

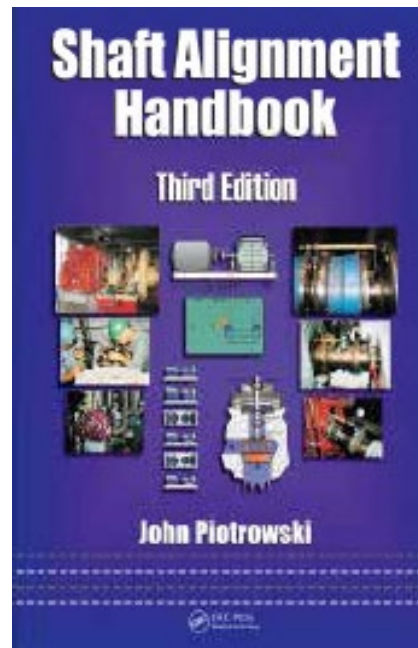
# Shaft Alignment Training

The Complete Course – Basic to Advanced Concepts

19- 22 May 2020 : Perth



**Master trainer - John Piotrowski Back for the last time!**



Author of the 800-page industry reference book

## Shaft Alignment Handbook

**Learn the fundamentals of Shaft Alignment**  
Hands-on Experience



No matter what level of experience you have, if you are wanting to improve in the area of precision maintenance then -  
You do not want to miss this course!



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# Shaft Alignment Training

19-22 May 2020 - Mercure Perth

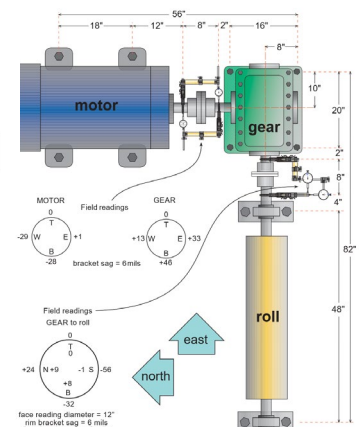
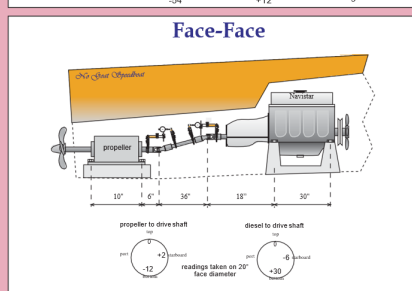
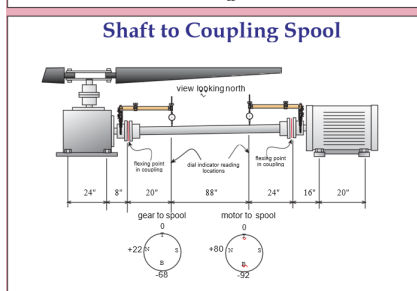
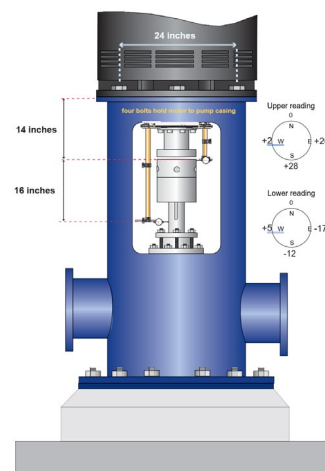
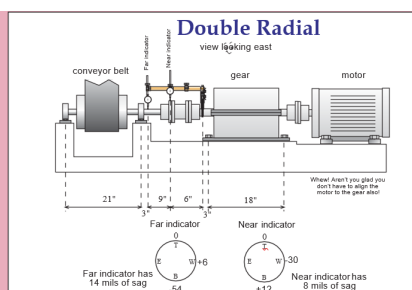
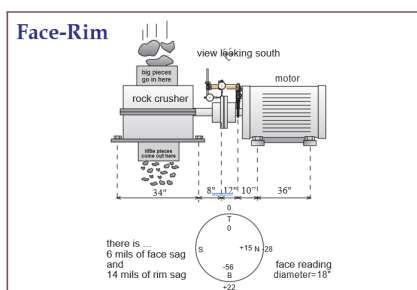
This four-day Complete Course on shaft alignment is the most comprehensive training available worldwide. It is recommended for anyone who is responsible for installation, maintenance, and managing reliability of rotating machinery.

## Who should attend:

- Reliability Engineers
- Reliability Improvement Practitioners
- Plant and Maintenance Managers
- Condition Monitoring Personnel
- Engineers, Technicians, Fitters and Trades people

The premise of this course is to provide the attendee with the knowledge to accurately align any type of rotating machine in a variety of ways. No single alignment method or system is promoted over another. There are advantages and disadvantages to every method or measurement system. You will learn what is available to measure and correct misalignment.

You will learn how to align your machinery with the necessary precision required. You will have the ability to align any simple or complex drive system you may encounter. This course will help drive your Reliability Improvement Program.



# The Complete Course

This course covers from basic to advanced concepts in shaft alignment. It is a lecture and lab workshop where the students will be doing hands-on work with machinery alignment demonstrators. After completing this course, the attendees will:

- be able to recognize the symptoms of misaligned rotating machinery
- understand how shaft misalignment causes failures in equipment such as: motors, pumps, gears, turbines, fans, compressors, and other types of rotating machinery
- have a clear definition of shaft misalignment and how to quantify the amount of misalignment to determine if machinery is within acceptable tolerance limits
- possess a step-by-step procedure to guide them through the alignment process
- have a sense of approximately how much time each step of the alignment process requires
- understand how to measure runout on mechanical couplings and machinery shafts
- recognize different kinds of faults that cause excessive runout conditions and understand when the problem is severe enough to warrant correction
- be able to measure and correct machine case to baseplate interface problems such as soft foot conditions
- be shown how all five shaft position measurement methods are performed (Face-Rim, Reverse Indicator, Double Radial, Shaft to Coupling Spool, and Face-Face)
- be given a review of the available alignment systems currently on the market that include laser, or electromechanical sensors and understand the advantages and disadvantages of each system
- be able to measure bracket sag and adjust the shaft positions measurement readings taken from dial indicators to compensate for this phenomenon
- learn how to plot the positions of machinery shafts onto alignment models using data from the five basic alignment measurement methods, or laser alignment systems, to easily visualize the vertical and lateral positions of the machinery
- be able to determine a variety of possible realignment solutions from the alignment models to best suit the specific conditions encountered on different machinery designs and installations. Thereby eliminating unnecessary tasks (such as grinding baseplates to lower machinery) and minimizing the amount of time required to align machinery
- review the mathematical solutions for single unit moves from measurements taken with the five basic alignment measurement methods or laser alignment systems
- learn about tools and techniques to control lateral movement of machinery
- understand how to maintain accurate records to determine if machinery is moving out of alignment over a period of time. If so, how to look for the cause of this movement
- align machinery to correct internal clearance issues such as armature to stator air gap or fan rotor to shroud gap
- apply known off-line to running machinery movement vectors for a two element drive system to ensure the machinery is running under acceptable tolerances when operating
- align a horizontally mounted, linear, three element drive system
- understand aligning vertical machines
- examine a wide variety of flexible coupling designs and understand which couplings are best suited for certain kinds of tasks

# Shaft Alignment Training

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- learn how: to properly install couplings on shafts; understand what type of interference fits are appropriate; how to specify bores for replacement of couplings; operational problems with couplings; how to measure and maintain proper shaft to shaft distances; the difference between coupling and alignment tolerances; and the types of special lubricants available for couplings
- be able to recognize shaft misalignment from vibration analysis and other nondestructive testing techniques and the role that flexible couplings have on the vibration pattern
- be able to recognize and correct induced piping stress problems
- learn how: to plot the positions of complex, multiple element drive systems: vertically oriented machinery; and right-angled drives onto alignment models, for determining the optimum movement solutions
- be able to determine what kind of machinery is most likely to undergo movement from off-line to running conditions
- be able to select from a variety of techniques to measure how machinery moves from an off-line to a running condition
- generate the desired off-line vertical and/or lateral shaft position models and calculate the target values when using any alignment measurement method
- evaluate basic design principles of foundations, baseplates, grouting and couplings
- align machinery with shared bearings

## 19 – 22 May 2020

### Venue

Mercure Perth CBD

10 Irwin Street, Perth

Phone: +61 (0) 8 9326 7000

### Course duration

The course consists of four days of training including an optional 2 hour Basic/Level 1 exam.

### Hours

Training days (Days 1-4):

8.00 am to 5:00 pm

Including a 2 hour exam

### Fees

**Training Course without exam:**

\$3690 + \$369 (GST) = **AUD\$4059**

**Training Course with Level 1 Exam:**

\$3980 + \$398 (GST) = **AUD\$4378**

**Training Course with Level 1 & 2 exam:**

\$4270 + \$427 (GST) = **AUD\$4697**

Prices include lunches and refreshments.

### Course Materials

Each attendee will receive:

- Shaft Alignment Handbook 3rd edition (hard bound, 800 pages)
- Shaft Alignment Self Study Guide system comprised of the Basic Shaft Alignment Workbook and the Shaft Alignment Self Study Guide books