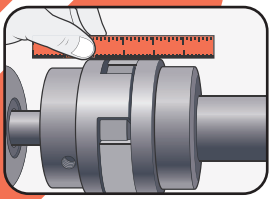
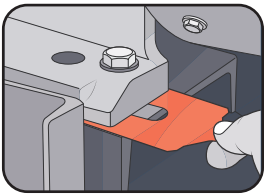
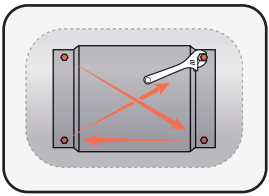
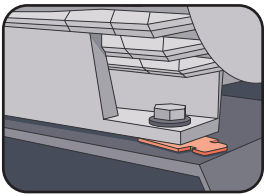








PRE-ALIGNMENT POCKET GUIDE

acoem

Introduction

Correct alignment is an essential component of a predictive maintenance routine, but even before we can address maintenance issues, it is important to consider essential pre-alignment steps. Taking a few extra minutes to complete pre-alignment steps will ensure that your alignments are correct and will be effective for a substantial period of time.

The pre-alignment steps of machinery, while fundamental, are critical to performing accurate alignment. Simply put, pre-alignment are the things that should be done before alignment is attempted.

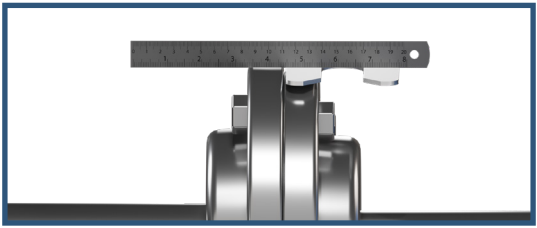
To complete the pre-alignment steps, you will need the following tools:

- **Straightedge**
- **Wrenches**
- **Shims**
- **Feeler Gauges** (optional)

Step 1: Rough Alignment

1. To begin a **rough alignment**, you will need to measure both the vertical and horizontal planes. To do this, place a straightedge on the machine's highest hub.

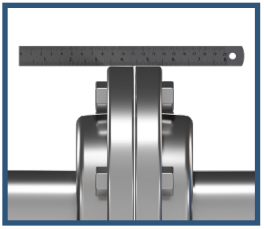
2. Slide a shim under the straightedge bottom and the lower part of the hub so that it just barely drags.

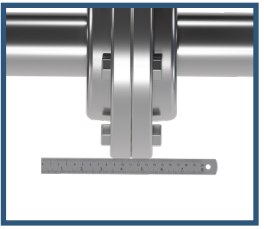


3. Loosen all four bolts.

4. Slide the appropriate sized shim under all four feet.

5. Place the straightedge on the hub again to check the horizontal and vertical planes. The straightedge should now be flush with the surface of the hub. This means that we have no offset.





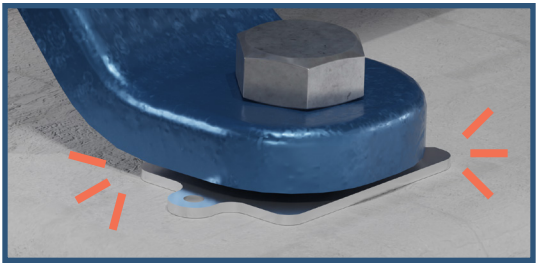
Make sure to leave the hold-down bolts loosened for the next pre-alignment step.

Step 2: Eliminating Obvious Soft Foot

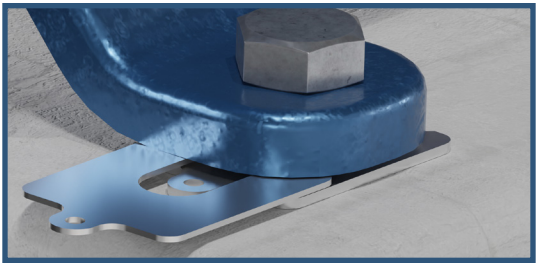
Obvious soft foot is when all four feet are not sitting in a common plane. If soft foot remains every time you loosen or tighten the bolts, the movable machine will come to rest at a different place, making it difficult to accurately measure and correct misalignment. This step is crucial to make sure that each foot is carrying the same amount of weight.

1. With all four bolts still loose, use your hand to nudge the shims under each foot.

2. If one of the shims under the feet moves back and forth when you nudge it, that is an indication of obvious soft foot. This means that foot is sitting slightly higher than the rest so the weight isn't being equally distributed.



3. Add more shim(s) of appropriate thickness until it is a snug fit.

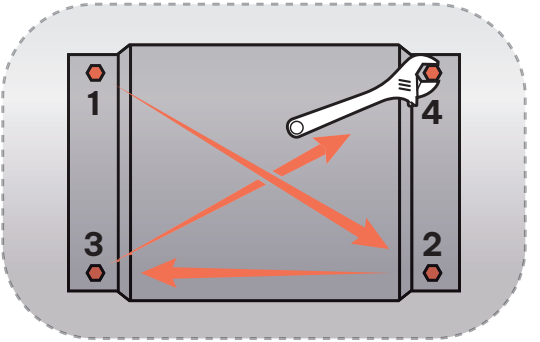


4. Once you've added the shim(s), try nudging it again. This time it shouldn't move from side to side.

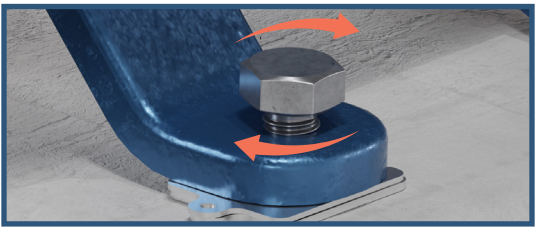
5. Nudge the shims under the other three feet again. None of them should move. Obvious soft foot has been corrected.

Step 3: Bolt Tightening

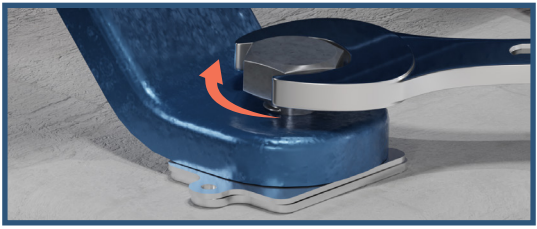
Now that the machine has been rough aligned and obvious soft foot has been corrected, the bolts can be tightened. It is important to note that the bolts cannot be tightened in a random order. **They must be tightened using the bolt tightening sequence** pictured below **in three passes**:



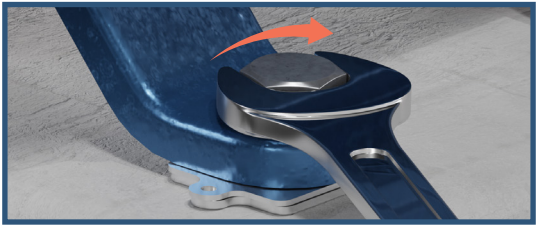
1. First, tighten the bolts by hand.



2. Next, snug the bolts with a wrench.



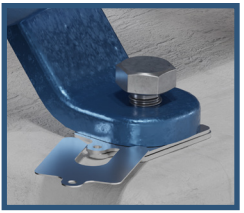
3. Finally, tighten to final torque or until bolts are satisfactorily tight.



Step 4: Final Soft Foot Correction

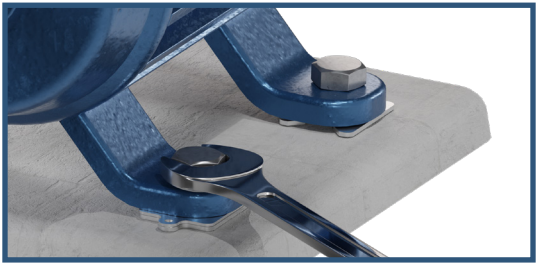
Now that the bolts are tightened we are going to check for soft foot one foot at a time. When only one hold down bolt is loosened at a time, any remaining soft foot can be more accurately measured and corrected.

1. Loosen a bolt and try to slip a .002 shim under the foot. It's best to check two or three places around the foot in case an angled soft foot condition exists.

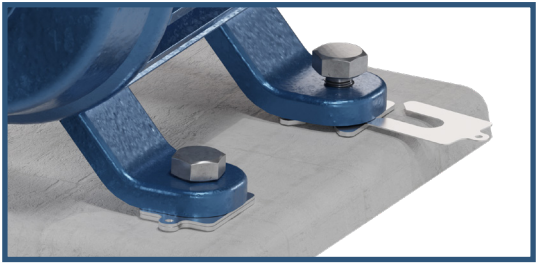


2. Add shims if you need to, but if nothing will go under, you will know that you have an equal weight distribution.

3. Tighten the bolt down before checking the next foot.



4. Repeat the first three steps until you have checked all four feet.



This completes the final soft foot check. This will ensure that there is no unintended movement during the more precise steps of shaft alignment.

Note: On larger machines, a dial indicator might be necessary for final soft foot check.

Additional Steps

There are some additional pre-alignment steps that we recommended before performing an alignment. This includes:

- Cleaning the machine feet and base
- Consolidating shim packs
- Checking for runout
- Checking for pipe strain
- Checking bearing clearances
- Checking for hub separation on the spacer coupling

Remember: the four pre-alignment steps that we covered in this pocket guide are essential whether you are using a dial indicator system or a laser alignment system.

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