

MINING

GROUTED CABLE BOLT

VERSATILITY AND REMARKABLE PERFORMANCE

DESCRIPTION

High-capacity cable bolting system to support and control large underground movements. Minova’s Cable Bolts are designed to perform in broken and unstable ground as well as in highly stressed ground as primary or secondary roof support. Cable Bolts incorporate much higher strength than traditional bolts with incomparable flexibility and elongation to adjust to the movement of the earth’s strata.

Cable Bolts are applicable where standard ground support is marginal or inadequate. Common application areas include development headings, ore recovery zones and draw points, sidewalls, floors, and other mine areas where additional support is desired.

Minova leads the way with cable and grouting systems, based on your mining equipment and site-specific conditions, to rapidly install cable bolt systems.



Minova fishhook style cable system is swaged on with steel tubing and bent hooks can accommodate any size borehole, firmly holding the cable in place during the post-grouting process.

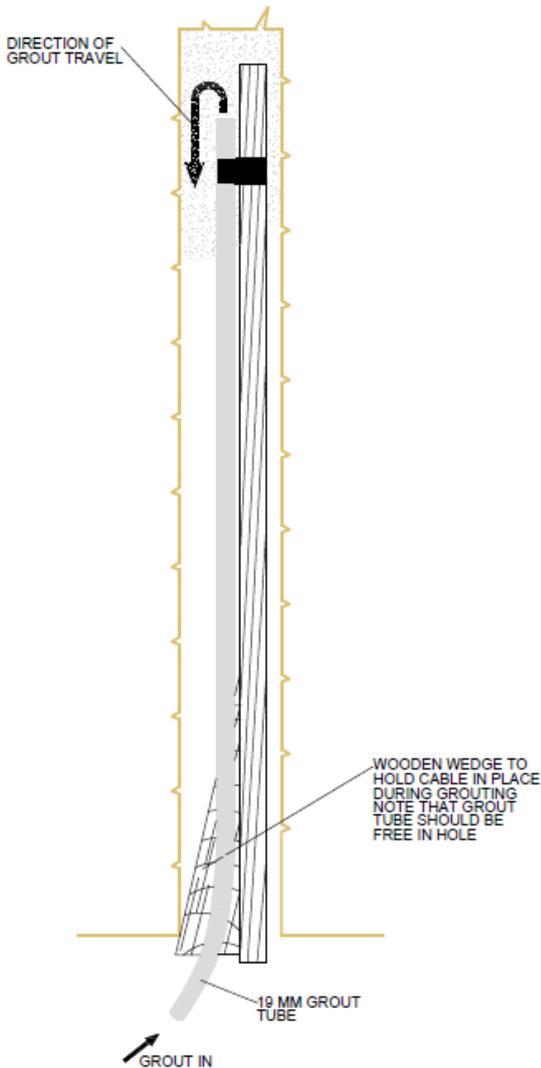
ADVANTAGES

- Available in two cable strand diameters with smooth or indented outer wires.
- Bright or Galvanized strand is available for different environmental conditions.
- Minova’s exclusive Garford bulbing system provides improved anchorage.
- Available in passive or post-tensioned systems

CABLE BOLT SPECIFICATIONS

Material	Strand	Ultimate Load
0.6” Gr270K	Bright, Galvanized	Approximately 30 tons
0.7” Gr270K	Bright, Galvanized	Approximately 40 tons

CEMENT GROUTED AND CARBOTHIX CABLE BOLT INSTALLATION PROCEDURES WITH GROUT TUBE



1. Drill a 2" to 2-1/2" diameter hole.
2. If a bearing plate is going to be used and the cable post-tensioned, the hole needs to be drilled 18" shorter than the cable bolt (18" tail is required for tensioning the cable bolt)
3. Flush out the hole to remove all cuttings. If a downhole, avoid inflow of mud and rock when drilling is completed.
4. Safely unspool the cable bolt.
 - Stand in the middle of the coil, ensure area is clear of other workers and equipment. The cable

is under tension and will spring open once the straps are removed.

- Try to keep the cable as clean as possible; avoid mud, grease, and oil, which will impact anchorage.

5. Using electrical tape attach the grout tube 6" from the end of the cable bolt, leave an adequate length of tail on the grout tube to reach and attach the grout pump.

6. Push the cable in the drill hole ensuring that 18" of cable sticks out of the hole for post-tensioning.

7. If a fishhook has not been fabricated onto the cable end, insert a wooden wedge into the hole to secure the cable in the desired position. Additionally, tie the cable to screen with a carry strap or nylon rope to prevent falling out before grouting.

8. Fill grout pump with water and ensure it is working properly OR if using CarboThix, ensure the pump set-up and the two components of CarboThix A and B, are ready to be delivered.

9. Water: Cement ratio is crucial to a good installation. Follow manufacturer recommendations.

10. The cement should have a thick consistency. The consistency is very important to ensure the grout does not run out of the hole during pumping.

11. Clamp the pump discharge hose onto the grout tube using modified Vice Grips.

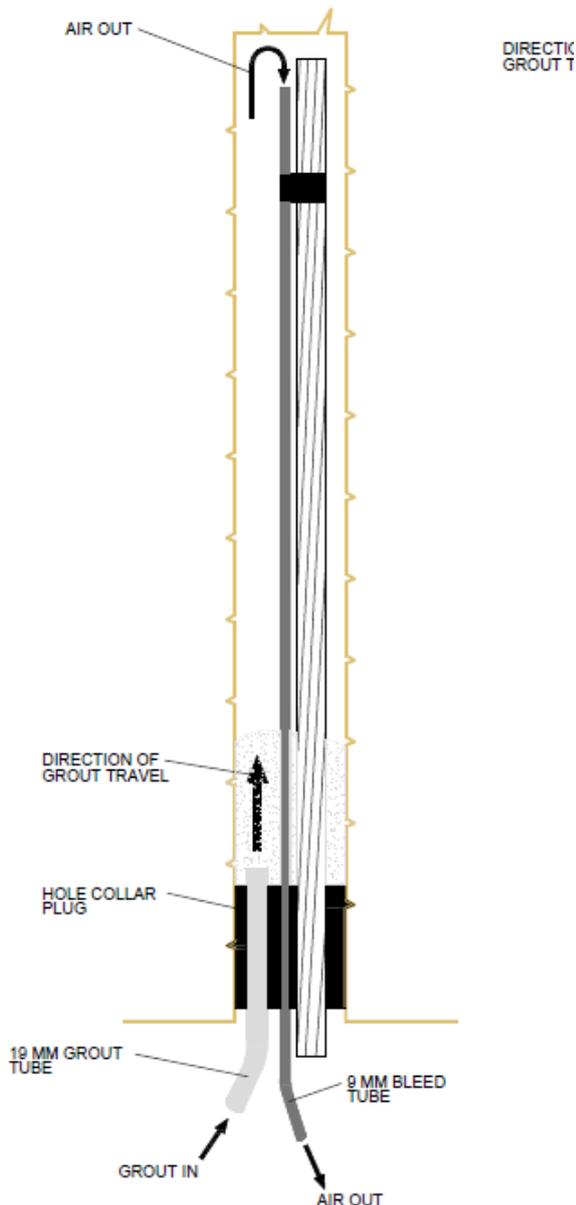
12. Continue pumping until grout or CarboThix appears at the collar.

13. Remove the pump hose from the grout tube pump and bend it over onto itself and use electrical tape to prevent grout from flowing out.

14. After adequately curing of the grout:

- Cut the grout tube off as close to the hole as feasible.
- Insert the cable through a bearing plate, add a barrel and wedge cable anchor by hand and as tight to the roof as possible.
- Post-tension the cable with a jacking system to the desired level.

CEMENT GROUTED CABLE BOLT INSTALLATION PROCEDURES WITH BREATHER TUBE



1. Follow steps 1-4 from the grout tube installation.
2. Using electrical tape attach the breather tube 6” from the end of the cable, leave a long enough section of breather tube so the other end can be placed in a cup of water.
3. Push the cable and breather tube into the drill hole.

- Push a grout tube 6” to 12” into the collar of the drill hole and secure it to the cable with electrical tape.
 - The grout tube needs to be long enough to reach the grout pump.
4. If a fishhook has not been fabricated onto the cable end, insert a wooden wedge into the hole to secure the cable in the desired position. Additionally, tie the cable to screen with a carry strap or nylon rope to prevent falling out before grouting.
 5. Fill grout pump with water and ensure it is working properly.
 6. Water: Cement ratio is crucial to a good installation. Follow manufacturers recommendations.
 7. Clamp the pump discharge hose onto the grout tube using modified Vice Grips.
 8. While pumping the grout into the grout tube and up the hole keep the end of the breather tube in a cup of water, as the hole fills it will push air out of the hole that will come out of the breather tube and make bubbles in the water. When the bubbles stop the hole is full and grout is blocking the breather tube – stop pumping.
 9. After adequately curing of the grout:
 - Cut the grout and breather tube off as close to the hole as feasible.
 - Insert the cable through a bearing plate, add a barrel and wedge cable anchor by hand and as tight to the roof as possible.
 - Post-tension the cable with a jacking system to the desired level.

Consult your Minova Technical Sales Representative for specific grouts, W:C ratios and grouting consumables.

ABOUT CARBOTHIX

CarboThix is a silicate resin anchoring grout that is instantly thickening and fast curing for the anchorage of bolts and cables.

CarboThix improves the productivity of ground support installations in underground mining and tunnelling applications.

Using the CarboThix enables post-tensioning to take place in minutes versus 24 hours required for cementitious grouted systems.

During the application, the two components are intimately mixed and achieve a grease-like consistency so the grout stops flowing and cures to form a tough elastic and non-porous resin that will not mix with water or be diluted in wet holes.

APPROVALS AND CERTIFICATES



an ISO 9001:2015

Quality Management System Certified Company.

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