

**MINING**

# EXPANSION SHELL BOLTS

**KR-1/Ø25-M18, KR-2/Ø25-M18, KR-1/Ø25-M18/M, KR-2/Ø25-M18/M**

*Certificate of Conformity issued by "INOVA" Technical Innovation Centre Ltd.  
No. 68/4/2017*

**DESCRIPTION**

KR-1/Ø25-M18 and KR-2/Ø25-M18 expansion shells of ø25 mm diameter are elements fixing the bolt in the hole.

KR-1/Ø25-M18 shell consists of one shell sleeve and one expander, while KR-2/Ø25-M18 shell consists of two shell sleeves and 2 expanders.

The bolt rods are made of plain AP 600 steel bar of ø18.3 mm in accordance with ZN-97/AP-2 standard. The rods vary in terms of shape and size of the forged head. The upper part of the rod ends with a rolled M18 thread.

**APPLICATION AND USE**

Expansion shell type KR-1/Ø25-M18 and KR-2/Ø25-M18 are designed to be used for roof and ribs support in mine working areas as an independent or auxiliary roof support system. They are also used for the attachment of various components of mining equipment.



*KR-1/Ø25-M18 (top), KR-2/Ø25-M18 (bottom)*

**ADVANTAGES**

- Dimensional diversity of the length of the expansion shell
- Fast bolting system
- Small borehole diameter used for installation - 25.4 mm
- Various solutions of bolt forged heads
- Various plate versions available

**TECHNICAL DATA**

**DESIGN DATA**

The following rods can be used in KR-1/Ø25-M18 and KR-2/Ø25-M18 expansion shell bolts:

Bolt type	Rod type				
<b>KR-1/Ø25-M18</b>	RS-1SZ/M18	RS-1SZ-Z/M18	RS-1N/M18	RS-1N-Z/M18	ES-1/M18
<b>KR-2/Ø25-M18</b>	RS-2SZ/M18	RS-2SZ-Z/M18	RS-2N/M18	RS-2N-Z/M18	ES-2/M18

**BOLT DATA**

Parameter	Value
Rod diameter	ø18.3 mm
Thread	M18
Rod length	1200 ; 1400 ; 1600 ; 1800 ; 2000 ; 2200 ; 2400 ; 2600 ; 3000 ; 3200 mm
Head diameter KR-1/Ø25-M18 KR-2/Ø25-M18	Ø25 mm
Head length KR-1/Ø25-M18 KR-2/Ø25-M18	74 mm 110 mm lub 130 mm
Bolt capacity according to regulations	min 100 kN
Useful load	130 kN

All washers are made of 6 mm metal plate. The washers differ in terms of press forming method and thickness.

The washer plates have a hole of 27 mm in diameter. The following washer plates can be used with the bolts:

- Square
- Square with a side hole
- Round
- Octagonal

**APPLICATION METHOD**

- Bolts should be installed in dry drill holes after drill dust has been cleared.
- The length of the hole should be equal to the length of the bolt.
- Reassemble the bolt by placing the washer and shell on the rod
- Place the bolt in the hole and push until the washer touches the rock surface.
- Turn the rod and as a result the shell expands in the hole
- Tighten the bolt by applying at least 250 Nm torque in order to obtain the prestress of at least 30kN.

Washers with a side hole of ø15 can be used for attaching elements of mining equipment. They should be used if there is no hole in the rod.

**PACKAGING AND TRANSPORTATION**

As a standard practice, anchor poles and expansion shells are packed in bundles of 10pcs or in bundles of 100-300pcs and plates are stapled with 10pcs of wire.

Other packaging options available on request.

Expansion shells and plates are placed in containers and elements of the bolts can be transported by any means of transport in bundles or in containers.

**APPROVALS AND CERTIFICATES**

- KR-1/Ø25-M18, KR-2/Ø25-M18 expansion bolts have a Certificate of Conformity No. 68/4/2017 issued by "INOVA" Technical Innovation Centre Ltd. in Lubin.

**DISCLAIMER**

The Minova Logo is a registered trademark.

Copyright © 2019 Minova. All rights reserved.

All information contained in this document is provided for informational purposes only and is subject to change without notice. Since Minova cannot anticipate or control the conditions under which this information and its products may be used, each user should review the information in the specific context of the intended application. To the maximum extent permitted by law, Minova specifically disclaims all warranties expressed or implied in law, including accuracy, non-infringement, and implied warranties of merchantability or fitness for a particular purpose. Minova specifically disclaims, and will not be responsible for, any liability or damages resulting from the use or reliance upon the information in this document.

**LIST OF REPRESENTATIVES**

- AUSTRIA: Minova MAI GmbH
- BELGIUM / FRANCE: Minova France C/O Orica Belgium SA
- CZECH REPUBLIC: Minova Bohemia s.r.o.
- GERMANY: Minova CarboTech GmbH
- ITALY: Minova CarboTech GmbH
- KAZAKHSTAN: Minova Kazakhstan JV LLP
- NORWAY: Minova Norway C/O Orica Norway
- POLAND: Minova Arnall Sp.z o.o.
- RUSSIA: Minova Leninsk-Kuznetsky / ZAO "Carbo-ZAKK"
- SLOVAKIA: Minova Slovakia Žilina
- SOUTH AFRICA: Minova Africa (Pty) Ltd.
- SPAIN: Minova Codiv S.L.U.
- SWEDEN: Minova Nordic, C/O Nitro Consult AB
- UNITED KINGDOM: Minova International Limited (Global Head Office)
- AUSTRALIA: Minova Australia C/O Orica Technical Centre (Regional Headquarters)
- AMERICAS: Minova Georgetown (Regional Headquarters)

**CUSTOMER SERVICE**

For additional support options available at your area, contact our local offices.

[www.minovaglobal.com](http://www.minovaglobal.com)