

Title (en)  
ROCK DRILLS

Publication  
**EP 0099594 B1 19860219 (EN)**

Application  
**EP 83200711 A 19830519**

Priority  
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Abstract (en)  
[origin: EP0099594A2] The invention relates to rock drilling equipment particularly of the down-the-hole type. More particularly the invention relates to such drills incorporating a flap valve. Hitherto such drills have been designed to operate at a particular air pressure with the disadvantage that if on a particular site the compressed air availability does not suit the drill, its effectiveness is impaired. It is equally the case that conventional rock drills of the type in question operate at a relatively low cutting speed calculated on a feet per minute basis. The object of the invention is to provide a rock drill capable of considerably higher cutting speeds than has hitherto been possible and which is capable of operation over a range of air pressures. The objective is met by a construction comprising a backhead for the connection of a drill to a source of compressed air, a wear sleeve secured to the backhead and a chuck adapted to retain a drill bit secured to the opposite end of the wear sleeve, there being within the wear sleeve an inner cylinder with a valve seat at one (inner) end of the cylinder having a valve stem extending into the cylinder and a piston within the cylinder reciprocable therein from one position where the valve stem engages in a bore in the piston to a second position where a stem on the piston enters a bearing located in the cylinder and strikes a drill bit held within the chuck, the dimensions of the piston being such that the ratio of the piston head diameter to its bore diameter is in the range 9.9/9.95 to 1, the ratio of the piston head length to the piston stem length is in the range 1.5/1.52 to 1, the ratio of the piston head diameter to the piston stem diameter is in the range 1.4/1.43 to 1 and the ratio of the piston stem length to the length of the piston stem within the bearing at the point at which the piston strikes the drill bit is 1.4/1.45 to 1. It is further highly desirable that the rock drill has a valve seat wherein the ratio of the cross-sectional area of the part of the valve seat within the cylinder to the cross-sectional area of the stem of the valve seat is in the range 0.09/0.10 to 1, the ratio of the stroke length of the piston to the length of the stem of the valve seat is 0.87/0.88 to 1 and the ratio of the net internal length of the bearing to the stroke length of the piston is in the range 0.56/0.57 to 1.

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