STEALTH SERIES™
SHAFT ALIGNMENT SYSTEMS
ALIGN WITH THE BEST
ALIGNMENT LASERS. SIMPLY THE BEST TOOL FOR SHAFT ALIGNMENT.

Accurate alignment of motor shafts to pumps, motors, blowers, etc. is critical to reducing maintenance costs and keeping crucial machinery up and running. Taking the time to accurately align your machines will reduce costs and increase reliability.

Misalignment costs you serious money - Misalignment increases bearing and seal wear and leads to premature failures. It also increases power consumption of the motor, increasing electrical costs. For example, studies show that for a 3000 RPM motor, an increase in the coupling gap of just .015” can cause motor power consumption to rise by 4%. Multiply this by hundreds of machines and this adds up to serious loss of revenue each year.

Increasing alignment accuracy has been shown to:
• Reduce maintenance costs by up to 7%*
• Increase bearing and seal life by up to 8 times.*
• Increase machine availability by up to 12%*
• Reduce energy costs by 5% to 12%*
• Significantly increase coupling life

We have used the system and it really is good. I was able to pick it up and align a motor accurately the first time with very little training and no previous alignment experience.”

—Jeff F
Roanoke Cement

*Source: Reliability Centered Maintenance Guide for Facilities and Collateral Equipment - NASA

WHY MORE COMPANIES ARE ALIGNING WITH HAMAR.

With features like Bluetooth® on all systems, 3 and 5-axis targets with automatic sweep function, sub-micron resolution, the largest detector range in the market and large color graphics, the Stealth™ Series of shaft alignment lasers are rapidly becoming the best choice for shaft alignment.

Worldwide leader in laser alignment technology - Hamar Laser developed the very first 4-axis shaft alignment system in the early 1990’s. It was ahead of its time and even today is unmatched by our competitors. Building on that innovation, we introduced the Stealth™ Series Shaft Alignment Systems that are the most accurate in the industry and are completely wireless from top to bottom - an industry first. Hamar's breadth of experience covers a wide range of applications and extends across many industries, so you can have confidence that an alignment done with a Hamar system means it’s done right.

Completely wireless - Fully wireless Bluetooth® operation is standard on all lasers in the Stealth™ series, eliminating potentially dangerous cables from the work area. This is especially important on large motors where rotating shafts require power assistance. It also eliminates the need for extension cables for long spacer-shaft applications. The Bluetooth radio module is sealed into the IP 67 target housing, does not require additional batteries and has a an industry-leading wireless battery life of 14 hours.

Easy-Guide™ screen navigation - The Stealth™ Series ground-breaking hardware is complemented by innovative and highly user-friendly software, driven by our Easy-Guide™ screen navigation, which is so feature-rich and easy to use that you can all but take it out of the box and use it. And if you forget something, built-in help text is just a click away.

Up to 15x higher accuracy - The Stealth™ Series utilizes the latest electrical design and components as well as super-linear PSD sensors to offer the most accurate shaft alignment systems available. Our systems are up to 15 times more accurate that our competitors' top-of-the-line systems. Our entry-level S-660 is even 2.5 times more accurate that our competitor's professional series laser!

Familiar off-the-shelf data displays - All 4 systems use familiar Windows® operating system-based display devices that are readily available from standard computer suppliers. This means there are no highly expensive, proprietary, display devices to replace if broken. A quick trip to the computer store to buy a replacement is all that is required.

More Options, Better Solutions - 4 systems, 13 platform configurations

Up by using readily available, off-the-shelf data display platforms, we are able to offer maximum flexibility to choose the system that best fits your needs. Choose from 13 different platform configurations to meet your specific needs:

<table>
<thead>
<tr>
<th>System</th>
<th>Smart Phone</th>
<th>rugged PDA</th>
<th>Smart Rugged Tablet</th>
<th>Rugged Tablet</th>
<th>Rugged Laptop</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-660 3-Axis Shaft Alignment System</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S-670 3-Axis Shaft Alignment System</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S-680B 5-Axis Shaft Alignment System</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>S-680 5-Axis Shaft Alignment System</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

www.hamarlaser.com

Research shows 50% of all machine downtime is the result of poor alignments
STEALTH SERIES: TECHNICAL OVERVIEW

45 years in the making - We know how to make alignment lasers. We’ve been doing it for 45 years, shaft alignment for 22 years. So when we decided to redesign our shaft alignment systems, we worked on everything, from the electronics to the brackets to the software, to bring you the best, most accurate, easy-to-use series of laser alignment systems on the market today. And we made the entire series wireless because we all know how much of a pain wires can be, not to mention potentially dangerous, too.

We also worked very hard on our software to make it so easy to use that training is only needed for the more complicated applications. One of our distributors told us that his users can put the system away for a month and take it out of the box and start using it without having to pull out a manual.

Talk about easy!

Two lasers, one sensor means 50% higher accuracy - Almost all other laser alignment systems use 2 lasers and 2 sensors in their shaft alignment systems. With our patented Dual-Beam™ technology, we use only one sensor with 2 uni-directional lasers, which cuts the error rate by 50%, giving you a more accurate measurement.

Large-range sensors with up to 0.5 micron resolution - 1 or 2-axis super-linear PSD detectors provide up to 33 mm (V) x 13 mm (H) of measuring area, a big benefit for long-distance shaft alignment applications. And these sensors provide up to 0.0005 mm resolution, too.

Duo-Plane™ live move screen - An exclusive, time-saving feature from the T-1290 5-Axis Target that allows the user to simultaneously view a live alignment screen for both the vertical and horizontal planes (4 axes) without having to rotate the shafts. This is critically important on large machine applications where tightening the bolts at the end of the alignment can create horizontal movement of the machine, causing the user to have to redo the alignment check.

Bluetooth LED - Green means the Target is connected to the computer. Blinking yellow means data is being transmitted.

On Target LED - Red means laser is blocked, green means laser is on target. Blinking green means Scanning Laser Mode (L-750).

Battery LED - Green means ok, yellow means charge.

Rugged, IP 67 sealed housings - All Stealth™ Series alignment hardware “heads” are compact and rugged, highly water resistant (to 3 M) and built to quickly and easily provide clear, dependable, accurate alignment data. They feature IP67 environmental protection and rugged handheld controllers featuring a high resolution VGA touchscreens.

Linearized sensors up to 15x more accurate - With linearization error rates as low as < 0.15%, our Stealth Series systems offer up to 15 times higher measurement accuracy than our competitors. Accuracy means better and faster alignments (more accurate shim calculations) and longer machine life, saving you even more money.

2 and 4-axis live move screens - The S-660 and S-670 systems provide a simultaneous 2-axis “live” display of move and foot values with continuously updating graphics to illustrate the motors’ alignment in either horizontal or vertical axis (plane) of the alignment. The S-680 offers a simultaneous 4-axis (2 planes) “live” display with a dual-view of the alignment motor graphics that update with each move of the motor.

Measurement value noise filter - Variable data averaging allows the user to choose the amount of data filtering to reduce the effects of poor measuring environments, such as vibrations and air turbulence.

Fixed angular resolution for close-coupled applications - Whether the heads are 1 inch (25 mm) or 10 feet (3 m) apart, the angular resolution is the same and up to 10 times higher than the highest angular tolerance. This means that for even the closest-coupled applications, you will have enough angular resolution to achieve high-accuracy alignments.

No need for rough-in alignment - With our large measuring range and high accuracy, rough-in alignments are not needed to get the alignment close enough so the laser can be used.

Print report file transfer: We do the work for you - Plug in the FDA into a computer with our print software and Hamar Active Sync installed and the alignment print files are automatically transferred to the PC’s print folder. Open the Couple’s print software and click on the file to view and print the report in color.

STEALTH SERIES: APPLICATIONS

A major problem with 2-laser/2 detector shaft systems is trying to use them on long-distance applications. As the upper illustration shows, when you try to move motor to motor, the longer distance makes the readings very sensitive to angular changes. For example, a tiny angular move of .005”/in (0.05 mm/100 mm) at 10 feet (3 m) will cause the laser beam to move in offset by .060” (1.5 mm)! This makes aligning the motor’s offset value very difficult to do especially for the horizontal axis. With our uni-directional laser technology, however, angular moves to motor do not move the laser beam at all and therefore do not affect the offset value! This means aligning the motor is amazingly easy, especially over long distances.

www.hamarlasers.com
INDUSTRY-LEADING COUPLE6 SOFTWARE FOR TABLETS AND PCS.

Project Menu: Start new projects, manage old alignment projects, review saved files and create project templates.

Step 2 Laser Setup Screen: Provides live, 4-axis, raw alignment data to initialize the system and maximize measurement range. On-screen graphics show you which direction to move the laser and target during the setup. Can also be used for Rough Alignment.

Step 4 - Measurement Results: Click on a set of alignment data to display color-code alignment results. Red means out of tolerance, yellow means “good” and green indicates “excellent”. Foot values are also displayed.

S-680 Software features
Included features: Arc Mode™ • Auto-Clock™ • Auto-Sweep™ • Bolt Bound™ • Point Mode • Recommended Tolerances • Repeatability Table • Report Software for PC • 7 Spacer Shaft Formats • Soft Foot • Thermal Growth at Coupling • Thermal Growth Calculator • 10,000 Saved Files • Uncoupled Mode • User-Defined Tolerances • Vertical Machines
Optional Software: Machine Train Software FOR TABLETS AND PCS. INDUSTRY-LEADING COUPLE6 SOFTWARE

ADVANCED FEATURES FOR COMPLEX APPLICATIONS.

Couple5
Spacer Shafts: Select Spacer Shafts, enter the spacer length and Couple5 will convert the alignment results to GapA/GapB, the standard spacer-shaft format.
Taking Data with Uncoupled Shafts: Available on both Couple5 & 6, simply rotate laser to any position, then sweep the target past to take a data point. Continue until enough data has been taken to generate the results.
Vertical Motor Program: For vertically mounted, flange-type motors, enter motor dimensions, select tolerances and number of bolt holes and Couple5 will calculate the flange shim values.
Bolt Bound™: Enter dimension of the pump, and then lock different combinations of the motor and pump feet to see how it affects the alignment. The graphics and shim values automatically update with each click.

Couple6
Spacer Shafts: Select Spacer Shafts, enter the spacer length and Couple6 will convert the alignment results to 7 different spacer-shaft formats.
Flip It™ Feature: Both Couple5 and Couple6 allow the user to flip the motor graphics to match the pump/motor orientation without having to turn the display upside down!
Vertical Motor Program: The industry’s only vertical alignment display with live graphical displays of the motor’s alignment along with shim values for all bolt-hole locations.
Bolt Bound™: Enter the pump’s dimensions and then lock different combinations of the motor and pump feet to see how it affects the alignment. The graphics and shim values automatically update with each click.

Database management
When you create a new machine in Couple6 software, it automatically creates a folder on your tablet and then saves each new alignment file for that machine in the folder. This allows you to keep a history of alignment for that machine so you can go back and easily collect historical data for trending purposes. Each file is time and date stamped so you can save multiple copies on the same date if needed.

Did you know our S-680 is 15 times more accurate than most other laser system on the market?
THE STEALTH SERIES - 3 WIRELESS SYSTEMS TO MEET YOUR NEEDS

S-680 5-AXIS WIRELESS SYSTEM

The S-680 is the next-generation in laser shaft alignment. It is the most accurate and highly featured laser system of the market-leading Stealth Series, designed for the most demanding and complex laser alignment applications. Utilizing our patented Dual-Beam™ technology, wireless communication and powerful software, the S-680 is the ultimate shaft alignment system.

S-670 3-AXIS WIRELESS SYSTEM

S-670 is our mid-level system with more features and higher accuracy for more difficult shaft alignment applications. Choose from 3 different platform options (rugged PDA, semi-rugged tablet or fully rugged tablet) to display our Couple5 or Couple6 Shaft Alignment Software, both of which offer an array of optional software features to handle complicated applications.

S-660 3-AXIS WIRELESS SYSTEM

With standard wireless communication, color software and high accuracy, the S-660 offers the best value in entry-level shaft alignment lasers. Its Dual-Fan™ technology allows the use of fan-type laser without having to increase power so distances of 15 feet can be easily achieved. Choose from a smart phone, rugged PDA, semi-rugged tablet or fully-rugged tablet to run our Couple5 or Couple6 Shaft Alignment Software.

Choose the one that's right for you

With 4 systems and 13 license and platform options to choose from, the Stealth™ series offers a system to meet every shaft alignment need. All systems offer our patented Dual-Beam™ or Dual-Fan™ technology and can be combined with a smart phone, rugged PDA, industrial tablet or laptop. There are also a lot of software feature options to choose from to customize the system for your specific needs.

Options

- Bracket & Chain Sets
  - A-970A Chain Bracket Upgrade
  - A-980A Chain Bracket
  - A-980R Non-Rotating Large Shaft Bracket
  - A-980OF Offset Brackets
  - A-982 Magnetic Brackets (set of 2)
  - T-1285B Outdoor Light Filter
  - A-986 Magnetic Coupling-Flange Slider Bracket
  - Other Options
  - R-1340 Smart Phone Data Platform
  - R-1345 Ruggedized PDA Device
  - R-1342R Ruggedized Tablet
  - R-1342R Ruggedized Laptop Computer
  - Geo Software and Accessories
  - L-750 Auto-Rotating Laser with P-R base
  - A-967 Flatness Measuring Fixture for T-1285/T-1290 Targets
  - S-1288 Plane5 Software

As one recent trainee, previously experienced in using SKF, Rotalign and Optalign Smart systems, told his boss after our training session: I am very impressed with this system. It just tells you what to do next!

Paul F.
IS Tecnik

“We have used the system and it really is good. It got us through the massive soft foot issues reasonably quickly, and the alignment was a breeze. The controls were simple and intuitive, and the touch screen made data entry very quick. I was able to pick it up, and align a motor accurately the first time, with very little training and no previous alignment experience. Thank you for making such an easy to use and accurate system.”

Engineer Roanoke Cement Company

“We with this alignment tool (S-680) we have done roughly 70 – 80 alignments, this has consisted of the following equipment but not limited to, compressors, gearboxes, pumps, fans and motors. We find the major advantage of the machine is the fact that there is no cabling involved between the two laser heads and the PDA unit. The battery life of the PDA unit is much longer than most other units we have worked with. The machine is extremely accurate. Uncoupled mode is quite handy.”

alignment tech
IDEAS Solutions

www.hamarlaser.com
Hamar Laser Instruments, Inc.
5 Ye Olde Road • Danbury CT 06810 • USA
Phone: 800-826-6185 • Fax: 800-730-4611 • Int'l: +1-203-730-4600
E-mail: sales@hamarlaser.com
www.hamarlaser.com

©2013 Hamar Laser Instruments, Inc. U.S. and foreign patented and/or patent pending
Made in the U.S.A. 05-2013 (0000)