

SPECIFICATION – INSTALLATION OF DURHAM GEO / SLOPE INDICATOR QC INCLINOMETER CASING

1. General Requirements

The Contractor shall install DGSI Quick-Connect (QC) Inclinator Casing in accordance with the manufacturer's published installation procedures and guidance. QC casing uses a patented snap-together coupling system that provides flush, grout-tight joints without requiring glue, rivets, or tape.

QC casing installation shall be performed by qualified personnel familiar with inclinometer systems and borehole instrumentation practices.

2. Materials

Only genuine DGSI QC casing and accessories shall be used.

Approved Components (70 mm & 85 mm QC Casing)

Components shall include, as required:

- QC casing sections (70 mm P/N 51150210; 85 mm P/N 51150310)
- Telescoping sections (70 mm P/N 51150220; 85 mm P/N 51150320)
- Bottom caps, top caps, locking caps, and grout valves
- Male and female splice kits

These are the standard QC system components listed by DGSI.

3. Handling and Preparation

3.1 Inspection

Before installation, all casing components shall be inspected for:

- cracks, deformation, or damaged grooves
- missing O-rings or compromised coupling features
- cleanliness inside the groove channels

The QC casing's precision-machined grooves must remain free of debris to ensure accurate probe tracking.

3.2 Orientation

Casing shall be oriented so that the four internal orthogonal grooves align continuously along the full length of the installation.

The QC coupling system prevents twisting or rotational misalignment when properly assembled.

4. Borehole Preparation

The borehole shall be drilled to the required depth and diameter appropriate for the casing size. The borehole annulus must allow sufficient space for uniform grout placement without casing deformation.

DGSI specifies that casing must be strong enough to resist collapse from grout pressures; controlling grout pressure may be necessary in deep installations.

5. Assembly of QC Casing

5.1 Coupling Engagement

Each QC joint shall be assembled by:

1. Ensuring the O-ring is properly seated.
2. Aligning the casing ends so grooves match.
3. Pressing the sections together until the snap-lock engages.

The QC joint:

- Will not twist out of alignment,
- Will not pull apart,
- Will not leak or collapse under normal grout pressure, as confirmed in the DGSI installation guide.

5.2 Splice Kits

Where repairs or special transitions are needed, only DGSI-approved male/female splice kits shall be used.

5.3 Telescoping Sections

Where settlement or differential movement is expected, telescoping sections shall be installed per DGSI procedures.

6. Installation in Borehole

6.1 Lowering the Casing

Casing shall be lowered slowly into the borehole, avoiding shock loading, bending, or lateral stress that could deform the casing or coupling.

QC casing is engineered to maintain structural integrity during installation, with robust joints and controlled groove thickness.

6.2 Maintaining Verticality

Contractor shall ensure the casing remains plumb and free of bends or kinks. Alignment shall be checked regularly during installation.

6.3 Centralization

If needed to maintain alignment or prevent casing contact with borehole walls, contractor may employ spacers or centralizers.

7. Grouting

7.1 Grout Requirements

Grout shall be pumped from the bottom up using tremie methods to avoid voids.
Grout mix shall conform to DGSI-recommended formulations referenced in casing datasheets.

7.2 Pressure Management

Because QC casing can withstand typical grout pressures, but deep holes may require staged grouting, the contractor shall control pump rates and pressure to avoid collapsing the casing.

7.3 Joint Integrity

The QC O-ring coupling ensures a grout-tight seal; however, contractor shall verify:

- all joints fully seated
- no leakage during early grout injection

8. Termination and Surface Completion

At the top of the installation:

- Install the DGSI top cap or locking cap as specified (e.g., P/N 51101500 or 51100550).
- Ensure the casing is protected from site traffic and weather.
- Provide identification markings and survey reference information.

9. Quality Control

The Contractor shall verify:

- continuous groove alignment over full depth
- correct orientation using plumb or alignment tools
- no obstruction inside casing by conducting a dummy probe run prior to commissioning
- proper engagement of every coupling

Precision, spiral-free grooves and consistent geometry are essential for inclinometer accuracy.,

10. Documentation

Contractor shall provide:

- installation log (depths, coupling locations, grout volumes, anomalies)
- as-built drawings showing final casing depth and orientation
- batch information for grout mixes

11. Manufacturer

Durham Geo Slope Indicator (DGSI)
Tucker, Georgia, USA
QC Casing System (70 mm & 85 mm).