



# Inclinometer Casing



Glue and Snap Inclinometer Casing



Snap Seal Inclinometer Casing

RST's Inclinometer Casing is engineered to be assembled quickly and accurately for long and short term monitoring in the most adverse field conditions. RST Inclinometer Casing is suited to be installed in boreholes, embankments, piles, set into concrete or attached to structures. It's compatible with all commercially available inclinometer probes, including RST's MEMS Digital Inclinometer Probe. RST manufactures Inclinometer Casing with precision CNC technology.

The casing serves as an access tube to guide a MEMS-based inclinometer probe in the two orthogonal directions of measurement. Changes in the output of the probe caused by the deformation of the casing, is proportional to the sine of the angle of inclination of the long sensor axis from vertical. These displacements are incrementally summed to provide profiles of total displacement versus depth.

RST Instruments manufactures two sizes of Inclinometer Casing, with two integral coupling styles, to provide alignment and displacement measurements in numerous applications.

## manufacturing process

Key to quality inclinometer casing is not only the material, but the quality and shape of the grooves. The inclinometer probe utilizes grooves in the casing to control the azimuth of the inclinometer probe. Clearly if the grooves spiral, azimuth control is lost, and the installation becomes questionable if not useless.

Successive lengths of casing must join in such a manner so as to permit accurate tracking of the probe between successive casing sections. Spiral of the grooves cause misalignment between sections, causing the probe to jump out of the grooves.

Groove shape must accurately mirror the probe wheels in order to prevent probe lateral movement. There are two methods of producing grooved casing: extrusion and machining. While the simplest and cheapest way is to extrude the grooves with the pipe, the extrusion process does not adequately address the parameters of spiral and shape. Machining the grooves produces a higher quality product. All RST casing is machined to insure the highest quality possible.

RST casing is manufactured from non-recycled virgin ABS resin. While more costly than common PVC resin, ABS is preferred due to superior flexibility, stability and low temperature impact resistance. Using recycled resin degrades the performance of casing.



### RST Instruments Ltd.

11545 Kingston St.,  
Maple Ridge, BC  
Canada V2X 0Z5

Telephone: 604 540 1100  
Facsimile: 604 540 1005  
Toll Free: 1 800 665 5599

info@rstinstruments.com

www.rstinstruments.com

## applications

- Pilings
- Landslides and slope stability
- Subsidence control
- Under large storage tanks
- Embankment and dam stability
- Bridge pier, abutments deflection
- Areas next to large excavations

## features

- High precision, machined guide grooves.
- Low spiral  $\leq 0.005$  Rad/3 m ( $\leq 0.3$  deg./10 ft.)
- Meets or exceeds all applicable standards.
- Compatible with all commercial probe types and in-place inclinometer sensors.
- Self aligning, water and grout tight couplings.
- Integral coupling reduces assembly induced spiral by 50% over conventional separate coupling methods.
- Easy assembly.
- 70 mm (2.75 in.) and 85 mm (3.34 in.) OD sizes.
- Compatible with inductance, reed switch, magnetic, or mechanical settlement monitoring devices.
- Snap Seal and Glue & Snap integral flush couplings that minimize field installation time.
- Low temperature, impact and corrosion resistant ABS plastic.
- External key provides visual and tactile confirmation of proper installation.



specifications + ordering info

# Inclinometer Casing



## telescopic section specs

DESCRIPTION	70 MM (2.75 IN.) CASING	85 MM (3.34 IN.) CASING
Telescopic Section OD	76.96 mm (3.03 in.)	91.44 mm (3.6 in.)
Compressed Length	457 mm (18 in.)	457 mm (18 in.)
Extended Length	609 mm (24 in.)	609 mm (24 in.)
Range	152 mm (6 in.)	152 mm (6 in.)
Weight	0.77 kg (1.7 lbs.)	0.9 kg (2 lbs.)

## optional equipment

Top & bottom caps
Casing anchor and Casing anchor with Grout Connector (see separate brochure)
Reconnect adapter
Reconnect alignment tool
Female grout adapter
Grout cap
ABS-DVW Solvent Cement (cannot be shipped by air)

## casing specs

DESCRIPTION	70 MM (2.75 IN.) OD	85 MM (3.34 IN.) OD
Snap Seal / Glue & Snap Coupling OD	70 mm (2.75 in.)	85 mm (3.34 in.)
Casing OD	70 mm (2.75 in.)	85 mm (3.34 in.)
Casing ID	59 mm (2.32 in.)	73 mm (2.87 in.)
Casing Length	1.5 or 3 m (5 or 10 ft.)	1.5 or 3 m (5 or 10 ft.)
Casing Weight	1.27 kg/m (.85 lbs/ft.)	1.49 kg/m (1.0 lbs/ft.)
Snap Seal / Glue & Snap Bottom Cap OD	70 mm (2.75 in.)	85 mm (3.34 in.)
Material	ABS Plastic	ABS Plastic
Groove Spiral	≤ 0.3 deg./10 ft.	≤ 0.3 deg./10 ft.

## GLUE & SNAP SPECIFICATIONS - 70 MM

Load Test	738 kg (1630 lbs.)
Collapse Test	17.2 bar (250 psi)

## ordering info

DESCRIPTION	GLUE & SNAP		SNAP SEAL	
	70 MM (2.75 IN.)	85 MM (3.34 IN.)	70 MM (2.75 IN.)	85 MM (3.34 IN.)
1.52 m length (5 ft.)	ICGC205	ICGC305	ICSC205	ICSC305
1.50 m length (4.92 ft.)	ICGC205M	ICGC305M	ICSC205M	ICSC305M
3.05 m length (10 ft.)	ICGC210	ICGC310	ICSC210	ICSC310
Top cap	ICC2TC	ICC3TC	ICC2TC	ICC3TC
Bottom cap	ICGC2BC	ICGC3BC	ICSC2BC	ICSC3BC
Grout cap	ICGC2CP	ICGC3CP	ICSC2CP	ICSC3CP
Female Grout Adapter 3/4" NPT	IC1200	IC1200	IC1200	IC1200
Telescopic section	ICGC2TS	ICGC3TS	ICSC2TS	ICSC3TS

## snap seal casing

Traditional Inclinometer Casing installation methods dictate that screws or pop rivets must be utilized to hold the coupling in shear until the ABS solvent weld cement cures. The requirements for rivets is increased in deep boreholes.

Snap Seal is the original O-ring sealed coupling system, which does not require glue, pop rivets, screws, or shear wires. This patented, innovative system allows casing sections to lock together while maintaining precise groove alignment and high collapse strength. The Snap Seal system is flush coupled for ease of installation in hollow stem augers and casing advancers.

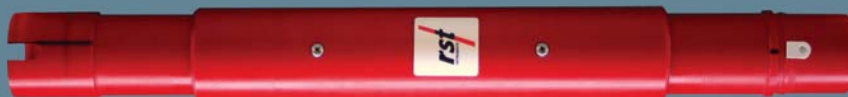
## glue + snap casing

Glue & Snap Inclinometer Casing is an improvement on the Snap Seal design and combines the best features of both installation methods with none of the disadvantages. Glue & Snap provides the speed and convenience of a Snap-together flush coupling combined with the low cost and high tensile/high torsional strength of a glue joint.

Installation is simply done by applying a bead of glue to the male end, snap casing together and insert downhole. As with Snap Seal, Glue & Snap Inclinometer Casing is flush coupled for simple installation.

## telescopic section

When vertical heave or settlement is anticipated to exceed 1-2%, Inclinometer Casing Telescoping Sections must be used to allow axial movement of the casing while minimizing distortion due to vertical strain. Telescopic sections must be inserted appropriately extended or collapsed, to accommodate the expected settlement/rebound. Settlement sections are available in 70 mm (2.75 in.) and 85 mm (3.34 in.) and each section can accommodate up to 150 mm (6 in.) of compression or heave. As a general rule, telescopic sections are recommended for use in boreholes, whereas telescopic casing (see separate brochure) is used in embankments that are gradually raised, such as embankments and tailings dams. Another option to accommodate high settlement in boreholes is to use corrugated sleeving over the Inclinometer Casing (see Magnetic Settlement System brochure).



Telescopic Section

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