

# 全断面掘进 系统技术装备



Full Face Tunnel Boring System



## ◆ 企业使命 Enterprise Mission

对标世界一流，不断超越自我；

推动行业进步，为客户和社会创造最大价值。

Benchmarking world-class, constantly surpassing self;

Promote pipe jacking industry progress and create maximum value for customers and society.

## ◆ 企业愿景 Enterprise Vision

建设具有全球竞争力的世界一流科技创新型企业。

Build a world-class scientific and technological innovative enterprise with strong global competitiveness.

## ◆ 核心价值观 Core Values

以人为本，开拓创新；客户至上，合作双赢。

People-oriented, Pioneering and innovative;

Customer first, Win-win cooperation.



# 公司简介

## About us



湖南中翔重工科技有限公司位于有“世界工程机械之都”美誉的湖南省会长沙，是一家专业从事非开挖顶管、盾构和TBM等全断面掘进系统装备制造的高新技术企业。公司集研发、制造、销售、售后、整体解决方案及工程施工服务为一体。

自2009年成立以来，中翔重工主要致力于开拓海外市场，累计出口的顶管设备，在全球排名前列。为国内、香港和东南亚等主要的地下工程承包商提供了一流的系统装备。我们定制化的产品设计和“为客户解决问题”的售后服务让我们多次在同台竞技中胜出，赢得了客户的高度认可和持续的转介绍。

“对标世界一流、不断超越自我”，中翔重工以自信、开放的心态，欢迎新老客户及同行来进行技术交流，共同探讨面对充满未知和不确定因素的地下施工的最优解决方案。

Realtop Heavy Industry Co., Ltd is located in Changsha, the capital of Hunan Province with the reputation of 'the capital of world engineering machinery'. It is a high-tech enterprise specializing in the manufacture of trenchless pipe jacking, shield and TBM full-face tunneling system equipment. The company integrates R & D, manufacturing, sales, after-sales, overall solutions and engineering construction services.

Since established in 2009, Realtop Heavy Industry has been mainly committed to exploring overseas markets, the cumulative number of exported pipe jacking machines ranks among the top in the world. It provides first-class system equipment for major underground engineering contractors in China, Hong Kong and Southeast Asia. Our design of customized product and effective after-sales service - aiming to unconditionally solve customers' issues in time, enabled us always win more opportunities in the same stage competition and be rewarded back with customers' high recognition and continuous referral.

'Benchmarking world-class and constantly surpassing itself', Realtop Heavy Industry welcomes all customers and friends in trenchless field to carry out technical communication with a confident and open mind, and jointly discusses the optimal solution for underground construction full of unknown and uncertain factors.

全断面掘进机包括顶管掘进机、盾构掘进机和岩石隧道掘进机（TBM），它们是集机械、液压、电控、激光、测量、支护、运输等多学科为一体的先进非开挖系统技术装备，已广泛应用于市政管道工程（污水管、供水管、电缆管、通信电缆管道、天然气管等）的建设和地下通道的建设，以及公路隧道、水电隧道的建设。

在管道铺设、通道建设和隧道施工中，全断面掘进机系统装备不仅具有地质适应性好、效率高、施工成本低的特点，而且可减少对环境的影响，有助于环境保护。同时，可较大地降低对人们的生活、路面交通和经济活动的冲击。因此，非常适合用于城市地下管线和通道工程的施工。目前，公司研发和生产的全断面掘进机系统装备已形成系列产品，拥有多项新技术和国家专利，其综合性能达到国内领先水平，部分达到国际先进水平。

根据市政地下管道施工的不同需求，我们开发了从 $\Phi 250$ - $\Phi 4000$ mm不同口径的顶管掘进机系列，包括适应土、砂、含有卵石和砾石地质条件的微型泥水平衡顶管机（ $\Phi 250$ - $\Phi 600$ mm）、中小型泥水平衡顶管机（ $\Phi 700$ - $\Phi 2200$ mm）、大型泥水平衡顶管机（ $\Phi 2400$ - $\Phi 4000$ mm），也有适应土、砂、含有卵石和砾石地质条件的土压平衡顶管机系列（ $\Phi 1350$ - $\Phi 3500$ mm），以及适应含有砾石和岩石地质条件的泥水平衡岩石顶管机系列（ $\Phi 600$ - $\Phi 3500$ mm）。根据市政地下通道施工的不同需求，我们开发了从 $1500 \times 1500$ mm<sup>2</sup>- $9820 \times 6320$ mm<sup>2</sup>不同断面的土压平衡矩形顶管掘进机系列，适应土、砂、含有卵石和砾石地质条件工程施工应用。

根据市政地下管道施工和隧道施工的不同需求，我们开发了中型盾构和TBM掘进机系统系列产品，适应土、砂、含有卵石和砾石及岩石等地质条件工程施工应用，还可以将应用范围拓展到矿山隧道建设工程中。

The full-face tunnel boring machine includes pipe jacking machine, shield pipe jacking machine and rock tunnel boring machine (TBM). They are advanced trenchless system technology equipment integrating mechanical, hydraulic, electrical control, laser, measurement, support, transportation and other disciplines. They have been widely used in the construction of municipal pipeline projects (sewage pipes, water supply pipes, cable pipes, communication cable pipes, natural gas pipes, etc.) and underground channels, as well as the construction of highway tunnels and hydropower tunnels.

In pipeline laying, channel construction and tunnel construction, the full-face TBM system equipment not only has the characteristics of good geological adaptability, high efficiency and low construction cost, but also can reduce the impact on the surrounding environment and contribute to environmental protection. At the same time, it can greatly reduce the impact on people's lives, road traffic and economic activities. Therefore, it is very suitable for the construction of urban underground pipeline and channel engineering.

At present, we developed and produced a full series of tunnel boring machines, with many new technologies and national patents, its comprehensive performance has reached the leading level in China, and some have reached the international advanced level.

According to the different needs of municipal underground pipeline construction, we have developed a series of pipe jacking machines with different diameters from  $\Phi 250$ mm to  $\Phi 4000$ mm, including micro slurry balance pipe jacking machine ( $\Phi 250$ mm-  $\Phi 600$ mm), small and medium-sized slurry balance pipe jacking machine ( $\Phi 700$ mm-  $\Phi 2200$ mm), large slurry balance pipe jacking machine ( $\Phi 2400$ mm-  $\Phi 4000$ mm), and earth pressure balance pipe jacking machine series ( $\Phi 1350$ mm-  $\Phi 3500$ mm). And a series of slurry pipe jacking machines for gravel and rock conditions ( $\Phi 600$ mm-  $\Phi 3500$ mm). According to the different needs of municipal underground passage construction, we have developed a series of earth pressure balanced rectangular pipe jacking machines with different sections from  $1500\text{mm} \times 1500\text{mm}$  -  $9820\text{mm} \times 6320\text{mm}$ , which are suitable for the construction and application of soil, sand, pebble and gravel geological conditions.

According to the different needs of municipal underground pipeline construction and tunnel construction, we have developed a series of medium-sized shield and TBM system products, which are suitable for the construction and application of soil, sand, pebble, gravel and rock etc. geological conditions, and can also be extended to mine tunnel construction projects.

# 微型泥水平衡顶管掘进机(Φ250 - Φ600)

## Micro Slurry Balance Pipe Jacking Machine

微型泥水平衡顶管机应用于市政微型管道（污水支管、供水管、供电电缆管、通信电缆管、天然气管等）的建设，管材通常为砼管、钢管、陶瓷管，适应在土、砂土、含有少量小粒径的卵石和砾石等地质条件下施工，适用直线顶进距离不大于200m。采用泥水平衡方式完成土体切割、推进、连续排渣等作业，完成微型管道安全、高效、高质量非开挖铺设，可以较好地控制地面沉降。

The micro slurry balance pipe jacking machine is applied to the construction of municipal micro pipelines (sewage, water supply, power cable pipe, communication cable pipe, natural gas pipe, etc.). The pipe materials are usually concrete pipe, steel pipe and ceramic pipe. It is suitable for construction under the different geological conditions such as soil, sand soil, pebbles and gravel with small particle size. The jacking distance of the straight line is not more than 200m. It completes soil cutting, propulsion, continuous slag discharge and other operations by slurry balance method, to complete the safe, efficient and high-quality trenchless laying of micro-pipelines, can better control land subsidence.



Pipe ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Slurry Line Diam. (mm)	Shaft Dimension (mm)	Power Source (Hz/V)
Φ250	385 x 2800	2.2 x 1	3.1	0-7	60 x 14 x 2	0.85	50	2000x1500	50/400
Φ300	430 x 2800	2.2 x 1	3.1	0-7	60 x 14 x 2	0.85	50	2000x1500	50/400
Φ350	490 x 2800	3 x 1	4.3	0-7	60 x 16 x 2	0.85	50	2000x1800	50/400
Φ375	530 x 2800	4 x 1	5.7	0-7	60 x 16 x 2	0.85	65	2000x1800	50/400
Φ400	550 x 2800	5.5 x 1	8.5	0-7	130 x 20 x 2	0.85	65	2500x2000	50/400
Φ450	590 x 2800	7.5 x 1	11.5	0-7	130 x 20 x 2	0.85	65	2500x2000	50/400
Φ500	660 x 2800	11 x 1	17	0-7	147 x 25 x 4	1.1	80	2500x2500	50/400
Φ600	780 x 3000	15 x 1	24	0-7	294 x 30 x 4	1.1	80	2500x2500	50/400

注:以上参数可根据用户需求适当调整。

Note: Above parameters can be adjusted based on clients needs.

# 中小型泥水平衡顶管掘进机（Φ700 - Φ2200）

## Small and Medium Sized Slurry Balance Pipe Jacking Machine

中小型泥水平衡顶管机应用于市政中小型管道（污水管、供水管、供电电缆管、通信电缆管、天然气管等）的建设，管材通常为砼管、钢管、玻璃钢夹砂管，可以适应在土、砂土、含有小粒径的卵石和砾石等地质条件下施工，适用直线或曲线顶进距离100m-1000m。采用泥水平衡方式完成土体切割、推进、连续排渣等作业，完成中小型管道安全、高效、高质量非开挖铺设，可以较好地控制地面沉降。

Small and medium-sized slurry balance pipe jacking machine is used in the construction of municipal small and medium-sized pipelines (sewage, water supply, power cable pipe, communication cable pipe, natural gas pipe, etc.). The pipes are usually concrete pipe, steel pipe, glass fiber reinforced plastic sand pipe, which can be adapted to the construction under different geological conditions such as soil, sand soil, pebbles and gravel with small particle size, and are suitable for straight or curve jacking distance of 100m-1000m. The slurry balance method is used to soil cutting, propulsion, continuous slag discharge and other operations, and the safe, efficient and high-quality trenchless laying of small and medium-sized pipelines can be completed, which can better control the ground settlement.



Pipe ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Slurry Line Diam.(mm)	Shaft Dimension (mm)	Power Source (Hz/V)
Φ700	925 x 3500	18.5 x 1	28	0-7	294 x 30 x 4	1.1	100	4000x3000	50/400
Φ750	975 x 3500	18.5 x 1	28	0-7	294 x 30 x 4	1.1	100	4000x3000	50/400
Φ800	1020 x 3500	30 x 1	46	0-7	294 x 30 x 4	1.1	100	4000x3000	50/400
Φ900	1100 x 3500	30 x 1	46	0-7	294 x 35 x 4	1.1	100	4000x3000	50/400
Φ1000	1220 x 3800	37 x 1	70	0-6	490 x 35 x 4	1.5	100	6000x4000	50/400
Φ1100	1330 x 3800	37 x 1	70	0-6	490 x 40 x 4	1.5	100	6000x4000	50/400
Φ1200	1470 x 3800	45 x 1	107	0-5	784 x 45 x 4	2.2	100	6000x4000	50/400
Φ1350	1640 x 3800	55 x 1	130	0-5	784 x 45 x 4	2.2	100	6000x4000	50/400
Φ1500	1810 x 3900	45 x 2	215	0-4	784 x 50 x 4	3	150	6000x4000	50/400
Φ1650	1950 x 3900	45 x 3	344	0-3	980 x 60 x 4	3	150	6500x4000	50/400
Φ1800	2190 x 4000	45 x 3	344	0-3	784 x 80 x 8	5.5	150	6500x4000	50/400
Φ2000	2440 x 4000	55 x 3	525	0-3	784 x 80 x 8	5.5	150	7000x4000	50/400
Φ2100	2540 x 4000	55 x 3	525	0-3	784 x 80 x 8	5.5	150	7000x4000	50/400
Φ2200	2610 x 4000	55 x 3	525	0-3	784 x 80 x 8	5.5	150	7000x4000	50/400

注:以上参数可根据用户需求适当调整。  
Note:Above parameters can be adjusted based on clients needs.

# 大型泥水平衡顶管掘进机(Φ2400-Φ4000)

## Large Sized Slurry Balance Pipe Jacking Machine

大型泥水平衡顶管机应用于市政大型管道（污水干管、供水管、供电电缆管、通信电缆管等）的建设，管材通常为砼管、钢管，可以适应在土、砂土、含有小粒径的卵石和砾石等地质条件下施工，适用直线或曲线顶进距离不大于2000m。采用泥水平衡方式完成土体切割、推进、连续排渣等作业，完成大型管道安全、高效、高质量非开挖铺设，可以较好地控制地面沉降。

Large sized slurry balance pipe jacking machine is used in the construction of municipal large-scale pipelines (sewage main pipe, water supply pipe, power cable pipe, communication cable pipe, etc.). The pipes are usually concrete pipes and steel pipes, which can be adapted to the construction under different geological conditions such as soil, sand soil, pebbles and gravel with small particle size, and the jacking distance is not more than 2000m in a straight line or curve. The slurry balance method is used to complete soil cutting, propulsion, continuous slag discharge and other operations, and the safe, efficient and high-quality trenchless laying of large-scale pipelines can be completed, which can better control the ground settlement.



Pipe ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Slurry Line Diam. (mm)	Shaft Dimension (mm)	Power Source (Hz/V)
Φ2400	2910 x 4500	45 x 4	572	0-3	1176 x 100 x 8	5.5	150	7000x4000	50/400
Φ2500	2980 x 4800	45 x 4	572	0-3	1176 x 100 x 8	5.5	150	7000x4000	50/400
Φ2600	3070 x 4800	45 x 5	716	0-3	1176 x 100 x 8	5.5	150	7000x4000	50/400
Φ2700	3260 x 4800	45 x 5	716	0-3	1176 x 100 x 8	5.5	150	7000x4000	50/400
Φ2800	3340 x 4800	45 x 5	716	0-3	1176 x 110 x 8	5.5	150	7000x4000	50/400
Φ3000	3530 x 5200	45 x 6	1450	0-2	1176 x 120 x 8	5.5	150	7000x4000	50/400
Φ3500	4170 x 4800	45 x 6	1450	0-2	1470 x 120 x 8	7.5	150	7000x4000	50/400
Φ4000	4660 x 6000	55 x 6	2100	0-2	1960 x 150 x 8	7.5	150	7000x4000	50/400

注:以上参数可根据用户需求适当调整。

Note: Above parameters can be adjusted based on clients needs.

# 土压平衡顶管机

## Earth Pressure Balance Pipe Jacking Machine

土压平衡顶管机应用于市政中大型管道（污水干管、供水管、供电电缆管、通信电缆管等）的建设，管材通常为砼管、钢管，可以适应在土、砂土、含有小粒径的卵石和砾石等地质条件下施工，适用直线或曲线顶进距离不大于1000m。采用土压平衡方式完成土体切割、推进、螺旋排渣等作业，完成中大型管道安全、高效、高质量非开挖铺设，渣土外运方便，可以较好地控制地面沉降。

The earth pressure balance pipe jacking machine is applied to the construction of large municipal pipelines (sewage, water supply, power cable pipes, communication cable pipes, etc.). Usually for concrete pipes or steel pipes, suitable for soil, sand, pebbles and gravel with small particle sizes. Straight or curved jacking distances not exceeding 1000m. Using soil pressure balance method to complete soil cutting, pushing, spiral slag discharge and other operations, achieving safe, efficient, and high-quality trenchless laying of medium and large pipelines. The transportation of slag is convenient and can effectively control ground settlement.



Pipe ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Screw machine		Shaft Dimension (mm)	Power Source (Hz/V)
							Diameter (mm)	Power (kW)		
Φ1500	1810 x 4000	18.5 x 3	212	0-4	980 x 50 x 4	3	250	11	7000x4000	50/400
Φ1650	1950 x 4000	22 x 3	394	0-5	980 x 60 x 4	3	300	15	7000x4000	50/400
Φ1800	2190 x 4200	45 x 3	430	0-5	784 x 70 x 8	5.5	400	30	7500x4000	50/400
Φ2000	2450 x 4500	45 x 3	430	0-5	784 x 80 x 8	5.5	400	30	7500x4000	50/400
Φ2100	2540 x 4500	55 x 3	630	0-4	980 x 80 x 8	5.5	450	37	8000x4000	50/400
Φ2200	2610 x 4500	55 x 3	630	0-4	980 x 90 x 8	5.5	450	37	8000x4000	50/400
Φ2400	2910 x 4800	55 x 4	840	0-3.5	1176 x 100 x 8	5.5	480	45	8500x5000	50/400
Φ2500	2980 x 4800	55 x 4	840	0-3.5	1176 x 100 x 8	5.5	480	45	8500x5000	50/400
Φ2600	3070 x 4800	55 x 6	1260	0-3.5	1176 x 100 x 8	5.5	500	55	8500x5500	50/400
Φ2700	3240 x 5000	55 x 6	1260	0-5	1470 x 110 x 8	7.5	600	55	8500x5500	50/400
Φ2800	3340 x 5000	55 x 6	1260	0-5	1470 x 110 x 8	7.5	600	55	8500x5500	50/400
Φ3000	3530 x 5000	75 x 6	1432	0-4	1470 x 120 x 8	7.5	600	55	9000x6000	50/400
Φ3500	4180 x 5000	75 x 6	1432	0-4	1470 x 120 x 8	7.5	600	55	9000x6000	50/400

注:以上参数可根据用户需求适当调整。

Note:Above parameters can be adjusted based on clients needs.

# 泥水平衡岩石顶管掘进机(Φ600-Φ3500)

## Slurry Balance Pipe Jacking Machine Series For Rock Condition.

泥水平衡岩石顶管机应用于市政管道（污水管、供水管、供电电缆管、通信电缆管、天然气管等）的建设，管材通常为砼管、钢管，可以适应在含有卵石、砾石、岩石等复杂地质条件下施工，适用直线或曲线顶进距离100m-1000m。采用泥水平衡方式完成岩石破碎、推进、连续排渣等作业，完成管道安全、高效、高质量非开挖铺设，可以较好地控制地面沉降。

Slurry pipe jacking machine for rock condition is applied to the construction of municipal pipelines (sewage, water supply, power cable pipes, communication cable pipes, natural gas pipes, etc.). Usually for concrete pipes or steel pipes, suitable for complex geological conditions such as pebbles, gravel, and rocks, straight-line or curved jacking distances of 100m-1000m. The use of slurry balance method to complete rock fragmentation, propulsion, continuous slag discharge and other operations, can achieve safe, efficient, and high-quality trenchless laying of pipelines, and effectively control ground settlement.



Pipe ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Slurry Line Diam. (mm)	Shaft Dimension (mm)	Power Source (Hz/V)
Φ600	780 x 3500	18.5 x 1	35	0-7	294 x 30 x 4	1.1	80	5000x3000	50/400
Φ800	1020 x 4000	37 x 1	69	0-7	343 x 35 x 4	1.1	100	5000x3000	50/400
Φ900	1100 x 4000	37 x 1	69	0-7	490 x 40 x 4	1.5	100	5000x3000	50/400
Φ1000	1220 x 4000	45 x 1	107	0-6	490 x 40 x 4	1.5	100	5000x4000	50/400
Φ1200	1500 x 4500	30 x 3	215	0-5	784 x 45 x 4	2.2	100	5000x4000	50/400
Φ1350	1640 x 4500	45 x 3	322	0-5	980 x 50 x 4	2.2	100	7000x4000	50/400
Φ1500	1810 x 4600	55 x 3	394	0-5	980 x 55 x 4	3	150	7000x4000	50/400
Φ1650	1950 x 4600	55 x 3	394	0-5	980 x 60 x 4	3	150	7000x4000	50/400
Φ1800	2190 x 5200	55 x 4	600	0-5	784 x 70 x 8	5.5	150	7500x4000	50/400
Φ2000	2440 x 5500	55 x 4	600	0-5	784 x 80 x 8	5.5	150	7500x4000	50/400
Φ2100	2540 x 6000	55 x 4	600	0-5	980 x 80 x 8	5.5	150	8000x4000	50/400
Φ2200	2610 x 6000	55 x 5	750	0-5	980 x 90 x 8	5.5	150	8000x4000	50/400
Φ2400	2910 x 6500	55 x 5	750	0-5	1176 x 100 x 8	5.5	150	8500x5000	50/400
Φ2500	2980 x 6500	55 x 5	572	0-5	1176 x 100 x 8	5.5	150	8500x5000	50/400
Φ2600	3070 x 6500	55 x 6	900	0-5	1176 x 100 x 8	5.5	150	8500x5500	50/400
Φ2800	3340 x 6500	55 x 6	900	0-5	1470 x 110 x 8	7.5	150	8500x5500	50/400
Φ3000	3530 x 7000	75 x 6	1432	0-4	1470 x 120 x 8	7.5	150	9000x6000	50/400
Φ3500	4170 x 7000	75 x 6	1432	0-4	1470 x 120 x 8	7.5	150	9000x6000	50/400

注:以上参数可根据用户需求适当调整。

Note:Above parameters can be adjusted based on clients needs.

# 矩形土压平衡顶管掘进机

## Rectangular EPB Pipe Jacking Machine

矩形顶管机应用于市政中大型管道、通道（供电电缆管、通信电缆管、行人通道等）的建设，管材通常为砼管、复合钢管，可以适应在土、砂土、含有小粒径的卵石和砾石等地质条件下施工，适用直线顶进距离不大于200m。采用土压平衡方式完成土体切割、推进、螺旋排渣等作业，完成中大型管道安全、高效、高质量非开挖铺设，渣土外运方便，可以较好地控制地面沉降。

The rectangular pipe jacking machine is applied to the construction of large municipal pipelines and channels (power cable pipes, communication cable pipes, pedestrian channels, etc.). Usually for concrete pipes or composite steel pipes, suitable for soil, sand, pebbles and gravel with small particle sizes soil. Straight-line jacking distance is not more than 200m. Using earth pressure balance method to complete soil cutting, pushing, spiral slag discharge and other operations, achieving safe, efficient, and high-quality trenchless laying of medium and large pipelines. The transportation of slag is convenient and can effectively control ground settlement.



Sectional Dimension W*H (mm)	Length (mm)	Cutterhead Number (set)	Cutterhead Power (kW*set)	Torque (kN·m)	Revolution (r/min)	Steering Jack (kN*st*set)	Hydraulic Unit (kW)	Screw machine			
								Diameter (mm)	Power (kW)	Revolution (r/min)	Number (Set)
1500x1500	4000	1	11x2	70	0-3	784x60x4	3	300	22	0-12	1
4720x3320	5000	4+1	75x4+(45 x 6)	238 x 4+1790	0-3; 0-2	(1960x150x4) x 2 (1960x150x3) x 2	15	620	55	0-15	1
5020x4020	5000	4+1	75x4+(45 x 6)	238 x 4+1790	0-3; 0-2	(1960x150x4) x 2 (1960x150x3) x 2	15	620	55	0-15	1
6020x4020	5000	6	55x6	210x6	0-2.5	(1960x150x4) x 2 (1960x150x3) x 2	15	465	45	0-15	2
6920x4220	5000	6	75x6	286x6	0-2.5	(1960x150x5) x 2 (1960x150x3) x 2	15	465	45	0-15	2
6920x4220	5000	4+1	75x4+(37x6)	286x4+1358	0-2.5; 0-1.56	(1960x150x5) x 2 (1960x150x3) x 2	15	465	45	0-15	2
7520x4320	5500	4+1	75x4+(45 x 6)	286 x 4+1653	0-2.5; 0-1.56	(1960x150x6) x 2 (1960x150x4) x 2	15	620	55	0-15	2
9820x6320	8000	4+2	(45x3) x 4+ (45 x 6) x 2	645 x 4+ 1653 x 2	0-2; 0-1.56	(1960x150x7) x 2 (1960x150x5) x 2	15	670	75	0-15	2

注:以上参数可根据用户需求适当调整。

Note: Above parameters can be adjusted based on clients needs.

# 盾构掘进机

## Shield Tunneling Machine

盾构掘进机应用于市政大型隧道（污水管、供水管、供电电缆管、通信电缆管、天然气管等）的建设，管材通常为砼管、钢管，可以适应在含有卵石、砾石、岩石等复杂地质条件下施工，适用直线或曲线掘进距离不小于3000m。采用泥水平衡方式或土压平衡完成土体切割、岩石破碎、掘进、连续排渣等作业，完成市政大型隧道安全、高效、高质量非开挖铺设，施工风险可控，可以较好地控制地面沉降。

Shield tunneling machines are used in the construction of large municipal tunnels (sewage, water supply, power cable pipes, communication cable pipes, natural gas pipes, etc.). Usually for concrete pipes or steel pipes, fit for construction under complex geological conditions such as pebbles, gravel and rocks. They are suitable for straight or curved tunneling distances of no less than 3000m. Using slurry balance or earth pressure balance method to complete soil cutting, rock fragmentation, tunneling, continuous slag discharge and other operations, can achieve safe, efficient, and high-quality trenchless laying of municipal large tunnels, with controllable construction risks and good control of ground settlement.



Segment ID(mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Cutterhead Torque (kN·M)	Revolution (r/min)	Steering Jack (kN*st*set)	Thrust cylinder (kN*st*set)	Advance Rate (mm/min)	Hydraulic Unit (kW)	Min. Curve Radius (m)	Machine Type		Power Source (Hz/V)
Φ2440	3070 x 9000	55 x 6	630	0-7	1176 x 8	980x2100x12	0-150	37.5+7.5	25	Slurry	EPB	50/400,10000
Φ3000	3680 x 9000	250 x 4	955	0-12	1960 x 8	1470x2100x12	0-150	55+15	30	Slurry	EPB	50/1140,10000

注:以上参数可根据用户需求适当调整。  
Note:Above parameters can be adjusted based on clients needs.

# 全断面岩石隧道掘进机 (TBM)

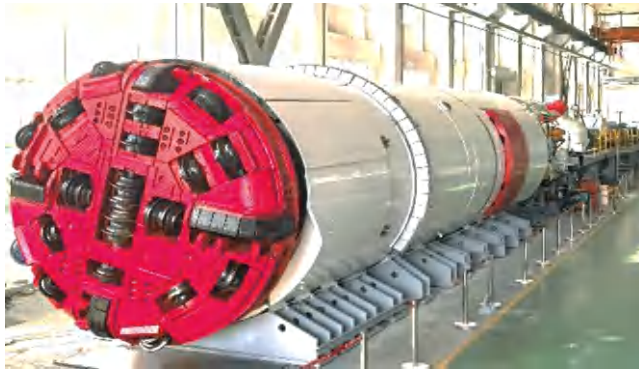
## Full Face Tunnel Boring Machine in Rock Condition

全断面岩石掘进机(简称TBM)是技术密集程度较高的机、电、液一体的大型隧道施工设备，主要用于岩石地质结构的铁路、公路、水利水电引水导洞、地铁及地下工程隧道施工。掘进机根据地质条件的不同，可以采用护盾式或敞开式结构，具有锚杆、锚索、铺网、拱梁、管片、注浆和混凝土喷射等支护方式，满足有掘必探、超前钻探的要求。掘进系统具有掘进、支护、通风除尘、长距离物料和出渣运输、自动导航和智能监控等平行、连续作业的功能，可实现安全、高效、高质、绿色、少人、智能等隧道掘进的目标。

全断面岩石掘进机适用隧道直径  $\Phi 3.8\text{-}5.0\text{m}$ ，隧道坡度10%左右，隧道掘进长度大于3000m，岩石单轴抗压强度  $\leq 250\text{Mpa}$ 。

Full face rock tunneling machine (TBM) is a large-scale underground construction equipment that integrates mechanical, electrical, and hydraulic systems with high technological intensity. It is mainly used for the construction of railways, highways, water conservancy and hydro power tunnels, subways and underground engineering tunnels in rock layer. According to different rock conditions, tunneling machines can adopt shield or open structures, with support methods such as anchor rods, anchor cables, mesh laying, arch beams, shield tunnel segments, grouting, and concrete spraying, achieved the requirements of detecting before tunnel boring and test boring in advance. The tunnel boring system includes boring, support, ventilation and dust removal, long-distance material and soil transportation, self-navigation and intelligent monitoring for parallel continuous operations. Achieved safe, efficient, high-quality, economic development, less labor, and intelligent tunnel boring aim.

The full face rock tunneling machine is suitable for tunnels with a diameter of 3.8m-5.0m, a slope of about 10%, a tunnel length longer than 3000m, and an uniaxial compressive strength of rock  $\leq 250\text{Mpa}$ .



Tunnel ID (mm)	Machine Dimension OD*L(mm)	Cutterhead Power (kW*set)	Cutterhead Torque (kN·M)	Revolution (r/min)	Steering Jack (kN*st*set)	Thrust cylinder (kN*st*set)	Advance Rate (mm/min)	Hydraulic Unit (kW)	Min. Curve Radius(m)	Machine Type	Power Source (Hz/V)
$\Phi 3800$	3680 x 11000	250 x 4	955	0-12	1960 x 8	1470x2100x12	0-150	37.5+7.5	30	ShieldType	50/400,10000
$\Phi 5000$	5000 x 22000	280 x 7	2000	0-12		2750x1600x4	0-150	110	80	Open Type	50/690,20000

注:以上参数可根据用户需求适当调整。  
Note: Above parameters can be adjusted based on clients needs.

## 集中控制室

## Control Room

集中控制室是用来布置顶管机整个供电和控制系统的专用空间，也是顶管操作员专属的工作地点。它含有冷暖空调、照明、排风扇、电源和网络插座，长度有3m、4m和6m三种规格，以适应不同尺寸规格的顶管机的需要，也适用顶管出发井现场空间的大小。

The control room arranged the entire power supply and control system of the pipe jacking machine, with lengths of 3m, 4m, and 6m, for different sizes of pipe jacking machines and start wells. It is a dedicated work location for the pipe jacking operator, including heating and cooling air conditioning, lighting, exhaust fans, power supply, and network.



## 遥控操作系统

## Remote Control Operating System

遥控操作系统对整个顶管系统进行地面集中控制，以及数据采集显示系统（Data Logging System），具有设备控制、实时数据采集、显示、故障报警、趋势分析、历史数据打印等功能，部分系统具有自动和智能控制功能。系统中包括刀盘变频调速功能，可降低启动电流对电网的冲击，减少启动压降的影响，刀盘可保持高转矩启动，保护各系统设备免于损坏，提高其使用寿命。因此，遥控操作系统具有较好的操作性能，以及较高的可靠性和适应性。

顶管机导航定位系统，根据顶管机尺寸规格不同、顶进距离长短、直线还是曲线顶进等因素，可选择带激光自动定位的测控系统，也可选择基于高性能陀螺惯导的智能导航定位控制系统，达到高精度控制顶管轴线精度的目的，为顶管高质量施工提供智能和高效的控制手段和平台。

The remote control operating system controls the entire pipe jacking system on the ground, as well as a Data Logging System, which has functions of equipment control, real-time data collection, display, fault alarm, trend analysis, and historical data printing. Some systems have automatic and intelligent control functions. The variable frequency speed regulation of cutter head, can reduce the impact of starting current on the power grid, reduce the impact of starting voltage drop, maintain high torque starting, protect various system equipment from damage, and improve its service life. Therefore, remote control operating systems have good operational performance, as well as high reliability and adaptability.

According to the diameter and jacking distance of pipe jacking machine, and straight line jacking or curved jacking, we could choose the measure and control system with laser automatic positioning, or an intelligent navigation and positioning control system based on high-performance gyroscopic inertial navigation, this achieves the goal of high-precision control of the pipe jacking axis, providing intelligent and efficient control for pipe jacking construction.



# 主顶系统

## Thrust Jacking System

### ◆ 主顶液压泵站 Hydraulic Pump Station

额定压力Pressure rating: 31.5MPa

主泵功率Main pump power: 18.5-45kW

推进速度Speed: 0-150mm/min

主泵调速方式: 变频调速

Speed regulation way of main pump: VFD



### ◆ 双级等推力主顶液压油缸 Double-Stage With Steady Thrust Cylinder

推力Thrust: 1960kN, 2940kN

行程Stroke: 2500mm, 3500mm



### ◆ 单级主顶油缸 Single-Stage With Steady Thrust Cylinder

推力Thrust: 1470kN, 1960kN, 2450kN,

2940kN, 3136kN, 3430kN

行程Stroke: 1000mm, 1200mm, 1500mm,  
1800mm



### ◆ 组合式主顶装置 Combined Main Jacking Device

推力Thrust: 1470kN×2, 1960kN×2,  
2450kN×2, 1960kN×4, 2450kN×4

行程Stroke: 1500mm, 2000mm, 2500mm



# 泥水循环系统

## Slurry Circulation System

泥水循环系统由进水泵、排泥泵、耐压软管、钢管及联结件、泵的变频调速控制柜和流量计等部件组成，完成泥浆高效循环、排出，可以调控泥水流量和压力，以利于地面沉降控制。根据顶管机尺寸规格、地质条件和顶进距离的不同，可以选择以下参数：

The slurry circulation system consists of inlet pump, discharge pump, pressure resistant hose, steel pipe and connecting parts, variable frequency speed control cabinet and flow meter of the pump, and other components to achieve efficient slurry circulation, regulate the slurry flow rate and pressure to facilitate ground settlement control.

According to the different diameter, geological conditions, and jacking distance of the pipe jacking machine, the following parameters can be selected:



管路内径 Pipe diameter: 50mm, 60mm, 80mm, 100mm, 150mm, 200mm.

泥水泵功率 Pump power: 18.5kW, 22kW, 30kW, 45kW, 55kW, 75kW, 90kW, 110kW, 132kW.

# 泥浆处理系统

## Mud Treatment System

泥浆处理系统主要由1套预筛器、1套泥浆净化装置、1套泥浆箱及其冲砂系统等组成，系统分离出的渣料含水率可低于30%，接近开挖的原状地基土，渣土可直接外运，避免了对环境的污染。系统处理后的泥浆能够参与泥浆循环，重新进入顶管机循环利用。泥浆处理系统有助于相关工程施工高质、高效、经济、文明地进行。

The mud treatment system mainly consists of one set pre-screener, one set mud purification device, one set mud box, and sand flushing system. The moisture content of the slag separated by the system can be less than 30%, close to the original foundation soil. The slag can be directly transported out to avoid environmental pollution. The mud processed by the system can participate in mud circulation and re-enter the pipe jacking machine for recycling. The mud treatment system helps to ensure high-quality, efficient, economical, and civilized construction of related projects.



单套泥浆处理能力 Single set mud processing capacity:  $200\text{m}^3/\text{h} \sim 320\text{m}^3/\text{h}$ .

渣料筛分能力 Residue screening capacity:  $25 \sim 110\text{t/h}$ .

一级分离粒度 Primary separation particle sized:  $d_{50}=0.045\text{mm}$ .

二级分离粒度 Secondary separation particle size:  $d_{50}=0.02\text{mm}$ .

总装机功率 Total power:  $50 \sim 180\text{kW}$ .

# 自动注浆润滑系统

## Automatic Grouting Lubrication System

注浆系统主要由注浆泵、拌浆桶、发酵箱、管路和联结件、电磁阀、电控系统组成，将减摩润滑材料（膨润土或高分子材料）压注入管子外壁和土体之间，可有效降低管子外表面和土体的摩擦系数和摩擦力，从而降低管线后端的顶推力，提高主顶系统的可靠性和效率，避免管子损坏，能够有效降低顶管施工风险，是顶管施工的重要和必不可少的工艺环节。

根据地质条件和顶进长度的不同，可选择注浆系统的数量、注浆点的数量，以及注浆量的自动控制，达到最佳的注浆减摩效果。

The grouting system mainly consists of grouting pump, mixing barrel, fermentation box, pipeline and connecting parts, solenoid valve and electrical control system. By injecting anti friction lubricating material (bentonite or polymer material) between the pipe and the soil, efficiently reduce the friction force between the pipe and soil, thereby reducing the pushing force at the rear end of the pipeline, improving the reliability and efficiency of the main jacking system, avoiding pipe damage, and effectively reducing risks. It is an important and essential process in pipe jacking construction.

According to different geological conditions and jacking lengths, the number of grouting systems, grouting points, and automatic control of grouting volume can be selected to achieve the best grouting friction reduction effect.



# 齿轮传动系统

## Gear Drive System

齿轮及行星减速器为我们专门为全断面掘进机系统研制的系列产品之一，也是我们的优势产品，不仅通过了国家级测试中心试验室的加载及性能试验，它的材质为优质低碳合金钢，齿面经过渗碳淬火处理，硬度可达HRC58—62。齿面经过磨齿加工，其精度为5级以上。最后，齿面进行强化喷丸处理，可进一步提高齿轮的疲劳强度和寿命。这些工艺措施的实施，有力地保证了我们的齿轮和减速器可以具备体积小、效率高、噪声小、传递转矩大、寿命长和可靠性高等特点，从而较好地满足和保证了全断面掘进机系统的可靠性。

The gear and planetary reducer is one of our series of products specially developed for the full face tunneling machine system, and it is our advantageous product. It has passed the loading and performance tests of the national testing center laboratory, which is made of high-quality low-carbon alloy steel. The tooth surface has undergone carburizing and quenching treatment, and the hardness can reach HRC58-62. The tooth surface has undergone gear grinding and its accuracy is above level 5, and the strengthening shot peening treatment on the tooth surface can further improve the fatigue strength and service life of the gear. These technological treatments effectively ensure that our gears and reducers are small volume, high efficiency, low noise, large torque transmission, long service life and high reliability, thus better meeting and ensuring the reliability of the full face tunneling machine system.



## 服务保障

## Our Service

### ◆ 售前支持 Pre-sales supports

如果您想了解我们的产品，我们的销售人员将为您提供相关的技术咨询、产品介绍、产品推荐、设计方案、以及便利的考察环境。

If you would like to learn more about our products, our sales staff will provide you with technical advice, product descriptions, product recommendations, design programs and an easy access to your investigation.

### ◆ 客户关怀 Concerns for our customers

我们拥有一支经验丰富、技术力量雄厚的研发团队，可根据您的实际施工需求和地质情况，为您提供专业的技术指导以及最合理的解决方案。

We have an experienced team with strong technical force. We can provide you with professional technical guidance as well as the most reasonable solution according to your actual needs and geological conditions.

### ◆ 售后服务 After-sales service

公司提供产品安装调试的技术指导，以及相关技术文件和技术培训。根据客户的不同需求，我们可以派技术人员到现场技术服务，协助客户完成首段工程施工。

We provide technical guidance for machine installation and debugging, as well as relevant technical documents and training. According to the different needs of customers, we can send technical engineers to the site for technical services, to assist customers in completing the first section of construction.

公司建立完善的客户档案，为售后提供跟踪服务，定期回访。

We have established perfect records of clients and can offer tracking service and regular visits after sales.

设备保修期为1年，以约定时间为准，实施终身维护，提供配件支持。

The machinery warranty lasts for one year, subject to the appointed date, we offer a lifelong maintenance and provide parts support.

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