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TECHNOLOGY GROUP

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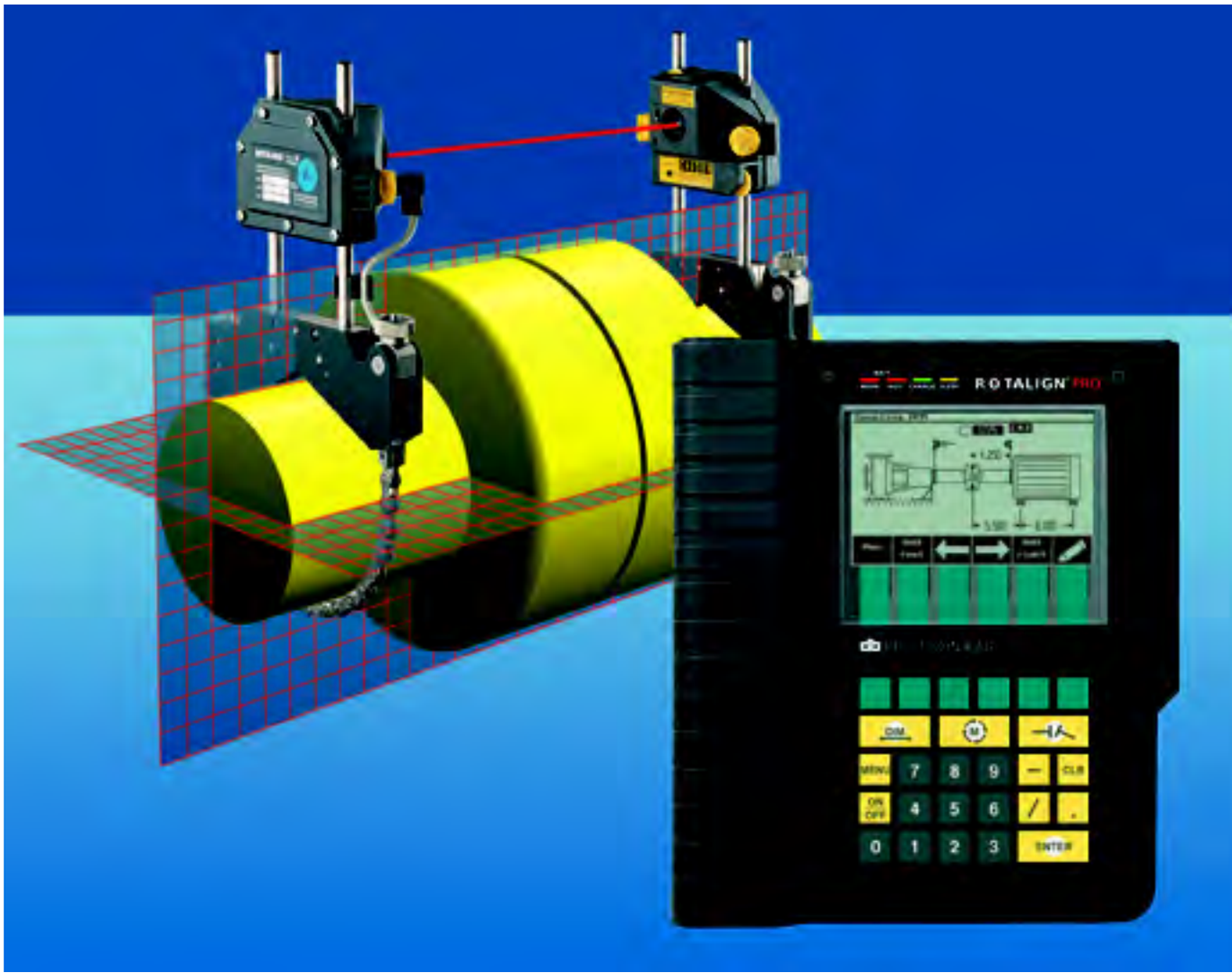
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LUDECA INC.

PRÜFTECHNIK

ROTALIGN® PRO

The ultimate in laser shaft alignment



Taking professional alignment to a higher le

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 measure misalignment uncoupled – but the new ROTALIGN® PRO does much more. It lets you align machine trains of up to six machines, calculating which machine feet to move in order to reduce work to a minimum. 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 does not stop at the alignment of rotating machines: it also features an optional program for accurate single-pass straightness measurement.



Intrinsic safety optional

Precise a

vel

Expertise for everyone



ROTALIGN® PRO makes quick, accurate shaft alignment simple 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 & vertical machines!

Aligns coupled & uncoupled shafts!

Rotate shafts only a quarter-turn in any position!

Machine train alignment!

Built-in soft foot expertise!

Thermal growth computation!

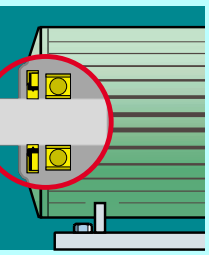
Cordless measurement!

Cardan shaft alignment!

Measure straightness with ease!

Take Command with PC software!

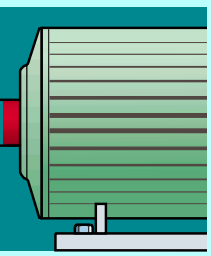
lignment pays for itself!

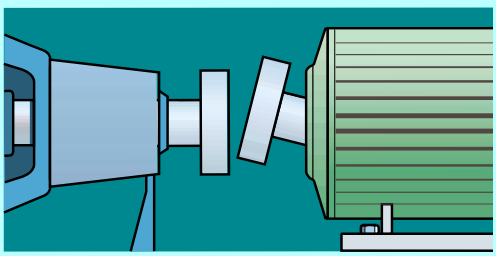


Reduces bearing and seal damage

Minimizes energy loss

Cuts production downtime





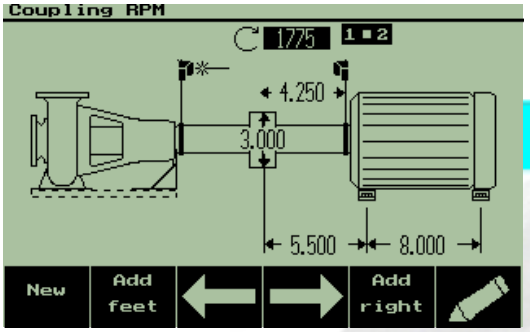
ROTALIGN® PRO does it all!

3-key alignment:
Quicker, easier, more flexible

1

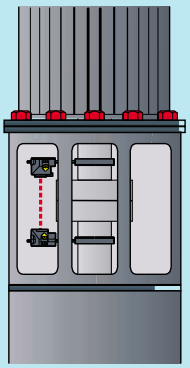
DIM

Define any machine in record time!

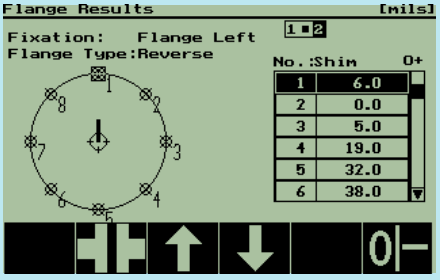


Quick and easy setup
The job setup screen gets you up and running quickly with a clear, yet detailed diagram of the machines to be aligned. The same screen also lets you add machines to new or existing trains, specify coupling types and dimensions, RPM, amount of thermal growth and much more!

No machine too 'exotic'



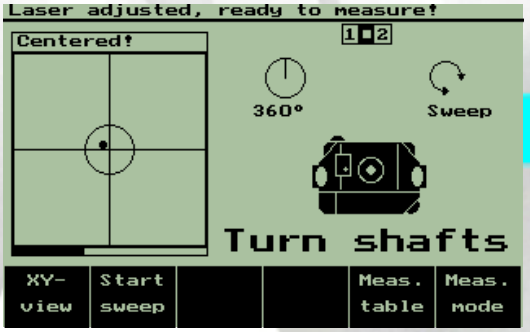
Flange-mounted machines: a breeze to align!
Precise alignment of vertical machines and horizontal flange-mounted machines was never this easy! ROTALIGN® PRO shows shimming corrections for each flange bolt and lets you monitor lateral positioning 'live' on screen as well.



2

M

Automatic measurement with total control

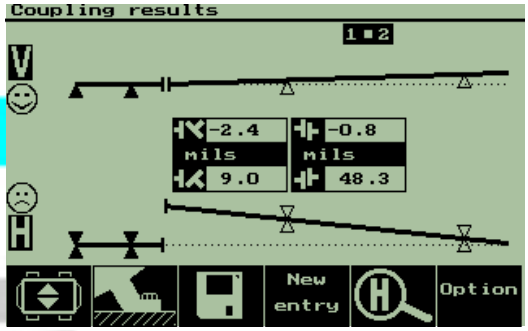


Measures all by itself!
Simply adjust the laser beam, then rotate the shafts to begin measurement: in less than a quarter-turn, ROTALIGN® PRO automatically registers enough points to determine alignment accurately.



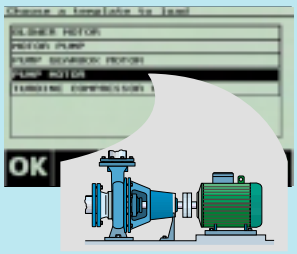
3

Alignment results in their most usable form

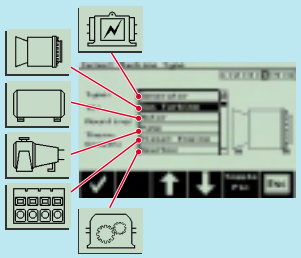


The whole picture at a glance
ROTALIGN® PRO shows you the complete alignment condition in a single clear screen: coupling misalignment, machine foot corrections, even tolerance compliance indicated by 'happy faces' for horizontal and vertical planes.

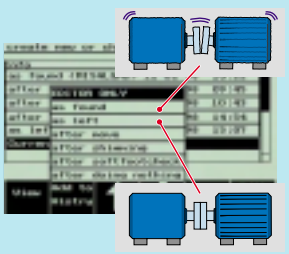
Ultimate alignment convenience



Machine templates save setup time!
Save setup time with predefined machine configurations including machine types/names, identification tags, dimensions, tolerances, targets etc. Simply select a ready-made default template or create your own from any alignment file!



Select among realistic machines!
Choose machine types and detailed diagrams from a 'real machine graphics' library to customize setup of your alignment jobs: saves time, speeds identification of your machines and makes your reports more professional.



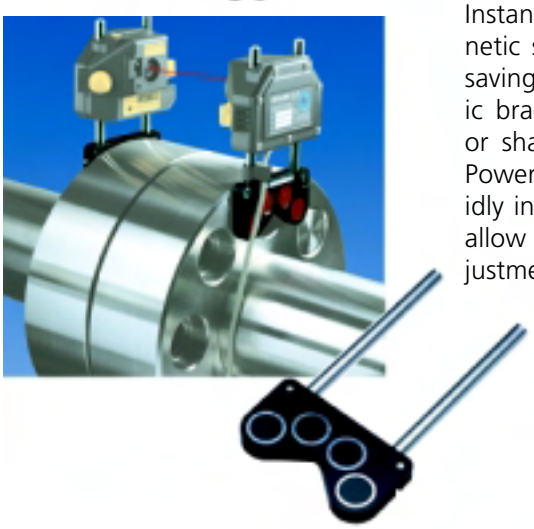
Traceable results, step by step!
The enhanced alignment history capability of ROTALIGN® PRO lets you document every step of the entire alignment job (e.g. 'as found,' 'as left' etc.) for ISO-compliant traceability.

The right brackets for all your machines

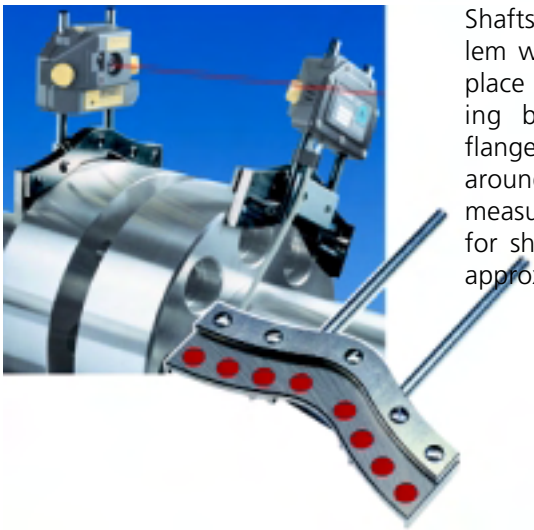




Quite possibly the only bracket you'll ever need: the standard ROTALIGN® PRO compact chain-type bracket ALI 2.891set uses interchangeable parts to fit onto shafts and solid couplings ranging from 15 mm to 500 mm (5/8" to 20") in diameter in a matter of seconds!



Instant mounting on any ferromagnetic surface: just place the time-saving ALI 2.112 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.

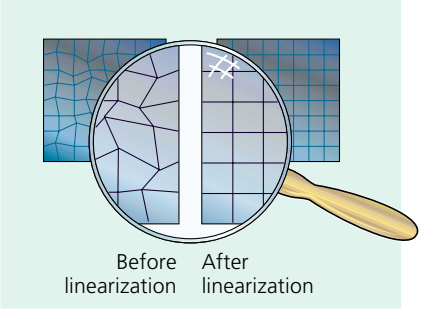


Shafts can't be rotated? No problem with ROTALIGN® PRO! Simply place the ALI 2.230 magnetic sliding bracket onto the coupling flange or shaft end and slide it around the circumference to take measurements in seconds. Suitable for shaft/coupling diameters from approx. 80 mm (3 1/8") on up.

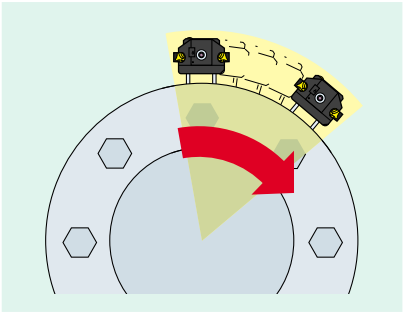


PRO as in 'protection'
ROTALIGN® PRO means industrial-strength alignment: its shockproof, IP67 rubberized components remain unaffected by water spray, grime and solvents, while the rugged flat keyboard gives a positive response even through heavy work gloves. The lockable flight case (shown here in optional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

Alignment advantages through technology



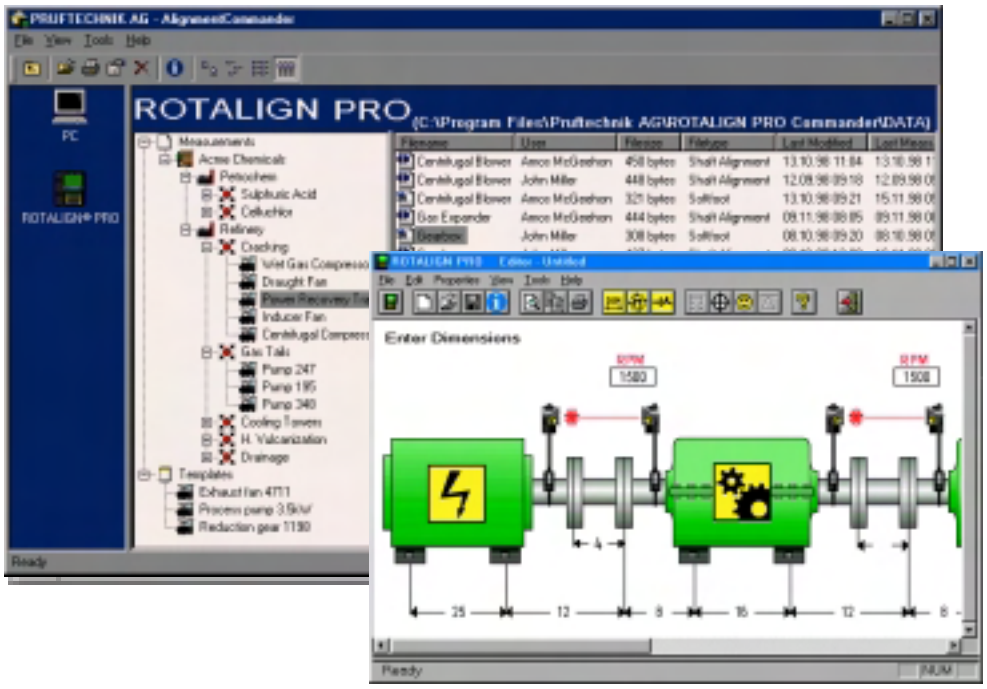
High-precision detector gives unparalleled accuracy
Even the best commercially-available position detectors are no match for those linearized by the unique PRÜFTECHNIK AG process: each individual detector undergoes a complex mathematical optimization procedure to give exceptional accuracy over a large 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!

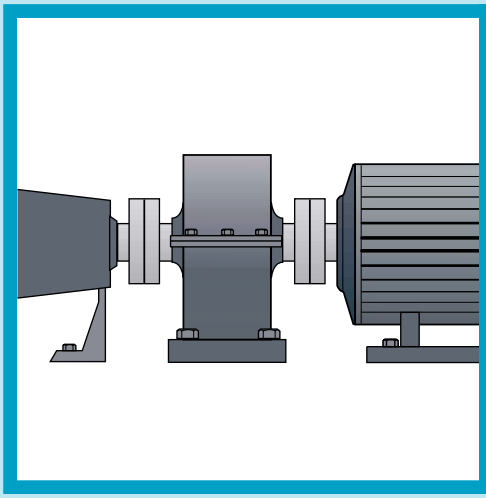
PC support: before, during & after



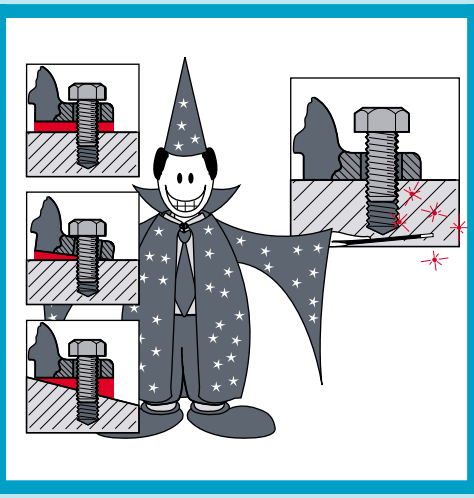
The timesaving PC partner: ROTALIGN® PRO Commander

ROTALIGN® PRO Commander software saves alignment time at the job site by giving you complete control with the point-and-click ease of Windows™ 95 or NT! Display and store alignment results, customize the ROTALIGN® PRO computer and specify all aspects of the machines to be measured. Define machine templates, even for entire trains of up to six machines in one file. Select among alignment tolerance tables or modify them to suit your particular circumstances. Machine definitions and measurement results are logically organized by plant, area and machine train or aggregate.

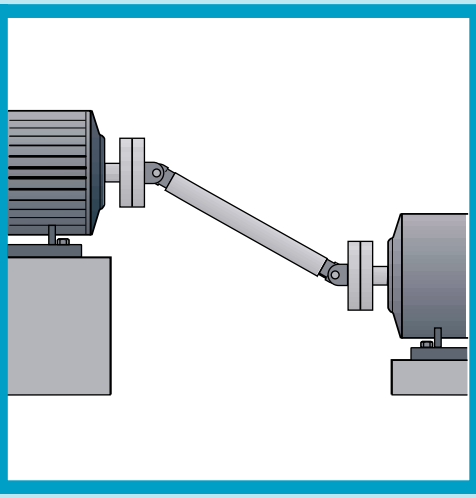
Alignment power for any situation



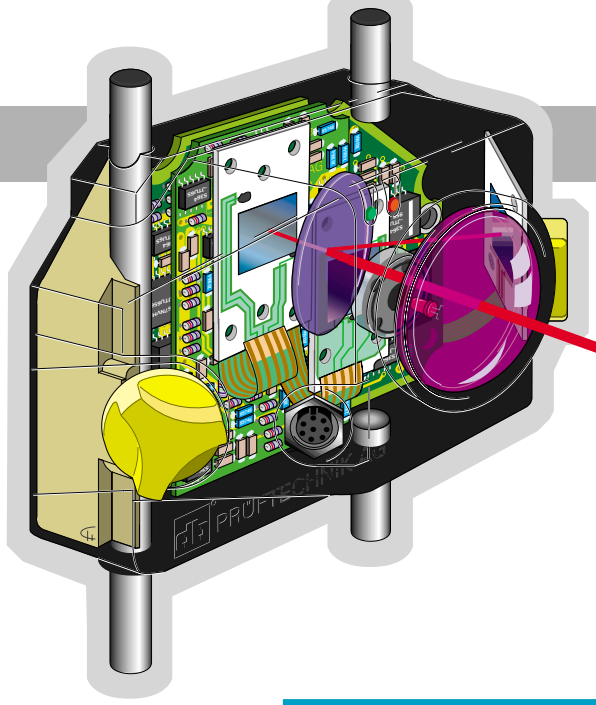
Machine train alignment!
ROTALIGN® PRO handles trains of up to 6 machines (5 couplings), complete with specific tolerances, targets, names and icons for each machine. Machine trains can have horizontal or vertical shafts, with or without flange-mounted (C-face) machines!



Built-in soft foot expertise!
The new Soft Foot Wizard (patent pending) 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.

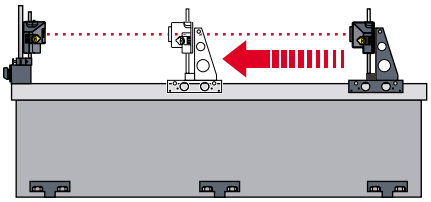


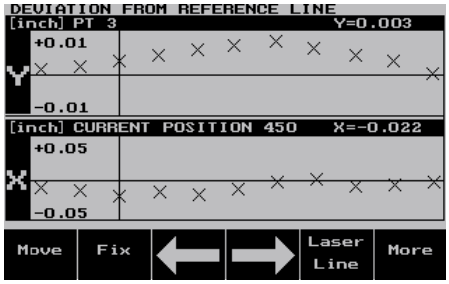
Cardan shaft alignment!
ROTALIGN® PRO handles this special alignment challenge with ease, thanks to new, specially-designed large-offset brackets (ALI 2.893SET option).

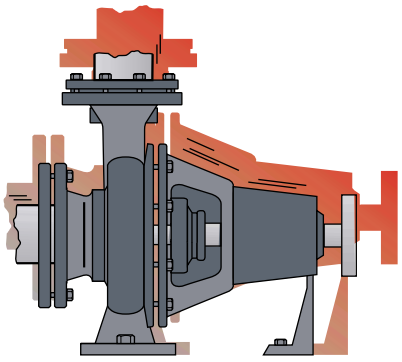


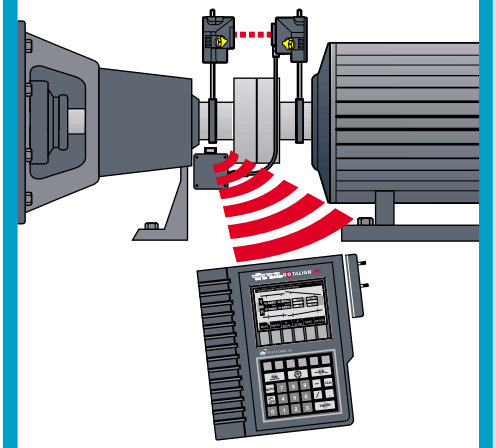
Advanced design features mean fast, accurate results
ROTALIGN® PRO measures alignment by tracking to the nearest 1/1000 mm laser beam displacement over the surface of a position detector as the shafts are turned. The more accurately this measurement is made, the more reliable the alignment corrections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

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 ALI 3.630SET includes adjustable brackets that fit a wide range of workpieces.









Straightforward results
ROTALIGN® PRO shows you vertical and horizontal offsets at a glance, based upon optimized correction values or your choice of stationary points – and guides you through corrections 'live' on screen as well in both horizontal and vertical directions at the same time.

Thermal growth computation!
No specs available for compensation of thermal effects? Let ROTALIGN® PRO 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!

Cordless measurement!
No more cable to constantly disconnect and reconnect when large shafts require use of turning gears for measurement rotation or in "hot" (radiation) areas. The optional infrared data transmission link ALI 4.609SET is invaluable for passing alignment readings from the measurement receiver to the ROTALIGN® PRO computer, reliably and with no cable connections.

ROTALIGN® PRO Technical data

Laser emitter

Laser	GaAlAs semiconductor laser
Wavelength	675 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	32°F -140°F (0°C - 60°C)
Weight	Approx. 5.8 oz. (165 g)

Laser receiver

Directions of 5-axis	2 planes (4 displacement axes)
detector measurement	1 inclination 360° (angle to plumb)
Two detector areas	0.7" x 0.7" (18 mm x 18 mm) each
Separation between measurement planes	Approx. 6 1/4" (160 mm)
Resolution	0.04 mil (1 µm) ; angular 10 µRad
Error	< 2%
Error rotation angle	< 2°
Measurement rate	Approx. 20 Hz
Temperature range	32°F -140°F (0°C - 60°C)
Weight	Approx. 6.7 oz. (190 g)

Laser emitter/receiver

Max. measurement separation between emitter and receiver	33 ft. (10 m)
Measurement stability	Ensured by temperature-stabilized light metal housing
Environmental protection	Shockproof, waterproof, dustproof (IP 67)
Protection from ambient light	Yes
Dimensions, W x H x D	Approx. 4 1/8" x 2 5/8" x 1 7/8" (105 x 67 x 47 mm)

Computer

LCD screen	2 3/8" x 3 3/4" (60 x 95 mm), 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) 20 fixed-function keys (hard 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: Lithium-Ion battery rechargeable by computer Optional: ALI 3.576 mains adapter for 110V/220V (switchable), output 400 mA 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/receiver[1]	50 hours (alkaline batteries) 25 hours (NiCad batteries) 10 hours (Lithium-Ion battery pack)
Environmental protection	Waterproof, dustproof, shockproof (IP67)
Operating temperature	32° F - 113° F (0° C - 45° C)
Dimensions, W x H x D	Approx. 8 1/4" x 9 1/2" x 2 3/4" (210 x 240 x 70 mm)
Weight with battery	Approx. 3.8 lb. (1.75 kg)

Carrying case

Standard	ABS, drop tested (6 1/2 ft./ 2 m)
Optional	Aluminum shell Both cases feature 2 key locks and 1 combination lock.
Case dimensions, W x H x D	Approx. 21 5/8" x 15" x 8 1/8" (550 x 380 x 205 mm)
Weight, including all standard parts	Approx. 24.6 lb. (11.2 kg)

Options

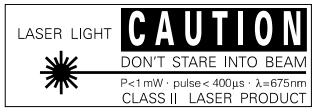
Non-contact IR data transmission from receiver to computer

Max. range	Approx. 26 ft. (8 m), depending upon surrounding conditions.
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

ROTALIGN®PRO Commander PC software ALI 3.592SET lets you:

- Back up and restore machine alignment data files under Microsoft Windows
- Issue alignment reports
- Display alignment results
- Configure the ROTALIGN®PRO computer
- Define machine templates for quick setup

[1] Based upon an operating cycle of 25% measurement 25% computation and 50% 'sleep' mode



ISO 9001



Calibration checking traceable to your national standards

All measurement systems need periodic verification of accuracy to ensure reliability of results; ISO standards even require it. ROTALIGN® PRO calibration can be traced at any time to national or international norms such as ISO 9000.

The world of laser shaft alignment and more

The PRÜFTECHNIK Laser Alignment Product Catalog provides details on all standard systems and a full range of accessories designed to make for faster, easier and more accurate alignment in just about any situation.

Ask for your free copy today!

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Productive maintenance technology

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We buy equipment

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