

Lokset[®] Resin Cartridges Tunneling

Reinforced Polyester Resin Anchor

The Lokset[®] Resin Cartridge consists of a filled polyester mastic and a catalyst paste, contained in a heat-sealed tube of polyester film. A film barrier prevents premature chemical reaction until the anchor bolt ruptures and mixes the contents. Available in three standard gel times, the cartridge is manufactured in six diameters. Standard cartridge length is 12". Lokset[®] Resin Cartridges are also available in longer lengths to facilitate rapid installation of material.

Uses

Rock bolting in mines and tunnels, permanent rock reinforcement on highway rock cuts, dams and underground rock structures, vibration-resistant anchorages for attachment of critical equipment to concrete or rock, uplift anchorages for near surface structures, and immediate post-tensioning steel reinforcements in rock concrete structures.

Advantages

- **Accuracy** – Reproducible strength characteristics.
- **Speed** – The fast-gelling Lokset[®] Resin Cartridges enable rapid installation to be carried out, with application of load in minutes.
- **Permanence** – The durable resins protect the embedded bolt from corrosion.
- **Safety** – Millions of Lokset[®] Resin Cartridges are used every year for permanent rock reinforcement in mines, tunnels and foundations.
- **Vibration** – Lokset[®] Resin Cartridges are not affected by vibration and require no retensioning even after close proximity blasting.

- **Stress Free** – No internal stresses are set up in the rock or concrete by resin anchors.
- **Low Insertion Force** – Cartridges specially formulated for easier penetration when hand held equipment is in use are available.

Description

The system permits the placing of bolts in any position or angle above or below the horizon, in rock or concrete structures. Drill holes with rotary-percussive equipment to provide for the essential hole profile. Holes must be flushed with air or water so that they are clear of cuttings and debris.

Hole diameters should be within the range of borehole diameters permitted with a specific bolt diameter. To facilitate installation of long, coupled bolts, a larger diameter hole is drilled in the grout zone with a reduction in hole diameter carried out with the last section of drill steel.

Refer to Lokset[®] Usage Chart.

Anchorage

The anchorage achieved varies from 2-1/2 tons per inch in granite and other very high strength rocks to 1/2 ton per inch in mudstone and other very weak rock formations. Lokset[®] resin achieves full strength in less than one hour.

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General Installation Instructions For Fully Grouted Systems

1. Before use, read the installation and safety information provided with each box. Read the material safety datasheet.
2. To obtain a consistent set time, make sure the Lokset® Resin Cartridge and bolt are at tunnel temperature before use, preferably 50°F to 70°F.
3. Drill the borehole to the correct diameter at a depth 1" longer than the bolt.
4. Insert the required number of Lokset® Resin Cartridges.
5. Rotate the bolt as it passes through the cartridge.
6. Just prior to the bolt head contacting the rock, stop and spin the bolt at a minimum 100 rpm to mix the cartridge (3 to 8 seconds).

7. Stop rotation and push the bolt upward with full thrust until the resin sets.
8. **Do not overspin the bolt.** If bolt rotation continues through the gel time, damage to the anchor may occur.
9. **Never re-spin the bolt.** Bolt rotation after the final spin may damage the partially set resin.

Packaging

Product packaging is dependent upon cartridge length.

Please refer to the Lokset® Resin Cartridge product line brochure for packaging information.

Shelf Life

One year when stored in a cool, dry place. For maximum performance, stock rotation is strongly recommended.

Resin Usage Chart

Bolt Size	Hole Diameter (inches)													
	1	1 1/4	1 3/8	1 1/2	1 5/8	1 1/2	1 5/8	1 3/4	1 7/8	2	2 1/4	2	2 1/4	
	Cartridge Diameter (mm)													
	23	28	32	32	32	35	35	40	40	40	40	45	45	
Hole Length Per Foot (12 inches) of Resin														
#5 (5/8" ∅)	13.7													
#6 (3/4" ∅)	19.1	12.4				Not recommended								
#7 (7/8" ∅)		15.6	14.4											
#8 (1" ∅)			18.2	13.0		15.5	11.8							
#9 (1 1/8" ∅)				16.5	11.8	19.7	14.1	14.1	11.2					
#10 (1 1/4" ∅)					15.0		18.0	16.9	13.0	10.4		13.1		
#11 (1 3/8" ∅)		Not recommended						23.0	16.0	12.0		15.2		
#14 (1 5/8" ∅)											12.7			16.1

Minova Americas Products

Bolts and Plates

Anchoring Products

Pumpable Cementitious Grouts

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Chemical Grouts



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