



安拓矿山





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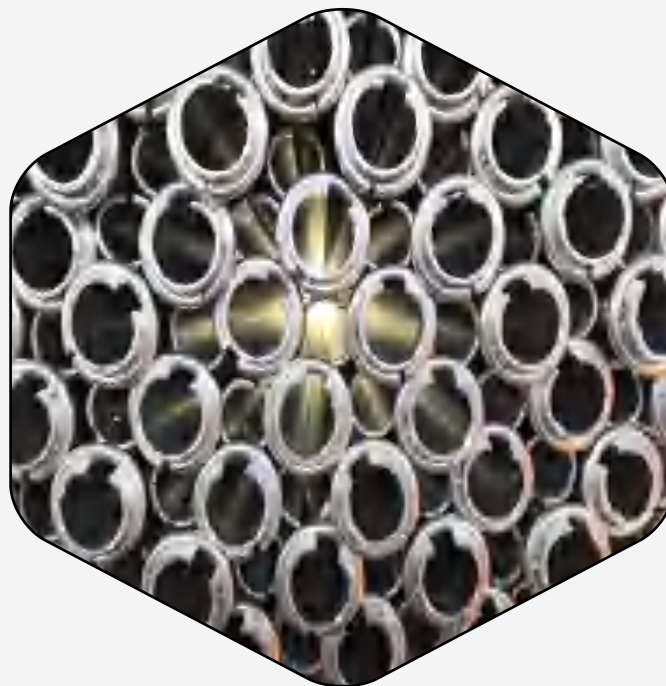
公司简介

Company Profile





安拓（山东）矿山机械有限公司是一家以矿山支护材料、支护器具和支护装备的研发、生产、销售和技术服务为一体的创新型矿业科技公司。公司组织机构严谨、管理规范、生产检测设备齐全、技术力量雄厚。公司长期与多所高校和科研单位合作，借助高校和科研单位的智力优势和科技平台，及时了解和掌握最新的矿山支护理论及其相关的新技术、新工艺，研发制造满足新技术、新工艺要求的支护产品和施工器具，将科研成果及时转化为生产力，为矿山安全生产提供技术保障。同时，公司依托“矿山灾害预防控制国家重点实验室”等单位，组建了矿山支护专家服务中心，能够根据矿山客户的需要，结合矿山的具体地质条件，为矿山客户量身定做切实可行、技术经济效果最佳的专属支护方案，并能及时跟踪生产、设计、施工的全过程，成为矿山支护全领域解决方案供应商。





产品概述

缝管式锚杆系列

MF33
材质
Q235B、Q355B、Q400W,
S420MC
厚度
1.5/1.8/2.0/2.3/2.5/2.75/3.0/3.2

MF39
材质
Q235B、Q355B、Q400W,
S420MC
厚度
1.5/1.8/2.0/2.3/2.5/2.75/3.0/3.2

MF47
材质
Q235B、Q355B、Q400W,
S420MC
厚度
1.5/1.8/2.0/2.3/2.5/2.75/3.0/3.2



产品概述



● 管缝式锚杆Friction stabilizer

管缝式锚杆又名缝管锚杆,摩擦锚杆该锚杆是主动加固围岩全锚固立即承载等优点,安装于比管径稍小的钻孔中,可立即在全长范围内对孔壁施加径向压力防止围岩下滑.在爆破震动围岩位移情况下,锚固力明显增大,支护效果更加理想.

● 使用方法Manual

(1)依据设计要求确定锚杆孔位,用钻机具打孔。

drill a hole According to the requirement of design

(2)用压风吹尽孔内岩粉。

Clean rock powder in the hole with compress air

(3)杆体装上锚盘,用冲击钻将锚杆打入孔中。

Mounting plate through rod,then push rod into hole with shock drill machine

● 技术优点Technical advantages

高强托盘其承载力大于杆体承载力,挡环拉脱力大于杆体的承载力。

High-strength plate's bearing capacity higher than rod's, block ring's bearing capacity higher than rod's

缝管锚杆主要应用在铜矿和金矿中。在硬质岩层中安装缝管锚杆，缝管锚杆可以和岩层产生轴向和径向的摩擦膨胀力，从而产生巨大的支撑力，保护巷道的安全。

安拓公司生产的缝管锚杆，适用高屈服和高强度的钢材制成；焊环有良好的焊接力，在矿山支撑中，即使杆体破断，焊环也不容易脱落。

缝管锚杆优点：

- 1.安装简易，节省人力成本。
- 2.高屈服和高强。
- 3.具有好的焊环脱拔力。
- 4.黑色或者热镀锌。

Mining Friction Bolt are mainly used in hard rock mines such as copper and gold mines. Bolts are installed in the rock strata by extrusion, which can generate axial and radial frictional expansion force with the rock strata, thereby generating huge supporting force and protecting the safety of the roadway.

Mining Friction Bolt produced by ANTO Company is made of high-yield and high-strength steel; the welding ring has good welding power. In the mine support, even if the rod body is broken, the welding ring is not easy to fall off.

Advantages of Mining Friction bolt:

- 1.Simple installation, saving labor cost.
- 2.Has good yield strength and breaking strength.
- 3.Has good welding ring pull-out force.
- 4.Black or hot dipped galvanized available.



技术参数

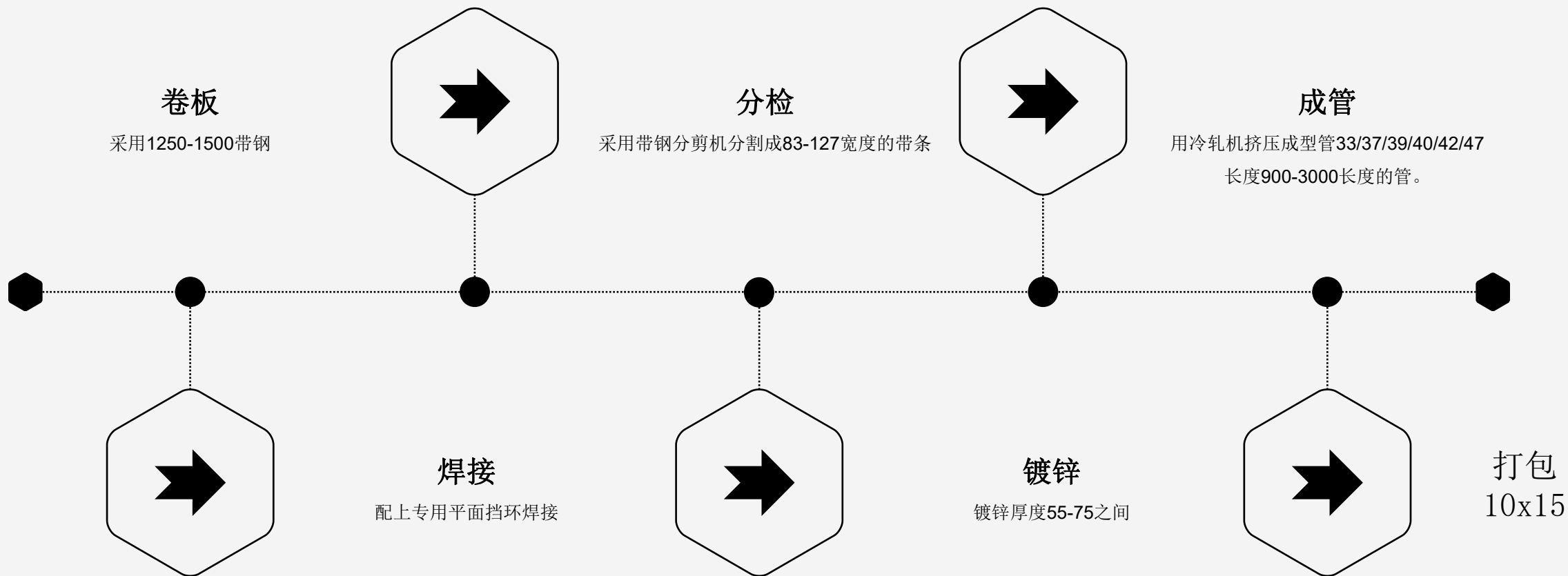
产品系列Series	规格specifications	承载力(KN)	高强托盘high-strength tray		长度length (mm)
			高强托盘(球形)High-strength Plate(global)	承载力(KN)Bearing capacity	
MF-33系列series MF-33	33×2.5	100	120×120×5.0	≥100	914-3000
	33×3.0	120	120×120×6.0	≥120	914-300
MF-39系列series MF-39	39×2.5	130	150×150×5.0	≥150	1200-3000
	39×3.0	150	150×150×6.0	≥180	1200-300
MF-42系列series MF-42	42×2.5	140	150×150×5.0	≥150	1400-3000
	42×3.0	160	160×150×6.0	≥180	1400-300
MF-47系列series MF-47	47×2.5	150	150×150×6.0	≥180	1600-3000
	47×3.0	170	150×150×6.0	≥180	1600-3000

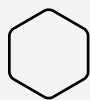
Dimenions	FS-33	FS-39	FS-46
TaperedDiameter A	1-1/8" (28 mm)	1-3/16" (30 mm)	1-1/2" (38 mm)
TaperedLength B	2-3/8" (60 mm)	2-1/2" (65 mm)	2-1/2" (65 mm)
Slit Width C	1/2" (13 mm)	5/8" (16 mm)	7/8" (22 mm)
Steel Thickness D	3/32" (2.5 mm)	3/32" (2.5 mm)	1/8" (3 mm)
Rod diameterE	1-5/16" (33 mm)	1-1/2" (39 mm)	1-13/16" (46 mm)
Technical Data	FS-33	FS-39	FS-46
Available Hole diameter	1-3/16" to 1-5/16" (31 to 33 mm)	1-3/8" to 1-1/2" (35 to 38 mm)	1-11/16" to 1-3/4" (43 to 45 mm)
Available Tube Lengths	3' to 8' (0.9 to 2.4 m)	3' to 10' (0.9 to 3.0 m)	3' to 12' (0.9 to 3.7 m)
RatedBreaking Capacity	24,000 lbs(107 kN)	28,000 lbs(124 kN)	40,000 lbs(178 kN)
Minimum Breaking Capacity	16,000 lbs(71 kN)	20,000 lbs(89 kN)	30,000 lbs(133 kN)
Initial AnchorCapacity	3 to 6 tons(27 to 53 kN)	3 to 6 tons(27 to 53 kN)	6 to 10 tons(53 to 89 kN)
Ultimate Axial Strain	Typical 16%		





生产工艺





产品图片





产品简介

高强顶板钢带系列

矿用W型钢带	W type rock bolt mat	材质	Φ235、Φ335
规格(mm)	140、160、180、200、220、240、250、270、280、300、320厚度：2.5—6.0 长度及孔距依据设计要求而定		
W type rock bolt mat		Material	Φ235、Φ355
specification	160、180、200、220、240、255、270、280、300、320Thickness: 2.5—6.0 The length and hole distancebased on the design requirements		

W钢带系列

W type rock bolt mat

W型钢带

W钢带也叫顶板钢带，是用高强合金板冷压而成，与各种锚杆共同组合组成锚杆的整体性，是软弱岩石和煤顶板控制的最佳选择。广泛应用于矿井下巷道，工作面切眼，峒室及其它领域的巷道支护，对处理不稳定围岩效果更佳。

W type rock bolt mat (roof steel belt), is cold-formed by high strength alloy plates, and which can be combined with all kinds of rock bolt, is the best choice of weak rocks and control of coal roof. It is widely used in coal mine roadway, working surface, and other fields of roadway. It got better efficacy on unstable surrounding rocks.

应用原理:

Application of Principles

通过W钢带把分散的多根锚杆联结起来形成一个整体承载结构，显著地提高锚杆支护的整体效果，在不完整的顶板岩中应用效果更好。

W type rock bolt mat can joint several separated rock bolts as whole bearing support construction, which could highly improve the integral effect of supporting and get a better effect on the application with incomplete roof rock.





产品优势

技术特点（同普通下钢带相比）

Technical characteristics (compared with ordinary steel belt)

- 1、原料采用高强合金带钢。
- 2、具有更高的刚性和强度。
- 3、W钢带抗弯截面模量提高54倍。
- 4、W钢带在冷压过程中的硬化作用可提高抗拉强度28-46%。

技术特点（同普通下钢带相比）

- 1、 Using high strength steel alloy material
- 2、 Higher strength and rigidity
- 3、 W type mat got 54 times higher on anti-bending section modulus.
- 4、 W type mat can be improved 28-46% on Tensile strength because of the hardening effect during cold formed





产品介绍

矿山支护用品系列配件

Accessories Series for Mine Support Products

让压管(双)

Release pressure tube (double)

矿山支护用品系列配件

Accessories Series for Mine Support Products

让压管(单)

Release pressure tube (single)



高低压情况下，地应力释放量是不可抗拒的，让压管设定让压吨位，达到一定吨位时让压管变形让压释放地应力。

Under high and low pressure situations, the stress release is irresistible, so that setting a certain tonnage for release pressure tube, in order to be deformation when reach the setting certain tonnage.

x吨位

x Tonnage

y吨位

y Tonnage

可以实现二次让压

Twice release pressure

根据锚杆、锚索的强度设定让压吨位。

According to strength of Bolt and cable to set up the release pressure tonnage.

配合锚索，使用索具的承载力大于锚索的承载力

Joint with the cable. Ensure Bearing capacity is higher than cable's

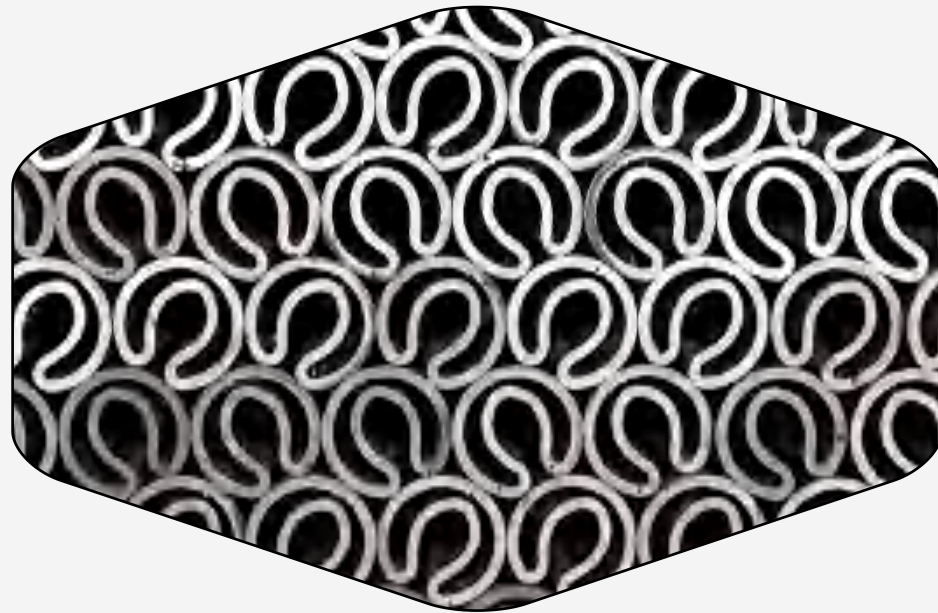


水力膨胀锚杆

水涨式锚杆

技术参数表

描述	单位	Swellex Premium line					Swellex Manganese line		
		Pm12	Pm16	Pm24	Pm24	Pm24	Mn12	Mn16	Mn24
材质		Q355B					Q355B		
破坏荷载(≥)	kN	110	160	240	200	200	110	140	200
屈服荷载(≥)	kN	100	130	200	190	190	90	140	180
延伸率(≥)	%	10	10	10	10	10	20	20	20
注浆压力	Bar	240	240	300	300	300	240	240	300
剖面直径	mm	27.5	37	37	37	37	27.5	37	37
原管直径	mm	41	54	54	54	54	41	54	54
壁厚	mm	2	2	3	3	3	2	2	3
上部套管直径	mm	28	38	38	38	38	28	38	38
膨胀套管直径	mm	30/36	41/48	41/48	41/48	—	30/36	41/48	41/48
最佳扩径	mm	35-38	45-51	45-51	48-51	45-51	35-38	45-51	45-51
孔直径范围	mm	32-39	43-52	43-52	48-52	43-52	32-39	43-52	43-52
连接直径包括焊接	mm	—	—	—	43	—	—	—	—
推荐茎直径	mm	—	—	—	—	53-55	—	—	—





产品简介

焊网:

焊网主要用在巷道岩层的表面，防止岩石破碎后的掉落。焊网和大数量的锚杆链接起来，形成一个整体的支护系统，大大提高矿山的安全性。安拓焊网选用高强度的钢绞线，通过高频率的焊接机器焊接而成，其焊接点不容开裂。

焊网的优点:

- 1、高强度钢绞线制成
- 2、高频焊接，不易开裂
- 3、黑色或者热镀锌

Welded wire mesh:

Welded mesh is mainly used on the surface of the rock layer to prevent the rock from falling after being broken. The welded mesh is linked with a large number of bolts to form an integrated support system, which greatly improves the safety of the mine.

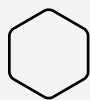
ANTO welded wire mesh is made of high-strength steel wire, welded by high-frequency welding machines. the welding are not easy to crack.

Advantages of welded mesh:

1. Made of high-strength steel wire
2. High frequency welded, not easy to crack
3. Black or hot-dip galvanized

SPECIFICATION:

Welded Mesh	Wire Diameter	Aperture	Mesh width	Mesh length
SIZE	3mm,4mm,5mm,6mm	100*100mm,150*150mm,200*200mm	600mm,1200mm,1800mm,2400mm	1-6meters



产品图片





中空注浆锚索系列:

一、注浆锚索加固支护机理

1、多层组合拱结构支护体系

注浆锚索注浆充填不同深度围岩裂隙，形成一个多层有效组合拱，即锚索压缩圈及注浆加固圈，形成的多层组合拱扩大了支护结构的有效承载范围。

2、防风化水侵

利用浆液封堵充填围岩的裂隙，隔绝空气防止围岩风化，防止围岩被地下水侵蚀而降低围岩的自身强度。

3、提高围岩自身支护体强度

注浆后将松散破碎的围岩胶结成整体，提高了岩体的内聚力、内摩擦角及弹性模量，从而提高了岩体强度，可以实现围岩本身作为支护结构的重要组成部分。

4、提高支护结构的整体强度和平衡性

注浆锚索本身为全长锚固，从而将多层组合拱联成一个整体，共同承载，避免应力集中，提高了支护结构的整体强度和平衡性。

5、支护体受力平衡，避免应力集中导致局部破坏

注浆后使得作用在支护体上的压力能有效平衡地传递到两墙，通过对墙的加固，又能把荷载均匀传递到底板。支护体厚度的加大，不仅减小作用在底板上的荷载集中，而且减小底板岩石中的地应力，减弱底板的塑性变形量，减轻底鼓。

6、机械与物理双重加固。

注浆锚索预紧力对围岩主动紧固为机械加固，注浆胶结围岩为物理加固。



中空注浆锚索技术参数

序号	型号	SKZ22-1/1770/1860	备注
1	锚索索体直径 (mm)	22	
2	钢绞线公称直径 (mm)	6.0	
3	抗拉强度 (Mpa)	最小1770最小1860	
4	破断力 (KN)	≥375/≥400	
5	中空注浆管规格	内径Ø 7.5mm, 外径Ø 10mm	耐压胶管
6	延伸率 (%)	≥3.5	
7	适应安装孔径 (mm)	30-42	
8	长度 (m)	2.8-15	按需要选制
9	树脂锚固长度 (mm)	1000~1500	
10	注浆压力 (Mpa)	4.0 ~6.0	

锚索是用高强度的钢绞线，索具，托盘组成。
锚索支护力比较大，采用注浆锚固，适合于煤矿井下大断面硐室和巷道的补强和加固。
通常锚索是需要施加预应力，它是主动受力，可以用作永久性锚固工程。

锚索的优点：

- 1.锚索由高强度钢绞线制成，承载力优于普通锚杆。
- 2.可以施加预应力，主动支护。
- 3.锚固长度优于普通锚杆。
- 4.普通或者鸟笼型

ANTO cable bolt is composed of high-strength steel wire, barrel & wedge and plate.

The cable bolt support force is relatively large, and it is anchored by grouting, which is suitable for reinforcement of large-section chambers and roadways in underground coal mines.

Usually, cable bolt needs to be prestressed, it is an active force supporting, and can be used as a permanent anchoring project.

The advantages of cable bolt:

1. cable bolt is made of high-strength steel strands, and its bearing capacity is better than ordinary rock bolt.
2. It can be pre-stressed and actively supported.
3. The anchorage length is better than ordinary rock bolt.
4. plain or bulbs available.





中空注浆锚索示意图

左旋全螺纹锚杆

左旋全螺纹锚杆主要应用煤矿等岩层硬度不够坚硬的矿山。左旋全螺纹锚杆一般跟锚固剂共同使用，对矿山实现端锚固或者全锚固。

安拓左旋全螺纹锚杆由高强度HRB500或HRB600制成，可以提供很高承载力保护矿山安全。

相对于其他锚杆而言，可以节省安装成本，使用国外普通钻机安装即可。

安拓左旋全螺纹锚杆，螺纹分布于整个杆体，增加了螺母的移动长度，如后期锚杆支护松动，拧紧螺母，锚杆恢复支护力。

左旋全螺纹锚杆优点：

- 1.高强度材质制成，高的支撑力。
- 2.螺纹分布于整个杆体，增加了螺母的可移动长度。
- 3.与锚固剂共同使用，实现端锚固或者全锚固。
- 4.黑色或者热镀锌。

Left-hand full-thread bolt

Left-handed full-thread bolts are mainly used in mines where rock formations such as coal mines are not hard enough. bolts are generally used together with anchoring agents to achieve end anchoring or full anchoring in mines.

ANTO left-handed full-thread bolt is made of high-strength HRB500 or HRB600, which can provide high load-bearing capacity to protect mine safety.

Compared with other bolts, it can be installed using ordinary foreign drilling rigs, which saves installation costs.

Antor left-handed full-threaded anchor rod, the threads are distributed throughout the rod body, increasing the moving length of the nut, if the anchor rod support is loose in the later stage, tighten the nut, and the anchor rod restores the support force.

Advantages of left-handed full-threaded anchor rod:

1. Made of high-strength material, high supporting force.
2. The threads are distributed throughout the rod, increasing the movable length of the nut.
3. Used together with anchoring agent to achieve end anchoring or full anchoring.
4. Black or hot-dip galvanized.

树脂锚杆





顶板托盘



托盘尺寸(mm)PlateSize	承载力(kn)Capacity	托盘尺寸(mm)Plate dimension	承载力(kn)Capacity	备注Remarks
120×120×5	≥100	200×200×10	≥360	部分规格型号 PartSpecification
120×120×6	≥115	200×200×12	≥420	
120×120×8	≥130	250×250×8	≥320	
150×150×5	≥135	250×250×10	≥400	
150×150×6	≥170	250×250×12	≥440	
150×150×8	≥230	300×300×10	≥420	
150×150×10	≥290	300×300×12	≥480	
200×200×8	≥290	300×300×14	≥520	

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安

ANTO

拓

矿山
支护
专家



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