Shaft Alignment Trainer

SAT

The Ultimate Tool for Teaching Shaft Alignment

SpectraQuest, Inc.
8227 Hermitage Road, Richmond, VA 23228 U.S.A.
TEL +1-804-261-3300/FAX +1-804-261-3303
www.spectraquest.com

Shaft Alignment Trainer (SAT)

Understanding the Misalignment Issues

Misalignment is probably the most common cause of machinery malfunction. A poorly aligned machine can cost a factory 20% to 30% in machine down time, replacement parts, inventory, and energy consumption. The payback from aligning machinery to extend the operating life and optimize process conditions is very large. At first glance it seems that aligning two mating shafts should be a simple process. In the real world, however, there are many complicating factors. For example, either one or both shafts may be locked or have limited rotation. One or both shafts may float axially. The machine may have a soft or sprung foot at one or more locations along with a soft and/or warped baseplate. The alignment positions may become bolt bound. Keeping in mind that acceptable final alignment is typically less than 2 mils, maintenance professionals often find it very challenging to attain proper alignments.

The Ultimate Tool for Teaching Shaft Alignment

SpectraQuest's Shaft Alignment Trainer (SAT) is the most comprehensive device on the market for shaft alignment training. It is designed for studying a wide variety of problems that can arise when two shafts are misaligned. It is a hands-on trainer for maintenance professionals. It provides a unique mechanism for studying soft and sprung foot. It is a realistic simulator with a one inch diameter shaft that fits standard couplings. Its modular design facilitates simulation of multiple element drive trains. The SAT is available in a two train and in a three train configuration. Each SAT incorporates two fully adjustable modular units featuring horizontal jack bolts, calibrated and reference dials, and replaceable feet. The three train SAT adds a fixed module which simulates a non-adjustable machine, but, the shaft can be offset and axially floated.

The SAT system is robust, portable, and simple to use. The device has ample space to mount dial indicators and laser heads for alignment training. The innovative design makes it easy to extend the base to accommodate additional main modules for simulating multiple machine element trains. This can be done in both linear and perpendicular configurations. The SAT provides a range of benefits in developing an understanding of alignment problems.

Benefits:

- Practice and learn different shaft alignment methods using dial indicators or lasers.
- Practice alignment procedure when one or both shafts are locked
- Practice alignment when one or both shafts have limited rotation.
- Practice alignment when the machine is bolt bound.
- Recognize and correct soft foot conditions in one to three feet.
- Recognize and correct sprung foot conditions, from one to four feet.
- Study effect of coupling types on alignment procedures.

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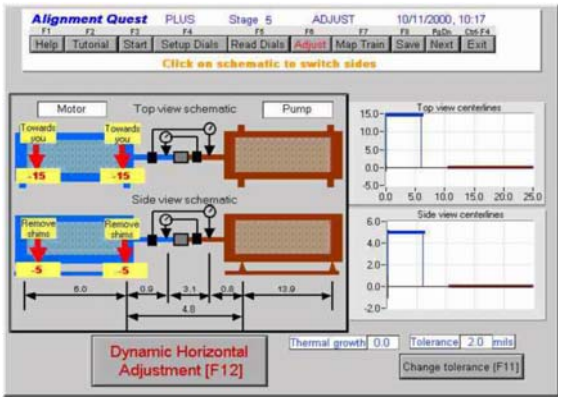
AlignmentQuest Software

The AlignmentQuest software enables the user to employ conventional, readily available dial indicators to their maximum potential. This is accomplished by using a built-in inclinometer to input accurate rotational data. The software then calculates the proper movements needed to bring the shafts into near perfect alignment. For bolt bound or similar conditions, it is only necessary to click the mouse on the other machine to see the opposite set of alignment data and graphical orientation.

With the limited swing feature, it is no longer necessary to use a mirror to read the indicators, thereby minimizing the potential for error and the software will alert the user to the expected reduction in accuracy. The program is able to map the 360 degree rotation and check each degree of rotation for human and/or hardware errors that might be contributing to a false reading. Shaft alignments can be made on vertical machines and multi-machine trains and provisions for thermal growth are possible. Machine definition, measurement data, and alignment steps with time/date for all equipment in the plant can be archived and retrieved as needed. Custom reports can easily be generated and data can be exported for further analysis.

AlignmentQuest Features:

- Perform shaft alignment under limited swing conditions using any amount of angle.
- Self diagnostics to detect errors
- Sag compensation indicator.
- Adjustable tolerance limit
- Align multiple machine trains.
- Optimum alignment solutions automatically suggested and “what-if” scenarios performed.
- Perform alignments on vertically mounted machinery.
- Create a machinery database for the entire facility.
- Archive alignment data, including steps, with date/time.
- Generate comprehensive custom reports.



SAT Features:

- Misalignment in both horizontal and vertical planes, both angular and parallel (four horizontally mounted jack bolts with calibrated dials and slotted shims for elevation).
- Calibrated parallel and angular misalignment easily introduced.
- Learn to recognize and correct soft and sprung foot conditions.
- Modular design for easy customization.
- Portable, robust, and comprehensive alignment trainer.

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Option Kits

Basic shaft alignment workbook (SAT-SAW)

- Provides valuable information on the basic knowledge needed to begin understanding shaft alignment of rotating machinery, and reviews the importance of alignment, preliminary steps, how to measure shaft positions, and basic graphing techniques.

Shaft alignment self study guide (SAT-SSG)

- Complement to the basic shaft alignment workbook, it contains eight lessons for the self study of shaft alignment.

Soft / Sprung Foot Kit (SAT-SKF)

- Study the effect of soft and sprung foot conditions.
- **The kit consists of three soft-feet of different lengths and one sprung-foot**

AlignmentQuest Bracketry with Built-in Inclinometer (SAT-BKT)

- Accommodates 1” to 8” diameter shafts.
- **The kit consists of two precision dial indicators, two mounting brackets with one inclinometer, two 12” bars, two 6” bars, one mirror, and one set of feeler gauges packaged in a rugged plastic case.**

Alignment Quest Software (AQ-PRO)

- Dial indicator software for machinery shaft alignment

Training Packages

The SAT is also available in two packages providing you with all of the components necessary for a turnkey training system:

Packages	
Package 1	Includes SAT two train with all the option kits
Package 2	Includes SAT three train with all the option kits

Specifications

Mechanical	
Shaft Diameter	1” diameter; Turned, Ground, & Polished (TGP) steel
Bearing	Pillar block ball bearing
Foundation	3” x 10” aluminum channel and four rubber isolators
Physical	
Weight	Approximately 60lb for 2 train and 90lb for three train
Dimensions	L=30” for 2 train and 48” for three train, W=10” , H=13”

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