



Machine Alignment and Installation

E710

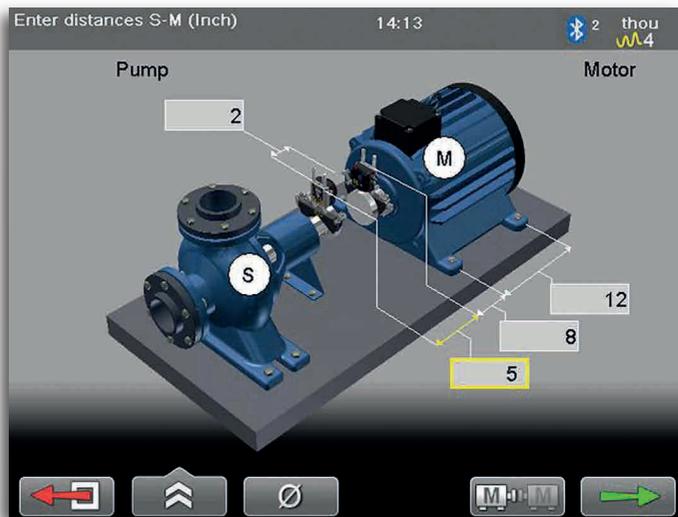
SHAFT ALIGNMENT

HORIZONTAL MACHINES



Horizontally coupled machines often consist of a pump and motor, but there can also be other types of machine such as gearboxes and compressors.

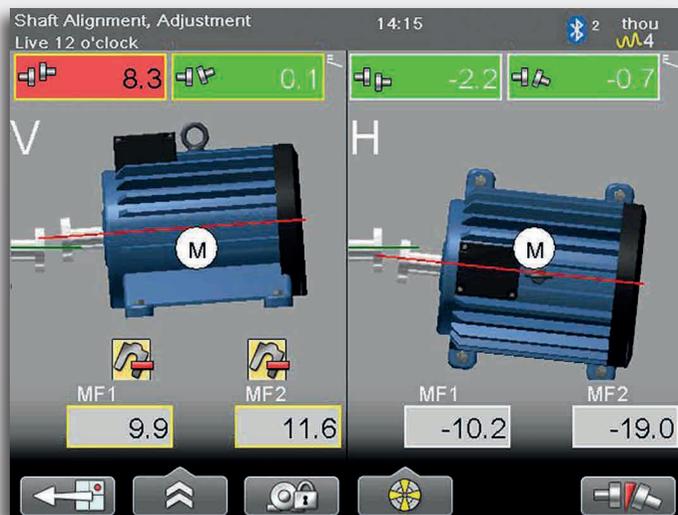
Regardless of what machine it is, it's easy to measure and align with Easy-Laser®. The measuring units (M and S) are mounted on each side of the coupling with cable or wireless communication to the display unit. Then follow the step-by-step instructions on screen (see below).



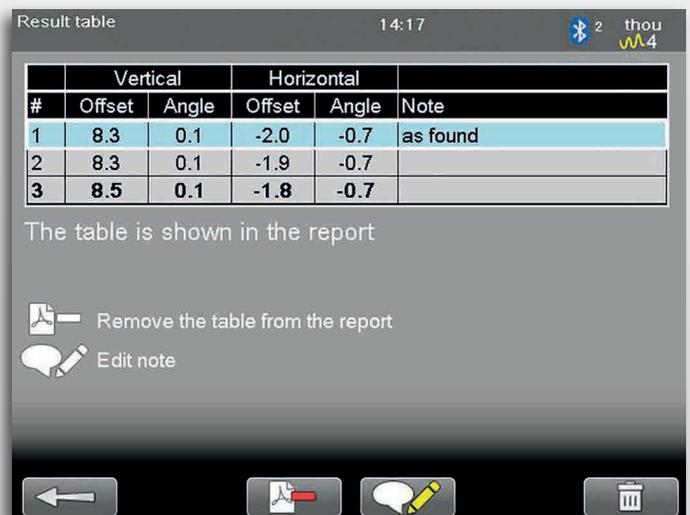
1. Enter dimensions



2. Measure



3. View result and adjust



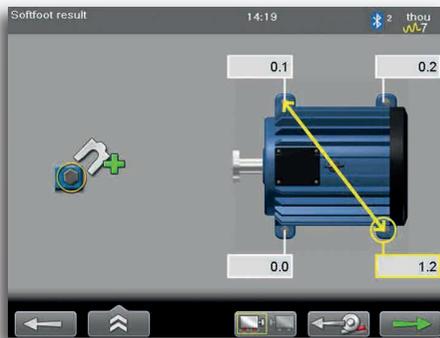
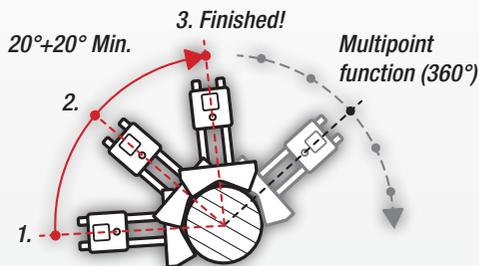
Establish measurement repeatability before carrying out machine adjustments

MORE FUNCTIONS

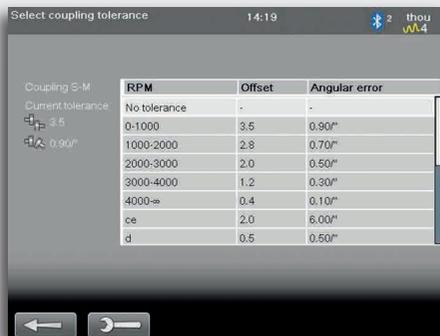
EASYTURN™ AND MULTIPOINT



With the EasyTurn™ function you can start measurement anywhere on the turn. Turn the shafts with the measuring units to three positions in any direction with as little as 20° between to register the measurement value. Measurement is complete! For advanced applications, such as turbines, there is a Multipoint function where any number of measuring points around the whole or part of the rotation can be registered.



Soft Foot Check



Tolerance Check against pre-defined tolerance table



THERMAL GROWTH

Automatically compensate for positional change from thermal expansion of the machines.



SWAP VIEW

Display the machines the way you see them, from either side.



LIVE-ANY-ANGLE 360°

This function allows adjustment of the machines live with the measuring units positioned anywhere around the shaft.



MEASUREMENT VALUE FILTER

Improve readings when measuring conditions are poor.



MULTIPLE SETS OF FEET

Align machines with more than two pairs of feet.



REFERENCE FOOT LOCKING

This function allows you to lock any pair of feet on the machine. This gives great freedom when aligning base-bound or bolt-bound machines.



QUALITY ASSESSMENT

Function in Multipoint measurement that helps you achieve the best possible result during alignment.



VALUES PROGRAM

Measure directly using the raw data values with laser precision and the possibility to document the measurement result. You can also use it to check bearing play or shaft load.

DISPLAY AND MEASURING UNITS



E51 DISPLAY UNIT

The display unit is easy-to-grip and rubber coated. Large well-spaced buttons give clear tactile feedback, friendly for both right and left-handed users. It has wireless communication and rechargeable battery. Clear graphics guide you through the measurement process.

You can save your personal settings in a profile. Choose your preferred on-screen language: English, Spanish, French, Portuguese, Chinese, Italian, Russian, Swedish and others.

Firmware can be upgraded over the internet or through USB stick.

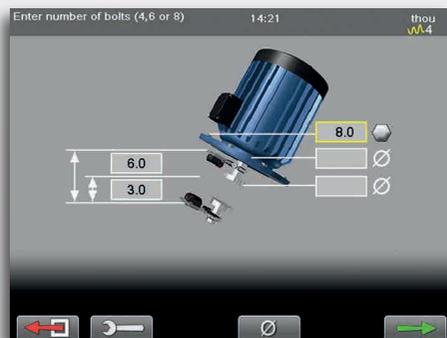


ES/EM MEASURING UNITS

The measuring units are water and dust proof to IP66 and IP67 and can measure over distances of up to 66 feet with the greatest precision. Intelligent compact bracket design simplifies installation on all types of machines, regardless of shaft diameter.

Electronic inclinometers let the system know where sensors are positioned, which is ideal for uncoupled shafts. Wireless connection with the display unit enables unencumbered work. Even badly aligned machines are easily and quickly aligned with the dual laser approach.

MORE SHAFT ALIGNMENT PROGRAMS



VERTICAL/FLANGE-MOUNTED MACHINES



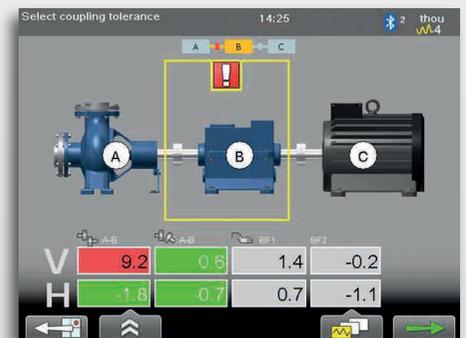
Alignment of vertical and flange-mounted machines. Shows center offset, angular error and shim value at each bolt.



CARDAN/OFFSET-MOUNTED MACHINES



Alignment of cardan/offset mounted machines. (Accessory Cardan fixture, Part No. 12-0615 is required.)



MACHINE TRAINS



Regardless of what machines you have and in which order they were assembled, you can build your own machine train with theoretically as many machines as you like. You can pick the reference machine manually, or let the program choose one that will minimize the need for adjustments.

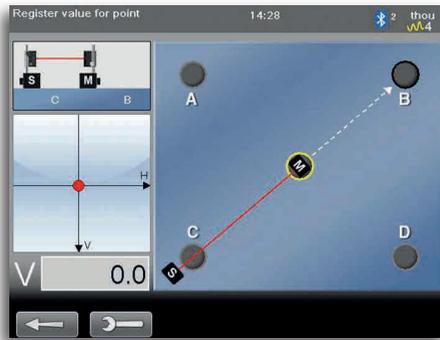
BEYOND ALIGNMENT



STRAIGHTNESS MEASUREMENT

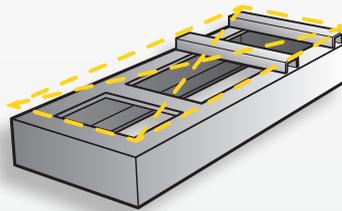
With our program for measuring straightness, you can easily measure long shafts, rolls, bearings, bases, machine structures etc. All you have to do is define a number of measuring points, in advance or while measuring. You will be able to get the result for both the horizontal and vertical alignment, graphically as well as digitally.

The D22 Laser transmitter (accessory) will provide even more alignment possibilities.



TWIST AND FLATNESS MEASUREMENT

The twist measurement program allows you to check the flatness or twist of the machine foundation using only the measuring units in the system.

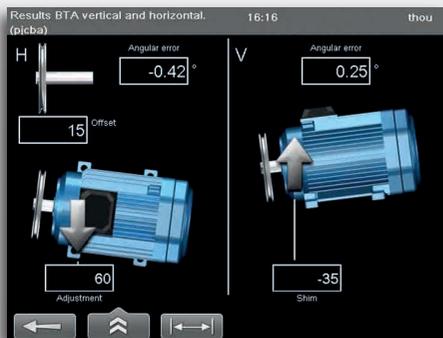


CHECKING BEARING PLAY

All our measurement systems come with the extremely useful Values program. The program can be used e.g. when one wants to measure as with dial gauges and to check bearing play. With the standard equipment and completely normal set up on the machine!



BELT/PULLEY ALIGNMENT



BELT/PULLEY ALIGNMENT

Using the system you can align sheaves and pulleys with digital precision. Adjustment of the machines is displayed in real time on the screen, with readings for angle and axial displacement in both the vertical and horizontal axes, as well as an adjustment value for the front or rear foot pair. The result can be documented as normal. (Requires the XT190 BTA accessory.)

MORE GEO WITH SEPARATE LASER



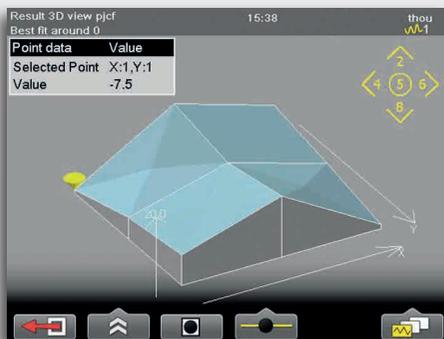
LASER TRANSMITTER D22

Machine set-up most often starts with the foundation. If the foundation is level and flat you will have less problems with the rest of the installation and alignment of the machine. The measuring units included with system E710 uses dot laser technology. This is one of the reasons it can be used in so many more places in your operations than just to align the shafts of rotating machinery.

Also a standard E710 will provide more measurement and alignment possibilities than a line laser system can, but the key to true versatility is the D22 (accessory).

With you can also perform the following:

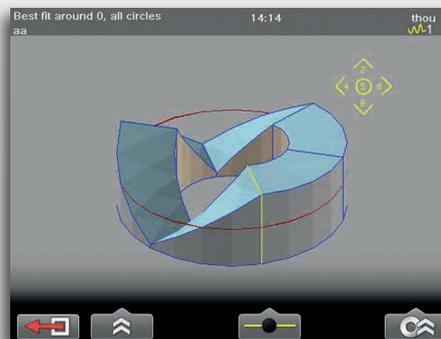
- Measure the flatness of the foundation
- Check plane parallelism for several surfaces on large machines
- Measure flatness for a single machine foot support surface
- Align the foundation level and plumb
- Align pipes straight and square



FLATNESS



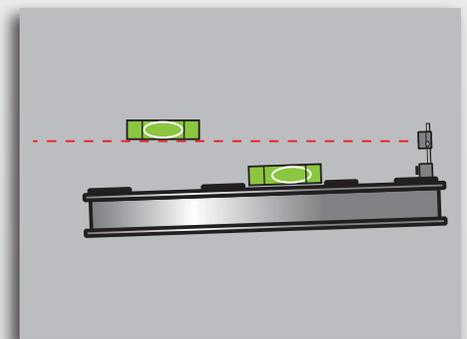
The foundation and baseplate for a machine has to be flat and level.



FLANGE FLATNESS



With this program you can measure sealing surfaces on tanks, heat exchangers and slewing bearings, to mention just a few examples.



LEVEL



All machines have to be placed level or plumb for optimum operation, generally speaking.



DOCUMENTATION

CREATE A PDF REPORT DIRECTLY TO USB

SAVE MEASUREMENTS IN THE BUILT-IN MEMORY

SAVE MEASUREMENTS TO USB

CONNECT TO YOUR COMPUTER

The display unit is connected to the computer via the USB port. It then appears on the desktop as a USB Mass Storage Device which you can easily transfer files to and from.

EASYLINK™ PC SOFTWARE

With the EasyLink™ database program you can save and organize all your measurements in one place, produce reports with both data and images and export to your maintenance systems. You can customize what your Excel reports should look like and what data should be visible and where it should be positioned.

The program has a clear folder structure, where you drag and drop files from the display unit to the database. Create your own structure with folders for manufacturer, department or machine type for example. The database can also be located on a common server and shared with other users. For extra safety you can use EasyLink™ to make backups of what you have saved in the display unit.

EASY-LASER Shaft alignment report
Horizontal

File information

File name	Machine No. 3
Measurement date	2013-11-02 09:51:16
Report generated for file	Machine No. 3_2013-11-02 09:51:16.001.PDF
Report generated date	2013-11-02 09:51:24
Operator	Edge
Measurement program	Horizontal
Measurement unit	mm
Serial no. (Manufacturer)	112 13002 10004
Temperature	amb. 20.7°C (69.3°F) max. 01.17°C (34.3°F)

Overview

Result table

Coupling values		Vertical	Offset	Horizontal
Coupling	Offset	Angle	Offset	Angle
S/M	0.0	0.0mm	-0.3	-18.0mm

Fit values

Machine S	Vertical	Horizontal
Machine M	Vertical	Horizontal
PI	13.0	-06.5
PI	23.0	-06.5

Thermal compensation

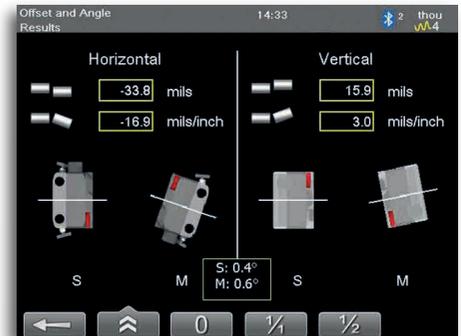
Coupling		Vertical	Offset	Horizontal
S/M	N/A	N/A	N/A	N/A



Laser transmitter D22 (accessory) will provide maximum possibilities to set up machines for problem-free operation.



MONITORING



"Snapshot" of machine positional change

OFFSET AND ANGLE

This program shows center offset and angular error between two shafts, for example. The values are displayed for both horizontal and vertical direction simultaneously. Can also be used for measurement of machine positional change during operation.

EASY-MONITORING

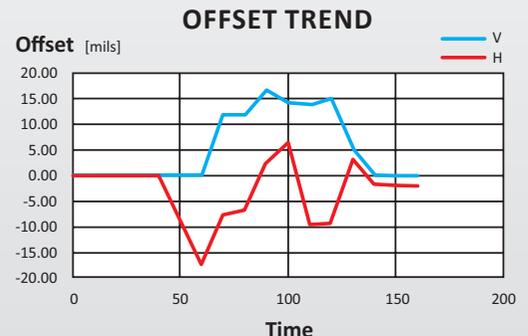
Precision alignment is an essential component in the reliability of rotating equipment. It can help lower operating costs and minimize failures in many areas of the process in your facilities. Accurate alignment depends on obtaining accurate information on the positional changes that your machines undergo while in operation. This information can prevent aligning a machine to the wrong target specifications. These target values are sometimes given by the manufacturer of your equipment. However, such targets may not always be representative of how the machines behave in your plant, under your conditions.

Hot and cold alignment checks of rotating equipment only give an estimated

movement due to thermal growth. This may not be an accurate representation of how much a machine actually expands/contracts due to thermal growth, nor does it take into account shape deformation from thermal gradients. Also, positional change due to dynamic load shifts is not considered. Therefore, the best of several ways to capture machine movement is to monitor it as it happens, during ramp-up or coastdown. With Easy-Monitoring, one can see the changes in alignment continuously during each step of the process of shutting a machine down or ramping it up.

By using the program included with the Easy-Laser® E710, along with our EasyLink™ template, analyzing machine movement has never been easier. Once

the easy setup is done, the user has the ability to obtain readings at any interval he or she chooses. This allows accurate data to be collected for machines that cool down quickly, or those that take a longer time. Thereafter, using the included EasyLink™ software, the user can analyze the data to find the exact cold alignment targets for their machines.



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