

GRUNDFOS

WHITE PAPER

Pump Installation and Alignment

by Steve Wilson

This tutorial is intended to provide a quick overview of installation and alignment techniques. As always, installation and alignment should only be attempted by personnel trained and familiar with such a task.

Local regulations and safety concerns are of prime importance.

Always follow the recommendations of the pump manufacturer as presented in their Installation, Operation, and Maintenance manuals.

Pump manufacturers will generally assume no responsibility nor liability for installation and alignment of their products, unless notified at time of purchase.

Most pump manufacturers who supply horizontal pumps will assure, at the factory, that they can be aligned in the field. However, in certain cases, improper installation may create conditions which cause baseplate distortion, “soft foot” and pipe strain. These situations, in turn, may render a pump unable to be properly aligned and may result in vibration or premature failure. Misalignment of the piping and of the pump to the driver results in more pump failure than perhaps all other causes combined. Seal failure, bearing failure, and wear component failure can all be often traced to alignment issues.

GETTING STARTED

- Assure that receiving instructions have been followed and the equipment has been properly cared for prior to installation.
- Assure foundation is properly sized and flat.
- Place pump / drive / baseplate assembly on the foundation.

- Disconnect the coupling halves. Do not reconnect until all alignment operations are complete.
- Support the baseplate on metal blocks or shims and not directly on the floor
- Adjust the metal supports until the baseplate is level. (Maximum spacing around 24 inches.)
- Check suction and discharge for horizontal and vertical, using a level.
- Check alignment

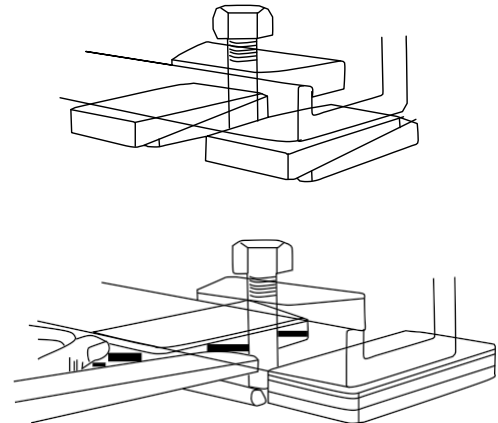


Figure 1. Getting started

CHECK ALIGNMENT

- (Even if final alignment is to be verified with laser alignment tools or dial indication, at this point, straight edge and feeler alignment checking will prove satisfactory.)
- Check angular and parallel alignment.
- Check on 4 Planes: (1) Angular in vertical plane,

(2) Angular in horizontal plane, (3) Parallel, side-to-side, and (4) Parallel, top-to-bottom.

- NOTE: After any adjustment, both parallel and angular alignment should be rechecked.
- NOTE: Straight edge and feeler alignments depend on couplings being square and parallel to shaft. (Make sure they are firmly affixed to each shaft.)

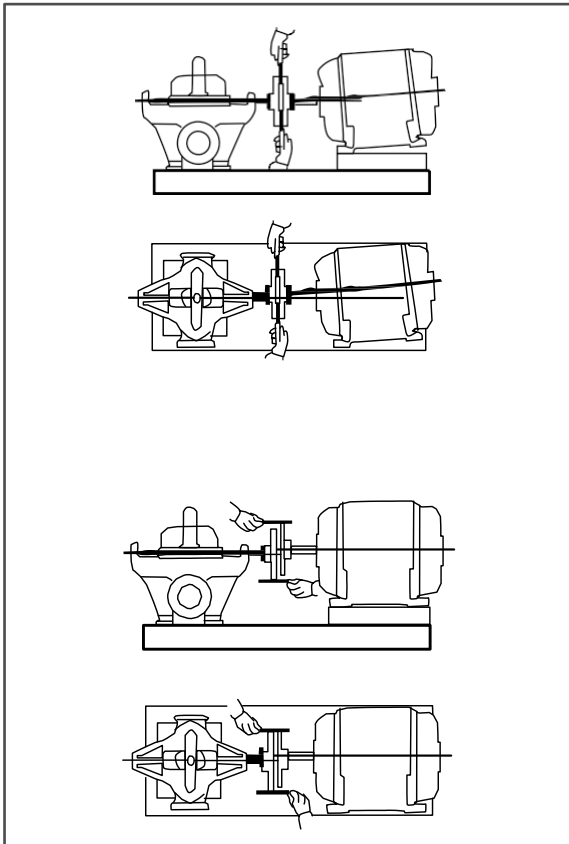


Figure 2. Feeler and straight edge alignment

TIGHTEN TO FOUNDATION

- Tighten foundation bolts evenly, but not too firmly. Do not fully tighten foundation bolts until grout has fully set. (Approximately 48 hours.)
- Recheck alignment. At this point, again, straight edge and feeler alignment should suffice.
- Grout. Leave shims in place.
- Align. At this point dial or laser alignment is recommended.

PIPING

- Pipe from the pump, taking care to properly support all piping.
- Check alignment and realign as necessary.
- Check rotation
- (To check rotation, it is best to do so without the couplings connected. It is imperative to disconnect the couplings if rotation is to be checked before the unit is primed.)

PRIMING

- Prime the pump, assuring that air is properly bled from the unit.
- Connect the couplings and perform a “semi-final” alignment before starting, using dial indication or laser alignment.

PUMP START-UP

- Run the pump long enough for operating temperature to be stabilized.
- Shut the pump down and recheck alignment. (Use dial indication or laser alignment.)

RUN THE PUMP

- Run the pump for a week or more, shut it down and recheck alignment, possibly caused by pipe or temperature strains. (Use dial indication or laser alignment.)
- If alignment has remained correct, and only if

it has remained correct, should the pump and motor be doweled. (This practice is endorsed by some, discouraged by others.)

MAINTENANCE

Ensure that alignment checking is an integral part of your preventative maintenance program. (Use dial indication or laser alignment.)

CONCLUSION

While the procedure indicated above is lengthy and may to some seem excessive, pump failure can be traced directly to poor installation and alignment practices, or pump procedures that were not followed. Taking shortcuts to save a few minutes or a few hours during installation and alignment may ensure the inconvenience and expense of extended and frequent periods of downtime.