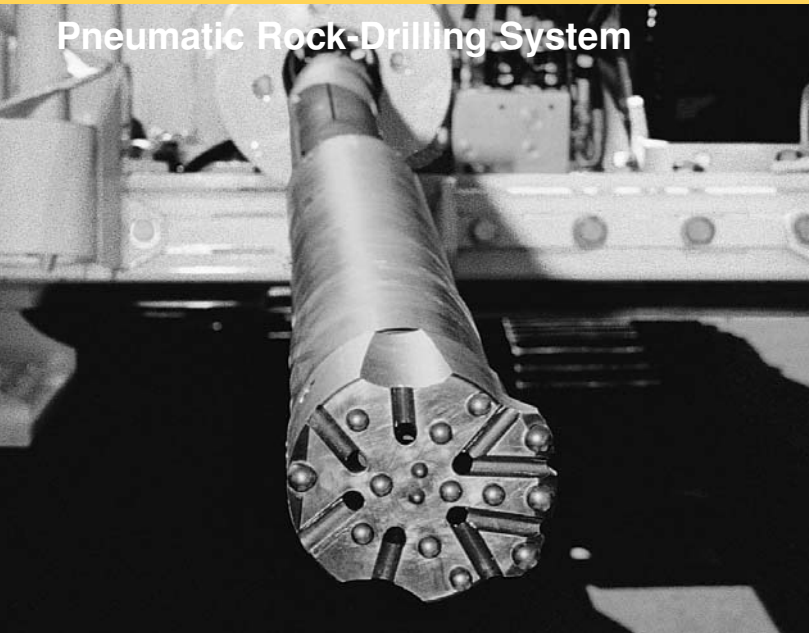


AS4 RockFire®



Pneumatic Rock-Drilling System



VERMEER BREAKS THROUGH WITH THE ROCKFIRE AS4 PNEUMATIC ROCK DRILLING SYSTEM!

The patented Vermeer® ROCKFIRE AS system is a steerable pneumatic rock drilling system designed to drill and steer in rock when used with Vermeer NAVIGATOR® horizontal directional drills. Available on the D24x40A and larger horizontal directional drills, Rockfire AS systems provide drilling contractors a tool to complete short to medium length bores in varying rock formations.

The AS systems allow D24x40A and larger HDD machines to tackle most rock drilling jobs up to 300 ft. that may difficult or impossible without the use of down hole mud motors. The AS4 virtually eliminates the mud management that comes with mud motor jobs. No reclaimers, no big mess...A real advantage when drilling in urban areas.

The system utilizes a down hole hammer which is powered by a stand-alone air compressor pumping air through conventional HDD drill stem. A steerable drill bit provides efficient impact cutting. The transmitter is protected from the high G-forces using a specially designed transmitter isolator.

The Rockfire AS system uses a specialized mixing system to introduce a foam/polymer mix into the air stream. This air/foam/polymer mix exits the drill head and carries the rock cuttings out of the bore path. The foam then dissipates, leaving

only the cuttings behind. Special de-foaming agents are available to speed dissipation rates.

All ROCKFIRE systems utilize the patented SplineLok® connection systems, allowing the system to quickly adapt back to conventional drilling techniques when the down hole hammer exits rock formations.

Others steer clear of rock. Vermeer steers clear through it. Break through, with the Vermeer ROCKFIRE® rock-drilling systems.

ROCKFIRE AS4 Specifications

Machine adaptability: D24x40A, D33x44, D36x50, D40x40

Air requirements: Air compressor- minimum 400 cfm, 200 psi (Max. pressure - 250 psi)

Cutting bit diameter: 4.25"

Cuttings Removal: Air/Foam/Polymer Mix

Recommended foam type: Quick Foam or Attack Foam

Recommended polymer type: Liquid Polymer

Mix Rates: (per 300 gallons) Soda Ash (to achieve pH of 8.5 - 9.5), 2 gallons Quick Foam or Attack Foam, 2 Qt. Liquid Polymer

Tooling connection: SplineLok

Transmitter: DCI, Spot D Tek, Radiodetection

Hammer length: 66" (Incl. bit and transmitter housing)

System Requirements

Minimum 400 cfm air compressor at 200-250 psi

Rockfire ready Navigator HDD

ROCKFIRE AS4 down hole hammer for appropriate sized drill stem (includes transmitter housing, pneumatic hammer, 2 steerable bits and one set of transmitter isolators)

ROCKFIRE compatible tank assembly

Vermeer Manufacturing Company

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