

Frequently asked questions

1 – Why do I need to perform a precision alignment?

Precision alignment has proven to be a fundamental requirement in order to achieve proper machinery life. Precision alignment leads to increased bearing life, increased seal life and decreased energy costs. World Class Maintenance organizations, or those striving to become world class, have recognized the value in proper precision alignments.

2 – I use dials, why do I need a laser?

There tends to be a big misconception on the use of dial indicators. Most organizations that say they use dials are not achieving the precision alignments required in today's competitive environment. This is not because dials are not capable, they are, but because very few people have been properly trained in their use and are not using them in a precision manner such as rim and face or reverse dial. There are also multiple places where mistakes can be made with dials.

The earliest converts to laser alignment, in fact, were the people that were well trained in precision dial methods since they recognized the obvious speed advantages, improved accuracy and ease of use of the laser compared to the traditional methods they were using. For instance, many people using dial indicators only correct for half the sag amount when they should correct for the whole amount. In addition, if they say they are currently using dial indicators they are likely still guessing at the required shims and horizontal moves. Rarely are they graphing the readings out to determine the correct moves.

3 – I use flexible couplings, they don't need to be that close.

The vast majority of couplings used in industry are flexible couplings and they do require precision alignments. Coupling tolerances are just that, for the coupling. The forces generated by misaligned flexible couplings are still being transmitted to the seals and bearings of the machine. These forces generate excess heat which leads to energy losses and decreased bearing and seal life. If the force on a bearing is doubled, its life is reduced by a factor of eight.

4 – We don't have the time to achieve precision alignments.

This is like saying you don't have time to change the oil in your car. This is definitely a pay me a little now or pay me a lot later scenario. Taking the time to do it right the first time has been proven to be the most cost effective way of managing maintenance resources.

Even if precision can't be reached initially, using the laser will typically allow the user to get it closer than they have been getting it in the past. This is also often accomplished even faster than they have been trying it in the past.

It can also help them identify problem areas such as bad bases or pipe strain that need attention.

5 – How does the Shaft Hog Work?

The Shaft Hog works exactly like a reverse dial indicator alignment except two lasers and laser detectors take the place of the dial indicators and the user does not have to do any alignment calculations. The values are live so as corrections are being made the user can immediately see the results.

Laser sensors are mounted using chain brackets across the coupling. One machine is designated as moveable (typically the motor or driver) and the other as stationary (the driven). Three dimensions A (distance between the detectors) B (distance from the

moveable detector to the front foot of the moveable machine) and C (front foot to back foot on the moveable machine). Two readings are taken 180 degrees apart and the alignment results are displayed live. From then on out it is move the feet towards zero until the alignment tolerances are satisfied.

It takes the hassle out of using dial indicators. The values are always live so as you are making the adjustments you can watch the results. It is the easiest to use alignment system on the market.

6 – How close do the measurements need to be?

A is the most critical and needs to be within about +/- .1 inches

B and C are less critical and should be about +/- 1 inch.

7 – How is misalignment quantified?

Misalignment is quantified by measuring the angularity and offset misalignment of the rotating centerline of the moveable machine as compared to the rotating centerline of the stationary machine.

Angularity is expressed as mils/inch and is the slope relationship of the moveable machine centerline compared to the stationary machine centerline. It needs to be corrected in both the horizontal and vertical planes.

Offset is the difference of the two shaft centerlines at a single point, the plane of power transmission (typically center of the coupling). It is measured in mils and is read directly by the Shaft Hog. It needs to be corrected in both the horizontal and vertical planes.

Tolerances are based on machine speed so precision alignment is achieved when the angularity and offset in both the horizontal

and vertical planes are at or below the tolerances required.

8 – Does the Shaft Hog have a soft foot program?

Yes

9 - What is soft foot?

Soft foot is a condition in which all four feet of the motor are not on the same plane. You can think of a wobbly table in a restaurant. You can stick a matchbook under one of the feet to correct the wobble. You have just corrected a soft foot condition.

Soft foot causes distortion on the machinery and non-repeatable alignment readings. It needs to be corrected in order to achieve precision alignment. It is corrected by determining where it is on the feet and shimming appropriately.

10 – What about computer documentation?

The Shaft Hog comes with an editable pdf file that allows for easy record keeping. Files can be easily stored on the computer and printed.

It also comes with a downloadable program for a palm pilot so results can be entered and transferred to a computer.

11 – What types of Alignments can the Shaft Hog Do?

In general the Shaft Hog is meant for horizontal close coupled machines where you can get a 180 degree swing. This represents the overwhelming majority of machines that plants have.

The Shaft Hog span is 2 feet 8 inches between the heads. It comes with enough chain to go around an 18” shaft.

Knowledgeable users can also do limited rotation (less than 180 degrees) and vertical machines.

12 – How accurate is the Shaft Hog?

It is extremely accurate. It will align as accurately as much more expensive units.

There is no compromise in alignment accuracy when using the Shaft Hog.

It measures to 2 microns with a displayed resolution of .1 mils or .0001 inches.

13 – How often does the Shaft Hog require calibration?

The Shaft Hog is a digital instrument and as such does not require traditional calibration common to analog instrumentation. Industrial standards, however, typically require traceable documentation of calibration on test and measurement equipment. This is done in the United States by VibrAlign and provides NIST traceable documentation.

Typical turnaround time on a scheduled calibration is 48 hours.

14 – Is training available?

Yes.

Instrument operation is very simple and does not really require any training. Many users, however, do require alignment training and a variety of training classes are available, including on-site and off-site classes.

15 – Are other accessories available?

Yes, although the Shaft Hog is complete ready to operate out of the box for most alignments.

Other fixtures available include thin magnetic brackets used to help mount in restricted areas.

16 – What about service and support?

VibrAlign is an alignment company. We service the brands we sell. Our customers are supported with repair, calibration, training and measurement services. In addition, VibrAlign's field sales people, located throughout the United States are trained alignment professionals available to support the end user.

Our web site also offers technical information including application notes and training manuals. These can be found under the alignment institute which is our knowledge base on a variety of alignment subjects. Visit us at www.vibralign.com.

17 – What is a mil?

A mil is a thousandth of an inch.

1 mil = 1 thousandth = .001 inches

18 – What if there is no room on the shaft to place the chain bracket?

The brackets can be placed on any surface that is rigidly mounted to the shaft. They can be mounted, for example, around a coupling hub that turns with the shaft.

Thin magnetic brackets are also optionally available that may help get into restricted areas.

19 – What if one coupling hub is bigger than the other

As long as the mounting surfaces are rigidly mounted to the shaft and turn with the shaft the diameter of the mounting surfaces are immaterial. In other words the sensors can be mounted at different diameters.