

ROTALIGN® PRO EX

The ultimate in laser shaft alignment



Taking professional alignment to a higher level

As maintenance technicians' job responsibilities grow more varied, so does the need for an alignment system to do more. Most systems can deal with horizontal and vertical machinery and measure soft foot. Some can even measure misalignment uncoupled – but the ROTALIGN® PRO EX does much more. It lets you align machine trains of up to six machines, calculating which machine feet to move in order to minimize correction effort. It not only measures soft foot but also analyzes it and suggests corrective action. It can even compute thermal growth for you. But ROTALIGN® PRO EX does not stop at the alignment of rotating machines: it also features optional programs for accurate geometric measurement.

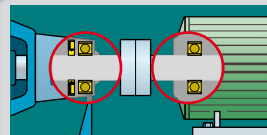
Expertise for everyone

ROTALIGN® PRO EX makes quick, accurate shaft alignment a simple affair for new users, yet offers experts the functions they need in order to master special challenges such as machine trains and cardan shafts, flange-mounted machines and nonrotatable shafts – all just a few keystrokes away.

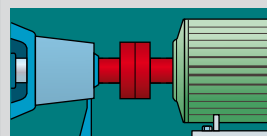
- ▶ Aligns horizontal and vertical machines
- ▶ Aligns coupled and uncoupled shafts
- ▶ Rotate shafts only a quarter-turn in any position
- ▶ Machine train alignment
- ▶ Built-in soft foot expertise
- ▶ Thermal growth computation
- ▶ Cardan shaft alignment
- ▶ Measures geometrics with ease
- ▶ ALIGNMENT CENTER, the powerful Windows® based PC software



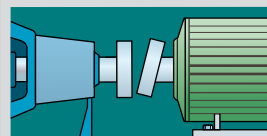
Precise alignment pays for itself



Reduces bearing and seal damage



Minimizes energy loss



Cuts production downtime

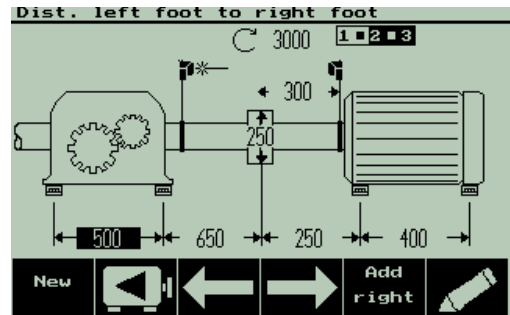
3-key alignment: Quicker, easier, more flexible

Quick and easy set-up

The job set-up screen gets you up and running quickly with a clear, yet detailed diagram of the machines to be aligned. The same screen also lets you add machines to new or existing trains, specify coupling types and dimensions, RPM, amount of thermal growth and much more.



Define any machine in
record time



Measures all by itself

Simply adjust the laser beam, then rotate the shafts to begin measurement: in less than a quarter-turn, ROTALIGN® PRO EX automatically registers enough points to determine alignment accurately.

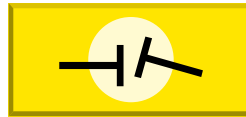


Automatic measurement
with total control

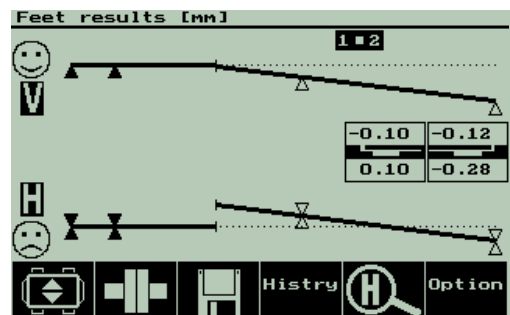


The whole picture at a glance

ROTAGLIGN® PRO EX shows you the complete alignment condition in a single clear screen: coupling misalignment, machine foot corrections, even tolerance compliance indicated by 'smileys' for horizontal and vertical planes.



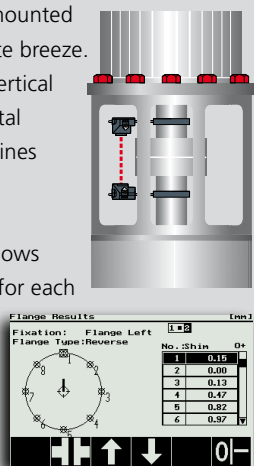
Alignment results in their
most usable form



No machine too 'exotic'

Alignment of flange-mounted machines – an absolute breeze. Precise alignment of vertical machines and horizontal flange-mounted machines was never this easy.

ROTAGLIGN® PRO EX shows shimming corrections for each flange bolt and lets you monitor lateral positioning 'live' on screen as well.



Ultimate alignment convenience

Machine templates save set-up time

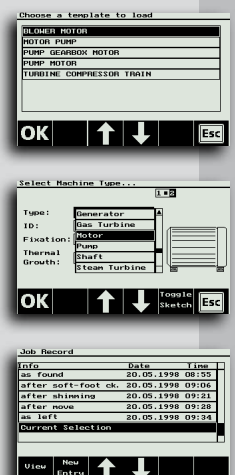
Why spend time entering every machine detail by hand before each alignment job? Machine templates offer predefined configurations including machine types/names, identification tags, dimensions, tolerances, targets etc.

Choose your machine

Select your specific machine type and its detailed depiction from a built-in selection. This makes for especially convenient handling of multi-element machine trains and also enhances your alignment reports.

Truly traceable results, every step of the way

Document every step of the entire job with the 'Job Record' feature of ROTALIGN® PRO EX, complete with comments (e.g. 'as found,' 'as left' etc.) for ISO-compliant traceability.



PRO as in 'protection'

ROTALIGN® PRO EX means industrial-strength alignment: its shockproof, IP67 rubberized components remain unaffected by water spray, grime and solvents, while the rugged flat keyboard gives a positive response even through heavy work gloves. The lockable matte aluminium flight case keeps all standard system components and frequently-used accessories in perfect order.



Additionally - the right brackets for all your machines



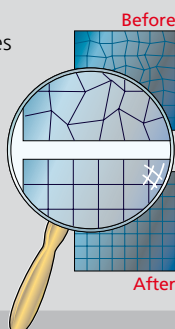
Instant mounting on any ferromagnetic surface: just place the timesaving ALI2.112 compact magnetic brackets onto coupling flanges or shaft faces and you're all set. Powerful magnets hold sensors rigidly in place for measurement, yet allow extremely easy, flexible adjustment.

Rotateable shafts: simply place the ALI2.230 magnetic sliding bracket onto the coupling flange or shaft end and slide it around the circumference to take measurements in seconds. Suitable for shaft/coupling diameters from approx. 80 mm (3 1/8") on up.

Alignment advantages through technology

High-precision detector gives unparalleled accuracy

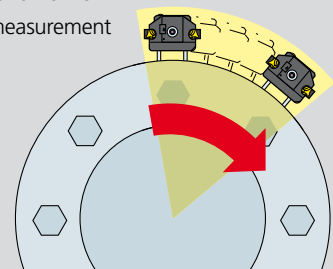
Even the best commercially-available position detectors are no match for those linearized by the unique PRÜFTECHNIK process: each individual detector undergoes a complex mathematical optimization procedure to give exceptional accuracy over a large measurement area. This enables you to perform alignment reliably at separations of 10 m (33 ft.) and beyond.



Ultimate flexibility: Measure in a quarter-turn or less.

Two built-in electronic inclinometers continuously keep track of the shaft rotation angle for each measurement of laser beam position. This ensures that alignment corrections are calculated precisely for vertical and horizontal directions, and thanks to the patented measurement techniques, you can even measure:

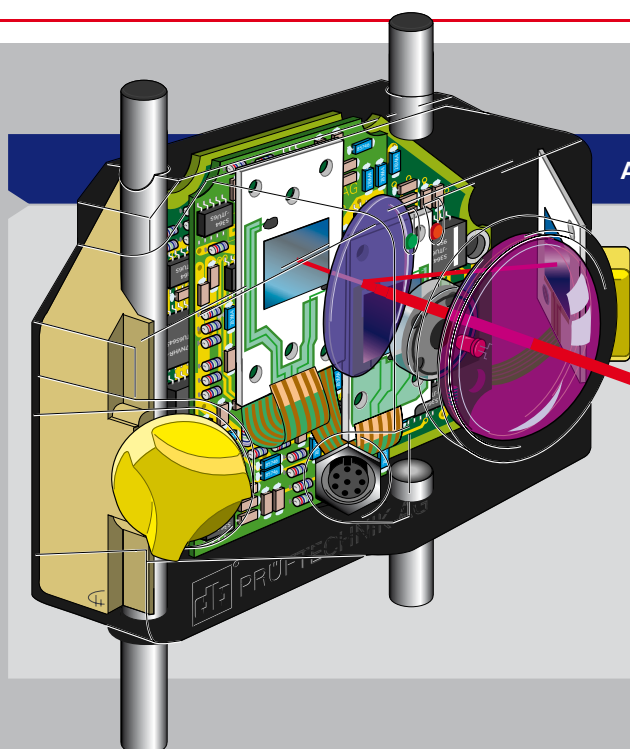
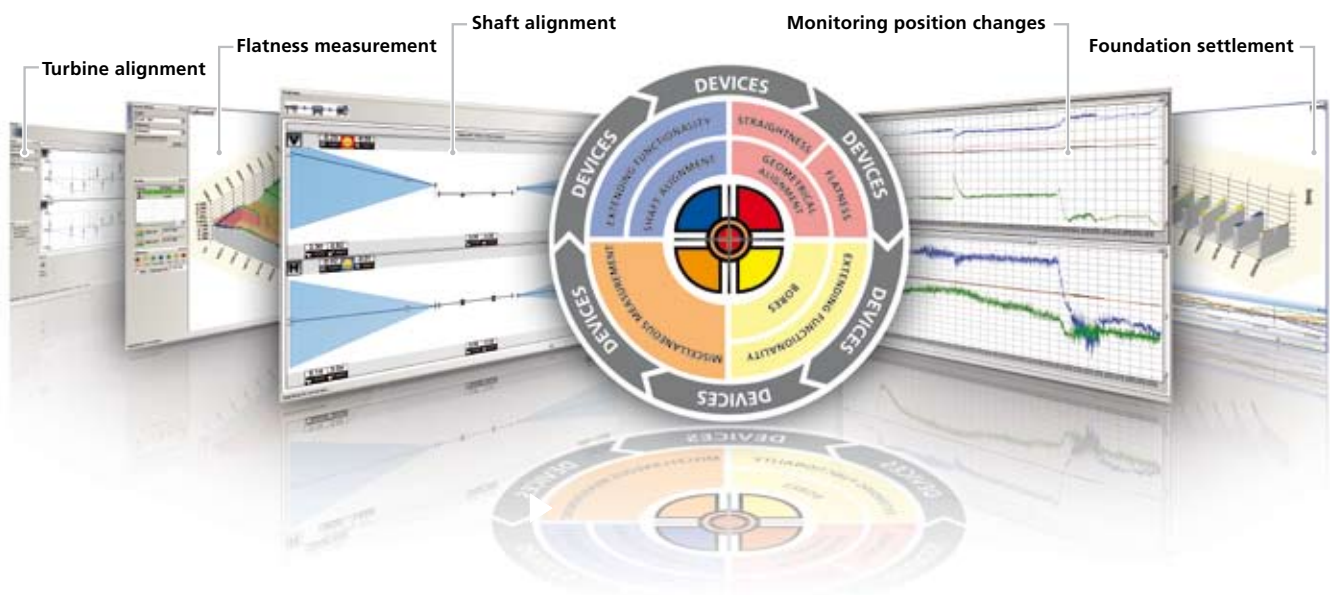
- ▶ in one continuous sweep
- ▶ in less than 1/4 turn
- ▶ in either direction
- ▶ from any starting position



ALIGNMENT CENTER

ALIGNMENT CENTER software

A Windows® based PC software platform for all PRÜFTECHNIK Alignment instruments and applications, is used to prepare, analyse, organize and archive measurement files and print off professional customized reports.



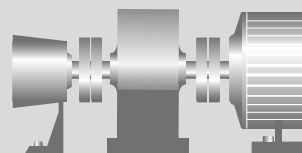
Advanced design features mean fast and accurate results

ROTALIGN® PRO EX measures alignment by tracking to the nearest 1/1000 mm laser beam displacement over the surface of a position detector as the shafts are turned. The more accurately this measurement is made, the more reliable the alignment corrections will be. Accuracy is enhanced by features like dual inclinometers and a quadruple-axis position detector with ultra-precise linearization.

Alignment power for any situation

Machine train alignment

ROTALIGN® PRO EX handles trains of up to 6 machines (5 couplings), complete with specific tolerances, targets, names and icons for each machine. Machine trains can have horizontal or vertical shafts, with or without flange-mounted (C-face) machines.



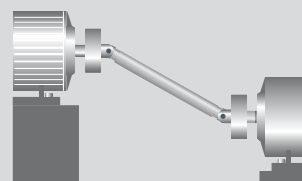
Built-in soft foot expertise

The Soft Foot Wizard helps you resolve difficult machine frame distortion problems on the spot. One soft foot, two soft feet, rough adjustment of severe soft foot, or induced soft foot from piping strain or severe misalignment: the Soft Foot Wizard recognizes such situations and gives you expert recommendations on how to handle them.



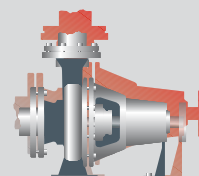
Align cardan shafts

Cardan shafts save space by running at an angle. But misalignment can pose a serious threat (especially to electronically-controlled synchronous and asynchronous AC drive motors) due to rapid RPM fluctuation of the drive shaft. ROTALIGN® PRO EX masters cardan shafts with ease thanks to a special function and the optional large offset brackets.



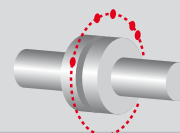
Thermal growth computation

No specs available for compensation of thermal effects? Let ROTALIGN® PRO EX compute thermal growth based on temperature change, machine geometry and material coefficient of thermal expansion - even when machine structural components are made of different materials.



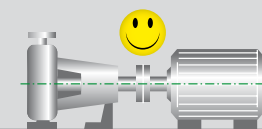
Multipoint measurement mode

Measurements are carried out at any selected positions. Results are obtained from any 3 or more positions over 60° rotation or wider. This mode is suitable for shafts mounted on sleeve bearings.



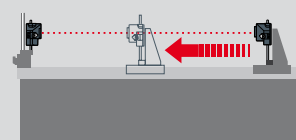
Tolerances (TolChek®)

Automatic evaluation of the alignment condition with the assistance of the dynamic tolerance table and the 'smiley'. This function is also active during live machine correction.



Straightness measurement with ease

Now measure straightness (vertical and horizontal) of ways, beds and other applications, far more quickly and accurately than with conventional taut wires, theodolites or even other laser methods. Optional straightness module ALI3.631SET includes adjustable brackets that fit a wide range of workpieces.



ROTALIGN® PRO EX Technical data

Laser emitter	
Laser	GaAlAs semiconductor laser
Wavelength	670 nm (typical)
Beam diameter	5 mm
Beam divergence	<0.3 mrad
Beam power	< 1 mW
Laser safety class	Class 2; FDA 21CFR 1000 and 1040
Safety precautions	Do not look into laser beam
Power supply	9V block battery, IEC 6LR61 (alkaline or lithium)
Operating time, continuous	80 hours, depending upon battery type
Temperature range	0°C - 60°C (32°F -140°F)
Weight	Approx. 165 g (5.8 oz.)
Laser receiver	
Directions of 5-axis detector measurement	2 planes (4 displacement axes) 1 inclination 360° (angle to plumb)
Two detector areas	18 mm x 18 mm (0.7" x 0.7") each
Separation between measurement planes	Approx. 160 mm (6 1/4")
Resolution	1 µm (0.04 mil); angular 10 µRad
Error	<2%
Error rotation angle	<2°
Measurement rate	Approx. 20 Hz
Temperature range	0°C - 60°C (32°F -140°F)
Weight	Approx. 190 g (6.7 oz.)
Laser emitter/receiver	
Max. measurement separation between emitter and receiver	10 m (33 ft.)
Measurement stability	Ensured by temperature-stabilized light metal housing
Environmental	Shockproof, waterproof, dustproof (IP67)
Protection from ambient light	Yes
Dimensions	Approx. 105 x 67 x 47 mm (4 1/8" x 2 5/8" x 1 7/8")
Computer	
LCD screen	60x95 mm (2 3/8" x 3 3/4"), 200 x 320 pixels, with contrast control
LED indicators	Main battery low, auxiliary battery low, battery charging, 'sleep' mode
Power conservation	'Sleep' mode blanks screen, interrupts measurement after user-defined period of nonuse; automatic shutoff after a further user-defined period
Keyboard	6 variable-function keys (soft keys)
External interface	RS-232C (serial) and parallel printer interface for graphics or text reports and instant screen dumps
Memory	Nonvolatile 4MB PCMCIA card, stores over 1000 measurement sets with labels, comments etc.
Power supply	6x 1.5V (IEC LR 14) Size "C" (alkaline standard, NiCad rechargeable optional) Optional: Lead-acid block battery rechargeable by computer: Optional: ALI 3.576 mains adapter for 110V/220V (switchable), output 400mA min. at 12V ±5%
Auxiliary battery	9V block (IEC 6LR61), provides 20 - 40 min. operation
Backup battery	Lithium (laser welded type), maintains data memory for 5 years
Operating time computer/ receiver¹	50 hours (alkaline batteries) 25 hours (NiCad batteries) 9 hours (lead-acid battery pack)
Environmental protection	Waterproof, dustproof, shockproof (IP65)
Operating temperature	0°C - 45° C (32° F - 113° F)
Dimensions	Approx. 210x240x70 mm (8 1/4" x 9 1/2" x 2 3/4")
Weight with battery	Approx. 1.75 kg (3.8 lb.)
Carrying case	
Standard	ABS, drop tested (2 m / 6 1/2 ft.)
Optional	Aluminum shell. Both cases feature 2 key locks and 1 combination lock
Case dimensions	Approx. 550x380x205 mm (21 5/8" x 14 15/16" x 8")
Weight, incl. all standard parts	Approx. 11.2 kg (24.6 lb.)
Intrinsic safety	EEx ib IIC T4. Approx. U.S. equivalent: NEC Article 500-4, Class 1, Division 1, groups D,C,B,A and special safeguards T4



... Shafts and much more

Precise, fast and intuitive bore alignment

CENTRALIGN® Ultra is a three-tier new generation laser system for precise alignment of bores in diesel engines, compressors, pumps, gearboxes, as well as stern tubes, steam and gas turbines.



Customized product training

The training and seminars are held by professional trainers and are intended to support users apply the systems and the alignment applications confidently, saving time and expense.



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