



USER MANUAL AT

**acoem**

AT100系列操作说明书



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## WELCOME TO OUR WORLD 简介

*Since the very beginning in 1984, ACOEM AB (formerly known as ELOS Fixturlaser AB) has helped industries throughout the world to achieve more profitable and sustainable production. We have reached where we are today by having the courage to think beyond the norm and follow slightly unconventional paths. We have had the courage to make mistakes and find new directions. Through our resolve, ambition and knowledge we have become a global player and a leader in innovative, user-friendly shaft alignment.*

### SUSTAINABLE INNOVATIONS

During our almost 30 years in this industry, we have explored, tweaked and tested more than anyone. Some might say we are incurable innovators whereas others might

say that we are highly focused. They both probably have a point. If we had not been devoted and ambitious, we would not have been the first in the industry to have a touch screen. Nor would we have been pioneers in the use of visible lasers and dual measurement heads.

Over the years, we have learnt to never compromise on quality and we are constantly in search of new, unexplored opportunities by combining advanced technology with design and function. By doing so, we have become the leading innovator in our industry. Not only do we minimize wear, production stoppages and costs, we also help save the environment. Natural resources are in short supply and if we can contribute to a more sustainable

world by making it a little bit straighter, we couldn't be happier.

## **TRUE COMMITMENT**

One reason for our success is our solid commitment. We have ensured that we remain attentive to constantly pick up on the needs of the market. Our expert employees and dedicated dealers in over 70 countries are undoubtedly our most important asset. Satisfaction and team spirit are of particular importance to us and are consistently at the top of our priority list. With experience from a wide range of industries and manufacturing processes, we are fully aware of the problems and needs of our end-customers. We are passionate about what we do and we are driven by the desire to eliminate anything in the industry

worldwide that may be even slightly out of line.

## **PURE USABILITY**

Our design and user-friendliness are carefully interwoven. As we develop new products, they also become cleaner, smarter, more functional and more robust. An industrial environment is demanding, infinitely more difficult to work in and inevitably subject to time pressure. There is no place for equipment with unnecessary functions, complicated interfaces and that is difficult to assemble.

Usability and user friendliness mean everything, not only to us but also to our customers. We have designed products that are easy to learn and can be incorporated quickly. By removing non-essential functions,

we make life less difficult for our users – and probably a little more difficult for our competitors.

## **END USER LICENSE AGREEMENT**

The rights to use the software in this product are offered only on the conditions that you agree to all the terms stated below, i.e. the end user agreement. By using this product you agree to be bound by this agreement. If you do not accept this agreement your sole remedy is to return the entire unused product, hardware and software, promptly to your place of purchase for a refund.

The user is granted a single license to use the software contained in this product. Use is only permitted on the hardware it has been installed on at the time of purchase. The software may not be removed from the hardware.

The software contained in the system is the property of ACOEM AB, any copying or redistribution is strictly prohibited.

Modifying, disassembling, reverse engineering or decompiling the system or any part thereof is strictly prohibited.

Disclaimer of warranties: To the maximum extent permitted by applicable law, ACOEM AB and its suppliers provide the software contained in this product 'as is' and with all faults, and hereby disclaim all other warranties either expressed, implied or statutory.

Limited liability: No liability shall exceed the price of the product, and the sole remedy, if any, to any claim shall be a right of return and refund.



ACOEM AB or its suppliers shall, to the maximum extent permitted by applicable law, not be liable to any indirect, special, incidental, punitive, and consequential damages arising from the use of the system or any part thereof, authorized or unauthorized.

ACOEM AB (formerly known as Elos Fixturlaser AB) is since mid-2014 a fully owned subsidiary of ACOEM Group, headquartered in Lyon, France. Other brands within ACOEM Group are 01dB, ONEPROD and METRAVIB. For more information please visit [www.acoemgroup.com](http://www.acoemgroup.com)



## **DECLARATION OF CONFORMITY** 合格声明

In accordance with the EMC Directive 2004/108/EC, the Low Voltage Directive 2006/95/EC, including amendments by the CE-marking Directive 93/68/EEC & EC directives RoHS 2011/65/EU.

### **Type of equipment**

Alignment System

### **Brand name or trade mark**

FIXTURLASER

### **Type designation(s)/Model no(s)**

I-1238 FIXTURLASER M8

I-1239 FIXTURLASER S8

### **Manufacturer's name, address, telephone & fax no**

ACOEM AB

Box 7

SE-431 21 Mölndal

Sweden

Tel: +15015607091

Fax: +020 85262155

The following standards and/or technical specifications, which comply with good engineering practice in safety matters in force within the EEA, have been applied:

### **Standard/Test report/Technical construction file/Normative document**

EN 61000-6-3:2007.

EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11.

EN 61010-1:2010

ISO9001:2008 Ref. No/ Issued by: DNV  
Certification AB Certification No. 2009-  
SKM-AQ-2704/2009-SKM-AE-1419.

The laser is classified in accordance with the  
International Standard IEC-60825-1:2014,  
USA FDA Standard 21 CFR, Ch 1, Part  
1040.10 and 1040.11 except for deviations  
pursuant to laser notice No. 50, dated June  
24, 2007.

The wireless device complies with Part 15 of  
the FCC Rules. Operation is subject to the  
following two conditions;

- (1) this device may not cause harmful  
interference, and
- (2) this device must accept any interference  
received, including interference that may  
cause undesired operation.

### **Additional information**

The product was CE-marked in 2014.

As manufacturer, we declare under our sole  
responsibility that the equipment follows the  
provisions of the Directives stated above.

### **Date and place of issue**

Möln dal 2014-03-11

### **Signature of authorized person**

A handwritten signature in black ink, appearing to read 'Hans Svensson', written in a cursive style.

Hans Svensson, Managing Director

## SAFETY 安全

Retain and follow all product safety and operating instructions. Observe all warnings on the product and in the operating instructions.

请留意并遵循所有产品安全与操作指导。  
注意所有警示说明。

Failure to observe the safety pre-cautions and operating instructions can cause bodily injury, fire, and damage to the equipment. 忽略不循序安全警告语操作说明有可能导致受伤，火灾与仪器损坏。

Do not disassemble, modify or use the equipment in other ways than explained in the operating instructions. ACOEM AB will not accept any liability for such use.

请勿拆开，维修或用不当的方式使用设备。  
否则Fixturlaser.不承担相关责任。



## WARNING! 警告

Do not mount equipment on running machines and take all appropriate measures to prevent unintentional start-up of machines. Make sure to fully comply with all appropriate shut down procedures, safety measures and regulations at worksite and local regulations regarding safety in a machine environment.

请勿在运转设备上安装仪器并防止设备意外开启。请确认完全遵循当地关机程序，安全操作规则。

## LASER PRECAUTIONS 激光防护

FIXTURLASER uses laser diodes with a power output of  $< 1.0$  mW. The laser classification is Class 2.

FIXTURLASER.使用二级半导体激光, 输出功率小于1毫瓦

Class 2 is considered safe for its intended use with only minor precautions required.

These are: 二级激光要求:

- Never stare directly into the las 请勿直视激光发射器
- Never shine the laser directly into anyone else's eyes. 请勿将激光照射到他人眼睛



COMPLIES WITH 21 CFR 1040.10 AND 1040.11  
EXCEPT FOR DEVIATIONS PURSUANT TO  
LASER NOTICE No. 50, DATED JUNE 24, 2007



### CAUTION!

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

使用其它的控制装置有可能导致设备损坏或人身伤害

Your system complies with the requirements in:

- IEC-60825-1:2007
- British Standard BS EN 60825-1
- DIN EN 60825-1

USA FDA Standard 21 CFR, Ch I, Part 1040.10 and 1040.11

## POWER SUPPLY 电源

FIXTURLASER is powered by a high-capacity rechargeable Li-Ion battery mounted in the display unit or by the external power unit. 显示单元内置高能锂电池供电，也可以外部交流供电。



Both the display unit and the measurement units (M7 and S7) can be connected to the charger and charged while lying in the case. It is important that the lid of the case is open during the charging or else the system will not be charged properly and might be damaged.

显示单元与激光探头可以在箱内同时充电，充电时请注意不要关闭箱盖，否则有可能损坏充电器。

Do not expose the power adapter to rain or wet conditions.

电源适配器不要暴露于潮湿环境中

Always unplug the charger from the electrical outlet after charging.  
充电之后及时从插座上拔掉充电器

Leaving a display unit or a measurement unit with an empty battery for a prolonged time can reduce the capacity of the battery or even damage the battery.

让主机或探头的电池长时间处于空电状态会降低电池容量甚至损坏电池

If the system is not used for a long time, charge the batteries to approximately 50-75% before storing the system, if kept in storage repeat this every 3-4 month (if needed)  
如果仪器长时间不用的话，在存放之前请将仪器电池电量保持在50%-75%之间，并且每隔3-4个月重复一次。



When used in typical conditions the battery will sustain good capacity for approximately 2-3 years before needing replacement.

Contact your sales representative for battery replacement.

通常情况下使用电池可以维持2-3年，如需更换电池请联系当地供应商。

The batteries contain safety circuitry to operate safely with the display unit. The unit can therefore only be used with the Li-Ion batteries supplied by FIXTURLASER.

电池包含安全电路以保证显示单元操作安全，请勿使用非Fixturlaser提供的锂电池。

Improper replacement of batteries can cause damage and risk for personal injury.

不正确的电池更换可能导致人身伤害



## **WARNING!**

**BATTERY REPLACEMENT SHALL ONLY BE PERFORMED BY AUTHORIZED FIXTURLASER REPRESENTATIVES.**

电池更换必须由Fixturlaser授权经销商进行

**USE OF ANY OTHER BATTERIES THAN THOSE SUPPLIED BY FIXTURLASER WILL CAUSE SEVERE DAMAGE TO THE DISPLAY UNIT AND CAN CAUSE RISK FOR PERSONAL INJURY!**

使用非Fixturlaser提供的其他品牌电池有可能导致显示单元损坏并有可能引起人身伤害。

Handle any batteries with care. Batteries pose a burn hazard if handled improperly. Do not disassemble and keep away from heat sources. Handle damaged or leaking batteries with extreme care. Please keep in mind that batteries can harm the environment. Dispose of batteries in accordance with local regulatory guidelines, if in doubt contact your local sales representative.

小心操作电池，不正确的操作可能导致电池烧毁。请勿拆解电池，并请远离火源。

Only use the external power adapter supplied by FIXTURLASER for use with the Display Unit. Using other power adapters can cause damage to the unit and personal injury.

请勿使用其他品牌电源适配器充电。

## WIRELESS TRANSCEIVER

The FIXTURLASER system is fitted with a Bluetooth wireless transceiver.  
.系统内置蓝牙传输装置。

Make sure that there are no restrictions on the use of radio transceivers at the site of operation before using the wireless transceivers.

使用时请先确保当地关于无线电发射装置的限制规定

Please refer to the chapter “Global settings” on how to turn off the Bluetooth transmitters for use in restricted environments.

在显示使用区域，请参考“全局设定”章节关闭蓝牙传输。



## WARNING!

Before using the wireless transceivers make sure that there are no restrictions on the use of radio transceivers at the site. Do not use on aircraft.

使用时请先确保当地关于无线电发射装置的限制规定。请勿在航空器上使用。



## CLEANING 清洁

The system should be cleaned with a cotton cloth or a cotton bud moistened with a mild soap solution, with the exception of the detector and laser window surfaces, which should be cleaned with alcohol.

请使用湿棉布或棉签擦拭系统。激光接收器  
请使用酒精擦拭。



For the best possible function, the laser diode apertures, detector surfaces and connector terminals should be kept free from grease or dirt. The display unit should be kept clean and the screen surface protected from scratches.

请保持激光二极管缝隙，接收器表面，连接线清洁，无油污。显示单元应预防刮伤。



Do not use paper tissue, which can scratch the detector surface.

请勿使用抽纸，会导致接收器刮伤。



Do not use acetone. 请勿使用丙酮

The chains on the V-block fixtures are delivered dry. If the system is used in highly corrosive environments, the chains should be oiled.

新出厂的V.型夹具的链条是干燥的。如果在高腐蚀性环境中使用，应给链条上油。

## DATE OF CALIBRATION

### DISCREPANCY 标定日期差异

Our instruments store the electronic date of the latest calibration of the instrument. Due to production processes and storage time, this date will differ from the date of the calibration certificate. Hence, it is the date of the calibration certificate which is important and that indicates when the next calibration is due.

我们的仪器内记录有最新标定的日期。因为生产与仓储原因，此日期会与标定证书日期略有差异。请以标定证书日期为准。



## APPS

The following apps are available in the AT system. AT系列包含以下功能应用



Horizontal Shaft Alignment  
水平对中功能





## SHAFT ALIGNMENT HORIZONTAL MACHINES

### 水平转轴对中

#### INTRODUCTION 简介

Shaft alignment: Determine and adjust the relative position of two machines that are connected, such as a motor and a pump, so that the rotational centers of the shafts are collinear, when the machines are working in a normal operating condition. Correction of horizontal shaft alignment is done by moving the front and the rear pair of one machine's feet, vertically and horizontally, until the shafts are aligned within the given tolerances. A tolerance table is available in the system.

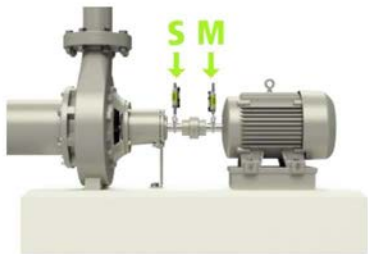
轴对中：测定和调整两台连接设备，使其旋转中心共线。水平对中的调整是通过调整设备前后脚的高低和水平位移，使其达到公差允许值。



The FIXTURLASER system has two measuring units that are placed on each shaft by using the fixtures supplied with the system.

FIXTURLASER的对中系统有两个测量单元，分别用夹具安装在联轴器两端的轴上

。



After rotating the shafts into different measuring positions the system calculates the relative distance between the two shafts in two planes. The distances between the two measuring planes, distance to the coupling and distances to the machine feet are entered into the system. The display box then shows the actual alignment condition together with the position of the feet.

Adjustment of the machine can be made directly, according to the displayed values.

The alignment results can be saved in the memory manager. The measurements in the memory manager can easily be transferred to a PC for further documentation purposes.

通过转动测量轴到不同位置，系统会计算两轴的相对位移，并显示对中结果和调整建议。角度偏差调整需增减垫片，位移偏差需侧向移动。测量结果可保存在文件存储器里，并且可以传送到电脑转换成文档格式。

## PRE-ALIGNMENT FUNCTIONS

### 预对中功能

In an effort to obtain the best possible conditions for shaft alignment, it is necessary to perform some pre-alignment checks. In many cases it is necessary to make these checks in order to obtain precise alignment. It is often impossible to reach the desired alignment results if you do not make any pre-alignment checks. 为获得最佳的对中效果需在测量之前做一些检查工作以保证获得精确测量数据。

Before going on site, check the following:  
去现场之前，请检查下列要求：

What are the required tolerances? 测量公差?

Any offsets for dynamic movements? 动态位移补偿?

Are there any restrictions for mounting  
the measuring system?

装条件是否受限？

Is it possible to rotate the shaft?

测量轴是否可旋转？

What shim size is needed?

所需垫片尺寸？

Before setting up the alignment system on the machine, check the machine foundation, bolt and shim condition. Also check if there are any restrictions in adjusting the machine (if e.g. there is enough space to move the machine).

安装对中系统之前请检查设备底座，螺丝与垫片情况以及是否有空间限制

After the visual checks have been performed, there are some conditions that have to be considered:

目测检查完成后，考虑以下情况:

Check that the machine has the right temperature for alignment.  
设备温度是否正常?

Take away old rusty shims (check that you can remove shims).  
移除旧的生锈垫片?

Check coupling assembly and loosen the coupling bolts.  
检查联轴器连接情况，松开联轴器螺丝?

Check soft foot conditions.  
检查软脚情况

Check coupling and shaft run-out. 检查联轴器与转轴离合情况

- Pipe work strain. 管道张力
- Coarse alignment. 粗对中
- Check coupling gap (axial alignment). 检查耦合间隙

Mechanical looseness.  
设备有无负载?

## MOUNTING 安装

The sensor marked “M” should be mounted on the movable machine and the sensor marked “S” on the stationary machine. The sensors shall be assembled on their V-block fixture, and placed on each side of the coupling.

Hold the V-block fixture upright and mount it on the shafts of the measurement object. 有M.的单元装在可动设备端，有S.的装在固定端。用V.型夹具固定



Lift the open end of the chain, tension it so that the slack is removed and attach it to the hook.

将V.型夹具向上安装在轴上，用锁紧链条固定。



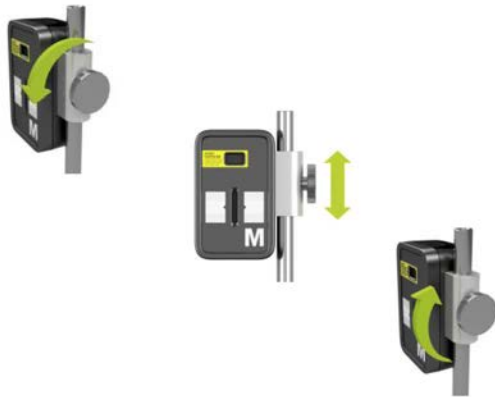
Firmly tighten the chain with the tensioning screw. If necessary, use the supplied tensioning tool. Do not over-tighten. If the shaft diameter is too large the chains can be extended with extension chains.

用提供的小扳手锁紧螺丝，不要拧太紧。如轴径过大，需使用延长链条。（可选）



Adjust the height of the sensor by sliding it on the posts until a line of sight is obtained for both lasers. Secure its position by locking both clamping devices on the back of both units

调整激光器高度和左右偏摆，直到两侧的激光都可以照射到接受区域中间，即可拧紧螺栓使其固定。



## STARTING

Turn on the sensors. 开启测量探头

Turn on the tablet.



Start the Horizontal Shaft Alignment app.  
点击图标进入水平对中程序

Go to settings for connecting the sensors, if they are not already connected.

进入设置界面连接探头（如果探头还没有连接）



Settings.  
设置界面

Settings are described in the end of the chapter. 设置功能讲解在最后一章节



## Measure and enter distances 输入距离数据



You must enter all the distances. The distance between the sensors, the distance between the center of the coupling and the M-sensor, the distance between the M-sensor and the first pair of feet and the distance between the first and the second pairs of feet.

必须输入两激光器间距，M.激光器到联轴器中心距，M.激光器到设备前脚距离与设备前后脚距离。


## Enter tolerances

Alignment tolerances depend to a large extent on the rotation speed of the shafts. Machine alignment should be carried out within the manufacturer's tolerances.

The tolerances are the maximum allowed deviation from desired values.

对中的公差值取决于设备的转速，结果必须在最大公差值允许的范围內

	rpm	$\pm$ mils/	$\pm$ mils
<input type="checkbox"/>	3600	0.5	2.0
<input type="checkbox"/>	1800	0.7	4.0
<input checked="" type="checkbox"/>	1200	1.0	6.0
<input type="checkbox"/>	900	1.5	8.0



Tolerance Table inch-mode

## Machine list

Under construction.



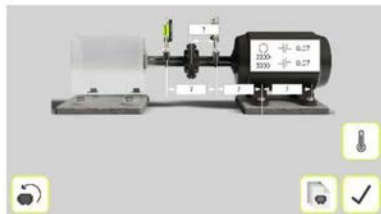
Select the tolerance to use in the alignment by touching its check box to the left.

在列表中选择合适的公差值，确定后左边的方框会打钩。



Confirm.  
点击确认

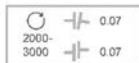
## Configuration screen 参数界面



?

### Distances

Opens window for entering distance.  
点击输入或修改距离数值



### Tolerance table

Open the tolerance table.  
点击选择合适的公差值



### Target Values

Opens Target Values.  
点击设置温度补偿值



### Machine List

Opens the machine list.  
设备列表



### Restart

Deletes all entered data and restarts the app.  
删除所有参数重开始



### Confirm

Confirms the machine configuration.  
确认

## MEASUREMENT METHOD 测量方法



### Tripoint™ method 三点法

In the Tripoint method, the alignment condition can be calculated by taking three points while rotating the shaft at least 90°. 三点法需要测量三个位置，每个位置点距离至少90.度。

**NOTE:** The shafts should be coupled during measurement in order to achieve as reliable and accurate results as possible, when using the Tripoint method.

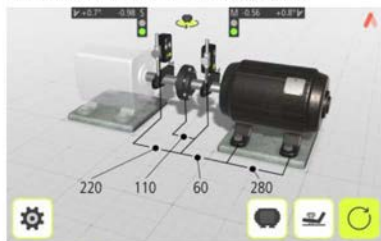
注意：当使用三点法测量时，为了达到尽可能可信和精确的测量结果，转轴连轴器需要连接

**TIP:** The larger the angle over which the three points are measured, the fewer moves and repeat measurements will have to be made. Minimum angle between readings is 45°. 提示：所测三点距离角度越大，重复性越好。两次测量之间的最小角度为45.度

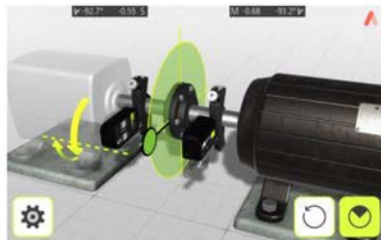


A green flashing arrow suggests suitable measurement positions.  
闪烁的绿色箭头显示合适的测量位置。

## MEASUREMENT POINT REGISTRATION 测量点采集



Go to measurement.  
进入采集



Set the sensors at approximately the same rotational angle at the first measurement position.

第一个测量点，将激光器调至大概的角度位置

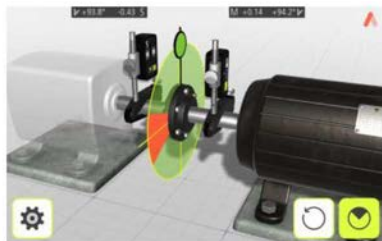


Touch the measurement icon,  
to register the first position.  
点击图标采集数据

Rotate the shafts to the next position. The shafts must be rotated over a minimum of 45°. 转动测量轴到下一个测量位置。轴的转动最小角度必须大于45度。

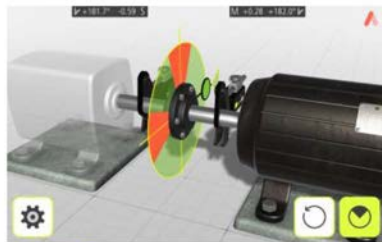
Red sector shows already measured zone. The Register icon is not shown if the rotation is less than 45°.

已测量位置会出现红色区域，需超出红色区域才能采集第二个点的数据，最小45度



Touch the measurement icon, to register the second position  
点击采集第二点的数据

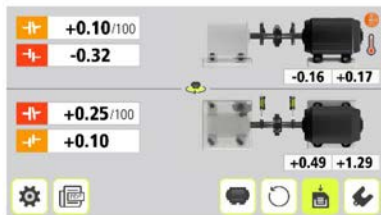
Rotate the shafts to the third position.  
转动到第三点位置



Touch the measurement icon, to register the third position.  
点击采集第三点数据

TIP: When registering the third position at the 3 o'clock position, the sensors will already be in the right position for horizontal alignment. 程序会提示最好以9-12-3点钟位置进行测量

## MEASUREMENT RESULTS



The Measurement Result screen shows coupling values and foot values in both the vertical and horizontal direction.

The symbol to the left of the coupling values indicates the angular direction and offset, and also if the values are within tolerance.

测量结果同时显示水平竖直方向的对中值与调整值。左侧的符号表示位移偏差与角度偏差，以及是否在公差范围内。



Within tolerance  
(green). 绿色表示在公差范围内



Within double tolerance  
(yellow and inverted).  
橙色表示超出一倍公差



Out of double tolerance  
(red and inverted).  
红色表示超出两倍公差



When a coupling is in tolerance in one direction, this is indicated with a check symbol at the motor.  
绿色图勾表示结果符合要求

## EVALUATING THE RESULT

### 测量结果评估

The angle and offset values are used to determine the alignment quality. These values are compared with the alignment tolerances to determine whether correction is necessary. If suitable tolerances are selected in the tolerance table, the symbols described above indicate if the angle and offset values are within tolerance or not. The foot values indicate the movable machine's foot positions where corrections can be made.

角度偏差与位移偏差可以衡量对中情况，并计地算是否需要进行调整。如果已经选择合适的公差，测量结果会通过不同颜色表示是否在公差范围之内。地脚调整值给出设备对中需要进行的地脚调整数据。



Depending on the result, the program will also guide the user. First, the program will always recommend the user to save the measurement. 基于对中结果，程序会一直指导用户。首先程序会建议用户保存测量数据。

Then, if the measurement result shows that the machine is misaligned, the user will be recommended to go to shimming.

之后，如果测量结果显示设备存在不对中，程序会建议用户进行调整

If the measurement result is within tolerance and has been saved, the system will recommend the user to exit the measurement.

如果测量结果是在公差范围之内并且已经被保存则系统会建议用户退出程序。



## SHIMMING 调整



Align faster with the VertiZonal Moves feature. 点击图标调整设备在竖直方向的对中

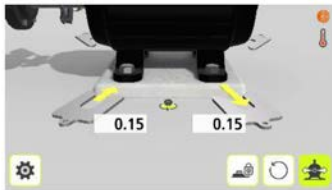
First correct the vertical misalignment in the shimming screen. The system shows how much you need to remove or add shims in order to correct the machine vertically.

首先通过垫片调整界面校准设备的高度偏差系统会提示增加或者减小垫片的厚度来达到对中效果。



Next correct the horizontal misalignment in the alignment screen. The system goes live and will deliver real time values during the adjustment phase.

之后通过实时显示界面校准设备在水平方向的偏差，系统会实时提示设备在水平方向的调整量和调整方向，已达到对中效果



The Shimming screen shows foot values in the vertical direction as suitable shim values (0.05 mm / 1 mil). 垫片界面显示竖直方向地脚调整值

The arrows show if shims must be added or removed to adjust the machine in the vertical direction. 箭头表示加或者减垫片

The check signs show that shimming is not needed. 对勾图标表示无需更改垫片厚度

When shimming is completed, continue to alignment for adjustments in the horizontal direction. 垫片加减完成后，继续进行水平方向调整



Go to alignment.  
进入对中

## ALIGNMENT 对中

If the machine has been adjusted vertically in the shimming screen, go directly to alignment in the horizontal direction.

如竖直方向已完成调整，直接进入水平方向调整

If the machine has not been adjusted in the shimming screen, alignment in the vertical direction has to be done first.

如未在垫片界面进行调整，此时可在对中界面先进行竖直方向调整。

### Vertical.direction. 竖直方向



Rotate the shafts to the 12 or 6 o'clock position to make adjustments in the vertical direction. The angle guide helps you to reach the right position. 旋转主轴至12点或6点钟方向调整竖直方向对中，倾角仪帮您达到正确的位置。

Adjust the machine vertically until the values for both angular and parallel alignment are within tolerance. The arrows by the feet show in which direction the machine should be moved.

在竖直方向调整设备直到角度与位移同时达到公差范围内。黄色箭头表示需要调整的方向。

## Horizontal direction 水平方向



Rotate the shafts to the 3 or 9 o'clock position to make adjustments in the horizontal direction. The angle guide helps you to reach the right position.

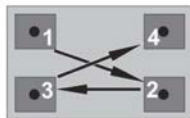
旋转主轴到.3.点或.9.点钟方向调整水平对中。

Adjust the machine horizontally until the values for both angular and parallel alignment are within tolerance. The arrows by the feet show in which direction the machine should be moved. 在水平方向调整设备直

到角度与位移都达到公差范围内。黄色箭头表示需要调整的方向。

Tighten the bolts using the tightening sequence, as below.

锁紧螺栓按照以下顺序预紧并锁紧



## Check and re-measure 检查与重新测量

Rotate the shafts back to the 12 or 6 o'clock position and check that the machine is still within tolerance.

主轴转回12.点或.6.点钟方向，检查测量结果是否发生变化。

Alignment is now completed. To confirm the result, re-do the measurement.

Re-measure.



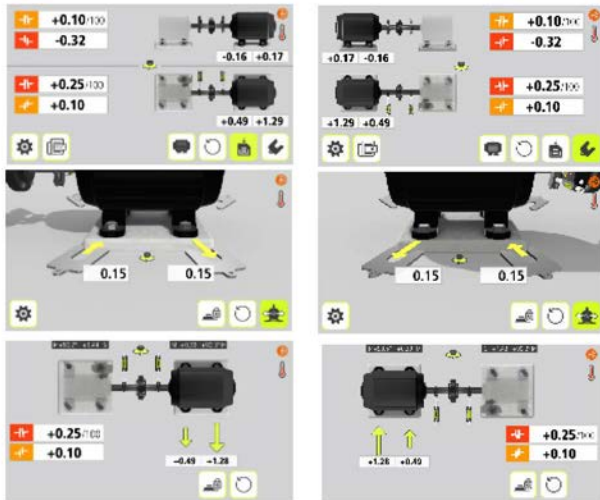
对中调整完成，为确保对中结果，可以重新测量。

## SCREEN FLIP视角切换



Screen Flip enables the user to see the machine set-up from the actual view.

视角切换功能能够让用户看到设备的真实相对位置



## PDF REPORT .PDF报告

A PDF report with several measurements can be generated. 完成对中之后可以生成报告



Touch the PDF icon to create a PDF report.  
点击图标生成PDF报告

(The PDF icon is found in the result screen and/or the setting screen.)

图标可在对中结果界面或设置界面找到

## Enter data 报告编辑

Touch the white field at the top to enter a header for the PDF report.

Touch the white fields to enter data.  
点击白色区域可编辑报告的标题和日期

## Select files



Touch the check box to the left to select files.

点击方框选择文件

## Customized logo

Touch the logo up to the right to change it.

## Generate and save the PDF report



Touch the save icon to generate and save the PDF report.

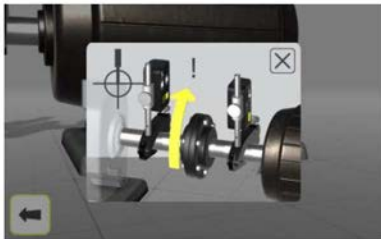
点击保存并生成PDF报告

Enter a file name and confirm.

The PDF report will then be shown, for further handling.  
在编辑文件名称并确认后，报告会在之后显示出来。

## OTHER FEATURES 其他特性

### Looseness indicator 松动标识



The system has a function for detecting coupling backlash and looseness in order to achieve optimum accuracy. The system will display the looseness indicator if one of the following conditions is met: 系统通过此功能监测联轴器间隙与松动，以达到优化的精度。如下列情况之一发生则松动标识出现：

- The M and S units are more than  $3^\circ$  apart. 两激光单元角度差大于3度
- The mutual angular position changes more than  $0.7^\circ$  from that when the first measurement point was taken.  
第一点测量完成后两激光器同步角度大于0.7度

When the coupling backlash or looseness is eliminated to avoid any of the above conditions, the looseness indicator will automatically disappear. 联轴器间隙与松动消除之后，此图标自动消失

## SOFTCHECK™软脚测试

### INTRODUCTION 简介

A soft foot condition needs to be corrected before any alignment takes place. If not, the measurement result will be of no value. It is more or less impossible to establish if there is a soft foot condition without using some kind of measurement tool. The FIXTURLASER Alignment System's built-in Softcheck program checks each foot and displays the result in mm or mils.

在对中调整开始前，应先进行软脚测试，否则对中结果是没有意义的。如果没有使用专业工具，软脚情况通常很难发现。Fixturlaser.对中测量系统内置软脚测试程序可以帮您精确检测软脚情况。

The Softcheck program is entered from the Horizontal Shaft Alignment program.

可以从水平轴对中程序里进入软脚测试程序

## STARTING THE PROGRAM 开始程序



Start the Softcheck by touching its icon in the Shaft Alignment program.

在轴对中程序里选择此按钮

Place the sensors at the 12 o'clock position.  
将激光器置于12.点位置



All the distances must be entered, before checking for soft foot.

Check that all foot bolts are firmly tightened.

开始软地脚测量之前，必须输入激光器间距，M.端激光器与前地脚间距，以及设备前后地脚的间距。检查每个地脚螺栓是否拧紧。

## MEASUREMENT VALUE REGISTRATION 测量

The application will guide you to the different feet. 程序会指出不同的地脚

The first foot. 第一地脚



1. Loosen the bolt fully and wait a few seconds. 完全放松螺栓，然后等待几秒
2. Tighten the bolt firmly, preferably with a dynamometric wrench. 紧固螺栓，最好用扭力扳手紧固
3. Register the measurement value. 记录测量数据

7.2



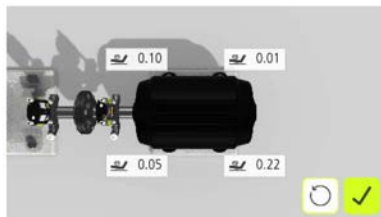
Touch the confirmation icon.  
点击确认图标

Repeat the procedure at the rest of the feet.  
重复以上操作测量其余三个地脚





## MEASUREMENT RESULT AND CORRECTIONS



Make the necessary corrections and then check each foot again (the values show approximately how many shims that are needed to eliminate the soft foot).

根据测量结果做调整，然后重新测量。（测量结果指导您需要多少垫片以消除软脚）

Re-measurements can be done at any time by touching the icon for the requested bolt again. 任何时间都可重新测量



Re-measure all feet.  
重新测量全部地脚



Re-measure a single foot.  
点击图标重新测量单个地脚



## SETTINGS 设置



### Log in

Under construction.

### Photo



Touch the Photo icon to take a photo.  
照相功能

### PDF report



Touch the PDF icon to create a PDF report.  
PDF报告功能

### Measurement unit



Select mm or inch.  
选择单位毫米或英寸

### Info



Touch the Info icon to go to website for downloading user manual.

## Bluetooth settings 蓝牙连接

When entering settings, the system starts searching for pair able sensors.  
在进入设置界面时，系统会自动搜索探头的蓝牙信号

Only ACOEM sensors, that are switched on, will be discovered.  
探头只有在开启时蓝牙才会被系统发现



Pair able sensors will appear in the list.



Select the sensors to pair.  
(Maximum two units.)

被发现的探头蓝牙信号会显示在列表中（系统最多连接2个探头）。



Paired units are marked with a check mark.  
在左边方框打钩确认连接

If there are units paired to the app, they must be unpaired before it is possible to pair new units.

如果系统配对了原有探头，配对新的探头时需要重新搜索并点击配对。



To unpair units, touch the check mark icon beside the units.

取消配对探头，取消掉左边方框的钩即可

**Search**

Starts searching for pairable sensors. 点击搜索可配对的探头

**Cancel search**

Stops searching for pairable sensors. 停止搜索配对探头

**Confirm**

Exits the Settings and returns to the application.  
确认并返回对中程序

## SENSORS M8 AND S8

### M8和S8激光探测器



1. ON/OFF button with status indication LED 电源键及LED指示灯
2. Laser transmission indication LED 激光指示灯
  - a. Green – laser transmission 绿色-激光发射
3. Bluetooth indication LED 蓝牙指示灯
  - a. Continuously blue – paired and ready. 持续蓝光-蓝牙已连接
  - b. Flashing blue – searching/ready to pair 闪烁蓝光-蓝牙搜索中或未连接
  - c. No light – Bluetooth disabled. 无蓝光-蓝牙未开启



4. Battery status LED. 电池状态指示灯
  - a. One LED continuously red – less 10% charge left.  
一个红灯持续亮—电量小于10%
  - b. One LED flashing red – less than 5% charge left.  
一个红灯闪烁—少于5%电量
  - c. One LED continuously orange – charging  
一个橙灯长亮—充电中
  - d. One LED continuously green – fully charged.  
一个绿灯持续亮—充满
5. Mini USB for charging  
Mini.USB充电口

## **OPERATING MODES**工作模式

M8 and S8 units has two operating modes:

On and Off. 开启与关闭

Turn the units on and off by pressing the ON/OFF button firmly. 按开关键开启与关闭激光器

In case the units fail to respond, it is possible to turn it off by pressing down the ON button for more than 10 seconds.

如正常关闭没有反应，长按10秒可以关闭

## **CONNECTIONS** 通讯连接

### **Bluetooth connection**蓝牙连接

The main connection for M8 and S8 units is the built in Bluetooth connection. The units will automatically connect to the display unit when turned on as long as they are paired.

See chapter “Global settings” for instructions on how to pair measurement units to the display unit.

激光单元的主要通信通过蓝牙，参见“全局设定” 匹配蓝牙单元



## POWER SUPPLY电源

The M8 and S8 units are powered by a high-capacity rechargeable Li-Ion cell, or by the external power unit.

M8,S8激光单元使用高性能可充电锂电池，或连接外部电源

The operating time of the batteries is approximately 12 hours when the system is used for a typical alignment work (continuously on).

电池可连续使用12小时

The M8and S8 units can be charged with the supplied combined charger or any 5V USB charger or battery life extender.

可使用组合的充电器通过5V.USB接口充电

When the external power supply is connected, the unit will automatically start charging the batteries. This will be indicated by the first battery status LED turning orange, when the unit is fully charged the LED will turn green. By pressing the battery status button the exact charging status can be monitored.

当外部电源连接后，激光单元自动开始充电。电量指示灯第一个会变成橙色。完全充满后会变成绿色。按下电量状态按钮可监控电池状况。

The charging time is approximately 8 hours for fully drained batteries. The charging time will be longer if the unit is turned on while being charged.

完全充满需要8个小时，如激光单元开启，充满时间更长。

When used in typical conditions the batteries will sustain good capacity for approximately 2-3 years before needing replacement. Contact your sales representative for battery re-placement. 典型的使用状况下电池可使用2-3年，如需更换电池请联络当地经销商。

The batteries contain safety circuitry to operate safely with the unit. The unit can therefore only be used with the Li-Ion batteries supplied by FIXTURLASER. Improper replacement of batteries can cause damage and risk for personal injury.

Please refer to the chapter on safety for further instructions.

电池包含安全电路，请勿使用非Fixturlaser提供的电池。不当的电池更换可能导致人身伤害。





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