



# X-SERIES™

LASER SHAFT ALIGNMENT

SHAFTALIGNMENT.HAMARLASER.COM

## X-990 Pro 5-Axis

PROFESSIONAL LASER SHAFT  
ALIGNMENT TOOL



- Dual-Beam™ Unidirectional Laser Technology
- 5-Year Unconditional Warranty
- Calibration Requirement Every 2 Years
- Ultra Accuracy for Fast Alignments
- Geometric Applications Included
- No Rough-in Needed
- 6 Data Taking Methods Available
- 8 Alignment Methods Available





# Unmatched Angular Accuracy and Repeatability

## The world's most advanced shaft alignment technology

For over 50 years, Hamar Laser has been providing highly accurate alignment systems to many different industry and application needs. We started with machine tooling where tolerances are high and applications are difficult, then in 1990, we developed the world's first 4-axis shaft alignment system. All that experience and knowledge has gone into the X-990 Pro Wireless 5-Axis Shaft Alignment System, resulting in the most accurate and easy-to-use laser aligner in the world.

## No rough-ins needed with the X-990 Pro

X-Series™ patented Dual-Beam™ Unidirectional Technology removes the need for rough-ins of the equipment during a pre-alignment check. Every other alignment system requires a rough-in of the machine before the system can take data. Unlike competing systems, with the X-990 Pro's 2 unidirectional laser beams and 33x13 mm sensor, the technician is not required to perform a rough-in before starting an alignment. You get the same measuring range from 2 in. to 33 ft. (50 mm to 10.06 m), just slap on the laser and target and get to work!

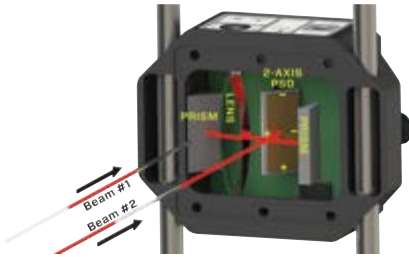
## Fixed angular measuring resolution

What sets the X-Series™ apart is the angular accuracy and repeatability of our systems. With other laser technologies, the angular resolution varies with distance, the closer a coupled application is, the worse the angular accuracy for these systems become. With our Dual-Beam™ technology, the X-990 Pro provides the same high angular resolution at 1 in. (25 mm) between heads as you get at 33 ft. (10.06 m), which is 15x higher than the highest angular specification.





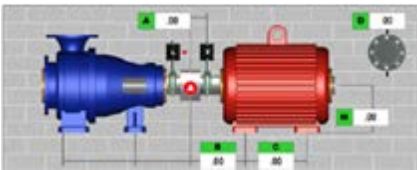
# Revolutionizing Precision Alignment with X-SERIES™



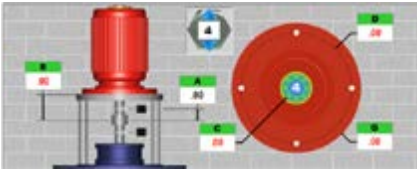
## Advanced Unidirectional Dual-Beam™ Technology

This innovative technology provides an amazing  $\pm 12^\circ$  of angular range. Utilizing 2 unidirectional laser beams (2 lasers, 1 direction), the X-990 Pro solves the rough-in problem with “cross-fire” lasers (2 lasers, 2 directions), makes aligning machines amazingly fast and easy, especially on long-distance applications. The result? More jobs done in less time and happier managers!

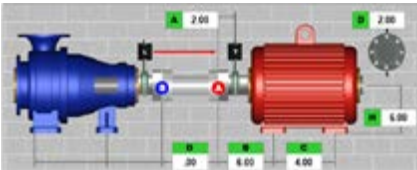
## Alignment Methods with the X-990 Pro 5-Axis System



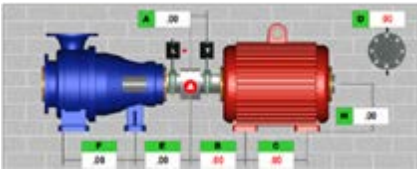
**(Included) Standard Machine Alignment** aligns two rotating machines connected by a single coupling. Includes measuring and correcting angular and offset misalignments between machine shafts to achieve optimal alignment.



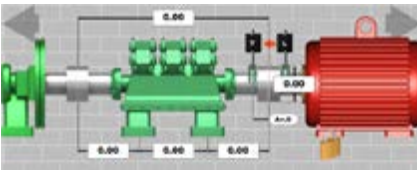
**(Included) Vertical Motor Alignment** is the industry's only vertical alignment with live graphical displays of the motor's alignment along with shim values for all bolt-hole locations. This alignment is for flange-mounted vertical motors.



**(Included) Spacer (Jack) Shaft Alignment** aligns the shafts of two rotating machines that are connected by a spacer or jack shaft to ensure their rotational centerlines are collinear. There are 7 different formats that can be used in this type of alignment.



**(Included) Bolt/Base Bound Alignment** lets you lock/unlock different combinations of the moveable and stationary machine feet to see how it affects the alignment solution. The graphics and shim values automatically update.



**(Included) Machine Train Alignment** lets you take data from 3 to 10 machines and will calculate the shims/moves that minimizes the moves. This ensures that all shafts are collinear and properly aligned throughout the entire train.



## Geometric Laser Alignment is included with the X-990 Pro System

Turn your X-990 Pro into a Geometric Alignment System. Utilizing the X-990 Pro Laser and Target, perform Manual or Timed Data Recording, Flatness, and Straightness Measurements in Couple6.

## Data Taking Methods with the X-990 Pro 5-Axis System



**(Included)**

**Auto Clock™ Mode** has 8 clock positions to choose from, simply rotate the laser/target to that position, and click record. Minimum three points in 90-degrees needed.



**(Included)**

**Auto Sweep™ Mode** starts at any clock position and sweeps to any other point with a minimum of 60 degrees. This mode auto-calculates when the sweep is stopped.



**(Included)**

**Uncoupled Swipe** makes taking data much easier. Rotate the laser to any clock position, sweep the target past it, where it automatically records the data point.



**(Included)**

**Arc Mode™** starts and stops at any point in the rotation circle multiple times. Use where there are obstructions that block the laser beam or prevent a full rotation.



**(Included)**

**Point Mode** rotates the laser/target to any clock position in the rotation and records a data point at that location. Also used to perform uncoupled alignments.

# Revolutionizing Precision Alignment with X-SERIES™

## Easy-Guide™ Software Makes Navigation Simple

Our Couple6 software is every bit as brilliant as our hardware, featuring our Easy-Guide™ navigation with its easy-to-follow, high-quality color screens that makes even the novice user look like an expert! Whether using our optional 10 in. (254 mm) Rugged Windows® tablet or placing Couple6 on a company laptop or tablet, just follow our 5-step process that guides you through each stage of the alignment and before you know it, you're printing a report!



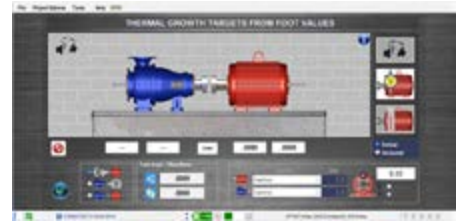
## Couple6 Software Steps for the X-990 Pro 5-Axis System



**Project Menu** starts new projects on a new or existing machine, manages old alignment projects, reviews saved files, creates project templates, and accesses optional apps. Creates a unique machine folder that stores all the alignments in one place for easy historical analysis.



**Step 1 - Machine Type, Dimensions & Tolerances** is where you select your shaft alignment method, machine and coupling type, enter dimensions, and select tolerances by RPM or enter user-defined tolerances. Thermal Growth compensation is accessed from this step.



**Step 1 - Thermal Growth** lets you enter thermal growth values at the coupling or the feet to offset the alignment at the move stage; the motor graphics will auto update. Or enter temperature changes at the feet, select the material and Couple6 calculates the alignment at the coupling.



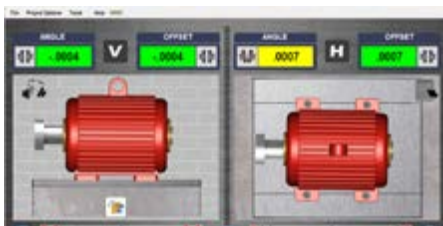
**Step 2 - Laser Setup Screen** provides live, 4-axis, raw alignment data to initialize the system and maximize measurement range. On-screen graphics show you which direction to move the laser and target during the setup. Can also be used for new-motor pre-alignment.



**Step 3 - Soft Foot Check** provides an on-screen, easy-to-follow procedure for checking Soft Foot, a common problem that can cause many alignment problems. By placing it in the process, it removes this step in the pre-alignment checklist. Automatically selects the "problem" foot and calculates the shim to fix it.



**Step 4 - Measure Misalignment** makes coupled alignment amazingly easy. With 5 data-taking modes available and with the built-in accelerometer, Couple6 detects shaft rotation and, depending on the mode, records data in a clock, arc, uncoupled, point, or sweep. More data points means better accuracy and quicker alignments.



**Step 5 - Move and Shim** utilizes our Duo-Plane™ live move screen to show both the side and top views of the motor's alignment and displays 4 continuously updating alignment axes (2 alignment planes) on the same screen. Arrows on the display shows which way to move the motor in real-time.



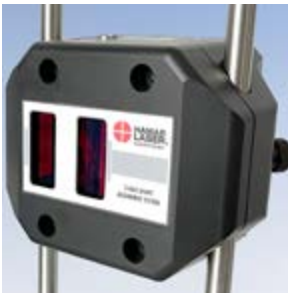
**Print Reports** uses the power of Windows® 10/11. Couple6 can print to any printer, and save a PDF file or XPS file for emailing or texting reports. With the optional App, Image Capture, you can add up to 10 images to the report. You can also choose to include or not include Soft Foot Check display, Thermal Growth Data or Data Taking History.

# Revolutionizing Precision Alignment with X-SERIES™



## L-790 Dual-Beam™ Laser

- 2 Unidirectional, parallel laser beams that can be used out to 30 ft. (10 m), which are much safer than the competitor 6° fans that can be up to 3 ft. (1 m) wide at 30 ft.
- Horizontal laser beam adjustment for faster setups.
- 2 mm diameter laser beams allows for extra measuring range.
- Blinking lasers for ambient light correction.
- Common charging cable for both laser and target.
- IP67 waterproof housing allows it to be submerged in water up to 3 feet (1 m) and still transmit data!
- Operating range of 30 feet (10 m) from laser to target.
- 125-hour battery life. Can be operated while plugged into A/C charger.
- Laser-On and Low Battery LED's.



## T-1290 Wireless 5-Axis Target

- 2-Axis 33(V) x 13(H) mm PSD with .00002 in. (0.0005 mm) resolution
- Measurement accuracy of:
  - Offset Error <0.15%
  - Angular Error <.75%
- ± .59 in. (±15 mm) offset measuring range
- ± 12° angular measuring range
- Rotation axis 0.1°. resolution with ±1.0 ° accuracy.
- Bluetooth Class I wireless communication with range of 100 feet (10 m).
- IP67 waterproof housing allows it to be submerged in water up to 3 ft. (1 m) and still transmit data!
- 15-hour (continuous) battery life.
- Wireless Link, On-Target, Data Communication and Low Battery LED's.
- USB charging cable also can be used as data communications cable in case of wireless problems.



## A-980 Stainless Steel Shaft Brackets

- Stainless steel quick-connect brackets for fast setup and stable readings.
- For shaft diameters from .8 to 6.0 in. (20.32–152.4 mm)
- 2 sets (qty 4) 4 in. (101.6 mm) and 8 in. (203.2 mm) posts.
- Stainless steel chain with magnetic tip to secure extra chain and protect the equipment.
- A-980A Chain Bracket Upgrade with chains to handle up to 12 in. diam. shafts and 6 in. (152.4 mm) and 12 in. (304.8 mm) posts.
- Fits into carrying case with posts connected.

With our optional IP65, 10" (254 mm) Rugged Windows® Tablet, our Couple6 software operates along with any other software you have that is on the Windows® Platform. With battery hot-swap, wi-fi access, and unlimited storage via a cloud network, this tablet meets all your needs and can be easily replaced if something happens to it.



## Additional Accessories for the X-990 Pro 5-Axis System



A-982 Magnetic Bracket



A-980 D - Chain Set  
1-20 In. (25-508 mm)



A-980OF - Offset  
Bracket 1 in. (25.4 mm)



A-980E - Bracket Posts -  
6 & 12 in. (152 & 304.8 mm)



A-980NRA-1 - Non-Rotating  
Shaft Bracket System



# X-990 Pro System Specifications

<b>Laser/Target Unit Size</b>	4.2 x 3.3 x 2.2 in. (107 x 84 x 55 mm)
<b>Housing Material</b>	Impact resistant plastic
<b>Detector Type &amp; Size</b>	2-axis super-linear PSD 33 mm (V) x 13 mm (H) provides 4 continuously updating alignment axes (or 2 alignment planes).
<b>Ambient Light Protection</b>	Via blinking-laser algorithm embedded in all Hamar Laser targets.
<b>Target Measurement Resolution</b>	Offset: .00002 in. (0.0005 mm) Angular: .00008 in/ft (0.007 mm/m)
<b>Target Measurement Error</b>	Offset: <0.15% Angular: <0.75%
<b>Angular Sensor Range</b>	± 12° (± .204 in/in or 20.4 mm/100 mm). For values > 5°, use only for rough alignment.
<b>Laser Type</b>	650 nm unidirectional Dual-Beam laser with horizontal adjustment <0.9mW
<b>Communication between Target &amp; Data Analyzer</b>	Wireless Bluetooth® Class 2 – 2.4 Ghz
<b>Wireless Range</b>	Up to 100 ft. (30.48 m)
<b>Ruggedized Display Platform</b>	Industrial tablet with 10 in. (254 mm) touchscreen. MIL-STD-810H and MIL-STD-461G certified
<b>Rotation Sensor (5th axis)</b>	Accelerometer Resolution: 0.1° Accuracy: ±1°. Measurement accuracy not affected by rotation sensor accuracy.
<b>Environmental</b>	IP67 (laser & target). IP65 (tablet) rated
<b>Bracket Set</b>	Covers .79 in. (20.0 mm) to 6 in. (152.4 mm) diameter shafts. Comes with 4 in. (101.6 mm)
<b>Application Range</b>	33 ft. (10.06 m) between laser and target
<b>Operating/Storage Temperature</b>	Laser/Target: 5°F to 140°F (-15°C to 60°C) Tablet - AC Mode: -4°F to 140°F (-20°C to 60°C) Tablet - Battery Mode: 32°F to 113°F (0°C to 45°C)
<b>Battery Life - Target</b>	14 hours continuous use with Bluetooth®, 15 hours with data communications cable. Target can be plugged into power source during use. Battery status indicator for both Target and PC.
<b>Battery Life - Laser</b>	150+ hours continuous use. Blinking LED indicates low battery status
<b>Battery Life - Tablet</b>	8 hours, best power efficiency setting
<b>AC Battery Charger Laser and Target</b>	110V–240V with U.S. and international adapters. Charging cable is also the data backup cable

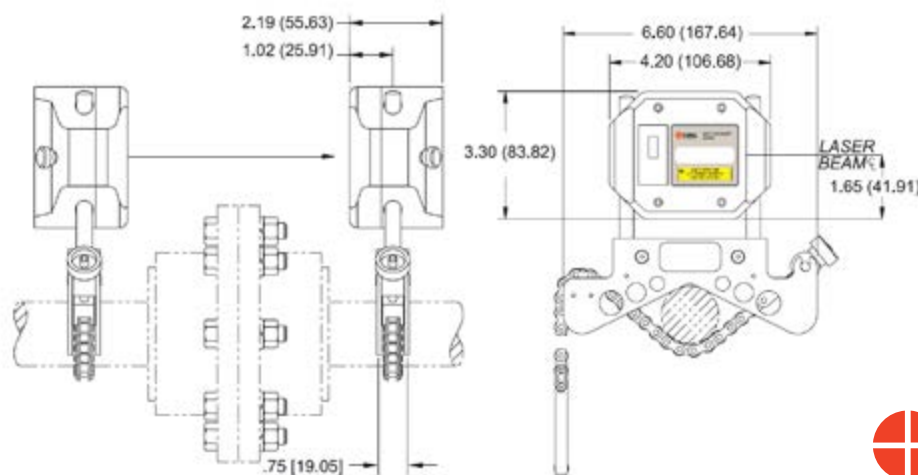


## Included Couple6 Apps

- Data Quality Analyzer
- Flip It™
- Machine Templates
- Printed Reports
- Recommended Tolerances – 2 levels
- Auto Clock™ Data Taking
- Digital Signature Capture
- Horizontal/Vertical Machines
- Save Data/Database Management
- Soft Foot Check
- Machine Templates
- Thermal Growth Calculator (@feet)
- User-Defined Tolerances
- Vertical Machines – Live Move
- Auto Sweep™ Data Taking
- Arc Mode™ Data Taking
- Uncoupled Swipe Data Taking
- Point Mode Data Taking
- Bolt/Base Bound™
- Data Recorder (Timed/Manual)
- Machine Image Capture (reporting)
- Machine Train-3
- Repeatability/History
- Spacer Shaft - 7 Formats
- Thermal Growth (@coupling)
- Geo – Manual/Timed Data Recorder/Analyzer
- Geo – Flatness Data Recorder/Analyzer
- Geo – Straightness Data Recorder/Analyzer

## Optional Couple6 Apps

- Machine Train-10



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NO WORRIES  
5-YEAR  
MANUFACTURER'S  
WARRANTY

