

Datum Markers and Smart Targets by Rothbucher Systems

**Superior markers and targets that take full advantage of
modern survey instrument capacities.**

Request our price list!



Since 1997, Rothbucher Systems has been developing and selling products that enable better location and measurement of key points in monitoring networks, survey projects, and construction sites. They are designed to improve the precision and accuracy of total station measurement, to conveniently mark control points and monitored points permanently and clearly, to make construction sites safer, and to increase surveyor confidence in reference networks. For nearly 20 years, the Rothbucher Systems has successfully improved performance of modern survey equipment.

High-precision instruments are indispensable for the high demands in surveying today. Therefore, pencil strokes, nails and other imprecise markers should be a thing of the past because they do not meet the needs of modern surveyors. Precise measurement requires precise targets. Only then can high-precision instruments achieve expected results. This is why our products are highly valued by surveyors, architects, construction managers, and foremen, and why they are standard equipment at progressive construction sites around the world.

On our website www.smart-targets.com, we show many examples of our products in use. This is where you can always find our latest products, and how they can be used.

You can also use this catalog to find the targets or markers you need for your particular project and instrument.







You may also contact me personally if you have any questions.



Georg Rothbucher

Founder and owner of Rothbucher Systems

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Ideal for concrete construction sites without plastering work and for permanent securing of axis as a negative imprint in concrete.



Datum and Axis Markers RS10 and RS11*



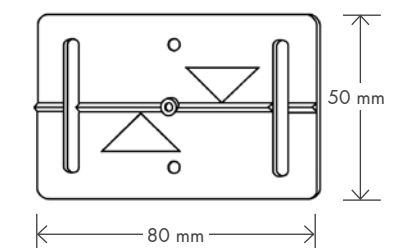
RS10 or RS11* are used to securely mark reference points at construction sites without plastering work and in door and window jambs.

To permanently secure the axis until the building is completed, the markers are measured and fastened in the ceiling formwork, or the slab edge formwork at the axis. The negative imprints are easily visible by all subcontractors during drywall construction, or any other indoor installations.

The foreman uses the negative imprint at the ceiling edge to transfer the axis right to the concreted ceiling with a string or laser. If required, they can also be used to install facades.

Datum and axis markers of Rothbucher Systems are already standard at many construction sites.

Datum Markers RS10/RS11



*self-adhesive



For plastering construction sites and to secure finished floor level (FFL) and axis.

Datum and Axis Markers RS20 and RS21 *



The markers RS20 or RS21 * are installed on an unplastered or unrendered wall to provide a level datum or finish floor level to all tradesmen.

To avoid measurement differences when transferring, the markers have a ledge to which a ruler can be applied, and a nail hole for horizontal consistency.

The elastic “plastering brushes” ensure that the surveying measurement is stable until after plastering, and easy to locate. Heights and axis are also secured after plastering. To avoid tampering, the corners are painted (see photo on page six).

After completing all work, the brushes can be easily pinched off, and the markers remain under the plaster, if needed.

We recommend gluing the markers and securing them at least once.



RS21r on a column. The protrusion is cut in 4 – 5 times with a cutter.

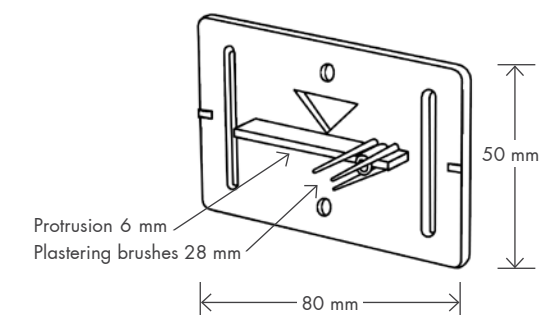


RS21r glued, fastened, and painted to prevent tampering.



Elastic “plaster brushes” to mark reference points securely until plastering work is completed.

Datum Markers RS20/RS21



*self-adhesive



RS30r in industrial construction: Documentation of heights and axis in one product.



RS30r in industrial construction: A perfect measuring point for each measuring instrument.

Combination markers for surveyors and foremen:



Surveying Markers RS30 and RS31 *

RS40 and RS41 *



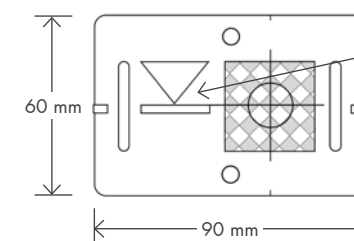
The Markers for Surveyors and Foremen

The combination markers RS30 & RS40 enable documentation and permanent position of heights and axis with a single product. If different measuring devices are used at a construction site, the combination markers are the best solution to avoid measuring differences. The height, axis and position number are indicated with embossed number punch or water-resistant pencil. Levels, laser, theodolites, or total station—the combined markers are the perfect surveying point for any instrument!

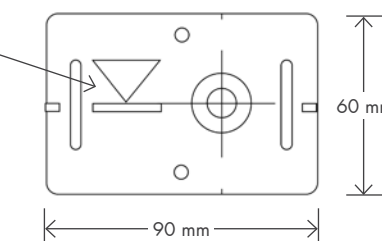
On difficult ground, the markers are permanently fastened with adhesive, or with dowels and screws. Measuring rods can be set on provided ledge to guarantee precise transfer of height.

Crosshairs are imprinted on the backing plate under each reflective target to ensure the survey point is durably marked. If the reflective target is damaged at any point, it can easily be replaced, and the original survey point can be restored quickly and cost-effectively.

Smart Targets RS30/RS31 with reflective targets 30 x 30 mm



Smart Targets RS40/RS41 with crosshairs



* self-adhesive



All-round markers for diverse uses.

Smart Targets RS50+RS51* RS60+RS61* RS70+RS71*



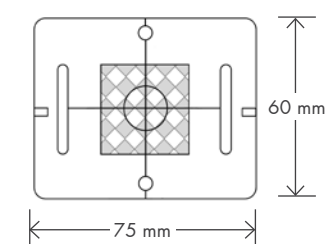
These markers can be used in a variety of situations. Inside buildings, heights and axis are clearly documented. Laser levels or plumb bobs can be used to extend control between levels in stairwells or other openings.

Outdoors, they can be fastened permanently at any point and used for positioning with total stations or other instruments.

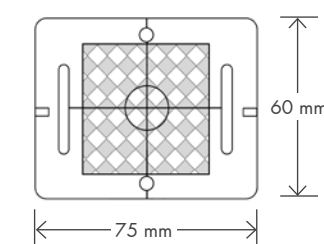
If the markers are fastened to facades, surveyors and foremen can continue to use them during construction. Facade subcontractors can use them to measure glass or natural stone facades, or as needed. They are also great for 3-dimensional observation of most surfaces including bridges and rock movement (see photos on page ten).

Crosshairs are imprinted on the backing plate under each reflective target to ensure the survey point is durably marked.

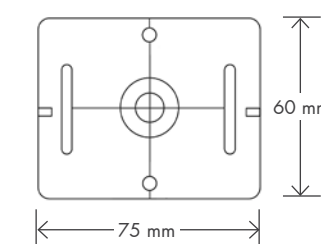
Smart Targets RS50/RS51 with reflective targets 30 x 30 mm



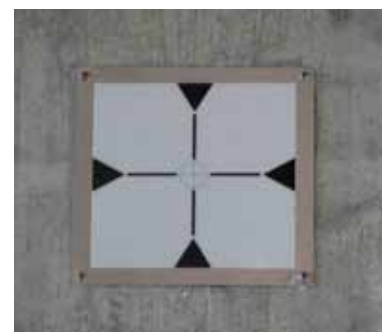
Smart Targets RS60/RS61 with reflective targets 40 x 40 mm



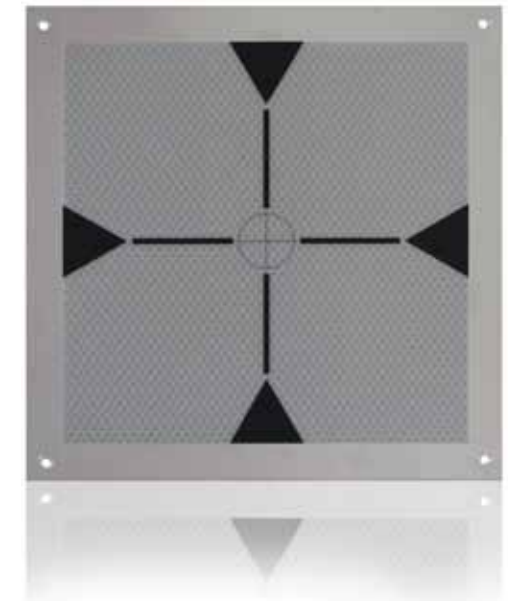
Smart Targets RS70/RS71 with crosshairs



*self-adhesive



Smart Targets RSAKZ6 and RSALU22



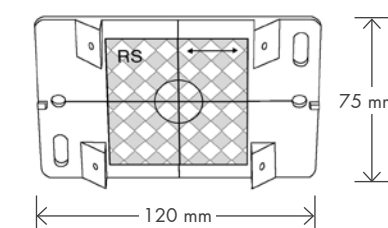
High-Precision Across Longer Distance

To monitor bridges, dams, roads and other objects where distance is an issue:
The RSAKZ6 and RSALU22 smart targets are used where measurements must be performed across longer distances.

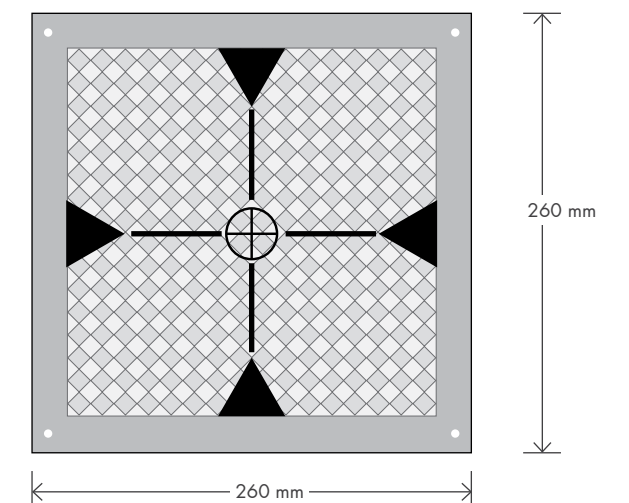
The RSAKZ6 markers feature 60 x 60 mm reflective targets, permitting accurate reflectorless-mode measurement up to 250 meters.

The RSALU22 reflective target panels feature 260 x 260 mm aluminum plates and reflective 220 x 220 mm targets permitting accurate reflectorless-mode measurement up to 500 meters.

Smart Targets RSAKZ6 with
reflective targets 60 x 60 mm



RSALU22 with target reflector 220 x 220 mm





Transportation Hub at World Trade Center in New York City



RS90r at Transportation Hub World Trade Center



RS90g at Metro in Rotterdam

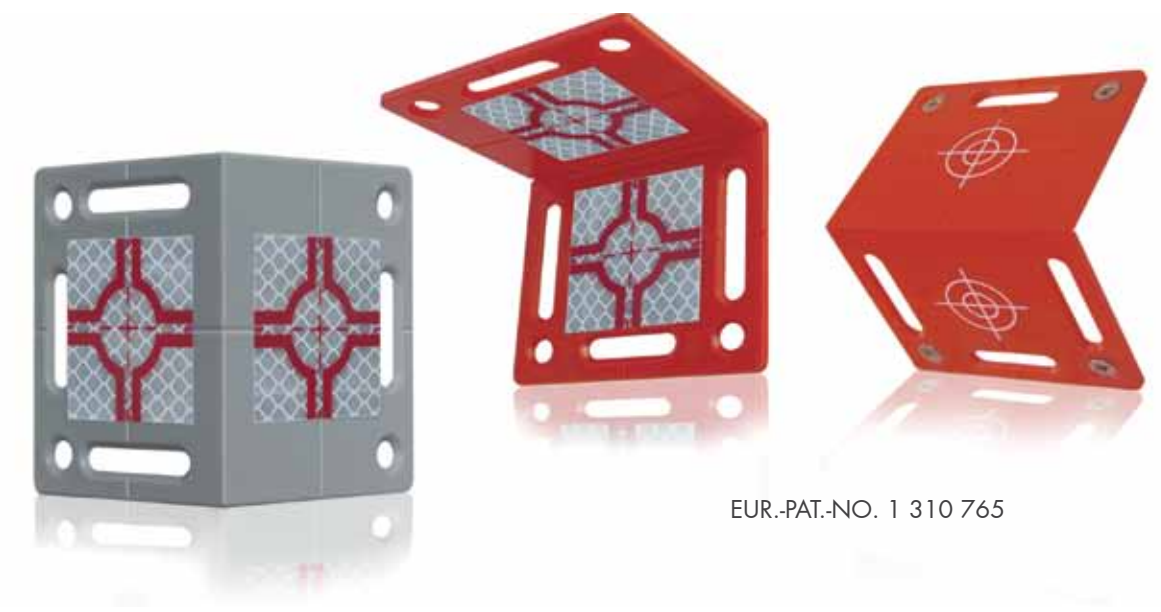


RS80r at Al Sadd Stadion in Qatar



Al Sadd Stadion in Qatar

Smart Angle Targets RS80, RS90 and RS100



EUR.-PAT.-NO. 1 310 765

Solutions for Difficult Positions

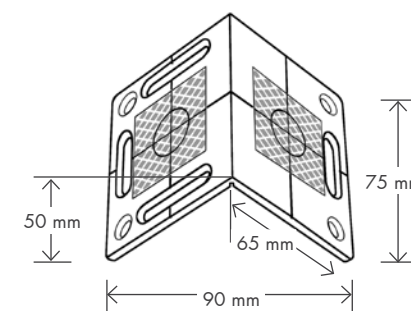
These markers are used when difficult setups make it impossible to sight typical reference points.

The RS80 markers with two outside reflective targets, are installed in "roof-shape" or "angular" mode. To observe facades and other points, these markers are well suited as corner solutions. If heights and axis must be transferred from the outside in and vice versa, the markers can be installed in the window jamb. You can then literally measure around corners.

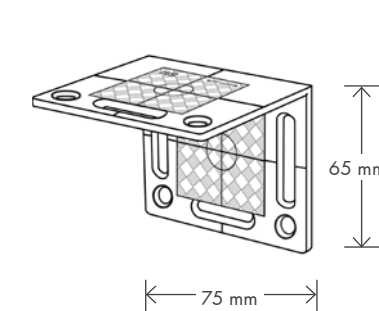
The RS90 markers with three reflective targets, permit sighting on the surveying points from almost any position. An axis, can be sighted from the front, bottom and top.

Crosshairs are imprinted on the backing plate under each reflective target to ensure the survey point is durably marked.

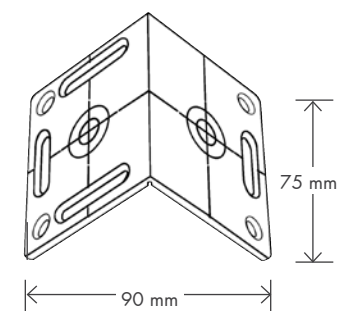
Smart Angle Targets RS80 with
two reflective targets 40 x 40 mm



Smart Angle Targets RS90 with
three reflective targets 40 x 40 mm



Smart Angle Targets RS100
with four crosshairs





Angled Plastic Adapters RSAK80 and RSAK130



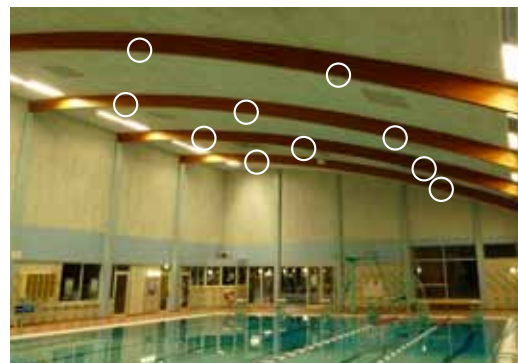
RSAK80 and RSAK130 are used on rails, bridges, housings, dams, buildings, supports, high-bay shelves, glass and natural stone façades, etc. At a well-planned installation, adapters that are equipped with pre-installed smart angle targets permit access to reference point from almost any position.

On railway tracks, for example, the surveyor no longer needs to put himself in danger, but can perform his measurements from a safe position at any time. These targets can potentially eliminate dangerous and expensive road blocks that are no longer necessary, since many measurements can be simplified considerably from a safe distance. 3-dimensional observations are ensured by XYZ coordinates.

Crosshairs are imprinted on the backing plate under each reflective target to ensure the survey point is durably marked.



Observation of bridges



Observation of halls

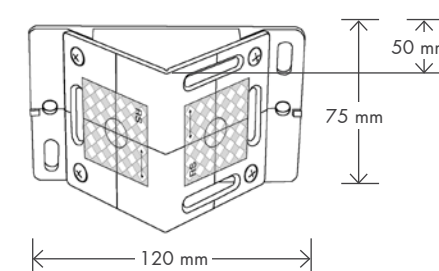


Observation of sound barriers & walls

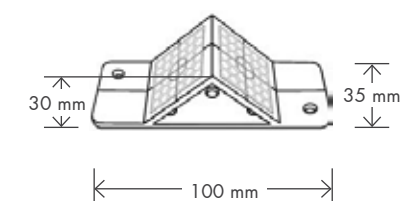


Surveyors no longer need to enter danger zones.

RSAK80 with reflective targets 40 x 40 mm



RSAK130 with reflective targets 30 x 30 mm





Adapters RSAM80 and RSAMG80 Stainless steel V4A



This stainless steel adapter with DW15 thread has been developed specifically for simple and permanent installation during new bridge construction. It is screwed into pre-installed anchor sleeves, with adhesive, and aligned with the reference point.

For concrete bridges, anchor sleeves are often installed on the cantilever arm and in the cap, at distances of approximately 3 feet. They are outstanding markers for bridge construction. New holes in reinforced concrete are not necessary, and they minimize traffic disruption by enabling remote measurement of monitored points.

To monitor metal bridges and other metal structures, avalanche barriers, and earth and rock movement, RSAM80 adapters without threads, for welding or dowelling, can be used.

The clip system that attaches the target to the stainless steel plate, allows the original measurement point to be restored quickly and cost-effectively in the event of damage.



Measuring point at the ski lift support

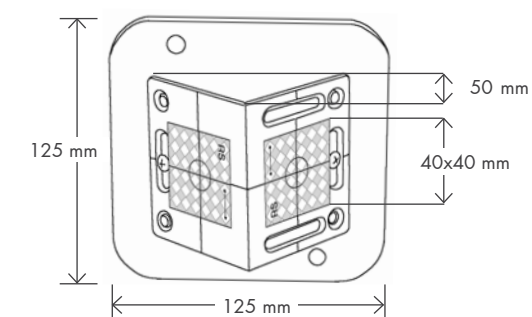


Coentunnel Amsterdam

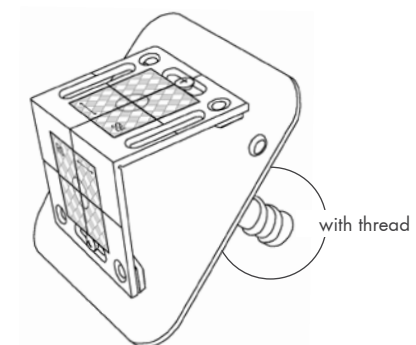


Bridge monitoring (Tappan Zee Bridge USA)

**Adapter RSAM80 with
reflective targets 40 x 40 mm**



**Adapter RSAMG80 with thread and
reflective targets 40 x 40 mm**





Twistable Reflective Target RS183



Twistable, Extensible, Plastic Housing System

When using total stations, the reflective marker can always be aligned precisely with the measuring instrument. The reflective target can be turned in a radius of 180°, making it possible to use the same survey point from different directions.

If the markers are pre-installed in construction zones, the surveyors can use the same surveying point at all times during construction. Depending on the construction phase, the markers are adjusted to the construction site process by realigning the reflective marker as needed.

With the integrated plug-in system, several markers can be combined. The markers can be connected to each other in both directions which enables measurement from different directions without having to turn the reflective targets. The distance between the measuring points of "stacked" markers is always 60 mm.

Adhesives permit quick and simple installation even on difficult surfaces. Provided holes permit attachment with dowels and screws.

Offset: 0
Height of tilting axis: 30 mm



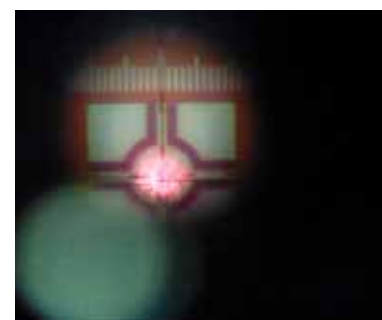
Simple and quick installation on any surface.



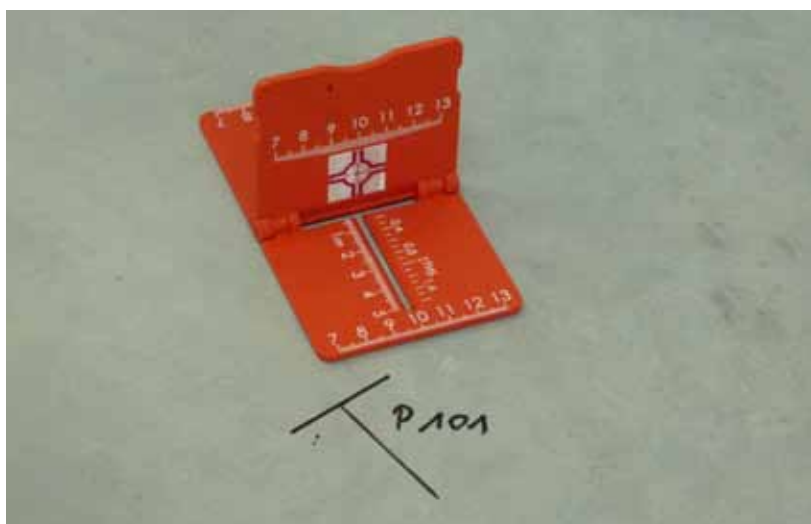
The reflective marker can be perfectly aligned with the measuring instrument at all times.



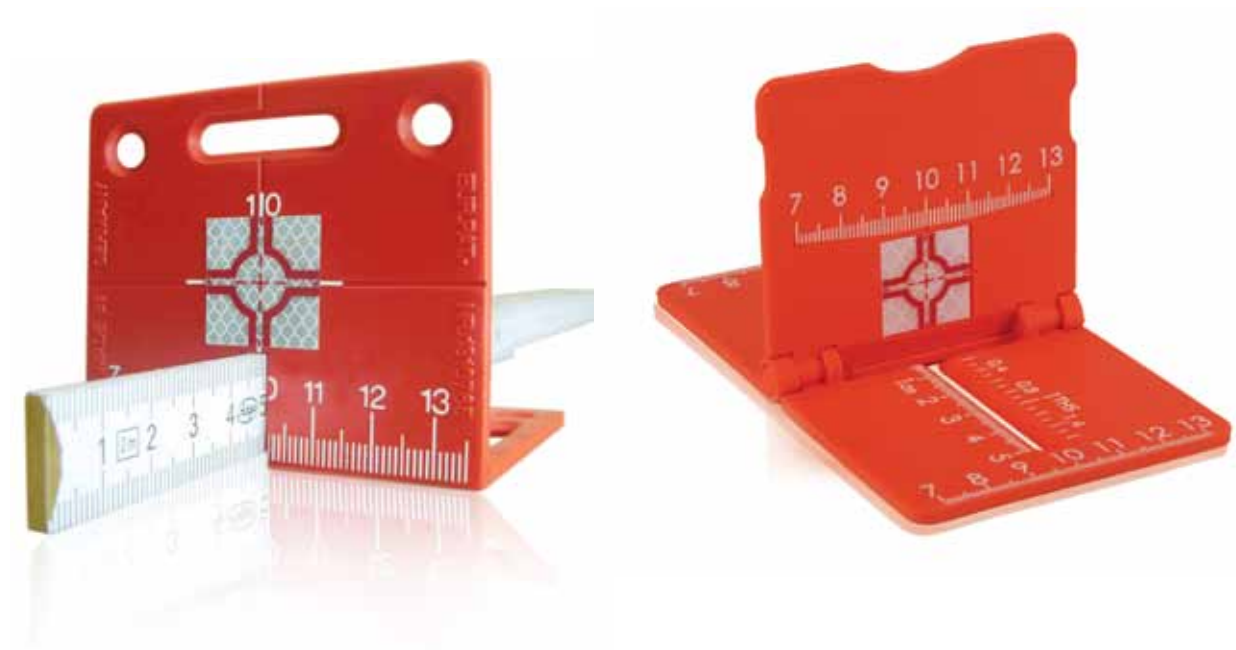
RS95 – Stake-out at the batter board



RS96 – Stake-out on the floor slab



Stake-out Aids RS95 and RS96

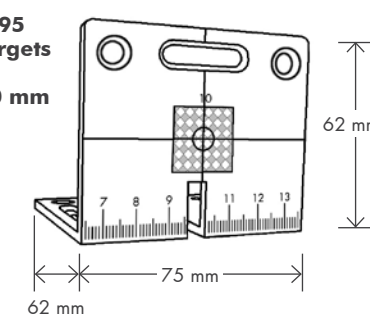


Stake-out aids RS95 and RS96 were developed specifically for stake-out work on batter boards and floor slabs. Exact measurement of floor slab reference points often presents major challenges, particularly in “final phase” with the last 5-10 cm. The work can be very time-consuming due to the continual side-to-side, backwards and forwards, movement of the prism pole which must remain plumb. Stake-out aid RS95 or foldable stake-out aid RS96 is placed on the ground and the rodmen can use consistent offsets to reproduce and transfer the surveyor’s directions quickly and precisely.

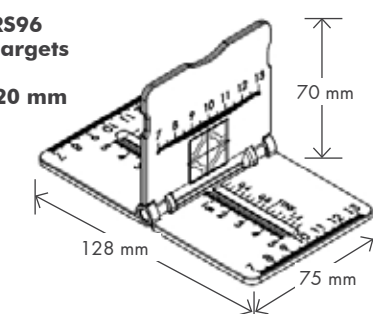
Advantages of the stake-out aids:

- They make surveying the axis on batter boards easier.
- Stake-out on the floor slab in final phases (5-10 cm) can be measured quickly and precisely.
- The surveyor’s dimensional data can be transferred accurately to the floor slab.
- There is no need for precise plumbing of prism poles
- Orientation scale for left and right - the number 10 corresponds to the axis.
- Orientation scales for backwards and forwards.
- Foldable: fits in any shirt pocket (only RS96)

**Stake-out Aid RS95
with reflective targets
20 x 20 mm
Target height: 30 mm**



**Stake-out Aid RS96
with reflective targets
20 x 20 mm
Target height: 20 mm**





Mini-prism RSMP15



Angled Plastic Adapter with 12.7 mm Prism

RSMP15 with 12.7 mm mini-prism sticks quickly and easily to difficult surfaces, such as glass or marble, historic buildings, steel girders, rails, gas and oil pipelines, or can be fastened with dowels and screws.

When using robotic total stations:

- Permanent settlement monitoring can be carried out during the building work
- Settling measurements are possible on railway tracks while under the load of rail traffic
- Bridges and other structures can be monitored even more quickly and precisely

The prisms can be used to a maximum angle of 30 degrees, item RSMP180 is recommended. With the RSMP180, the prism can be aligned precisely with the instrument (see next page).

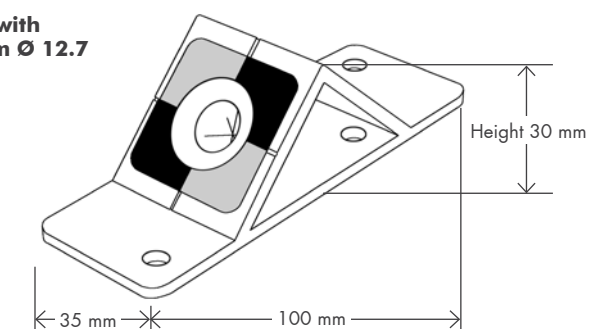


Hearst Castle USA



RSMP15 for measurements with robotic total stations during load

RSMP15 with
Miniprism Ø 12.7





Twistable Mini-prism RSMP180 and RSMP280



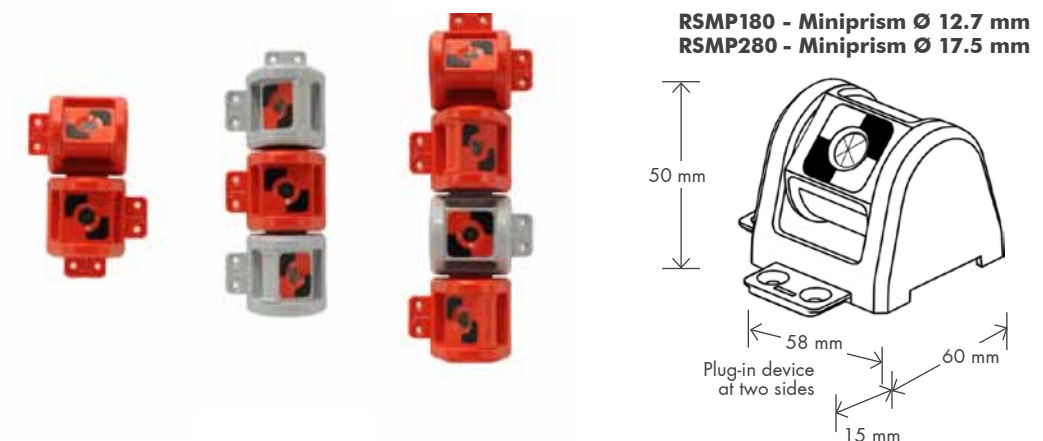
Twistable, Extensible, Plastic Housing System With 12.7 and 17.5 mm Prisms

When using the mini-prism RSMP180 or RSMP280, the prism can always be aligned precisely with the measuring instrument. The prisms can be turned in a radius of 180°, so the same survey point from different directions. Bridges and other structures can be monitored more quickly and precisely. With the integrated plug-in system, several prisms can be combined as needed. This permits measuring from different directions without having to turn the prism. Mounting adhesive enables quick and simple installation even on difficult surfaces. Provided holes enable attachment with dowels or screws.

Reflectorless measurement ranges from 170 m to 400 m are possible when using the mini-prism RSMP180. When sighting known measuring points with robotic total stations, it is possible to achieve ranges of up to 1000 m!

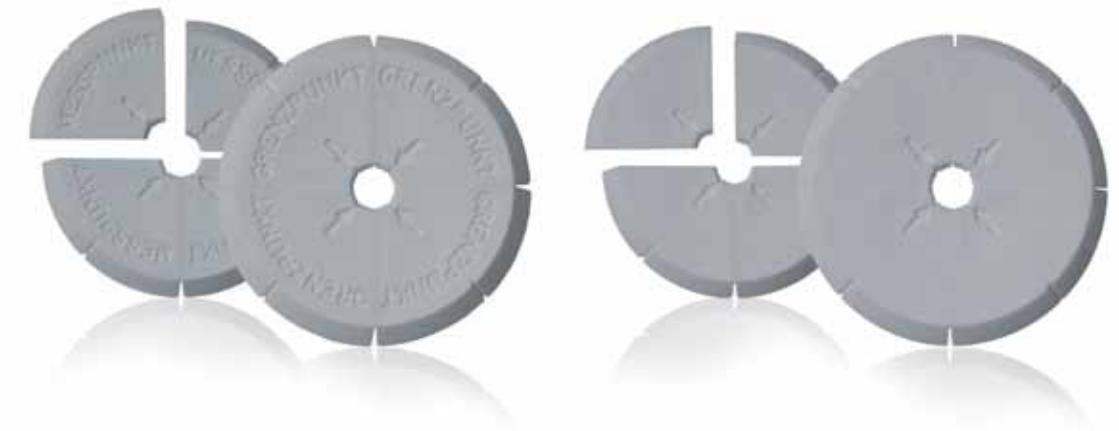
Depending on the instrument used, ranges of 400 m and more are achieved when using the mini-prism RSMP280.

RSMP180 with 12.7 mm miniprism: Offset -10 (minus 10), height of tilting axis: 30 mm
RSMP280 with 17.5 mm miniprism: Offset -10 (minus 10), height of tilting axis: 30 mm





4/4 Boundary Markers RSKM10 to RSKM40



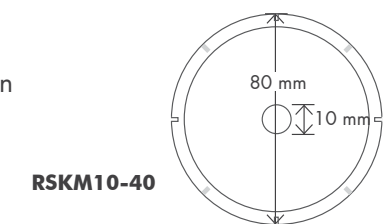
The Boundary Markers can be used as offset markers on firm surfaces.

Precise documentation is ensured along inner corners, along walls, and at outer corners. The Boundary Markers are attached using mounting adhesive.

The following designs are available:

RSKM10: 4/4 Boundary Markers without inscription

RSKM40: 4/4 Boundary Markers with "Survey Mark" inscription

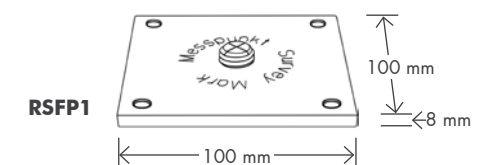


Measuring Point RSFP1



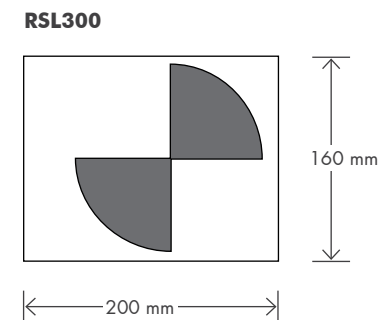
The aluminum plate RSFP1 has a 5/8" stainless steel thread for screwing in a prism or measuring instrument. If the plate is used as a fixed point on floors, the surveyor can position the instrument precisely above the cross.

RSFP1 is supplied with a plastic or aluminium protective cap for the 5/8" thread.

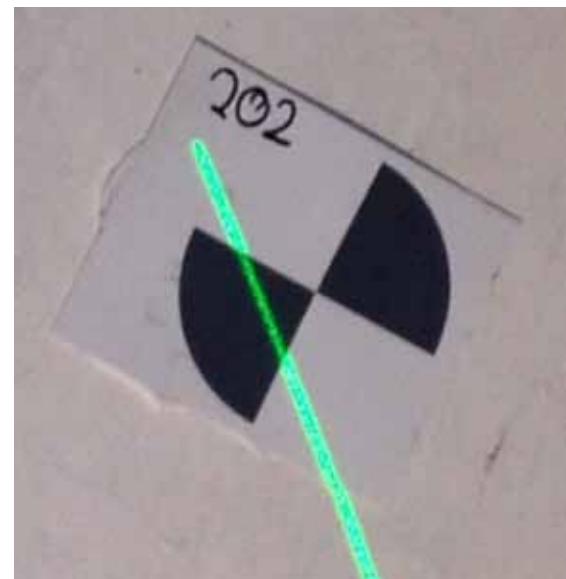


When used as a fixed point on the floor, this point should be surveyed with a prism so that if necessary, e.g. suspected moving of the fixed point due to foul play, it can be checked quickly and easily.

Laser Scanner Target Markers RSL300



- Outstanding for scanners by Leica, Trimble, Geomax and Faro
- Excellent registration markers
- Can transfer known positions into point clouds
- Easily marked with point numbers or other information
- Quick and easy attachment
- Waterproof
- Suitable for indoor and outdoor use



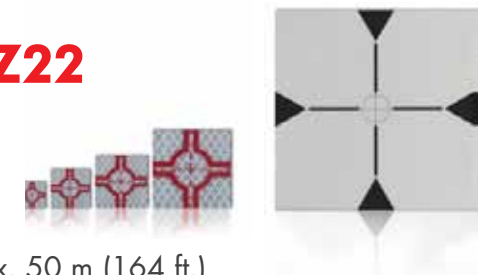
Fixing Adhesive UV-6800

- Powerful fixing adhesive with immediate initial adhesion
- Clear & odorless
- Suitable for all products by Rothbucher Systems.
- Can be applied using all common caulking guns or smaller squeeze tube



Reflective Targets RSZ2-RSZ22

Reflective targets are available in the sizes:



RSZ2	20 x 20 mm	→ range approx. 50 m (164 ft.)
RSZ3	30 x 30 mm	→ range approx. 80 m (262 ft.)
RSZ4	40 x 40 mm	→ range approx. 100 m (328 ft.)
RSZ6	60 x 60 mm	→ range approx. 120 m (394 ft.)
RSZ22	220 x 220 mm	→ range approx. 500 m (1640 ft.)

The ranges given are conservative, and are exceeded by most current measuring instruments. A minimum distance of 10 m is required for some instruments. **Survey markers with reflective targets are exclusively recommended for carrying out distance measurements using EDMs or total stations.**

Smart Targets with crosshairs, and without reflective targets, are available for the use of levelling instruments, theodolites and construction lasers.



Datum Markers and Smart Targets by Rothbucher Systems guarantee clear, permanent and unambiguous measuring points.

Request our price list!

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