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The following data set contains the vibration (run-to-failure) data for bearing testing conducted with an FE8 test rig with two 81212 axial cylindrical roller bearings from Schaeffler. More details of the bearing can be found in <https://medias.schaeffler.dk/en/product/rotary/rolling-and-plain-bearings/roller-bearings/axial-cylindrical-roller-bearings/81212-tv/p/395947#Product%20Information>.

A schematic layout of the test rig has been shown in Figure 1.

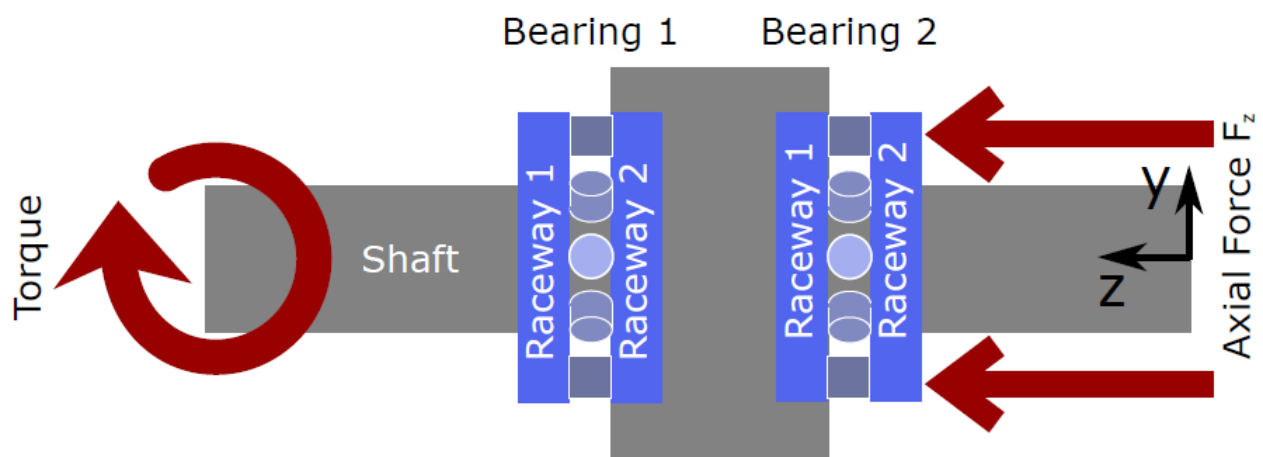


Figure 1: Schematic Layout of the FE8 Test rig

Data from five tests have been collected in zip files with each zip file containing all the vibration data, in parquet format files (a compressed columnar storage format), for each individual test. These files are compatible with the Pandas Python library and can be accessed using the command `pd.read_parquet("path_to_file")`. This operation requires the pyarrow library to be installed as the engine for Parquet support (`pip install pyarrow`). Each parquet file contains 4 columns. The first is the measuring time and date (An example is "09-Apr-2025 14:29:06") and the second, third and fourth columns consist of the vibration data in X, Y and Z axes respectively. Refer to Figure 1 for data about the axes in reference to the test rig. X and Y are radial directions of the bearing, and Z is in its axial direction.

The list of the tests along with their dates are:

- T1. 21 August 2024
- T2. 7 January 2025
- T3. 1 July 2025
- T4. 18 August 2025
- T5. 15 September 2025

The test conditions are shown in Table 1.

Table 1: Testing conditions

Test ID	Force F_z (kN)	Rotation Speed ω (rpm)	Temperature T (°C)	Contact Stress σ_{Hertz} (MPa)	Oil Used
T1, T3-T5	85	250	100	1800	Mobil SHC Gear 320 WT
T2	95	250	100	1900	Mobil SHC Gear 320 WT

For the collection of data for the datasets above, a 356A03 piezoelectric triaxial accelerometer from PCB Piezoelectronics has been installed on the housing of the test rig.

The test stopping criteria used is the vibration amplitude in the internal accelerometer of the test rig, an ACIDA AC101.51 accelerometer, exceeding 1 g of the steady run time vibration. In some of the tests, some gaps in recording time can be observed where there is no recording data. The bearing test rig has had to be occasionally stopped for maintenance and the data recorded in these time periods have been cleaned to remove data which cannot be used. For T4, due to issues with data collection, the vibration spectrum in the beginning of the test has not been recorded and therefore the data collection starts later during the test.

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