

Datum Markers and Smart Targets by Rothbucher Systems

**The ideal addition to any surveying instruments.
Request our price list!**



Since 1997, Rothbucher Systems has been developing and selling products for documentation of surveying points at construction and for surveying buildings and objects of all kinds.

Our products are very successful in the areas of construction surveying and monitoring. Combined with high precision, they facilitate work with modern equipment. The targets provide the surveyor with the assurance of using a quality product and the ability work safety in difficult environments.

High-precision instruments are indispensable for the high demands in the surveying area today. Therefore, pencil strokes, nails and other unidentifiable markers as surveying points are a thing of the past and have long been insufficient for the requirements of modern surveying. Precision starts with the surveying points. Only then can high-precision instruments achieve the expected results. This is another reason why our products are being highly valued by architects, construction managers, foremen and surveyors and why they are part of the standard equipment at many construction sites around the world today.

On our website www.smart-targets.com, we show many application examples of our products. This is where you can always find the latest products with the corresponding uses.

You will surely also find the right product for your current project on the following pages, or the matching markers to supplement your instrument.

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

Georg Rothbucher

Founder and owner of Rothbucher Systems

Content

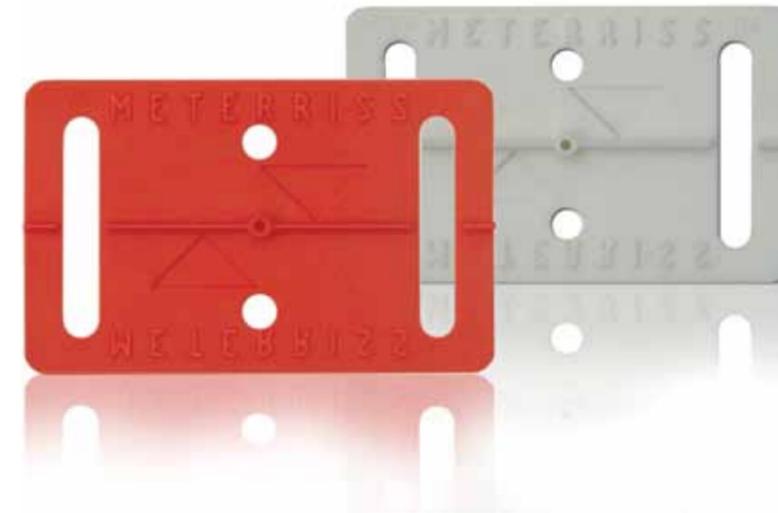
	Datum and Axis Markers RS10 and RS11	4 - 5
	Datum and Axis Markers RS20 and RS21	6 - 7
	Smart Targets RS30 to RS31	8 - 9
	Smart Targets RS50 to RS71	10 - 11
	Smart Targets RSKZ6 Survey Panels of Aluminium RSALU22	12 - 13
	Smart Angle Targets RS80 - RS100	14 - 15
	Plastic Adapters with Pre-Installed Smart Angle Targets RSK80 and RSK130	16 - 17
	Stainless Steel Adapters with Pre-Installed Smart Angle Targets RSAM80 and RSAMG80	18 - 19
	Plastic Housings with Swivelling Reflective Target RS183	20 - 21
	Stake-Out Aids RS95 and RS96	22 - 23
	Mini-prism RSMP15	24 - 25
	Plastic Housing with Swivelling Mini-prism RSMP180 and RSMP280	26 - 27
	4/4 Boundary Markers RSKM10 - RSKM40 and Measuring Point RSFP1	28 - 29
	Laser Scanner Targets RSL300	30
	Reflective Targets and Accessories	31



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



Datum and Axis Markers RS10 and RS11*



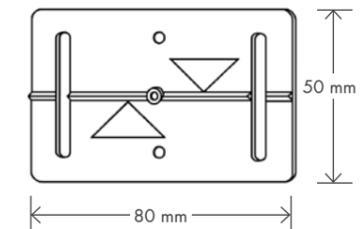
RS10 or RS11* are used to secure the surveyed measurements at construction sites without plastering work and in door and window rebates.

For permanent securing of the axis until the building is completed, the markers are already measured and fixed in the ceiling formwork or slab edge formwork at the axis. The negative imprint that are well visible for all trades are used for drywall construction or any other installations indoors.

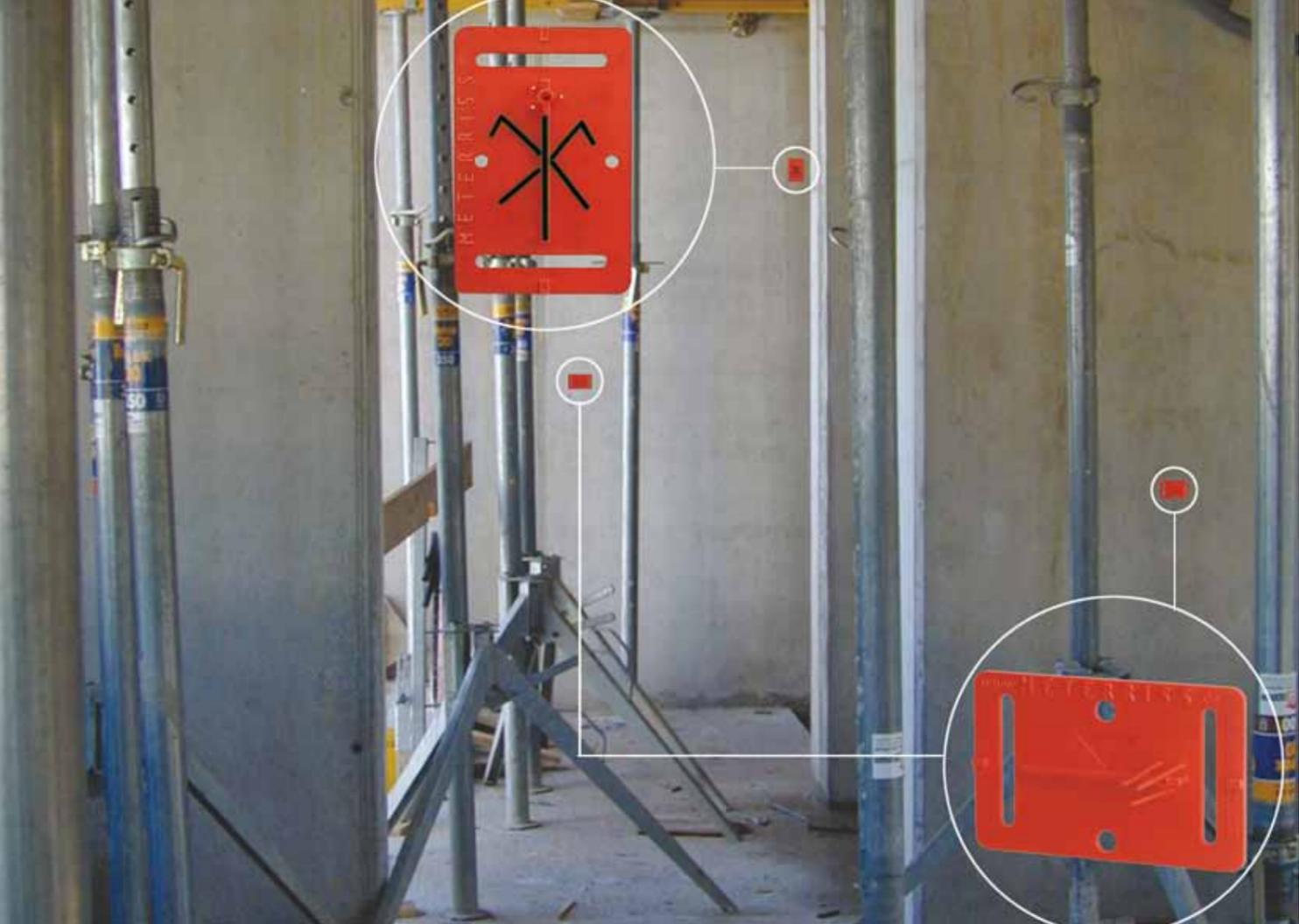
The foreman uses the negative imprint at the ceiling edge to transfer the axis right to the freely concreted ceiling with a string or laser. If required, they can also be used to install the facade.

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 protrusion to which a ruler can be applied and have a nail hole to allow consistency.

The elastic "stubs" ensure that the surveying measurement is secured until after plastering and easy to find again. Heights and axis are also secured beyond plastering. To avoid possible manipulations, the corners are sprayed over in colour.

After completing all work, the flexible "stubs" are pinched off - the rework is very little - and the markers remain under the plaster as proof.

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.

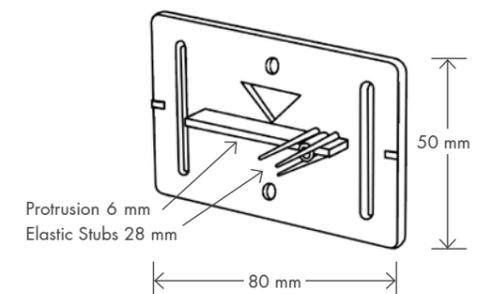


RS21r glued, fastened and sprayed on with colour - manipulation is thus prevented.



Elastic "stubs" for securing the surveyed measurements are securely marked until after plastering work.

Datum Markers RS20/RS21



*self-adhesive



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



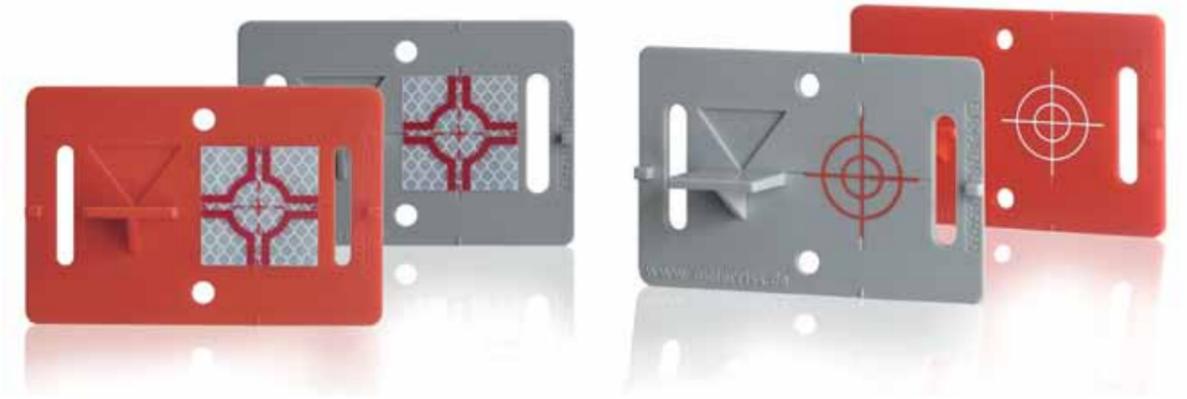
RS30r in industrial construction: A perfect measuring point for each measuring instrument

Combination markers for surveyors and foremen:



Smart Targets RS30 and RS31*

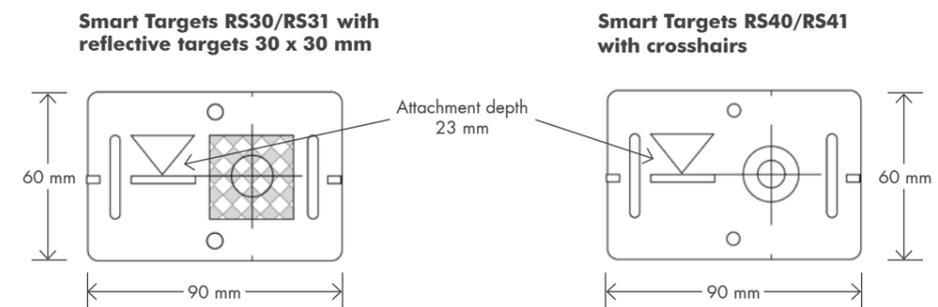
RS40 and RS41*



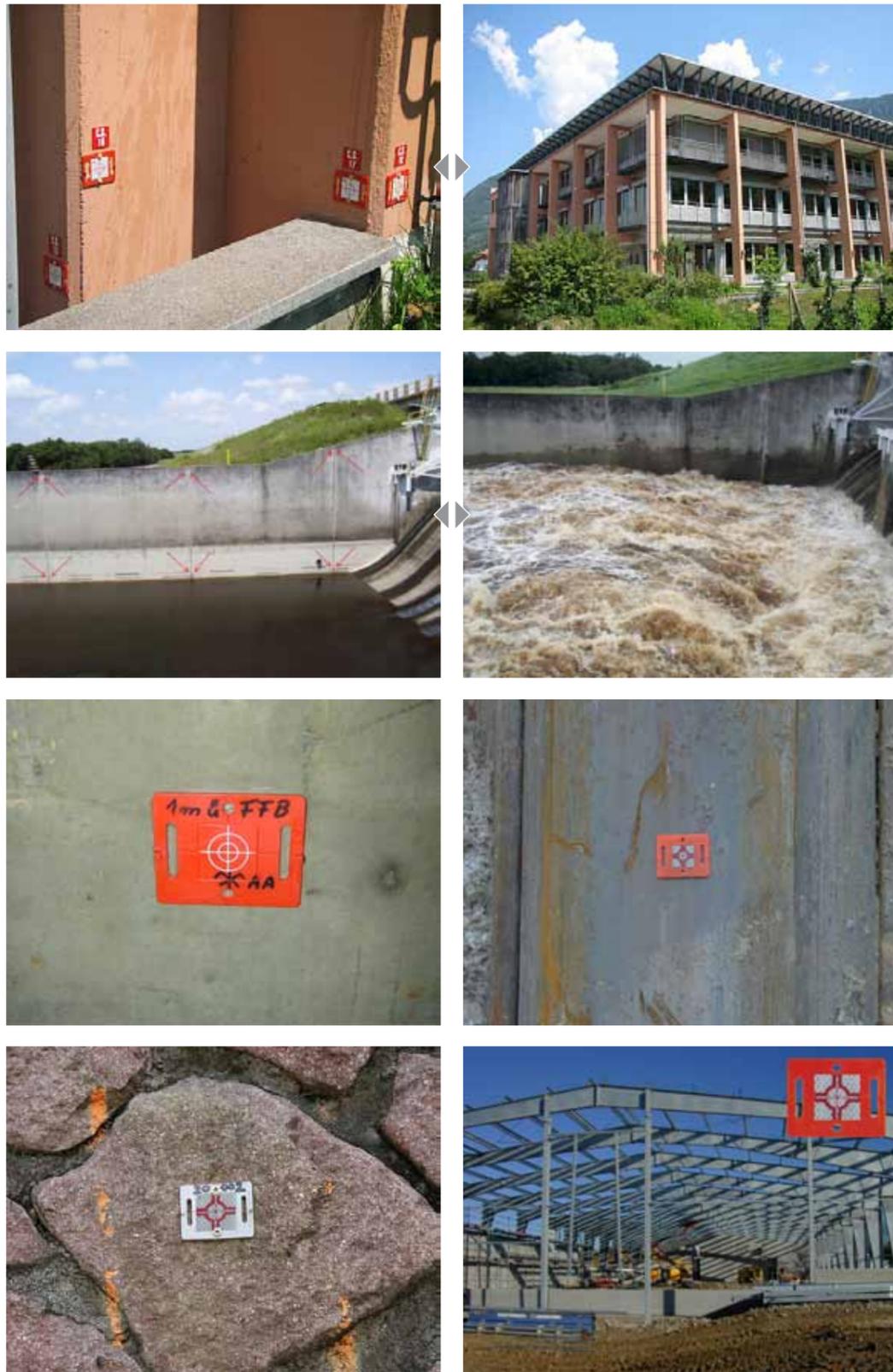
The combination markers RS30 & RS40 permit documentation and permanent securing of heights and axis with a single product. If different measuring devices are used at a construction site, these markers are the best solution to avoid measuring differences. The height, axis and position number are indicated with number punch or water proof marker pen. Levelling instrument, 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 glue or with dowels and screws. A protrusion to which the measuring rod or a measuring slat can be applied guarantees precise transfer of the 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, easily and cheaply.



* self-adhesive



All-round markers for diverse uses.

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



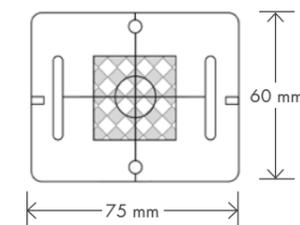
The use of these markers is very diverse. Inside the buildings, heights and axis are clearly documented. Transfer of the axis to the next level is possible by laser or plumb simply and precisely in the staircase or a cavity.

Outdoors, they can be fastened permanently at any point. There, they are used for positioning with the tachymeter or are used as a batter board or for heights and axis securing.

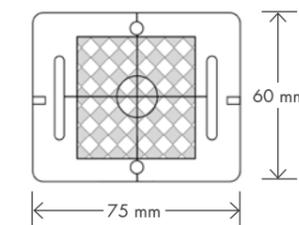
If the markers are fastened to the façade, surveyors and foremen can continue to use them. Façade constructors use them, among others, to measure glass and natural stone façades. They are also great for 3-dimensional observation of façades, bridges, earth and rock movements, and many others.

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

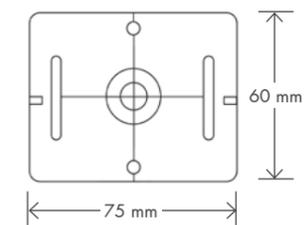
Smart Targets RS50/RS51 with reflective targets 30 x 30 mm



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

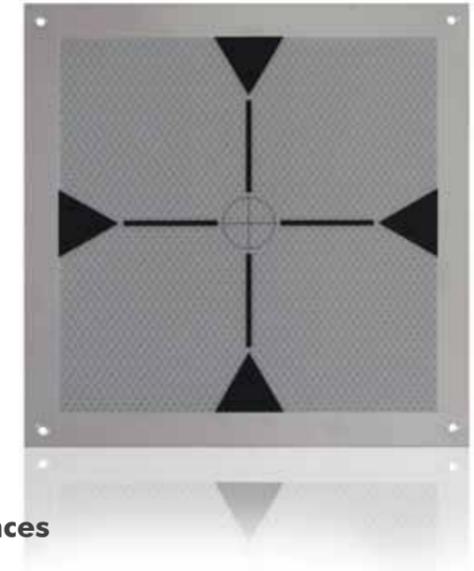


Smart Targets RS70/RS71 with crosshairs



*self-adhesive

Smart Targets RSAKZ6 and RSALU22



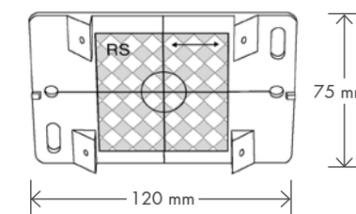
High-precision across large distances

To monitor bridges and other objects:
The smart targets RSAKZ6 and RSALU22 are used where measurements must be performed across longer distances.

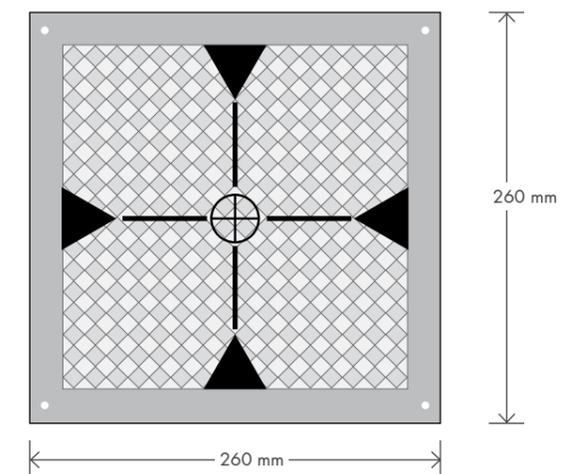
The markers RSAKZ6 are equipped with a 60 x 60 mm reflective target and the range is approx. 120 m, in the reflector-less mode up to 250 m and more.

The reflective target panels RSALU22 with aluminium-plate 260 x 260 mm and reflective target 220 x 220 mm for measurements up to 500m.

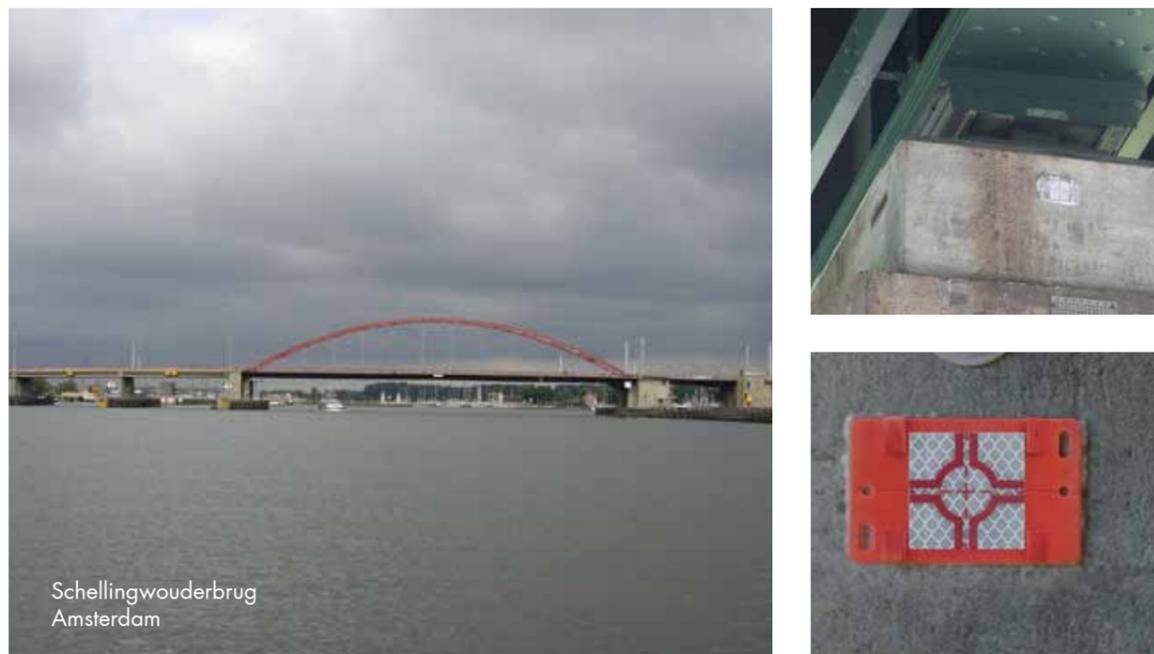
Smart Targets RSAKZ6 with reflective targets 60 x 60 mm



RSALU22 with target reflector 220 x 220 mm



Arabtec Resident Tower
Dubai

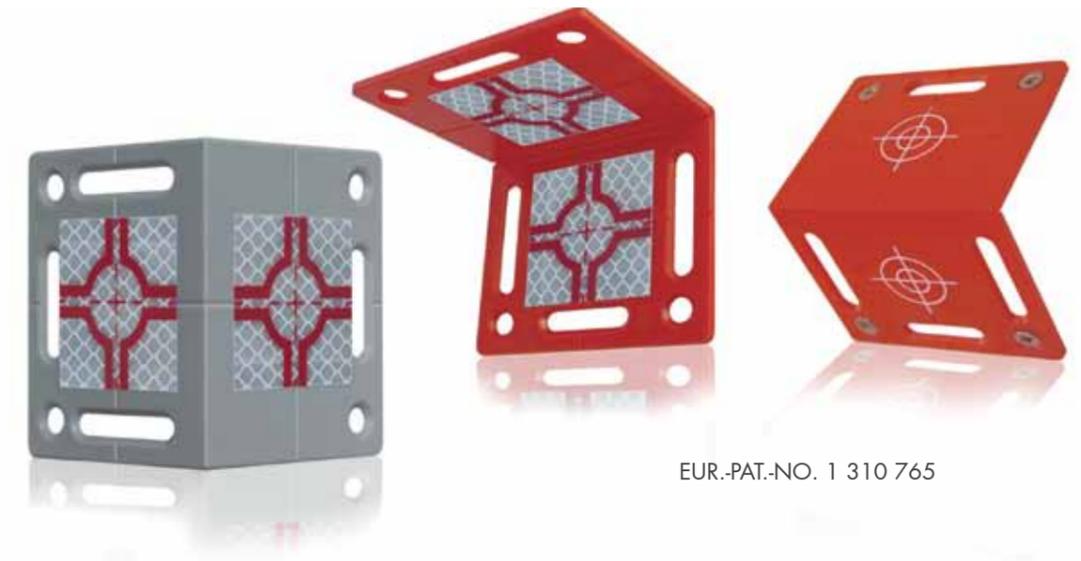


Schellingwouderbrug
Amsterdam



Transportation Hub at World Trade Center in New York City

Smart Angle Targets RS80, RS90 and RS100



EUR.-PAT.-NO. 1 310 765

Solutions for difficult positions

These markers are used when difficult measuring positions would make it impossible to sight on the measuring points.

The RS80 markers are installed in "roof-shape". To observe façades and objects, these markers are very well suited as corner solutions. If heights and axis must be transferred from the outside in and vice versa, the markers can be installed, e.g. in the window rebate. You can then literally measure around the corner.

The RS90 markers permit sighting on the surveying points from almost any position. An axis, e.g., can be sighted on from the front, below or above.

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



RS90r at Transportation Hub World Trade Center



RS90g at Metro in Rotterdam

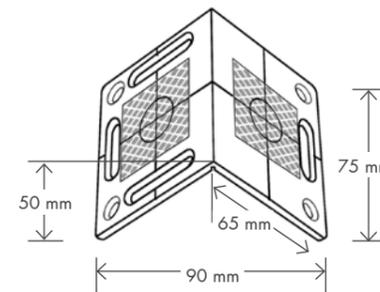


RS80r at Al Sadd Stadion in Qatar

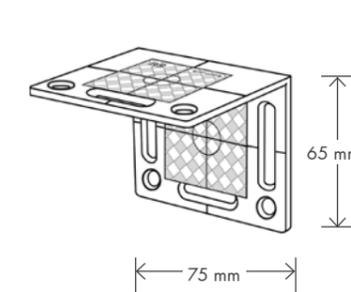


Al Sadd Stadion in Qatar

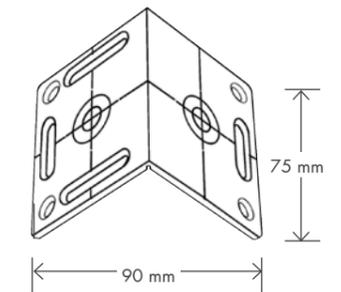
Smart Angle Targets RS80 with two reflective targets 40 x 40 mm



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



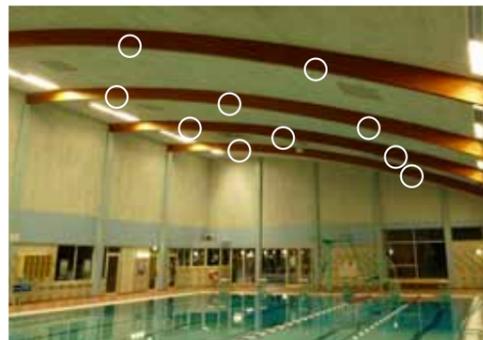
RSAK80 and RSAK130 are used on rails, bridges, housings, dams, buildings, supports, high-bay shelves, glass and natural stone façades, etc. At a well-planned installation, adapters that are equipped with pre-installed smart angle targets permit access to the surveying point from almost any position.

On railway tracks, for example, the surveyor no longer needs to put himself into danger, but can perform his measurements from a safe position at any time. Even dangerous and expensive road blocks are no longer necessary, since many measurements can be simplified considerably. 3-dimensional observations are ensured by XYZ co-ordinates.

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

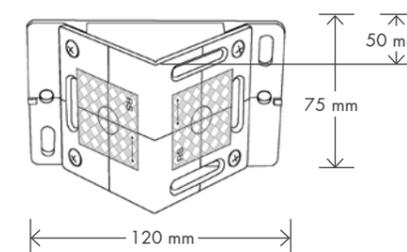


Observation of noise protection walls

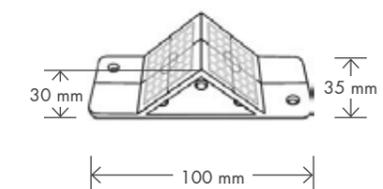


Surveyors no longer need to enter danger zones.

RSAK80 with reflective targets 40 x 40 mm



RSAK130 with reflective targets 30 x 30 mm





Adapters RSAM80 and RSAMG80 Stainless Steel V4A



Specifically for simple and permanent installation in the construction of new bridges, the adapter with DW15 thread has been developed. It is turned into the already-concreted-in anchor sleeves with component glue and aligned with the measuring position.

For concrete bridges, anchor sleeves are often concreted in at the cantilever arm and in the cap at distances of approx. one meter. Due to their location, they are outstandingly suitable for surveying. Annoying bores in the reinforcement-rich concrete are not necessary. Neither are the dangerous and expensive road blocks, since the bridges no longer need to be accessed for surveying.

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

The clip system allows the original measurement point to be restored both quickly and cheaply in the event of damage.



Measuring point at the ski lift support

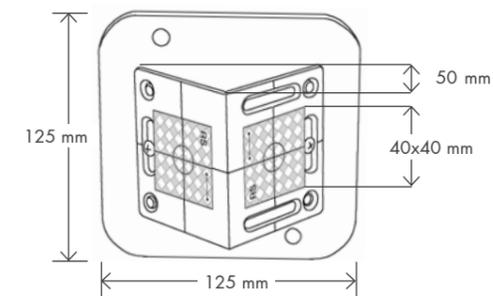


Coentunnel Amsterdam

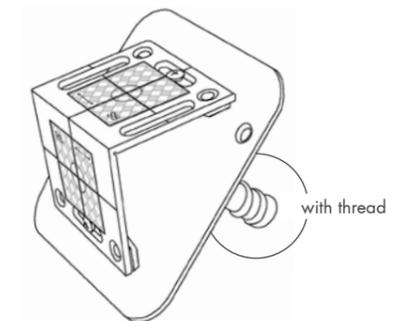


Bridge monitoring (Tappan Zee Bridge USA)

Adapter RSAM80 with reflective targets 40 x 40 mm



Adapter RSAMG80 with thread and reflective targets 40 x 40 mm





Swivelling Target Reflector RS183



Plastic housing, turning and combinable

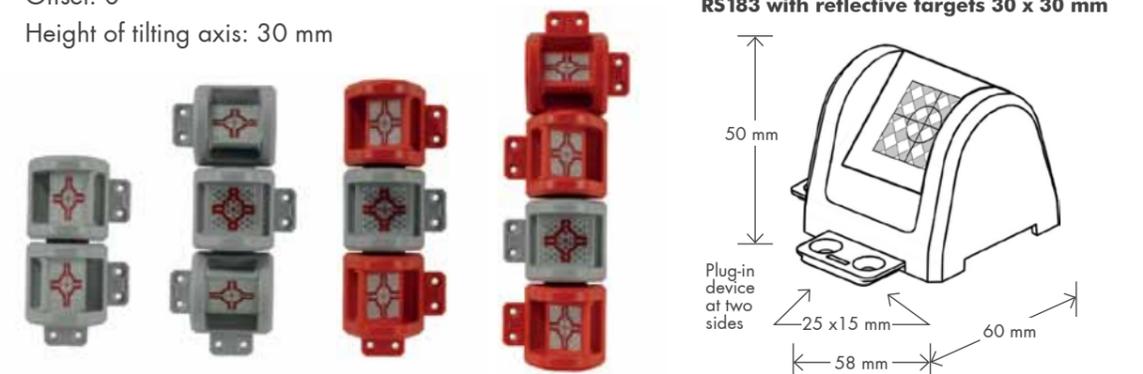
When using tachymeter and total station, the reflective target can always be aligned precisely with the measuring instrument. The reflective target can be turned in a radius of 180° making it possible to use the same survey point from different directions.

If the markers are installed in the area of the construction site before construction starts, the foreman or surveyor can use the same surveying point at all times from the construction pit to the top floor. Depending on construction phase, the markers are adjusted to the construction site process by alignment of the reflective target.

With the integrated plug-in system, several markers can be combined with each other. The targets can be connected to each other in both directions and permit measurement from different directions without having to turn the reflective targets. The distance between the measuring points in markers that are combined with each other is always 60 mm.

Fixing adhesive permits quick and simple installation even on difficult ground. Fixating holes permit attachment with dowels and screws.

Offset: 0
Height of tilting axis: 30 mm



Simple and quick installation on any ground

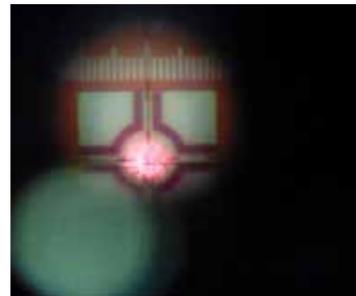


The reflective marker can be perfectly aligned with the measuring instrument at all times.

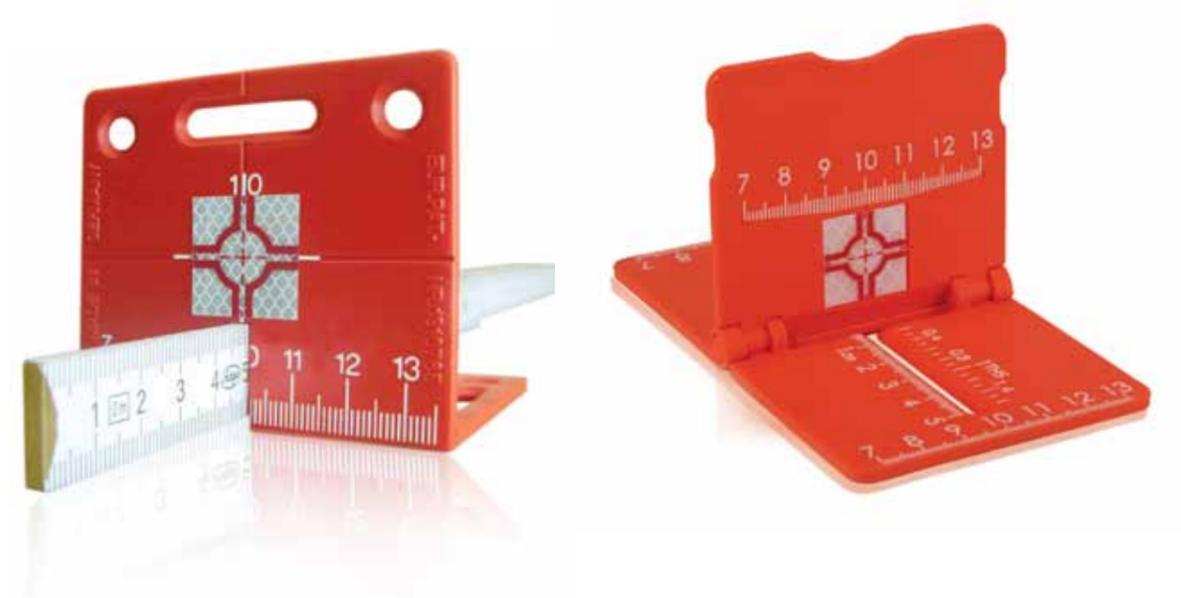
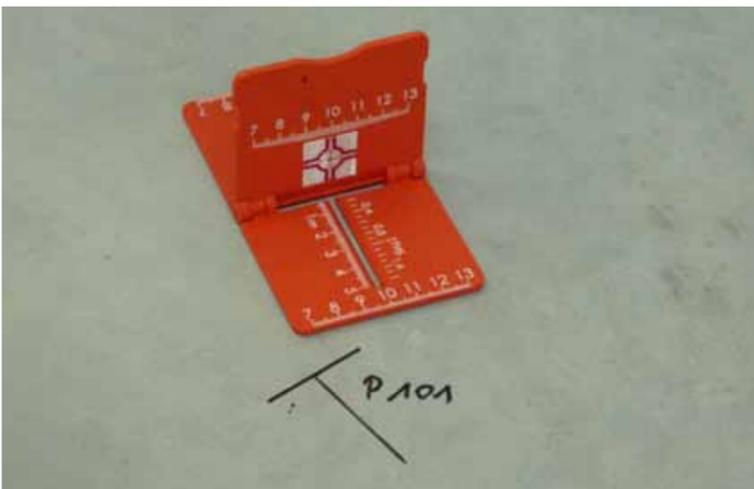
Stake-out Aids RS95 and RS96



RS95 – Stake-out at the batter board



RS96 – Stake-out on the floor slab

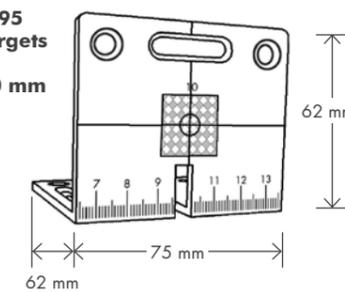


Stake-out aids RS95 and RS96 were developed specifically for stake-out work on the batter boards and on the floor slab. Exact measuring of the survey point on the floor slab often causes major problems particularly in the “final phase” with the last 5 – 10 cm. The work is very time-consuming due to the continual side to side, backwards and forwards with the prism pole and the prism pole always has to be exactly plumb. Stake-out aid RS95 or foldable stake-out aid RS96 is placed on the ground and the assistant can use the measuring scales to reproduce and transfer the surveyor’s directions quickly and precisely.

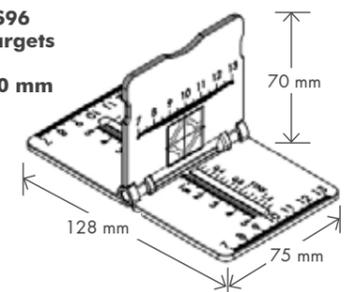
Advantages of the stake-out aids:

- They make surveying the axis on the batter boards easier.
- Stake-out on the floor slab at the last 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 the prism pole.
- 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 RSMP15 with 12.7 mm miniprism

RSMP15 with 12.7 mm miniprism sticks quickly and easily even to difficult surfaces, e.g. glass and marble façades, historic buildings, steel girders, rails, gas and oil pipelines, etc. or fastened with dowels and screws.

- When using robotic total stations:
- permanent settling measurements 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.

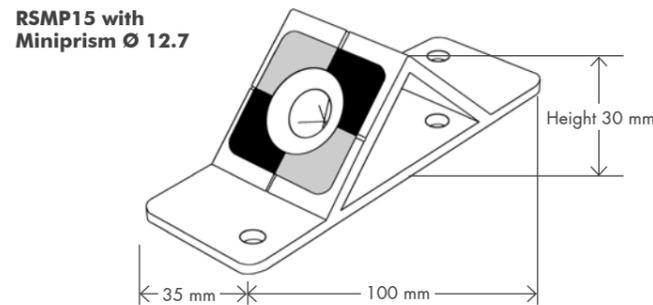
The prisms can be used to a maximum angle of 30 degrees in any direction. When measuring at an angle above 30 degrees, article RSMP180 is recommended. With this article, the prism can be aligned precisely with the instrument – see next page in the leaflet.



Hearst Castle USA



RSMP15 for measurements with robotic total stations during load





Swivelling Mini-prism RSMP180 and RSMP280



Plastic housing, turning and combinable with prisms in 12.7 and 17.5 mm

When using the miniprism RSMP180 or RSMP280, the prism can always be aligned precisely with the measuring instrument. The prisms can be turned in a radius of 180°, making it possible to use the same survey point from different directions. Bridges and other structures can be monitored even more quickly and precisely. With the integrated plug-in system, several prisms can be combined with each other. This permits measuring from different directions without having to turn the prism. Fixing adhesive permits quick and simple installation even on difficult ground. Fixating holes allows attachment with dowels and screws.

Ranges of 170 m to 400 m are achieved when using the miniprism RSMP180 in the ATR mode. When sighting measuring points that are already known, with robotic total stations it is possible to achieve ranges of up to 1000 m! Depending on the focus, ranges of approx. 200 m are achieved for measurements in manual mode.

Ranges of 400 m and more are achieved when using the miniprism RSMP280 in the ATR mode. The ranges depend on the instruments used.

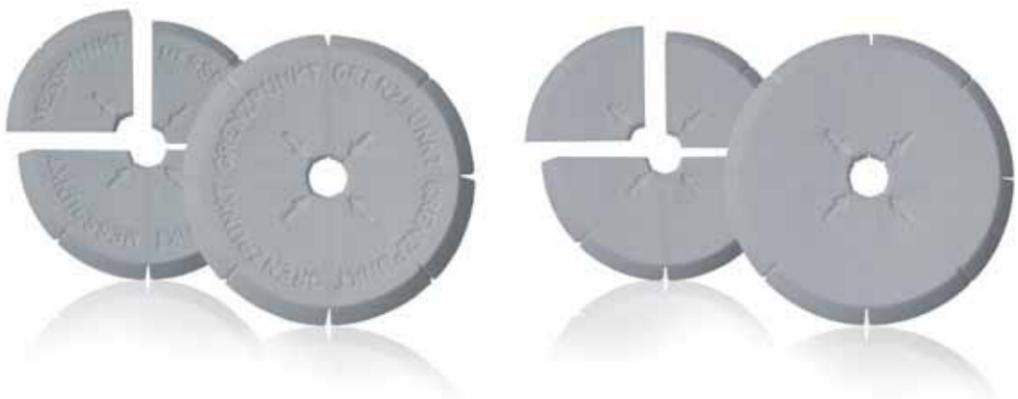
RSMP180 with 12.7 mm miniprism: Offset -10 (minus 10), height of tilting axis: 30 mm

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





4/4 Boundary Markers RSKM10 to RSKM40

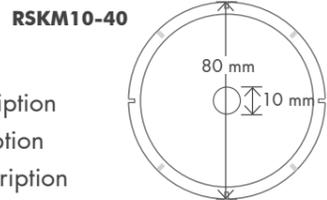


The Boundary Markers can be used as a 1/4, 1/2 and 3/4 limit or measurement point. They ensure the correct measurement of limit and measuring points on firm surfaces within property boundaries.

Precise documentation is ensured along inner corners, at a wall or brick wall and at outer corners. The Boundary Markers are attached using the special RSMK-FIX mounting adhesive.

The following designs are available:

- RSKM10: 4/4 Boundary Markers without inscription
- RSKM20: 4/4 Boundary Markers with "Grenzpunkt" inscription
- RSKM30: 4/4 Boundary Markers with "Messpunkt" inscription
- RSKM40: 4/4 Boundary Markers with "Survey Mark" inscription



Measuring Point RSFP1

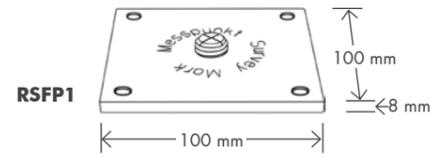


When used as a fixed point on the floor, this point should be surveyed with a prism so that if necessary, e.g. suspected moving of the fixed point due to foul play, it can be checked quickly and easily.

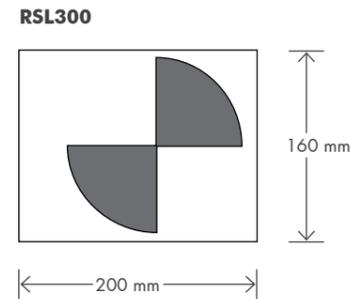


The aluminium plate RSFP1 has a 5/8" stainless steel thread for screwing on a prism or measuring instrument. If the plate is used as a fixed point at the bottom, the surveyor can position his instrument on his tripod precisely above the cross.

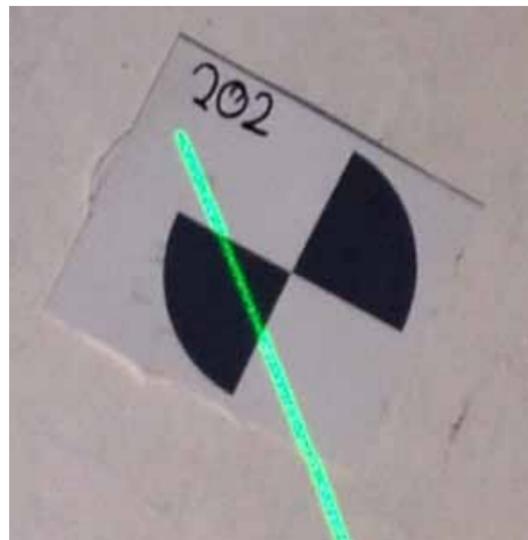
RSFP1 is supplied with a plastic or aluminium protective cap for the 5/8" thread.



Laser Scanner Targets RSL300



- Outstanding for scanners by Leica, Geomax and Faro,
- Fixed points for connecting several positions,
- Assignment of space-related reference information to a geodata set,
- With inscription space for clear assignment of measurement points,
- Quick and easy attachment,
- Waterproof,
- Suitable for indoor and outdoor use



Fixing Adhesive RSMK-FIX

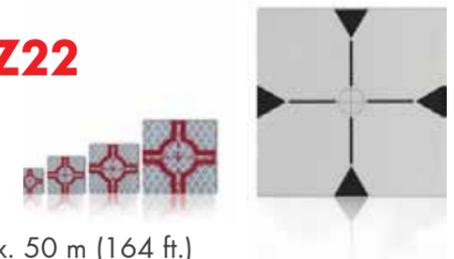


- Powerful fixing adhesive with immediate initial adhesion,
- Free from isocyanate and silicone,
- Permanently elastic and suitable for a wide range of uses,
- Odourless,
- RSMK-fix is suitable for all products by Rothbucher Systems.
- Can be applied using all common skeleton guns.



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 are average values and are exceeded by most current measuring instruments. A minimum distance of 10 m is required for some instruments. **Smart Targets with reflective targets are exclusively recommended for carrying out distance measurements using a tachymeter or total station.**

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 unmistakable measuring points.

Request our price list!

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