



BRICKING SOLUTIONS

A DIVISION OF **BROKK**[®]

Radialign

LASER ALIGNMENT SYSTEM

MADE IN AMERICA BY:

**BRICKING SOLUTIONS,
A DIVISION OF BROKK**

FORMERLY KNOWN AS:

PNEUMAT-O-RING INTERNATIONAL

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Thank you for your selection of the Bricking Solutions Radialign Laser Alignment System for rotary kiln brick alignment. We believe you have just acquired the finest instrument for precise brick alignment available on the market today. Accurate brick alignment is the first step in kiln maintenance geared toward Maximum Safety and Maximum Brick Life.

Bricking Solutions was founded in 1966 to fulfill the need for a safe and efficient means of installing refractory brick in rotary kilns. Originally known by the name of the inventor of pneumatic bricking machines, Maury Drenkel, Bricking Solutions has specialized in supplying custom rotary kiln maintenance equipment to the process industry, in over 60 countries under the names Pneumat-O-Ring International and Bricking Solutions. In year 2000, joining expertise with Brokk AB of Skelleftea Sweden, the worlds leading manufacturer of confined space brick tear-out and demolition equipment, Brokk Bricking Solutions set out to establish a new standard in providing **Kiln Maintenance Solutions**.

Since our inception, quality product design, delivered in our custom made Bricking Machines, Access Ramps, and Materials Transfer Systems, has also been reflected in the support products that we manufacture. Then and now, we provide state-of-the-art kiln maintenance technology to companies committed to finding safer and more efficient ways to reduce down-time and costs through better refractory brick installation.

Our unique relationship with the process industry in general, and our customers in particular, has led to the development of products like The Radialign Laser Alignment System. When a customer asked for better technology in aligning new bricks perfectly perpendicular to the kiln shell axis, we were listening. Working closely with our customers before, during and after product development insures continuous development of new technology, as well as improving on established technologies.

Combining the quality of our rotary kiln bricking machines with a large network of agents, complete parts inventory, experienced engineering staff, and world wide training support has established Bricking Solutions as the industry leader.



SPECIFICATIONS & SAFETY GUIDELINES

Unpacking your RADIALIGN™

Prior to setting up your RADIALIGN, please review the following packing list to familiarize yourself with the components and how they are packed in the carrying case. This will also introduce you to the component names and terms used in set up and operation.

Note that the RADIALIGN is designed to be run either on battery power or from a standard power supply. Prior to operating your RADIALIGN on battery power, your battery packs must be charged for approximately 14 hours. International power adapters, battery charging, and operation are covered in the SETUP & OPERATION section of this manual.

Inside the shock resistant carrying case you will find:

- LASER UNIT WITH TRIPOD
- PENTA-PRISM UNIT WITH TRIPOD
- PLUMB-BOB ASSEMBLY
- LASER SAFETY GOGGLES
- THIS INSTRUCTION MANUAL
- ACCESSORY BOX CONTAINING:
 - BATTERY CHARGERS
 - MARKING CHALK
 - MARK PLACEMENT CARD
 - LENS CLEANING KIT



Safety & Product Specifications

The following information provides technical specifications regarding your laser unit, charging system and adapter.

International customers please note: Set up is for 110v or 220v depending upon country ordered from.

SAFETY & NOTICES

AVOID EYE EXPOSURE: *Laser light is emitted from this unit*
Class IIIA Laser Product

LASER SPECIFICATIONS

Type: Visible Laser Diode, 635nm 3.0mi
Range: 1500' max (457m)
Power: 4.8v Nicade battery pack with charger / Will run on charger only

CHARGER SPECIFICATIONS

Input: 120V AV 60HZ 3W
Output: 4.8V DC 60MA

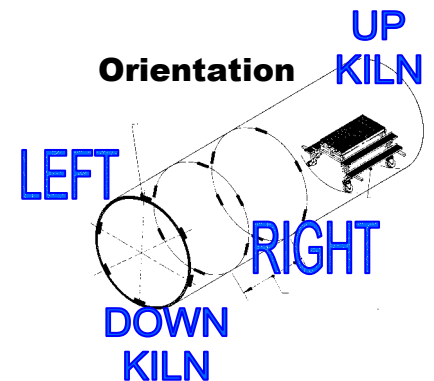


SET UP & OPERATION

SETTING UP YOUR RADIALIGN

PLEASE NOTE THE FOLLOWING **SAFETY GUIDELINES** & TIPS PRIOR TO UNPACKING AND SETTING UP YOUR RADIALIGN:

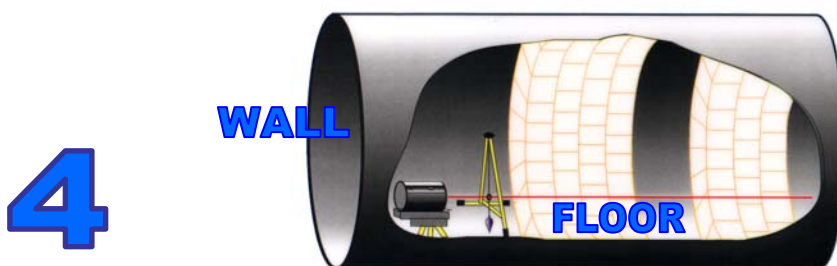
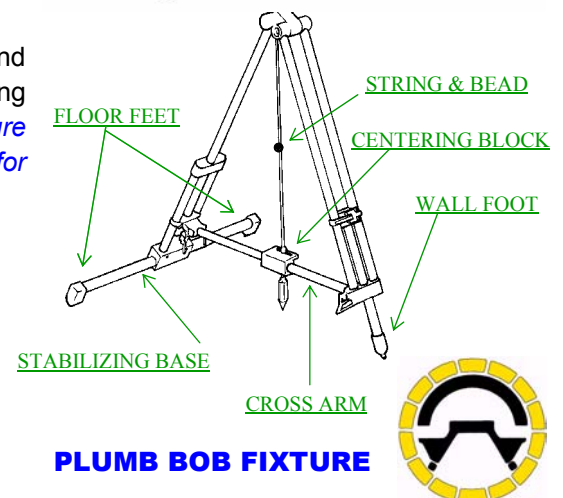
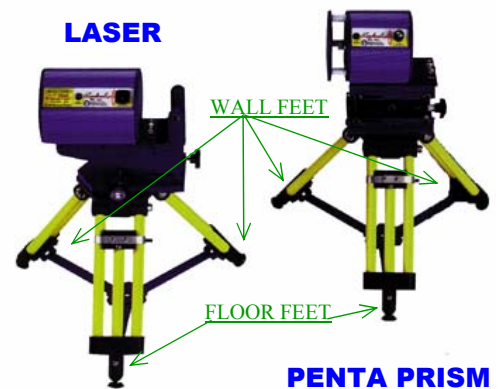
- ◆ **DO NOT LOOK DIRECTLY INTO THE LASER LIGHT. SERIOUS EYE DAMAGE MAY RESULT**
- ◆ **USE EXTREME CARE WHEN HANDLING THE LASER AND THE PENTA PRISM UNITS. SHOCK FROM A DROP MAY DAMAGE THEM**
- ◆ 2 PERSONS ARE REQUIRED TO EFFICIENTLY SET UP THE RADIALIGN
- ◆ FOR BEST RESULTS THE KILN SHOULD BE AS FREE OF DEBRIS AS POSSIBLE
- ◆ THE BATTERY PACKS REQUIRE A MINIMUM OF 14 HOURS CHARGING TIME PRIOR TO USE
- ◆ THE FOLLOWING INSTRUCTIONS ARE BASED ON USING THE RADIALIGN FACING UP-KILN TOWARDS THE INTAKE END, HOWEVER YOU MAY USE THE UNIT FACING DOWN-KILN TOWARDS THE DISCHARGE END ALSO



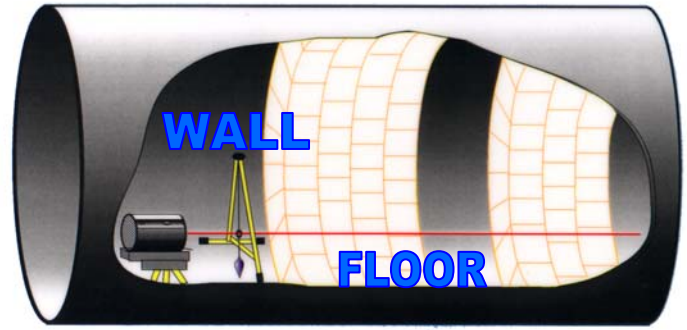
TIP: Erect the Bricking Machine Scaffold up-kiln from the area to be marked. Using the Scaffold to mark the kiln overhead is the safest method. (See step 8)

ASSEMBLY INSTRUCTIONS

- 1 Remove the Laser unit from the case and fully deploy and lock the tripod legs.
- 2 Set the laser unit up on the kiln shell floor, slightly off center to left side of the kiln. The two nonadjustable legs should be located on the slope of the kiln (the wall). With the single adjustable leg located on the floor of the kiln. The laser emitter should be pointing generally straight up kiln. Set it up so that the frame appears level - eyeball will do. Lock the tripod onto the kiln floor with the magnetic locking system. **If the laser is bumped or moved at any time during set up or operation, start again from this point.**
- 3 Remove and assemble the Plumb Bob Assembly by unfolding it and attaching the cross arm with the pins provided. Attach the stabilizing base by screwing it onto the fixture as shown. **Note that the picture below is incorrect - the stabilizing base should be the floor foot for the Plumb Bob Assembly.**



4. During this step the Plumb Bob Assembly will be set to match the Laser Unit on the kiln axis. This will set the Plumb Bob, the Laser will need one more adjustment. Place the Plumb Bob Assembly within 6" (150 mm), up kiln from the Laser. The stabilizing base must be located on the floor of the kiln (not like the picture right). Adjust the fixture legs until the cross arm appears level by eyeball.



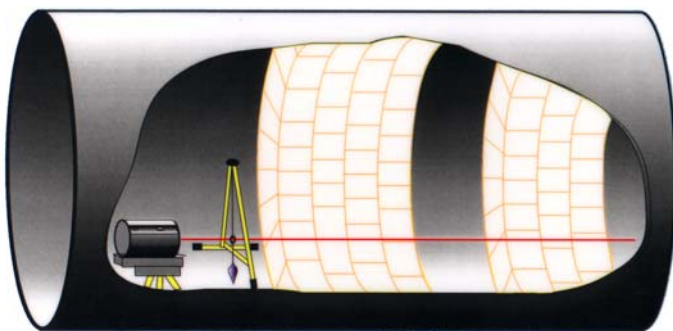
- 5 The Plumb Bob Assembly setting can now be made as follows:

- a Don the included Laser Safety Glasses and turn on the Laser Unit. Adjust the Laser Unit so that the beam is pointing pretty much straight up-kiln.
- b With the Plumb Bob Assembly string less than 6" (150 mm) in front (up kiln) of the Laser, move the entire Plumb Bob Assembly "out" (higher on the curve of the kiln wall) or "in" (lower on the curve of the kiln wall) until the free hanging plumb bob string is centered on the laser beam. The string should also be fairly centered on the Plumb Bob Assembly, but don't pursue perfection here. Readjust the adjusting leg so that the center bar once again looks level to the eyeball.
- c Once the center bar is reasonably level and the string is centered on the laser beam, move the bead on the string up or down until it is centered directly on the beam. Now slide the centering block in or out along the center bar until its center line is centered on the free-hanging plumb bob string.
- d Make sure that the clamps for the legs, center bar and centering block are locked and be sure that the string bead is not accidentally bumped or moved
- e With the Plumb Bob Assembly at rest, recheck your settings, confirming that the laser beam is directly on the bead, and the centering block is lined up with the string.
- f Turn off Laser Unit.



THE BEAD LOCATION, ALIGNED WITH THE LASER EMITTER, NOW REPRESENT THE ENDS OF A SHORT LINE TRULY PARALLEL TO THE KILN AXIS.

IF THE STRING BEAD, OR CENTERING BLOCK GET BUMPED OR MOVED AT ANY TIME, RE-START THE SET UP PROCEDURE FROM STEP 4



STEP 5

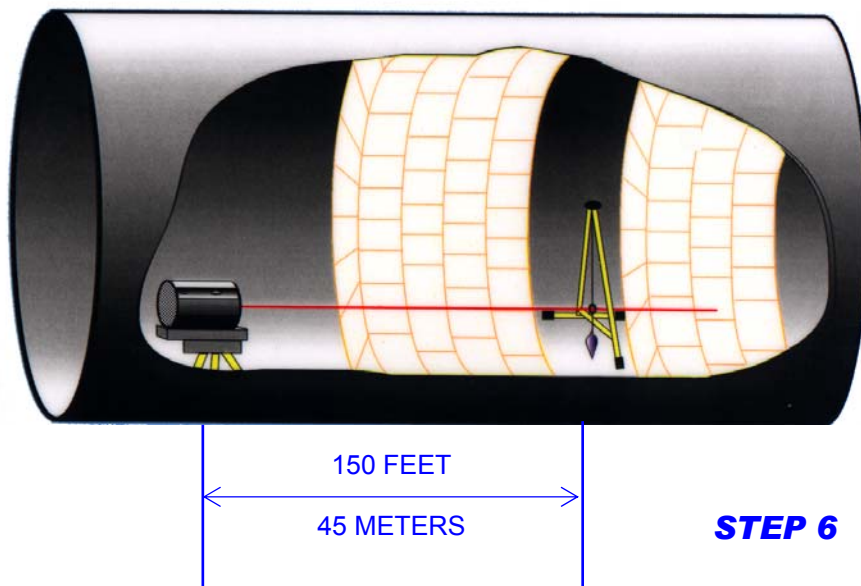
REMEMBER: THE GRAPHIC SHOWS INCORRECT PLACEMENT OF THE FEET OF THE PLUMB BOB



REMEMBER:
THE GRAPHIC SHOWS INCORRECT
PLACEMENT OF THE FEET OF THE PLUMB

6. A helper is required for the next step of the set up. Have them stay at the laser unit, taking care not to bump it. Take the plumb bob, with settings locked in place, and carefully walk it, in its entirety, up the kiln and beyond the area to be marked.

Gently place the plumb bob fixture on the clean kiln shell floor, wall foot on the wall and floor foot on the floor.



MAKE NO ADJUSTMENTS TO THE PLUMB BOB FIXTURE!

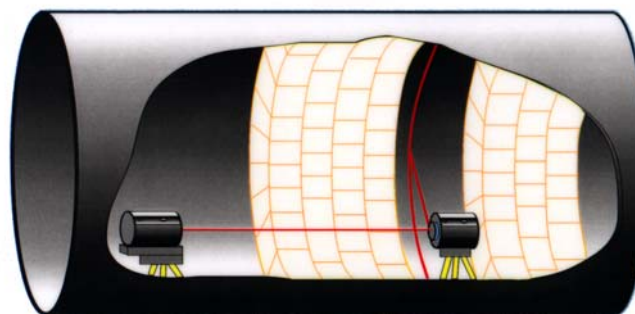
Move it - positions locked - in its entirety, up or down the kiln wall until the free-hanging string is centered on the centering block mark. It is important not to move the bead on the string or the centering block. The string must end up freely hanging straight and lined up on the centering block. Put on the Laser Safety Glasses and have your helper turn on the Laser Unit. Don't worry if the light beam is way off at this point - minor adjustments made by your helper, **USING ONLY THE TWO ADJUSTING KNOBS** on the Laser Unit are all that is required to bring the beam directly onto the bead with your guidance. Have your helper adjust the laser beam for up and down and side to side using only the fine adjustment knobs on the front and right side of the laser unit until the light beam settles squarely on the plumb bob string bead. Your laser light beam is now running parallel to the Kiln Axis. Carefully wipe the plumb bob fixture clean with a soft cloth and put it back in the case.

BE VERY CAREFUL NOT TO BUMP OR MOVE THE LASER UNIT! IF YOU THINK IT MAY HAVE MOVED - SET IT UP AGAIN!
DON'T RISK INCORRECT MARKS AND MISALIGNED BRICK!



STEP 7

7. Set the Penta-Prism Unit up, eye-ball level, facing the Laser Unit. The Penta-Prism should be no closer than 6 inches (150 mm) to the Laser Unit. Don your laser safety glasses and adjust the legs on the Penta-Prism Unit until the laser beam is as close to entering the hole in the front side as is possible. Use the fine adjusting knob on the Penta-Prism Unit to center the hole on the laser beam. Turn on the Penta-Prism Unit. Adjust the unit (position and speed) until the circle of light appears on the kiln shell. This circle of light is exactly 90° to the kiln axis. Adjust the speed of the Penta-Prism Unit to change the light ring from "solid" to "dashed" as desired.

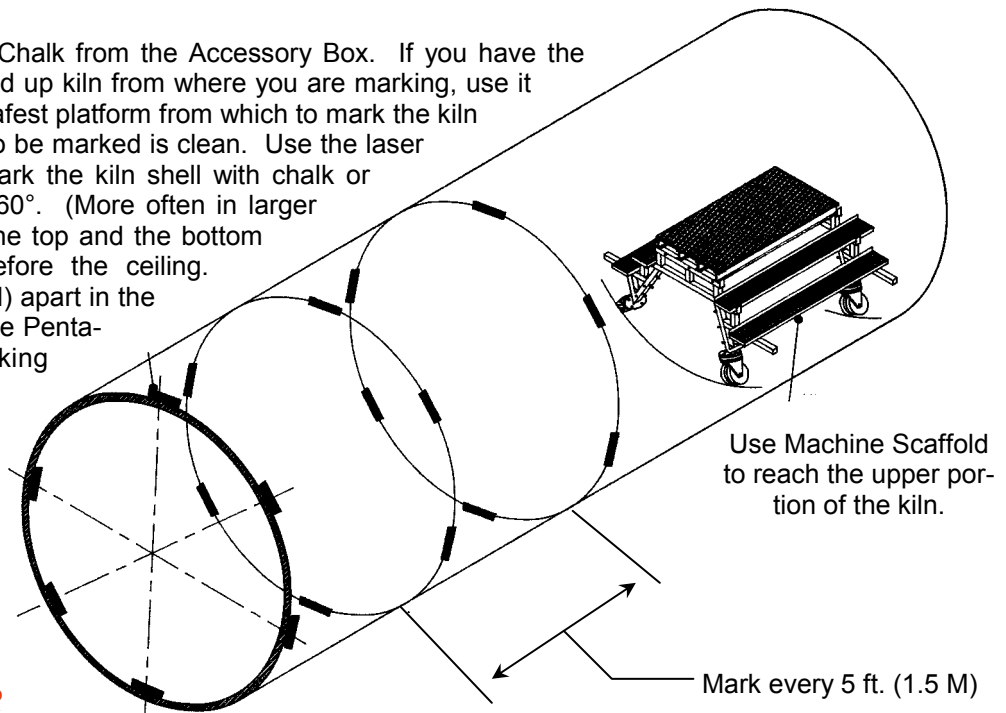


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PROTECT YOUR EYES! WEAR LASER SAFETY GLASSES DURING THE MARKING PROCEDURE!

8. Marking the Kiln Shell

Remove the Marking Card and Chalk from the Accessory Box. If you have the Bricking Machine Scaffold erected up kiln from where you are marking, use it for overhead marking. It is the safest platform from which to mark the kiln overhead. Make sure the area to be marked is clean. Use the laser line and the Marking Card to mark the kiln shell with chalk or soapstone approximately every 60°. (More often in larger kilns.) Place marks evenly on the top and the bottom as the bed will be bricked before the ceiling. Space the lines about 5 ft. (1.5 M) apart in the area to be bricked. Move only the Penta-Prism Unit during the marking procedure and with every movement re-adjust it to the laser light beam as shown in step 7 on page 6. A clear coat of spray-on urethane can help preserve the marks during the bricking operation.



DO NOT MOVE, BUMP OR ADJUST THE LASER UNIT WHILE MARKING!

Mark the kiln shell approximately every 60°

You may check your work by re-setting up the laser unit in a different spot from step 1 and checking your marks. You may also rotate the kiln and set it back up to check. In large kilns the bottom can be marked, the kiln rotated and the Radialign set back up to check the bottom (now on the top) and mark the top (now on the bottom). The marks should also line up if the Laser Unit and Penta-Prism are reversed and the beam is projected down kiln.



Trouble Shooting

The following procedures and troubleshooting guidelines (page 8) will assist you in the event your Radialign™ is not working properly. Under most situations we will have you return the entire unit if there are faulty components. However, please telephone or fax us first to determine whether individual parts or components can be replaced without returning the unit. Please also be prepared to present your Radialign™ serial number whether telephoning or faxing information regarding your unit.

Prior to setting up and using your Radialign™, it must be charged for at least 14 hours prior to initial setup. You may, however, choose to run your system by plugging in your battery charger and the electrical current.

Problem	Solution
Weak laser light	Determine that the hole in the penta prism is not obstructed. Adjust the penta prism speed (the slower the turning speed for the penta prism, the laser light is more visible.) Clean laser lens with alcohol and cotton swab. Area of repair is outside of 150 feet/45m from laser.
Turn on Laser unit / Penta-prism unit and nothing happens	Check battery to determine adequately charged or to see if power is getting to the penta prism and laser. Check to see if electrical connection is adequate if not operating by battery.
Faulty Laser	Do not open laser housing; return entire Radialign™ unit in case to Bricking Solutions.
Cross arm block or plumb bob bead moves too freely	Tighten or loosen the set screw so that it moves with moderate tension.
Tripod legs are difficult to adjust or latch	Adjust tensioning screw on lever lock and clean thoroughly.
Penta-prism optics are rotating off center	Send entire unit to Bricking Solutions for replacement.
The Penta-prism motor mount switches and/or plugs are broken	Send entire unit to Bricking Solutions for replacement.



Warranty

Thank you for purchasing a Bricking Solutions Radialign™ Laser Alignment System. We are sure you will be satisfied with the performance of this technologically-advanced system. With proper maintenance and care it will provide you with years of efficient and accurate measurement – helping to ensure your kiln is properly lined and relined every time.

Your Radialign™ Laser Alignment System is warranted by Bricking Solutions against defects in materials and workmanship. Should your Radialign™ be in need of repair, simply return it to Bricking Solutions for repair or replacement.

Warning: Opening or repairing the Laser or Penta-prism units will void this warranty.

Length of this warranty: The parts and labor warranty will be effective for one year from the date of the original purchase.

What Bricking Solutions will cover under our warranty:

1. Switches
2. Motors
3. Electrical components
4. Laser and Penta-prism optics
5. Laser and Penta-prism housings
6. Tripods
7. Faulty workmanship or materials

Bricking Solutions will pay all labor and material expenses for items covered by the warranty. Payment of shipping charges to Bricking Solutions will be covered by the customer unless authorized by Bricking Solutions.

Who may enforce this warranty: This warranty is enforceable only by the original purchaser.

What is not covered by this warranty:

1. Damage resulting from accident, misuse, abuse or neglect.
2. Damage resulting from failure to follow instructions contained in the product owner's manual or otherwise provided with the product.
3. Damage occurring during shipment of the product. (Claims must be presented to the carrier).
4. Damage resulting from the repair or attempted repair by anyone other than a Pneumat-O-Ring authorized technician.
5. Damage resulting from modification or attempted modification of product not authorized by Pneumat-O-Ring.
6. Damage resulting from causes other than product defects, including lack of technical skills, competence, or experience of the user.
7. Damage to any unit that has been altered or which the serial number has been defaced, modified or removed.



SERIAL # _____

