ROCKMORE INTERNATIONAL

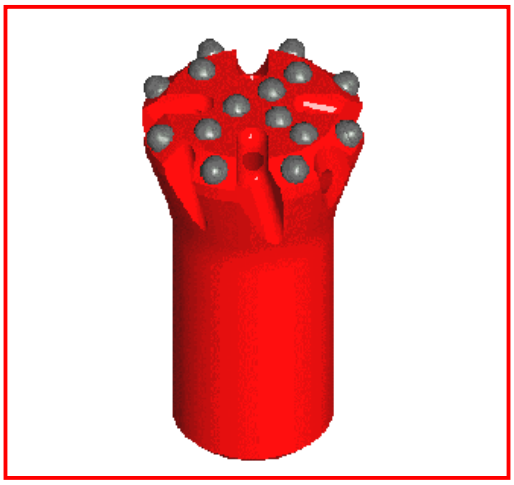
# PRESS RELEASE – NEW PRODUCT LINE

January, 2002

# *New* Xtreme Series Button Bits

Rockmore International introduces the new Xtreme series of Button Bits. This new percussive bit line employs a new button design called FA carbide. The Xtreme series of Button Bits with the newly designed FA carbide have been developed for extreme hard and abrasive rock conditions in percussive surface drilling for quarrying, mining, and construction drilling applications.

Extreme hard and abrasive rock conditions often cause premature wear in button bits by eroding the bit steel matrix and exposing the carbide button tips excessively. The most common mode of premature failure in such conditions is carbide breakage resulting from disproportionate button wear compounded by excessive button protrusion from the supporting steel matrix. The abrasive rock properties in the flushing rock chips steadily wear away the steel matrix supporting the button tips and thereby reduce the holding contact forces around the carbide buttons. This reduced contact area between the steel matrix and carbide surface area leads to excessive force and torque imparted on the overly protruding carbide tips and ultimately results in premature carbide breakage.



*New* **Rockmore** Xtreme Button Bit
For hard and abrasive rock conditions

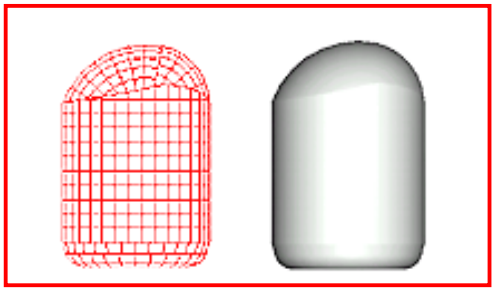
Rockmore has developed the Xtreme series of Button Bits to withstand severe hard and abrasive rock conditions by introducing revolutionary new design concepts. These advancements include a new bit face configuration, the innovative ***TURBO*** radial groove concept, as well as a new carbide design, FA carbide. The Xtreme Button Bits have been developed to limit excessive matrix or body wear and to maximize button life by employing the newly designed carbide concept. The overall result is longer sustained bit life in hard and abrasive rock conditions.

The Xtreme series bits are characterized by several new design features that revolutionize bit performance in difficult rock conditions. These bits may be distinguished by a new Flat-Face head design that allows for placement of robust carbide buttons as well as four large face flush grooves. Design modeling, verified by field tests, has demonstrated that this face configuration greatly reduces matrix wear at the bit face and improves rock chip flow volume rates. In addition, this new face design significantly reduces air turbulence between the bit face and hole bottom, common in traditional Drop-Center bit designs. This type of turbulence at the bit face has been associated with counterproductive rock chip flushing that contributes to higher steel matrix wear in abrasive rock conditions. The new Flat-Face design, however, increases rock chip flushing volume and flow rates leading to better bit

penetration. The improved chip flushing and bit penetration rates thereby reduces premature carbide and body wear, contributing to better overall drill string performance.

A new wing or shoulder profile design has also been developed in conjunction with the new face concept. The aggressive receding shoulder angle between the face and the body of the bit allows for greater volume of rock chips to pass more efficiently away from the head of the bit, leading to better bit penetration and reduced wear properties on the bit perimeter.

The traditional vertical perimeter flush grooves on the Xtreme bits have been replaced by modified radial grooves placed at calculated angles in the direction of the bit rotation. This novel design concept, called ***TURBO*** radial flush grooves, greatly enhances chip flushing by allowing the rock chips to more effectively channel between the carbide buttons away from the rotating bit face. In effect, the crushed rock chips are assisted away from the bit face due to the unobstructed radial flow paths permitted by the ***TURBO*** radial groove design. In addition, the vortex effect created by the design of the ***TURBO*** grooves expel the rock chips more effectively from the bit cutting face and up the drill hole annulus. By greatly improving the overall chip flushing characteristics, the ***TURBO*** design contributes to reducing perimeter or gauge wear, resulting in longer sustained blast hole diameters. This design feature significantly reduces excessive face and body wear especially in hard and abrasive rock conditions, a leading precondition to premature bit failure.



*New* FA design carbide
*On* Xtreme bits

The Xtreme Button Bits incorporate the newly released FA carbide design on the perimeter or gauge row of buttons. It has been well established that the perimeter row buttons on all carbide Button Bits carry the primary loads and torque transferred to the bit. Therefore, Rockmore's R&D efforts have focused on a new design for the perimeter row buttons to sustain the high loads and ultimately reduce the excessive wear factors, especially in hard and abrasive rock conditions. The guiding principle leading to the FA design is the concept of Functional Asymmetry, or FA. Traditionally, buttons for percussive drilling applications have always been vertically symmetrical in Button Bits. The FA carbide concept, never before applied to percussive drilling, results in an asymmetrical shaped button geometry that is characterized by more carbide mass and volume on the hemisphere tip at one side of the button. Each FA button is specifically located and oriented on the bit perimeter such that the increased carbide mass provides added wear protection and better transfer of energy, imparting more effective rock fracture. Because the resultant drilling forces and torque transferred to the bit are primarily tangent to the perimeter buttons, the shifted carbide mass on the FA carbide promotes increased wear protection at the bit perimeter. Especially in hard and abrasive rock conditions, the FA carbide geometry provides increased wear protection at the button surface locations where contact and cutting forces are at maximum. Button life and overall bit performance are extended as the bit is able to withstand longer perimeter wear while fracturing the rock at more effective rates.

The Xtreme Button Bits are available in diameters 102mm – 127mm (4 in. – 5 in.) with standard body or retrac configuration.