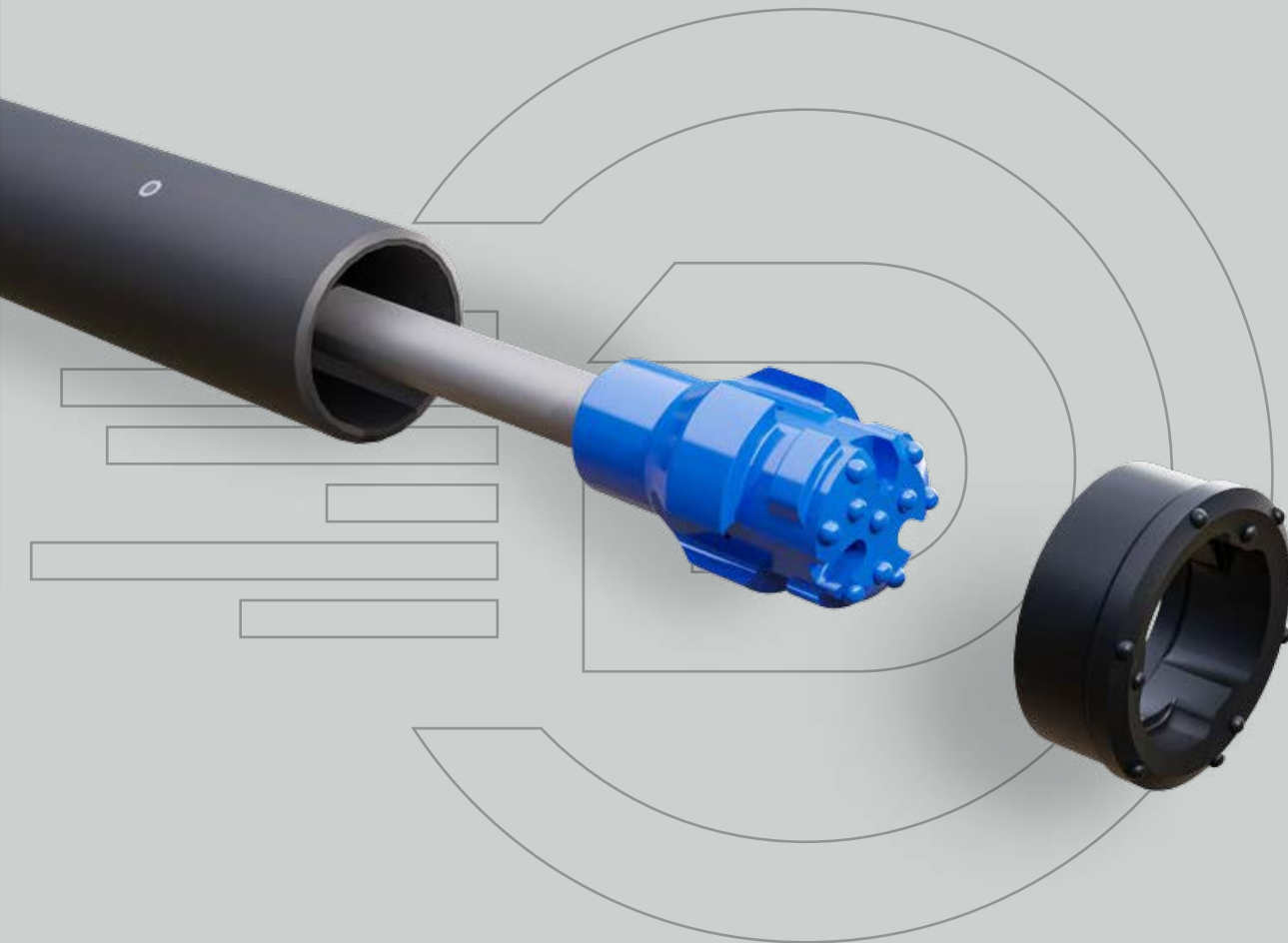


TUNNEL CONSTRUCTION

# Forepoling/Piperroof Systems



# Piperoof/Forepoling umbrella system

Diorit offers a wide range of forepoling systems, also known as canopy tubes or tube umbrella systems. These solutions are designed to install canopy tubes in weak ground conditions using either top-hammer jumbos or DTH drill rigs.

Umbrella systems be installed using steel casings between 12 and 18 metres in length, interconnected using Diorit -designed threads that allow for fast, easy connections - saving you time and money.

Diorit's forepoling casing systems inject grout through the casing, thanks to an arrangement of staggered grouting valves in the casing itself. This allows for secondary support to be formed, increasing safety and stability in

the working area before further excavation the tunnel, which is an essential requirement when drilling in sensitive ground conditions or overburden.

Forepoling bits and ring and also the pipe system are designed for the construction and drilling of tunnels in conditions of weak ground. Rings and bits are designed for mounting on both surface and deep hydraulic hammers. Rings and bits can be delivered with or without the pipes.



## APPLICATION

The field of application of the Piperoof/Forepoling umbrella system includes the following areas:



**Tunneling construction method**



**Ground improvement and dewatering**



**Anchoring**



**Micro piling**



**Fiberglass face stabilisation**



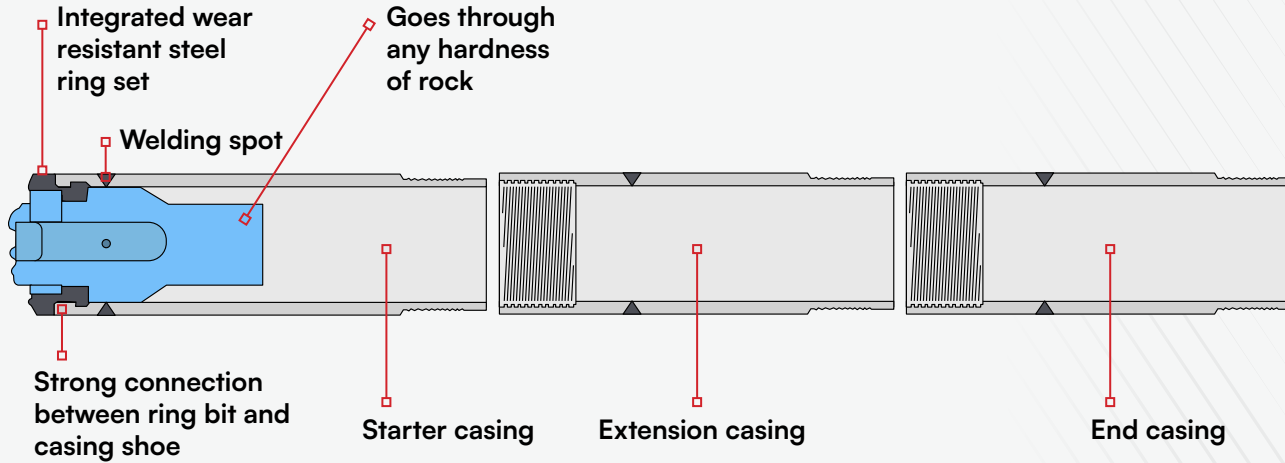
**Pipe jacking and ground freezing**



**Underground mining roof support**

System is designed for the construction and drilling of tunnels in conditions of weak ground

## ELEMENTS



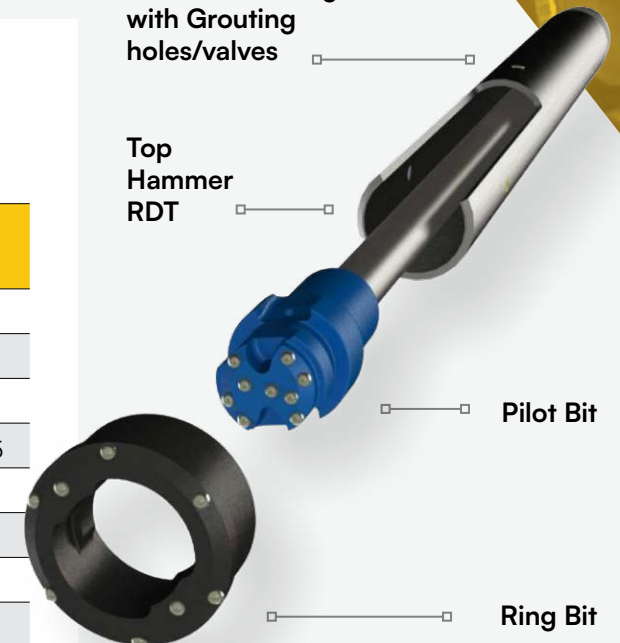
## TECHNICAL CHARACTERISTICS

System is available from 76 to 219 mm casings and for all major DTH shanks and top hammer threads. Threaded casings normally come with 1 start but they are also available with 2-3 start trapezoidal threads and 10 mm entrance.

Product code	Casing OD		Max wall		Ring bit ID		Ring bit OD		Pilot bit OD		Pilot bit thread
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	
F76-6-6.3-40	76.1	3.00"	6-6.3	0.31"	40	1.57"	82	3.23"	58	2.28"	R32
F89-6-6.3-52	88.9	3.5"	6-6.3	0.31"	52	2.05"	94.5	3.72"	70.9	2.79"	T38
F102-6-6.3-62	101.6	4.0"	6-6.3	0.31"	62	2.44"	106.6	4.20"	83	46447	T38
F114-6-6.3-70	114.3	4.5"	6-6.3	0.39"	70	2.76"	120	4.72"	92	3.62"	T38, T45
F140-8-94	139.7	5.5"	8	0.39"	94	3.70"	148	5.83"	116.7	4.59"	T45
F159-10-120	159	6.26"	10	0.39"	118	4.65"	179	7.05"	133	5.24"	T45, T51
F168-10-128	168.3	6.63"	12.7	0.5"	125	4.92"	189	7.44"	140	5.51"	T45, T51
F219-12.7-171	219.1	8.63"	12.7	0.5"	171	6.73"	243	9.57"	188	7.40"	T45, T51

Threaded Casing with Grouting holes/valves

Top Hammer RDT



## MAIN FEATURES

The system is available from 76 to 219 mm, and for all main bit supports and threads on surface and deep hydraulic hammers. Pipe threads are available at 2-3 by 2-3 initial trapezoidal threads and 10 mm inlet. Different availability of threads enables accelerated installation of the pipe on-site system.

# 76-219 mm

System availability range

- ✔ Very high-quality integration of ring case and bit
- ✔ The ring housing is welded to the starter tube in production and is supplied as such
- ✔ The ring controls the guidance and operation of the bit
- ✔ Option — installation of valves in production (3-10 bar)

## KEY ADVANTAGES

- ✔ Ideal and suitable for all ground conditions
- ✔ Unique flushing design reduces over-drilling
- ✔ Strong, reliable, and robust system to complete every hole
- ✔ Pilot to ring bit locking and unlocking is easy to use, fast, and reliable
- ✔ Customisability and flexibility

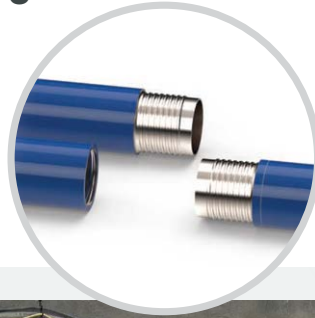
## PILOT BIT AND RING SETS

Pilot bit part #	kg	Ring set part #	kg
FP76-6-6.3-40-R32	1.6	FR76-8-40-SET	1.5
FP89-6-6.3-52-T38	2.9	FR89-8-52-SET	1.8
FP102-6-6.3-62-T38	3.7	FR102-8-62-SET	1.9
FP114-6-6.3-70-T38	5.3	FR114-10-70-SET	2.6
FP114-6-6.3-70-T45	5.3	FR114-10-70-SET	2.6
FP140-8-94-T45	8.1	FR140-10-94-SET	3.7
FP159-10-120-T45	10.3	FR159-10-120-SET	4.1
FP168-10-128-T45	12.3	FR168-10-128-SET	4.8
FP219-12,7-171-T45	21.1	FR219-12,7-171-SET	8.9



## MALE / FEMALE THREADS

Purpose-designed Diorit Male / Female threads are used for easy coupling, reducing time spent on threading casings. The inside diameter of the casing stays is designed to remain consistent throughout the connections.



Customisability and flexibility for:

- 01** casing lengths
- 02** thread connections
- 03** grouting holes/valves
- 04** casing grade & casing wall



## PRODUCTION



Diorit is Accredited  
for World Markets



**Precision Built,  
Future Assured.**





DIORIT - BUILDING SOLUTIONS TOGETHER

# References, Certificates and Quality Control



# Diorit References

Diorit has proven itself as a regional company that has successfully participated and currently collaborates in many of infrastructure projects in the region as a contractor as a supplier of equipment or materials needed for construction.

PROJECT DESCRIPTION	COUNTRY
<b>Tunnel Hranjen - Goražde</b> (Delivery and supply of self-drilling SDA and SN anchors);	Bosnia and Herzegovina
<b>The second route of the railway line Divača-Koper</b> (Delivery and supply of SN anchors);	Slovenia
<b>Tunnel Kobilja Glava Sarajevo</b> (Delivery and supply of self-drilling SDA and Forepoling/Piperroof);	Bosnia and Herzegovina
<b>Tunnel Donja Golubinja-Topčić Polje</b> (Delivery and supply of self-drilling SDA and Forepoling/Piperroof);	Bosnia and Herzegovina
<b>Bypass Medakovo-Doboj</b> (Delivery and supply of self-drilling SDA; SN anchors and Forepoling/Piperroof);	Bosnia and Herzegovina
<b>Bypass of Zalău municipality between DN1F, km 79+625 — DJ 191 C; Bypass Project, Zalau</b> (Delivery and supply of anchors, strand anchors and pre-tensioning pipes-PT Ducts);	Romania
<b>State road IB category no. 21. Novi Sad-Ruma Fruškograd Corridor</b> (Delivery and supply of self-drilling anchors, SN anchors and pipes for prestressing-PT-Ducts);	Serbia
<b>Ruma-Šabac-Loznica highway and expressway, Section 1 and 2, Ruma-Šabac highway, Ruma interchange</b> (Delivery and supply of anchors, PC strand and pre-tensioning pipes);	Serbia
<b>Highway E-763 Preljina-Požega, section in Čačak</b> (Delivery and supply of PC strand and strand anchors with pre-type tubes for prestressing);	Serbia
<b>Tunnel Bakovac</b> (Delivery and supply of self-drilling anchors and SN anchors)-(Diorit supplied a dump truck and a excavator);	Croatia
<b>Tunnel Ivan - Tarčin-Konjic</b> (Delivery and supply of self-drilling anchors and SN anchors);	Bosnia and Herzegovina

<b>Tunnel Ponirak</b> - Zenica (Delivery and supply of self-drilling anchors and SN anchors)	Bosnia and Herzegovina
<b>Počitelj Tunnel</b> (Delivery and supply of self-drilling anchors and SN anchors);	Bosnia and Herzegovina
<b>Hydrotechnical tunnel Ribnica - Kakanj</b> (Diorit supplied the underground drilling machine and loader for excavating the material from the tunnel and the drilling tools);	Bosnia and Herzegovina
<b>Hydropower plant Arilje, Geosonde - Belgrade</b> (Diorit supplied the geotechnical rope anchors);	Serbia
<b>Project Mrtvica 1, 2 — Serbia — Corridor 10</b> (Diorit supplied strand anchors, Gewi® bars and self-drilling anchors);	Serbia
<b>Slope rehabilitation - Grdelica, Corridor 10</b> (Diorit supplied the self-drilling anchors);	Serbia
<b>Predejane Tunnel, Corridor 10</b> (Supplied the strand anchors);	Serbia
<b>Pljevlje mine basin</b> (Diorit supplied self-drilling anchors)	Montenegro
<b>Construction of the port "Kostolac"</b> (Diorit supplied strand anchors, Gewi® bars 950/1050)	Serbia
<b>Rudnici boksita Jajce</b> (Diorit supplied machines for underground mining);	Bosnia and Herzegovina
<b>Ričice tunnel and Pečuj tunnel</b> (Diorit supplied self-drilling anchors)	Bosnia and Herzegovina
<b>Highway Bar-Boljare</b> (Supplied strand anchors and Gewi® bars);	Montenegro
<b>Project convector station</b> (Diorit supplied micropiles)	Montenegro
<b>Tunnel "1. Mart"</b> (Diorit supplied the Atlas Copco drilling machine, drilling tools and spare parts) etc.;	Bosnia and Herzegovina





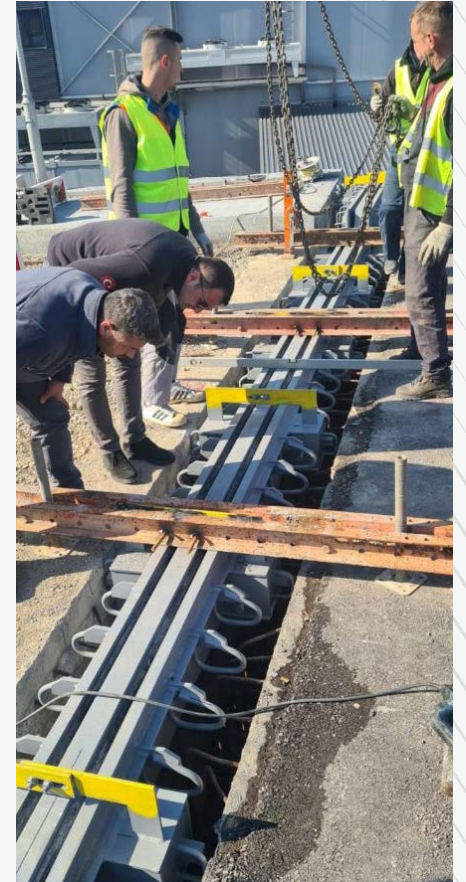
PRE-STRESSING WORKS:

<b>Prestressing works on the "Ričice" Bridge - Zenička bypass</b>	Bosnia and Herzegovina
<b>Bridge "Trebiljevo" (Prestressing works)</b>	Montenegro
<b>Bridge "Bijelo Polje" (Prestressing works)</b>	Montenegro
<b>Vijaduct Ričice</b>	Bosnia and Herzegovina
<b>Klopačka Stijene Viaduct</b>	Bosnia and Herzegovina
<b>Viaduct Babina Rijeka</b>	Bosnia and Herzegovina
<b>Zeleni Most in Gradiška</b>	Bosnia and Herzegovina
<b>Bridge Čelinac</b>	Bosnia and Herzegovina
<b>Bridge in Vukovar</b>	Croatia
<b>Dumanja Jaruga</b>	Croatia
<b>Pre-Stressing Work On The Construction Of The Bar-Boljare Highway: (Subcontractor for prestressing: Diorit Sarajevo)</b> Bridges: Preljubovica, Kiseljica, Pelev Brijeg, Lutovo	Montenegro

INSTALLATION EXPANSION JOINT:

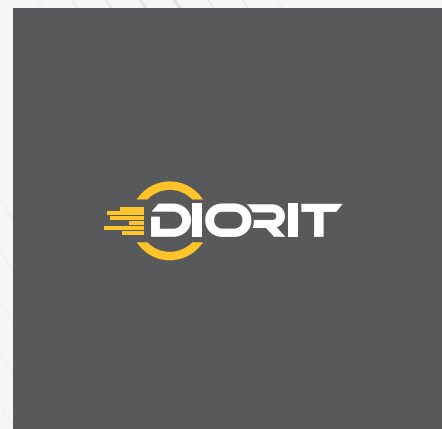
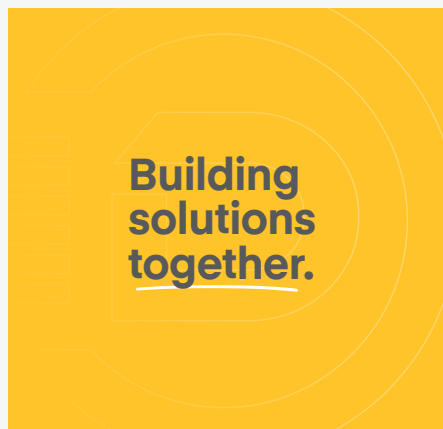
<b>Drivuša Bridge</b>	Bosnia and Herzegovina
<b>Bridge Čelinac</b>	Bosnia and Herzegovina
<b>Bridge in Vukovar</b>	Croatia
<b>Viaduct Brijesta-Pelješac</b>	Croatia





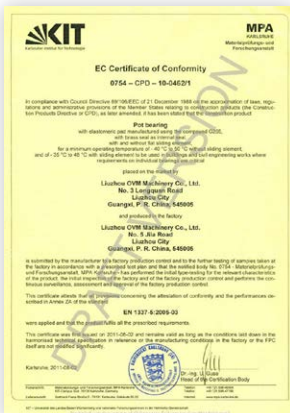
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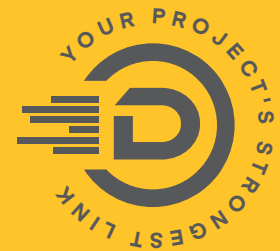




# Diorit is Accredited for World Markets

Diorit takes pride in its commitment to quality management, demonstrated through various certifications obtained in accordance with regulatory standards. These certifications serve as a testament to the company's proactive approach to quality assurance and are subject to regular surveillance, ensuring that Diorit consistently upholds the highest standards in its operations.





**Anlage zum  
Zertifikat-Nr. TIC 15 100 2010922**

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**DIORIT d.o.o. Sarajevo**  
Tvrniska 3  
BIH - 71000 Sarajevo

Folgende Zweigstellen sind Bestandteil des Zertifikates

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Tvrniska 3  
BIH - 71000 Sarajevo

**Beauftragte Stelle**  
Krope Administration  
Zertifikat-Nr. TIC 15 100 2010922

**Standort**  
DIORIT d.o.o. Sarajevo - Prolazna ulica 1, Oštak  
Tvrniska 3  
BIH - 71000 Oštak

Qualifizierungsbereich: Verkauf und Produktion von Werkzeugmaschinen für die Bauindustrie, Landmaschinen und landwirtschaftliche Traktoren für die Bauindustrie, Landmaschinen und landwirtschaftliche Traktoren für die Bauindustrie, Landmaschinen und landwirtschaftliche Traktoren für die Bauindustrie

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TUVRheinland  
IAF  
DAS

Juni 2006-01-01

**Enclosure to  
Certificate-Nr TIC 15 100 2010922**

**TIC**

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Tvrniska 3  
BIH - 71000 Sarajevo

Following local branches are part of the certificate

**Central office**  
DIORIT d.o.o. Sarajevo  
Tvrniska 3  
BIH - 71000 Sarajevo

**Responsible person**  
Krope Administration  
Certificate No TIC 15 100 2010922

**Location**  
DIORIT d.o.o. Sarajevo - Prolazna ulica 1, Oštak  
Tvrniska 3  
BIH - 71000 Oštak

Scope: Sales and production of processing machines for bridge construction, canal construction and geotechnical and position services for special construction works

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Juni 2006-01-01

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Tvrniska 3  
BIH - 71000 Oštak

Publicirane primjere: Proizvodnja i prodaja strojeva za izvođenje radova na podzemnoj konstrukciji, izvođenje radova na podzemnoj konstrukciji, izvođenje radova za specijalnu građevinsku radnju

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Juni 2006-01-01

**TECHNICKÝ A ZKŮŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.**  
Technical and Test Institute for Construction Prague

**EC CERTIFICATE OF CONFORMITY**  
No. 1020 - CPD - 000-02001

In compliance with the Decision 2006/228/EC of the Council of Ministers...

**Product**  
Structural bearings  
welded reinforcement bearings

Authorized body: DIORIT d.o.o. Sarajevo, Tvrniska 3, BIH - 71000 Sarajevo

Issued on: 13 March 2011

**Certificate  
of Registration**

**QUALITY MANAGEMENT SYSTEM - ISO 9001:2008**

This is to certify that Lüzhou OVM Machinery Co., Ltd. has been registered for the Quality Management System...

Authorized body: TÜV SÜD

Issued on: 09/09/2012

**TECHNICKÝ A ZKŮŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.**  
Technical and Test Institute for Construction Prague

**EC CERTIFICATE OF CONFORMITY**  
& 1020 - CPD - 000-0279208

In compliance with the Decision 2006/228/EC of the Council of Ministers...

**Product**  
POST-TENSIONING SYSTEM - OVM B516  
OVM Bored Post-Tensioning System for 1 to 37 strands

Authorized body: DIORIT d.o.o. Sarajevo, Tvrniska 3, BIH - 71000 Sarajevo

Issued on: 13 March 2011

**Prilog u vezi sa  
certifikatom br. TIC 15 104 222021**

**TIC**

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BIH - 71000 Sarajevo

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Krope Administration  
Zertifikat-Nr. TIC 15 104 222021

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BIH - 71000 Oštak

Publicirane primjere: Proizvodnja i prodaja strojeva za izvođenje radova na podzemnoj konstrukciji, izvođenje radova na podzemnoj konstrukciji, izvođenje radova za specijalnu građevinsku radnju

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TUVRheinland  
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Juni 2006-01-01

**TECHNICKÝ A ZKŮŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.**  
Technical and Test Institute for Construction Prague

**NATIONAL TECHNICAL APPROVAL**  
No. 050/06417

Authorized Body 2011  
Branch 0900 - Technical Engineering Services

DIORIT d.o.o. SARAJEVO

Issued on: 27 October 2009

**Zvezi sa gradbeništvu Slovenije**  
Slovensko tehnično soglasje

**ZAG**

DIORIT d.o.o. Sarajevo

Issued on: 15. 8. 2009

**ZAG**

**Certifikat o nespremenljivosti lastnosti**

REG2-0004-03 - ZGProt - 3487

DIORIT d.o.o. Sarajevo

Issued on: 15. 8. 2009

**DIORIT**

**DECLARATION OF PERFORMANCE**

REG2-0004-03 - ZGProt - 3487

Parametar	Uvjet	Uvjet	Uvjet	Uvjet	Uvjet
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