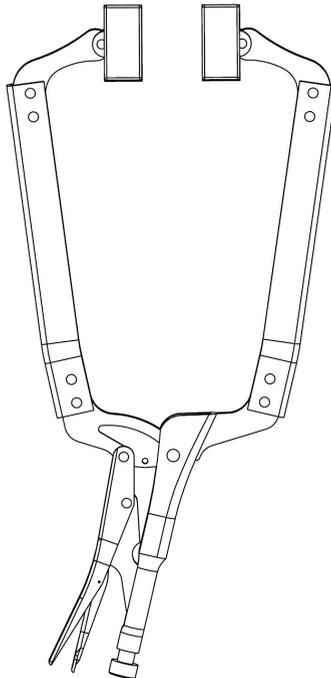


RafterEye



RE2

Penetration-free Rafter Center Locator



User's Guide

U. S. Patent 11,204,232

Description

The RafterEye RE2 is designed to help rooftop workers locate the centers of rafters or trusses quickly and accurately with no roof penetrations. The RE2 facilitates effective, code-compliant attachment to exposed or accessible structural members in all non-ferrous roof types. It offers quick, precise location to within 1/16" of center on the vast majority of roofs up to 4" thick. Highly insulated or stacked decks with 6-7" of material between rafters and rooftop yield 1/4" accuracy.* Distances of 9-10" can be read with a 3/4"-1" tolerance for east- or west-facing roofs; south-facing roofs generally get more accurate results.

The RE2 works by forming a symmetrical magnetic field around and through an accessible rafter. The RafterEye reads the field on the rooftop, identifying points directly above the rafter's center line.

The RE2's clamp jaws can accommodate rafters up to 11.25" deep or 7.25" wide (nominal 2x12s, 6x10s or 8x8s, for example). Oversized or odd-shaped members can be located by removal and manual holding of the magnet blocks.

WARNING: Climbing on ladders, working in confined spaces and accessing and working on a roof are hazardous activities. This tool should be used only by people trained and experienced in workplace safety compliance, including fall protection, personal protective equipment use and other applicable hazard mitigation practices.

WARNING: Always use caution when drilling or fastening through a roof deck or other surface that may contain visible or hidden pipes or wiring.

WARNING: The magnetic field within several inches of the RE2's Magnet blocks is powerful. Keep sensitive electronic devices away from Magnet blocks.

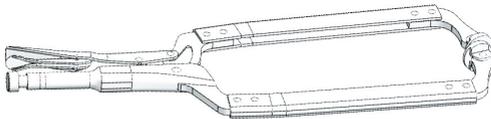
*National Design Standards' minimum edge distance requirements allow a maximum deviation from center of 9/32" for a 5/16" lag in a 1-1/2"-wide rafter.

WARNING: Some medical devices including pacemakers may be sensitive to strong magnetic fields. People with a pacemaker or other sensitive medical implant or device should consult their physician before handling the RE2's Magnet blocks.

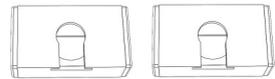
WARNING: Do not disassemble Magnet blocks. Magnetic attraction between internal components and metal items may cause injury if allowed to come into direct contact with a person or animal.

WARNING: Keep all tool components out of reach of children.

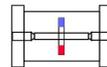
Components



Vise Grip 18SP clamp, modified



Magnet blocks (2)



RafterEye

Assembly

To assemble, slide one Magnet block onto each of the clamp's two pads from the side (Fig. 1). The magnet and pad will be mutually attracted and will snap into place when fully inserted. The Magnet blocks can be rotated on the clamp pads. *Be sure to rotate the two Magnet blocks so that both of their keyholes are pointing up, or both are pointing down; a bad reading on the rooftop will result if one is up and the other down.* To remove Magnet blocks, rotate as in Fig. 1, pull to separate clamp pad from magnet, and slide off.

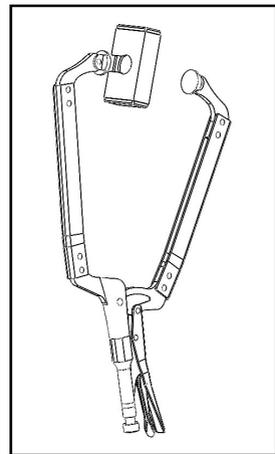


Figure 1. Assembly

Instructions for use

Two-person operation is recommended, but one person working both below and above the roof deck may complete the task. For two-person operation, hands-free mobile communication may aid in coordination.

Below deck: configure and place Magnet blocks

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Rotate both Magnet blocks to the same orientation. Positioning with keyhole slots down (Figure 2) is recommended for a stronger, easier-to-find magnetic field on the rooftop. However, a slots-up orientation (Figure 3), while offering a weaker magnetic field, provides greater reading accuracy when no insulation is present and roof deck and membranes are less than one or two inches thick.

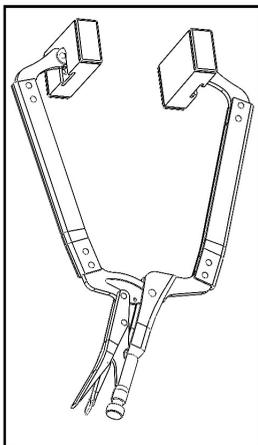


Figure 2. Slots down

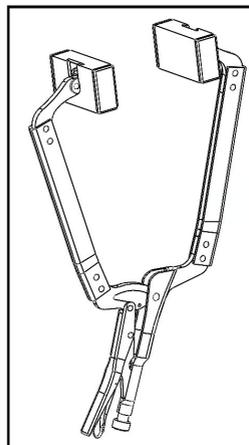


Figure 3. Slots up

With clamp open, slide Magnet blocks upward with one on each side of rafter until the full length of each magnet block is touching the bottom of the roof deck at the target location. Squeeze clamp handle to hold in place. If necessary, adjust clamp tightness so that Magnet blocks stay in place when clamped. **CAUTION:** *Do not overtighten clamp; excessive pressure may damage Magnet block internal components.*

Make sure both Magnet blocks are touching the bottom of the roof deck

or are the same distance from and parallel to it, and that they are tight against the rafter. If the clamp does not allow Magnet blocks to reach the bottom of the roof deck, they may be clamped as close as possible to the deck, assuring that the magnet blocks are oriented parallel to the deck, or they may be removed from the clamp and held manually on both sides of rafter against the deck.

Avoid working very near any large ferrous metal object, which may distort or block the magnetic field and result in an inaccurate reading.

After the center has been located and marked on the rooftop, move Magnet blocks to next target location.

On rooftop: locate rafter center with RafterEye

WARNING: *Working on a roof is hazardous and can be fatal. Do not work on a roof unless you are trained and equipped to do so safely and in compliance with all applicable laws and regulations.*

From a safe position on the roof surface looking uphill or downhill over the target position, holding one of the square sides of the RafterEye, move it from side to side and up and down the roof slope until the needle is attracted by the field produced by the Magnet blocks below. In two-person operation, tapping on the roof deck may help identify the approximate location from the other side. Center the RafterEye over the place where the magnetic field's effect on the RafterEye can be seen most clearly. If necessary, have the Magnet blocks relocated along length of rafter until they are as near as possible to the target location.

Key in on rafter center until the north-pointing (red) end of the bar magnet points straight down (see front cover of User's Guide). Set or hold the RafterEye on the roof and mark rafter center.

Locating a series of attachment points

- Make an approximate layout, including selecting rafters to be used.
- Measure the desired distance from ridge or eave to each point.

- Agree on a sequence for locating attachment points.
- From below, identify the rafter for the first attachment point, measure from ridge or eave and place clamp at target location.
- If direct verbal communication is not possible, use hands-free mobile communication or a system of knocking on the roof deck to confirm when to move from one location to the next.

Storage and Maintenance

The RE2 is designed for years of maintenance-free use. However, certain care measures will help ensure long, safe and trouble-free service.

Keep magnets below 80°C (176°F) at all times. Magnets allowed to reach this temperature may lose a portion of their magnetic strength. Since working environments may include direct sunlight and hot surfaces, when not in use, store in the shade and not in an enclosed space that may get too hot.

Using a slightly damp cloth or paper towel, remove any iron-containing material that may collect on the magnet blocks. Be especially attentive to this before clamping the blocks to finely finished surfaces, such as exposed rafters. Keep storage surfaces free of loose ferrous items and debris like screws or iron filings that may be attracted to the magnets.

Keep all parts in a dry location. Do not submerge or expose to wet conditions.

Protect the RafterEye from damage. When not in use, keep it out of direct sunlight and stored in its case. Avoid dropping it. Clean acrylic only with mild soap and water and a clean cloth. For tough grease, oil, or tar residue, use commercial grade hexane or kerosene. Never use ammonia, acetone, carbon tetrachloride, or gasoline as a cleaning solution. Use the RafterEye only on planar roof surfaces and do not allow abrasive materials to contact the acrylic cylinder.

Situations requiring center correction

1. Sistered rafters

Where two rafters are sistered (fastened side-by-side), RafterEye will locate the center location between the two adjacent rafters. This position is NOT a desirable attachment point. Therefore, the person marking on the roof must locate the center of the preferred rafter. In the case of two sistered rafters, each 1-1/2" thick, the center of either rafter would be 3/4" away from the midpoint indicated. For three sistered rafters, if the center position is a void or is not preferred for attachment, the location would be displaced by 1-1/2" to an outer member.

2. Slanted rafters

When locating a rafter that is warped and off-plumb by up to 10° at the target location, rotate the magnet blocks to the slots-up position (Fig. 3). Clamp them to the rafter as usual. Due to the rafter's tilt, only one corner of each magnet block should touch the bottom of the roof deck. The "center" position identified by the RafterEye on the roof deck will be suitable for a fastener to enter perpendicular to the roof surface and remain in the center portion of the top 2.5" of the rafter. If the fastener will enter significantly deeper into the rafter, a slight displacement in the direction of the lower portion of the rafter may be necessary.

3. Distorting fasteners

Occasionally, an off-center fastener in the deck and/or rafter within the magnetic field may distort the field enough to give a slightly inaccurate reading, indicating a location deviated from center toward the fastener. Usually the effect is negligible, and deviation is less than 1/8". If fastener locations are visible (from above the deck or below), avoid them. To detect a deviated reading, with magnet block slots down, place the RafterEye on the roof with the red end of its magnet pointing down perpendicular to roof. Gradually lift it perpendicularly upward 1-2". If the bar magnet moves left or right as it is raised, use the indication in the raised position to locate rafter center. Locating center a few inches up or down the roof slope may confirm or correct an ambiguous reading.

Limited Warranty

RafterEye LLC warrants the RE2 Rafter Center Locator against defects in material and manufacture for one year from the date of purchase. Seller's sole obligation and your exclusive remedy under this Limited Warranty and, to the extent permitted by law, any warranty or condition implied by law, shall be the repair or replacement of parts, without charge, which are defective in material or manufacture and which have not been misused, carelessly handled, or misrepaired by persons other than the Seller. To make a claim under this Limited Warranty, you must return the complete tool, transportation prepaid, to:

RafterEye LLC

Customer Service

511 N Cuesta Ave

Tucson AZ 85745

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LIABILITY FOR LOSS OF PROFITS) ARISING FROM THE SALE OF THIS PRODUCT. This warranty may provide you with additional rights that vary by state, province or nation.

This Limited Warranty applies only to tools sold within the United States of America, Canada and the Commonwealth of Puerto Rico.



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