Technical Note

Mounting Procedures – Footed Reducers

Mechanical

Drives must be properly installed if they are to produce rated torque. Incorrectly installed drives may experience oil leaks, reduced life spans, or even catastrophic failure. An appropriate mounting site should contain the following:

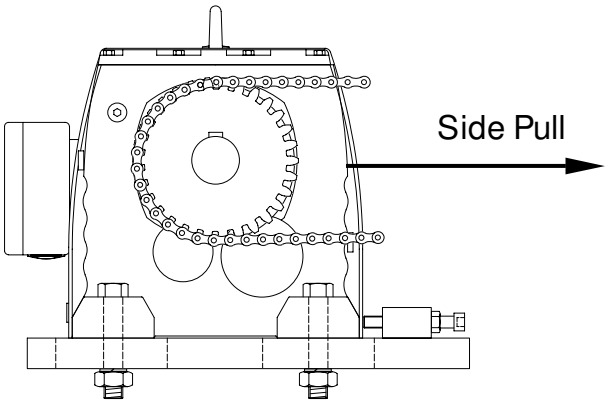
- Ambient temperatures between 0°C and 40°C (32°F to 104°F).
- Unimpeded airflow to and around the units.
- Accessibility to oil drain, level and breather plugs.
- Adequate space for removing the fan guard from the brake motor when adjusting or replacing the brake.
- A mounting surface that is flat, torsionally rigid, and dampened against vibration. Flatness tolerances should not exceed the following values:

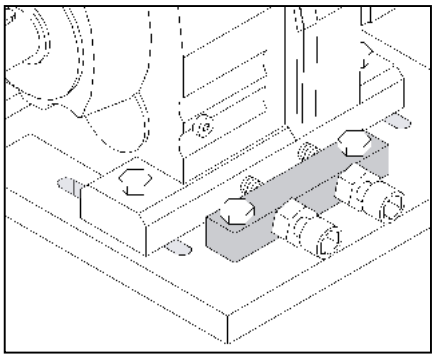
  Reducer Sizes 87 and smaller: 0.004 inches
  Reducer Sizes 97 and larger: 0.008 inches

1. Solid Shaft

SEW reducers have oversized mounting holes to allow for minor adjustments in alignment. Therefore, the largest bolt that can fit through the hole is not necessarily the best choice. SEW lists recommended bolt sizes in the reducer sections of the SEW Tech Manual.

Foot-mounted units that are subject to side pulls caused by chains or belts should include dowel pins or tightening bolts in addition to foot mounting bolts. As shown in the right picture below, a metal bar with two tightening bolts is anchored to a mounting plate either by a weld or by bolts that thread into the plate. This design prevents the reducer from creeping towards the load and from acquiring excessive slack in a belt or chain if the bolts in the reducer feet loosen. Plus, it still allows the use of slots in the mounting plate, which provides flexibility when initially positioning the reducer.

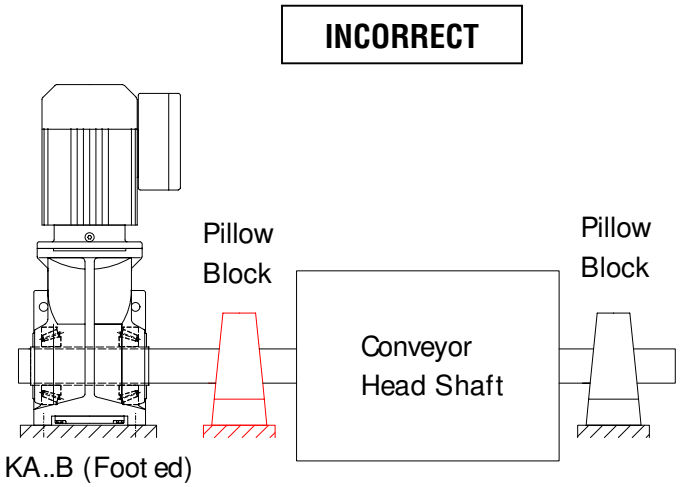




2. Hollow Shaft

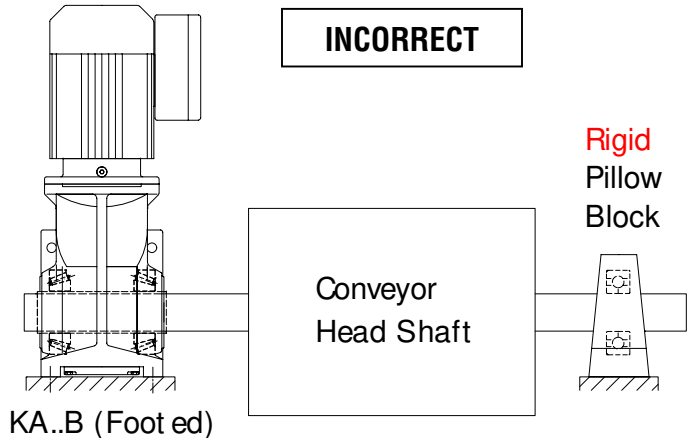
A gear reducer with a hollow shaft and feet is an acceptable means of support for one end of a machine's shaft. However, special care must be exercised during mounting to assure that the reducer is not subject to a bending moment (preload) caused by misalignment of the bearings in the system. Therefore, SEW strongly recommends the use of a self-aligning bearing on the opposite end of the machine's shaft.

Listed below are correct and incorrect methods to mount a footed unit with a hollow shaft.



Problem: There are four bearings that must be critically aligned. The closer the pillow block bearing is to the reducer, the more critical is the alignment.

Solution: Remove the pillow block bearing between the reducer and the head pulley, allowing the reducer to serve as support bearings for the head pulley.

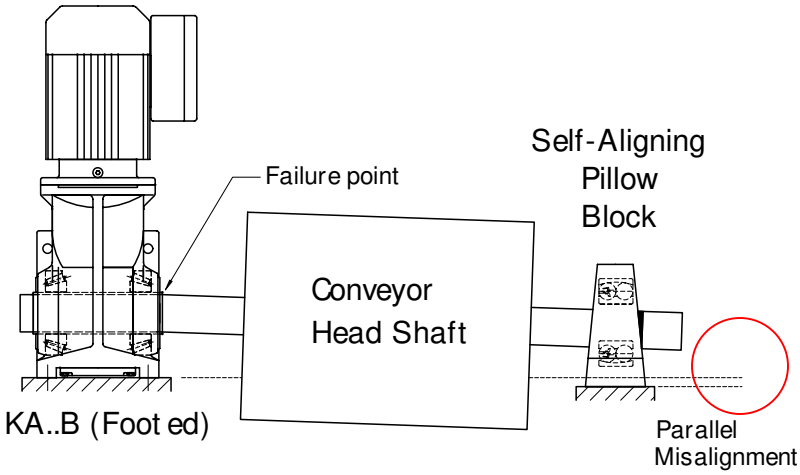


Problem: Due to its inflexibility, the rigid pillow block bearing can cause preloading on reducer bearings if the conveyor shaft is not correctly aligned.

Solution: Replace the rigid pillow block bearing with a self-aligning type.

Technical Note

INCORRECT



Problem: Even though a self-aligning bearing is used, the parallel offset caused by different mounting planes creates a bent conveyor shaft and a bending moment (i.e. an overhung load) at the edge of the reducer. The result of this overhung load is either premature failure of the reducer bearings or fatigue failure of the conveyor shaft.

Solution: Ensure that the mounting surfaces are on the same plane to keep conveyor shaft straight. Use shims where necessary.

CORRECT

Allow the gear reducer to support one end of the conveyor shaft and a self-aligning bearing to support the other end of the conveyor shaft. A self-aligning bearing tolerates some angular misalignment from an unleveled surface, as shown in the right diagram. Since the conveyor shaft remains straight, an overhung load is avoided. Notice the difference between a parallel misalignment (above) and an angular misalignment (below).