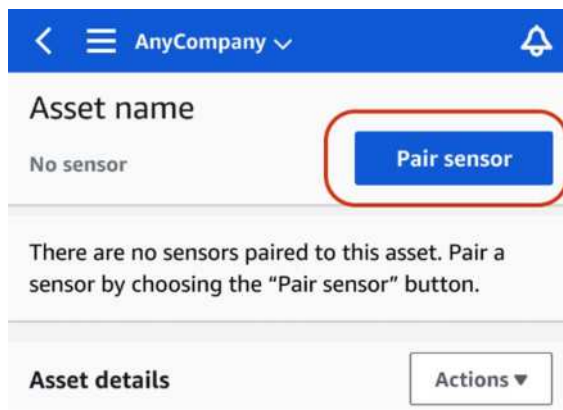
To pair a sensor to an asset

1. Ensure that near field communication (NFC) is turned on for your smartphone.

TIP: For many smartphone models, NFC is turned on by default. The following resources might help you determine whether you need to turn on NFC, and how to do so:

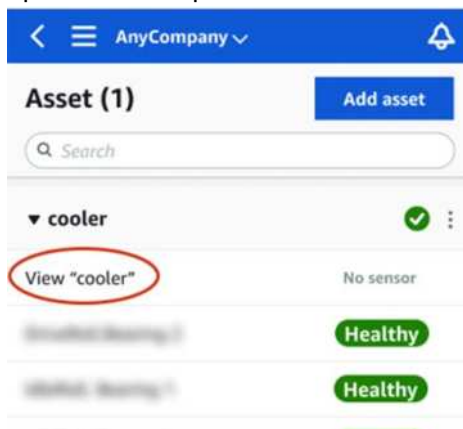
- [About NFC \(Samsung\)](#)
- [Models that support NFC Tag Reader \(iPhone\)](#)

2. From the Assets list, choose the asset.
 - a. If you just created the asset and haven't paired any sensors to it, choose **Pair sensor**.

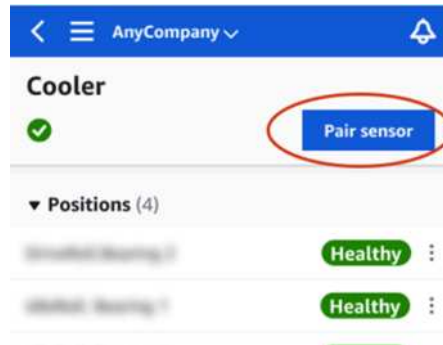


Site

- b. If you previously created an asset and have already paired sensors to it:
 - i. After you choose the asset, you will see a dropdown list of sensors associated with that asset. Choose the View option at the top of that list.



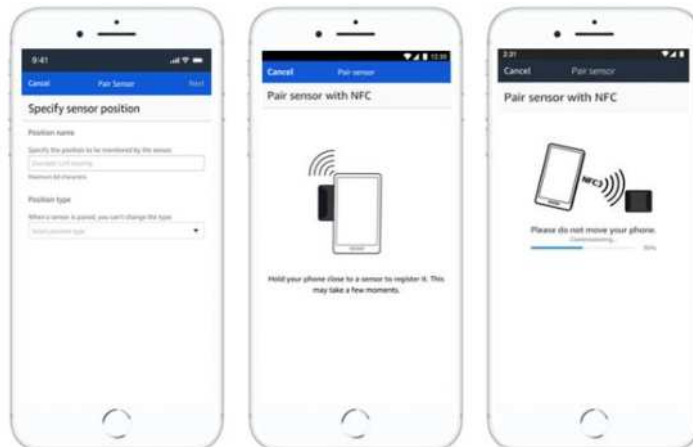
ii. Choose Pair Sensor.



3. Place your sensor on the machine in the correct location. For more information about placing sensors, see [Positioning a sensor](#) and [Mounting a sensor to an asset](#).
4. Name the position that the sensor will monitor.
SKF recommends that you use a name that is clear and easy for you to work with. (See [Appendix C Guidelines to help you name your Assets and Positions](#))
5. For Type of position, choose the position type:
 - Bearing
 - Compressor
 - Fan
 - Gearbox
 - Motor
 - Pump
 - Other

Note: After you pair a sensor to an asset, you can't change the position type. If you need to change the type, you must delete the sensor to re-add it.

6. Touch your smartphone to the sensor to pair with it. Don't move your smartphone while you are pairing the sensor. It can take a few moments for SKF Axios to commission the sensor and pair with it.



Changing a sensor position name

When more than one sensor is paired with a given asset, the Assets page shows each sensor position and its health status, but not the specific details about each position. To display the details, choose the position from the list. For more information about the data you can monitor with each asset, see [Understanding sensor measurements](#).

Positions are displayed in status order. For example, a position that's in an alarm state is displayed above a position that's in an acknowledged state. Positions that are in a healthy state follow those in an acknowledged state.

6.4 Changing a sensor position name

You can change only a position's name. You can't change a sensor's type.

To edit a sensor position name in the mobile app

1. From the **Assets** list, choose the asset with the sensor position name you want to change.
2. Choose the sensor with the position name you want to change.
3. Under **Position details**, choose **Actions**.
4. Choose **Edit position details**.
5. For **Position name**, enter a new name.
6. Choose **Save**.

To edit a sensor position name in the web app

1. Select the position.
Choose the **Actions** button in the **Positions** table.
2. Choose **Edit position details**.
3. For **Position name**, enter a new name.
4. Choose **Save**.

6.5 Deleting a sensor

Deleting a sensor prevents SKF Axios from collecting more data with it. It doesn't delete the data that it has already collected.

To delete a sensor in the mobile app

1. From the **Assets** list, choose the asset that is paired to the sensor that you want to delete.
2. Choose the sensor.
3. Under **Sensor**, choose **Actions**.
4. Choose **Delete sensor**.

5. Choose **Delete**.

After a sensor has been deleted, the status for that position says **No sensor**.

To delete a sensor in the web app

1. Choose **Delete** from the **Sensor details** pane.

6.6 Deleting a sensor position

Deleting a sensor position removes that data collection point from the asset. If a sensor is still paired to this position, you need to remove it before you can delete the position.

To delete a sensor position in the mobile app

1. From the **Assets** list, choose the asset that has the sensor position that you want to delete.
2. Under **Sensors**, choose **Actions**.
3. Choose **Delete** position.
4. If the position has a sensor paired to it, delete the sensor by choosing **Delete sensor**. Otherwise, skip to the next step.
5. Choose **Delete**.

To delete a sensor position in the web app

1. Select the position.
2. Choose the **Actions** button in the **Positions** table.
3. Choose **Delete position**.
4. If the position has a sensor paired to it, delete the sensor by choosing **Delete sensor**. Otherwise, skip to the next step.
5. Choose **Delete**.

6.7 Viewing sensor details

To check that a sensor is performing as expected, check its details page. The **Sensor details** page shows the following information:

- Sensor ID
- Sensor status
- Date the sensor was last commissioned
- Date of the last measurement
- Last gateway it connected to
- Current signal strength of the last gateway
- Sensor type
- Firmware version