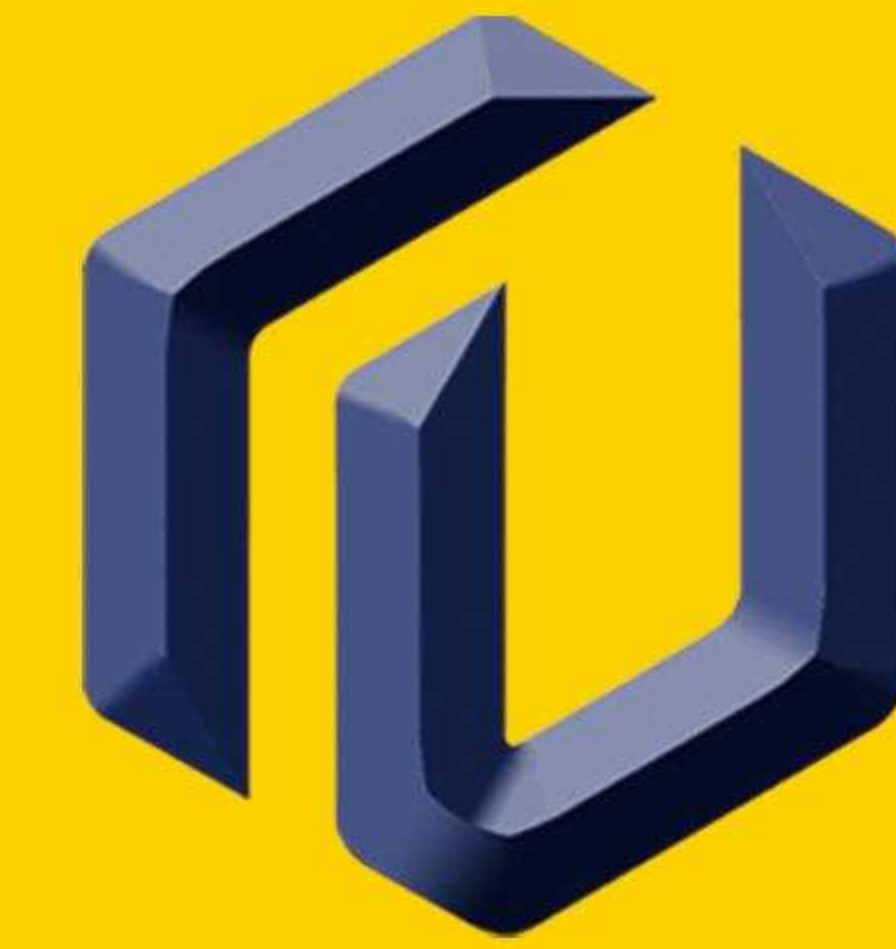


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SHANDONG TIANNUO CONSTRUCTION MACHINERY CO., LTD



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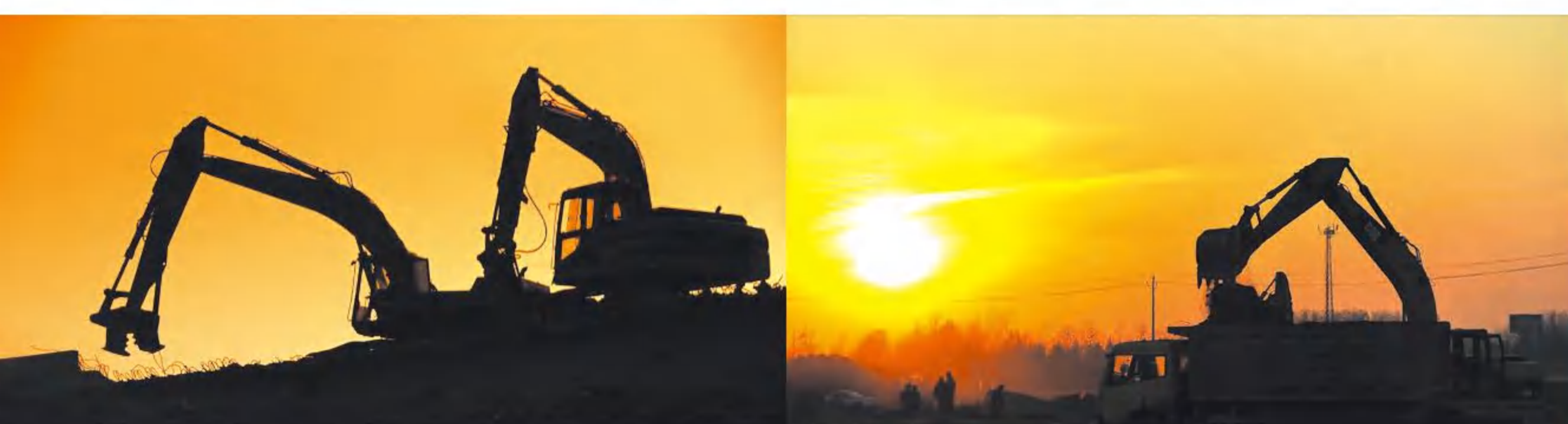
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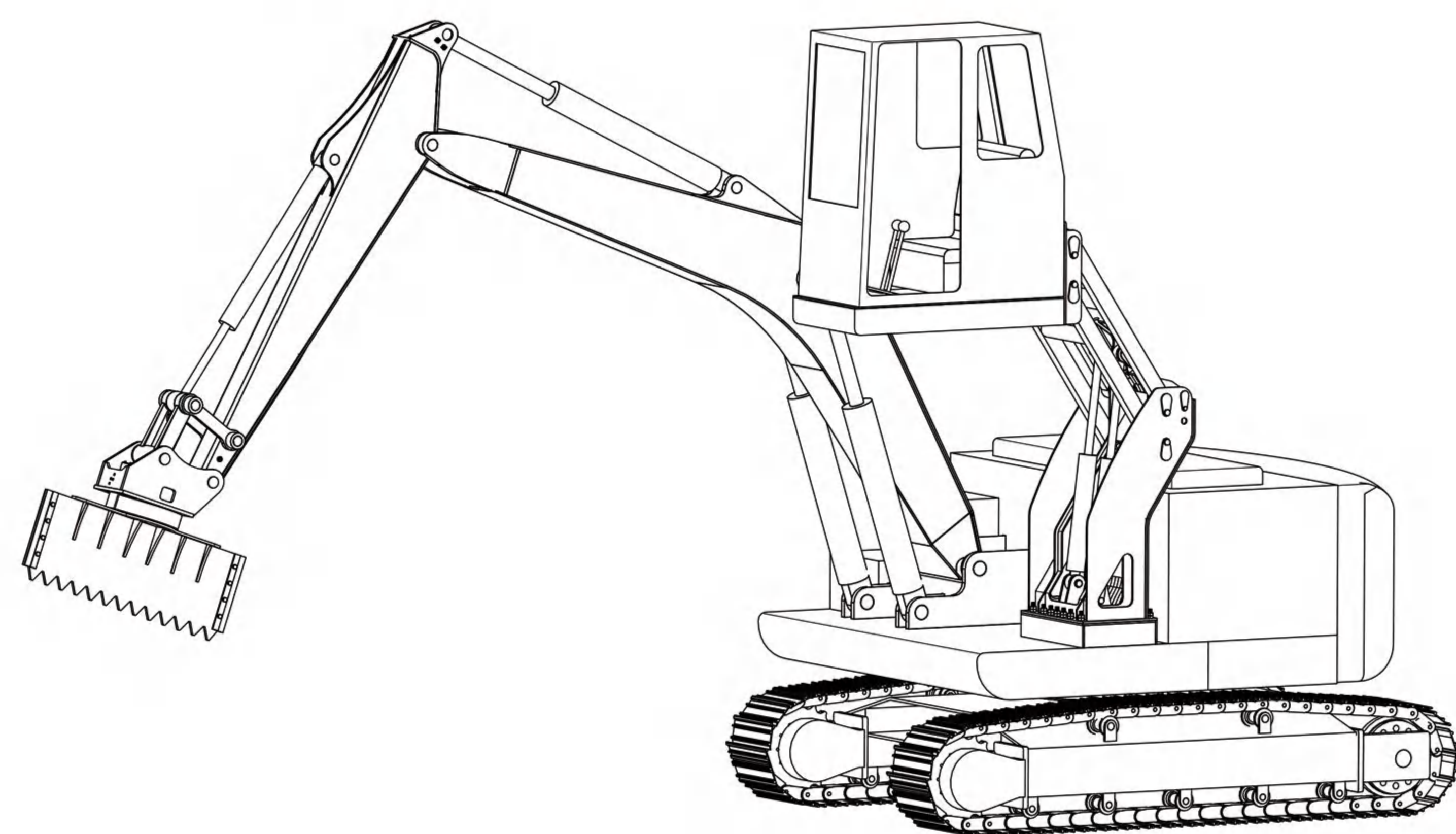
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一个企业就是一个传奇的故事
一个企业就是一个城市发展的见证



山东天诺工程机械有限公司，是一家挖机多功能设备研发、设计、制造、销售、服务于一体的综合性企业，公司坐落于“孔孟之乡，礼仪之邦”的山东省济宁市。

公司拥有70余项专利产品，产品通过ISO9001质量管理体系认证。被誉为“中国自主创新企业”“质量信得过产品”“AAA级信用企业”等荣誉称号。

公司拥有一批年轻精干的技术管理队伍，本着开拓进取的精神，不断求发展，引进国外先进技术，不断升级优化产品生产工艺及设备，经过多年经验积累，产品应用于国内外各知名品牌挖掘机、装载机，产品远销世界各地，赢得市场广泛赞誉及信赖。为众多企业提供个性化定制服务，为多种工程设备提供施工解决方案。公司始终坚持“质量第一，用户至上”的方针，竭力为客户提供性价比更高的产品，以最佳的售后服务满足客户需求。

公司主营产品分为五大类：

- 1、铁路养护装备：铁路换枕机、清筛机、边坡清理机、捣固机、清渣机、枕木夹、钢轨夹、旋转倾斜斗、道砟筛分斗等
- 2、挖机改装装备：挖机升降驾驶室、倾斜驾驶室、前凸驾驶室、两极驾驶室、卸火车加高底盘等；
- 3、工程手臂：挖掘机加长臂、三节臂、打桩臂、抓料臂、标准臂、岩石臂、隧道臂等；
- 4、挖机属具：挖斗、岩石斗、栅格斗、贝壳斗、高频筛分斗、异形斗、旋转刮板、夹木器、抓钢机、抓钳器、树桩夹、劈木机、松土器等；
- 5、工程车辅助装备：装载机铲斗、加长臂、装载机轮胎防滑履带、保护履带、自卸车防滑履带等。

Shandong Tiannuo Engineering Machinery Co., Ltd. is a comprehensive enterprise integrating R&D, design, manufacturing, sales and service of multi-functional excavator equipment. The company is located in Jining City, Shandong Province, "the hometown of Confucius and Mencius and the land of etiquette".

The company has more than 70 patented products, and its products have passed ISO9001 quality management system certification. Known as "China's independent innovation enterprise" and "quality.Trustworthy Products", "AAA Credit Enterprise" and other honorary titles.

The company has a group of young and capable technical management teams. In line with the spirit of pioneering and enterprising, it constantly seeks development, introduces foreign advanced technology, and continuously upgrades and optimizes product production processes and equipment. After With years of experience, our products are used in excavators and installation machines of well-known brands at home and abroad. Our products are exported to all over the world and have won widespread praise and trust in the market. We provide personalized customized services for many companies and provide construction solutions for a variety of engineering equipment. We always adhere to the policy of "quality first, customer first", strive to provide customers with more cost-effective products, and meet customer needs with better after-sales service. The company's main products are divided into five categories:

- 1.Railway maintenance equipment: Excavator pillow changing machine、Ballast Cleaning Machines Excavator railway slope cleaning machine、Railway Tamping Machine Ballast Compactors、Excavator Railway Slag Cleaner、Excavator Sleeper Clamp、Excavator rail clamp、Rotate Tilt Ditch Bucket、Excavator ballast screening bucket, etc.;
- 2.Excavator modifications: Excavator cab raising ladder、Excavator tilt cab、forward cab、Two-level cab、Excavator long legs, etc.;
- 3.Excavator arm: Excavator extension arm、Excavator three-section arm、Excavator Piling Arm、Excavator grab arm、Excavator standard arm、Excavator rock arm、Excavator tunnel arm, etc.;
- 4.Excavator Attachments: Excavator Bucket、Excavator rock bucket、Excavator grid bucket、Excavator shell bucket、Excavator high frequency screening bucket、Excavator special-shaped bucket、Excavator rotating scraper、Excavator Clamping Wood、Excavator steel grab、Excavator Gripper、Excavator stump clip、Excavator wood splitting、Excavator ripper, etc.;
- 5.Engineering vehicle auxiliary equipment: loader bucket、loader extension arm、anti-skid crawler of loader、Loader protection crawler、truck anti-skid track, etc.;

公铁两用挖掘机改装

Modification of road and rail excavator



铁路施工用具 ---- 公铁两用挖掘机
铁路轮系升降及驱动装置、枕木夹具。

挖掘机枕木夹具是我公司新设计生产的铁路维护属具工作装置之一，它是可以通过快换连接器安装到挖掘机上的前端工作装置。适用于6-13吨挖掘机使用。

同时我厂改装公铁两用挖掘机，即在铁路轨道上行走的挖掘机底部装置，在铁路维护方面更加高效、便捷。

本设备适用于国内1435mm轨距，行走速度大约10-20KM/h，载重量小于15T，本实用新型通过在已有履带式挖掘机，可通过液压系统驱动升降的铁路轮系系统，使普通履带式挖掘机可沿铁路运行，可广泛应用于铁路枕木维护更换、线路抢修、铁路两侧线缆沟施工等作业。

Railway construction tools ---- Railway wheel system lifting and driving device, sleeper clamp for dual-purpose road and rail excavator.

The excavator sleeper clamp is one of the newly designed and produced railway maintenance accessories working devices of our company. It is a front-end working device that can be installed on the excavator through a quick-change connector. It is suitable for 6-13 ton excavators. At the same time, our factory refits dual-purpose road and rail excavators, that is, the bottom device of the excavator that walks on the railway track, which is more efficient and convenient in railway maintenance.

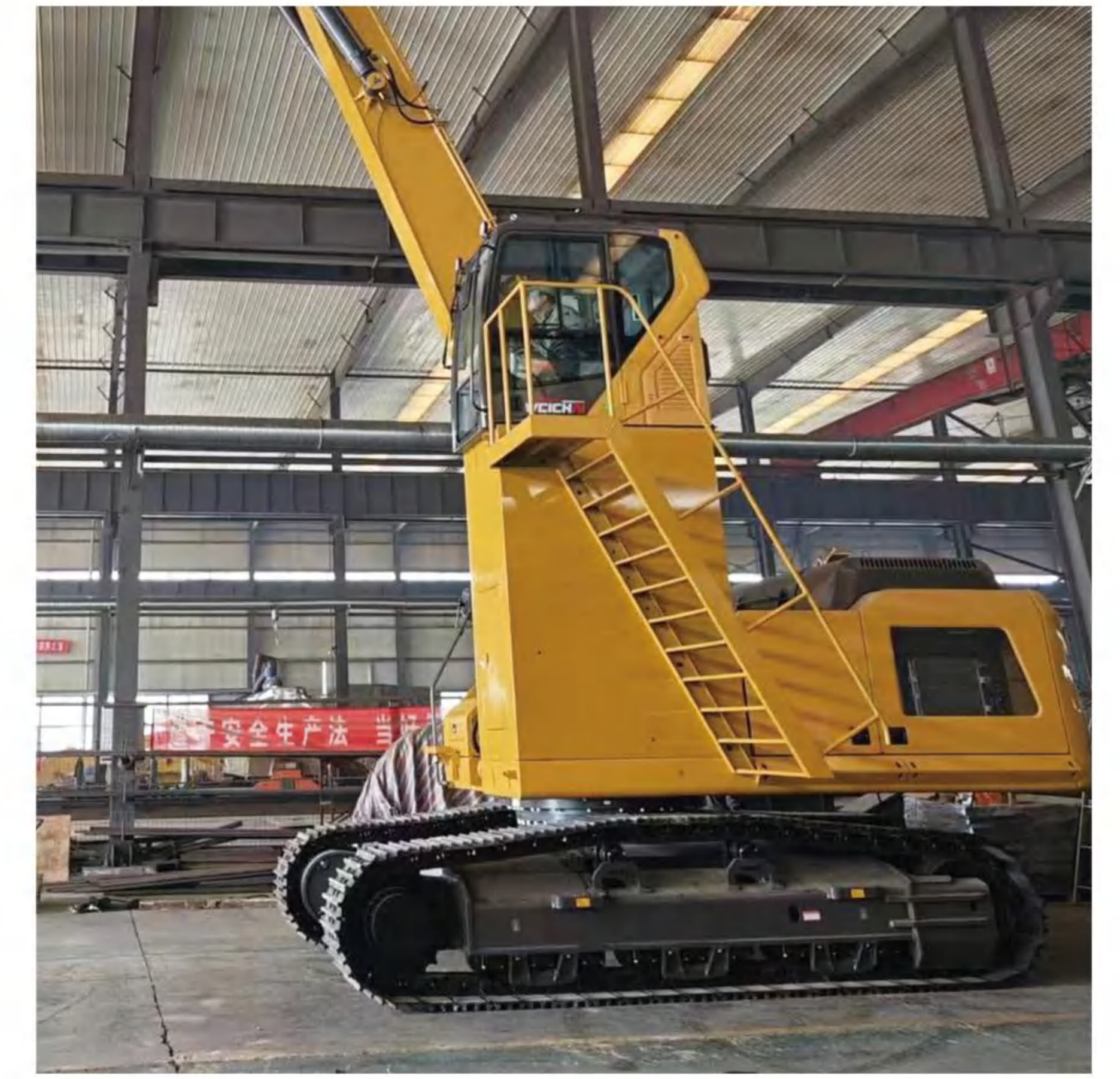
This equipment is suitable for domestic 1435mm track gauge, with a walking speed of about 10-20KM/h and a load capacity of less than 15T. The utility model can drive the lifting railway wheel system through the hydraulic system in the existing crawler excavator, so that the ordinary crawler excavator can run along the railway, which can be widely used in railway sleeper maintenance and replacement, line repair, and cable trench construction on both sides of the railway.



公铁技术参数			
适用轨距	Applicable track gauge	毫米 (mm)	1435/1520
驱动轮数量	Number of driving wheels	个 (Units)	2
驱动轮操作方式	Driving wheel operation		主机履带操纵杆操纵
铁路铁轨行走方式	Railway track running mode		驱动轮行走
铁路作业行走方式	Railway operation walking method		驱动轮可转换自由轮模式
驱动动力形式	Driving power type		一体式柱塞马达
铁路铁轨行走速度(驱动轮)	Railway track speed(drive wheel)	千米/时 (km/h)	10-15
铁路作业行走速度(自由轮)	Railway operation travel speed(free speed)	千米/时 (km/h)	2.86-5.0
铁路最大制动距离	Maximum braking distance of railway	毫米 (mm)	≤10000

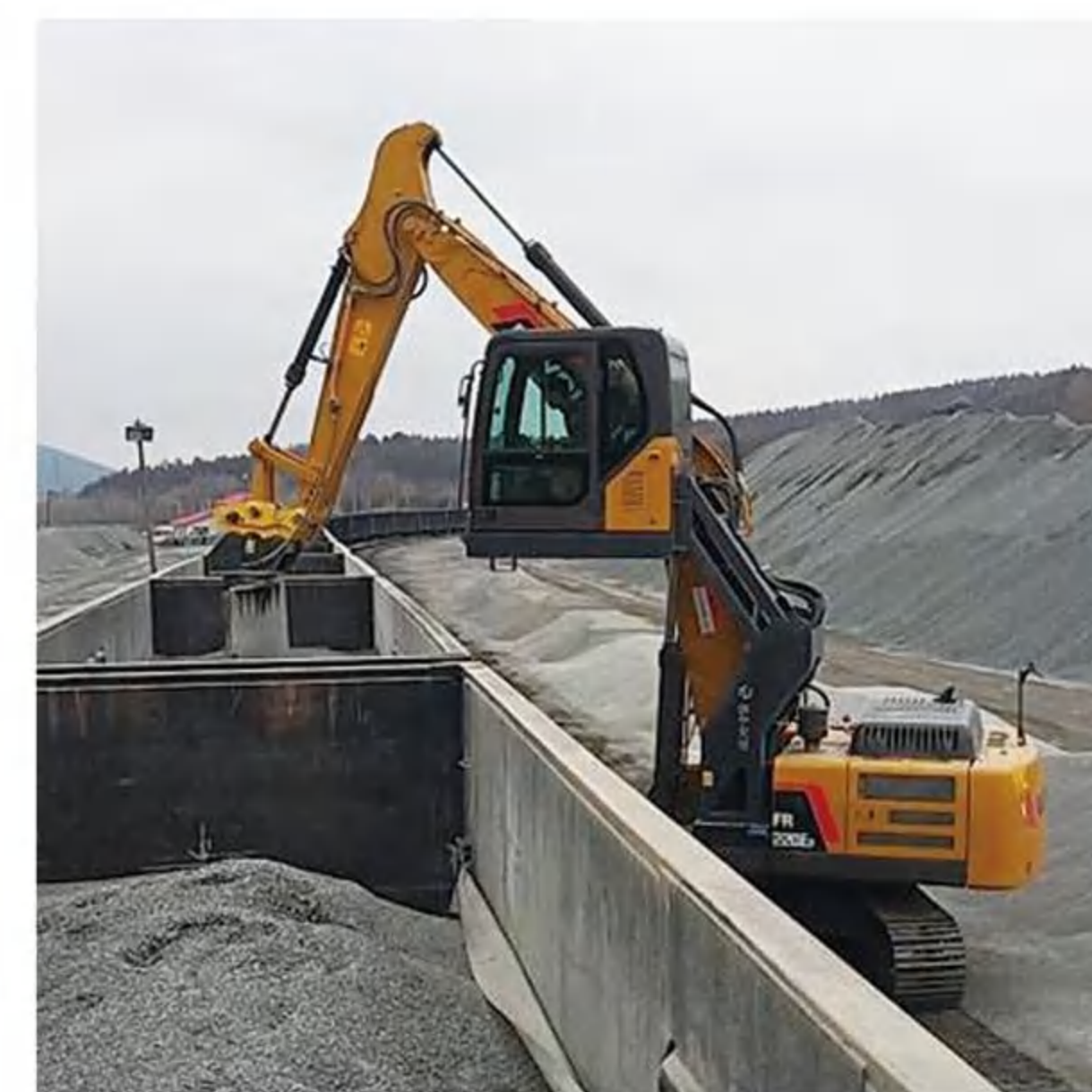
升降驾驶室改装

Converted to lifting cab



挖掘机升降驾驶室是我公司新设计生产的产品，以减少驾驶员视线被阻的情形，从而降低驾驶员的操作难度，保证施工作业安全。该挖掘机的驾驶室的底部通过液压油缸与一个辅助底盘连接，所述辅助底盘通过转动机构与挖掘机的底盘连接。在施工过程中，当因为驾驶室的高度不够而导致驾驶员视线被阻时，驾驶员可以控制液压油缸伸出，使驾驶室的高度提升，从而扩宽驾驶员的视野；当驾驶员视线被阻的条件消除后，驾驶员可以控制液压油缸缩回，使驾驶室的高度降低，以降低整体重心，保证挖掘机行驶安全。

Excavator cab raising ladder is a newly designed product produced by our company to reduce the situation where the driver's vision is blocked, thereby reducing the driver's operating difficulty and ensuring the safety of construction operations. The bottom of the cab of the excavator is connected to an auxiliary chassis through a hydraulic cylinder, and the auxiliary chassis is connected to the chassis of the excavator through a rotating mechanism. During the construction process, when the driver's vision is blocked due to insufficient height of the cab, the driver can control the hydraulic cylinder to extend to increase the height of the cab, thereby widening the driver's field of vision: when the condition that the driver's vision is blocked is eliminated, the driver can control the hydraulic cylinder to retract to lower the height of the cab to lower the overall center of gravity and ensure the safety of the excavator.



驾驶室技术参数			
适用机型	Applicable models		13-50吨
驾驶室升降高度	Cab lifting height	毫米 (mm)	2500 (可定制)
驾驶室离地高度	Height of cab from ground	毫米 (mm)	3800
驾驶室前突距离	Cab forward distance	毫米 (mm)	800
驾驶员视线范围	Driver's field of vision	毫米 (mm)	5000-5300
驾驶室升降速度	Driver lifting speed		可调节

挖掘机龙门架

Excavator long legs



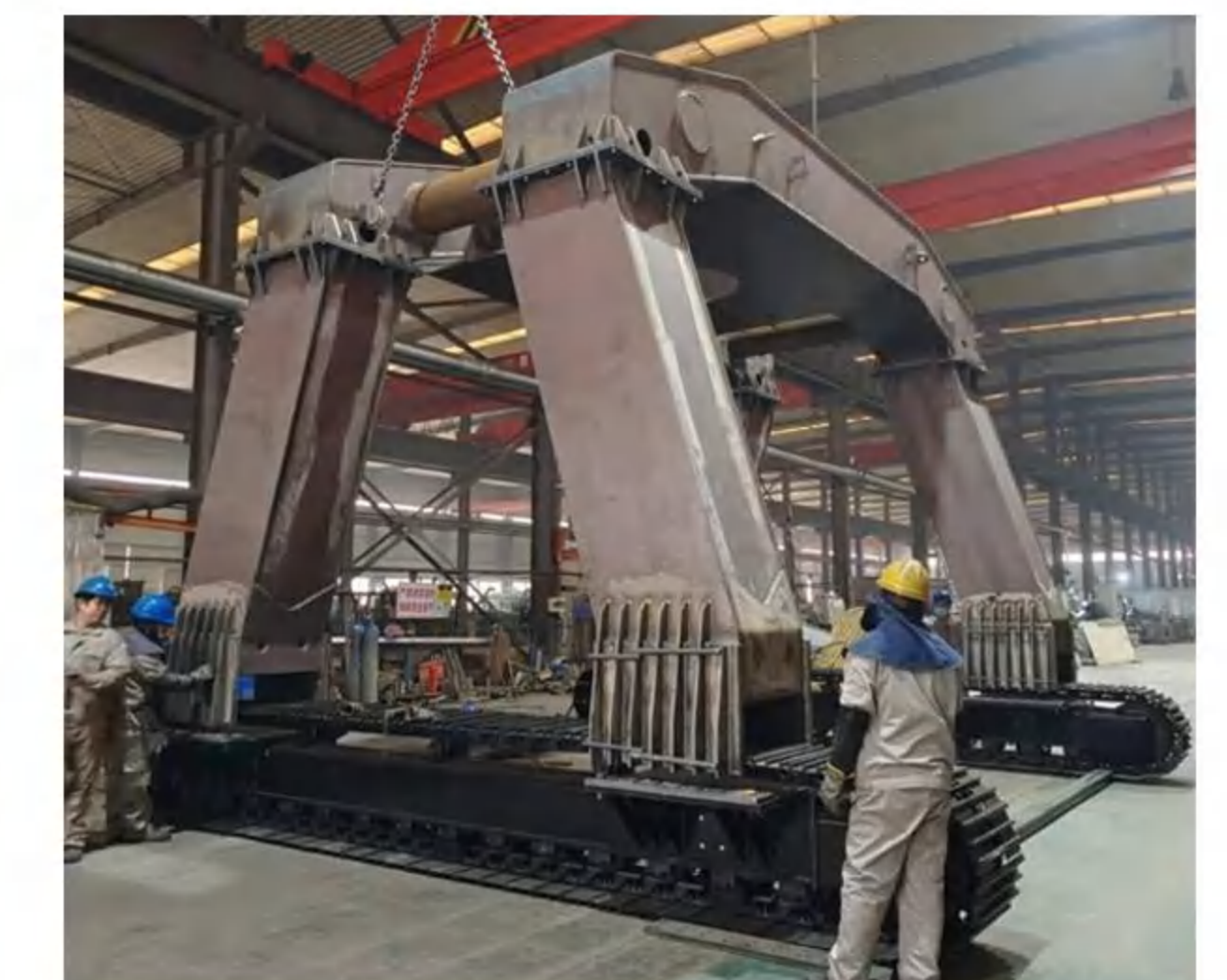
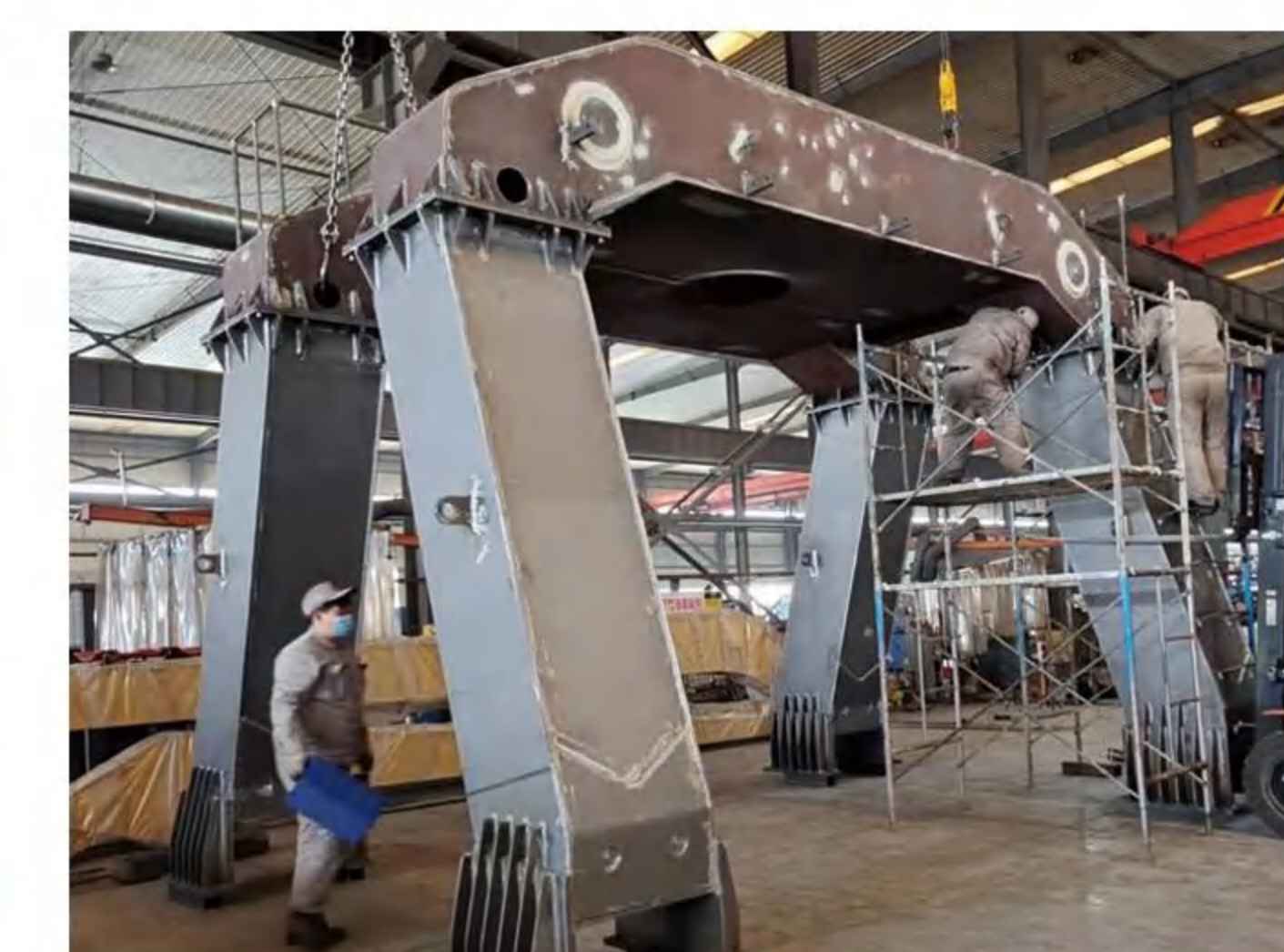
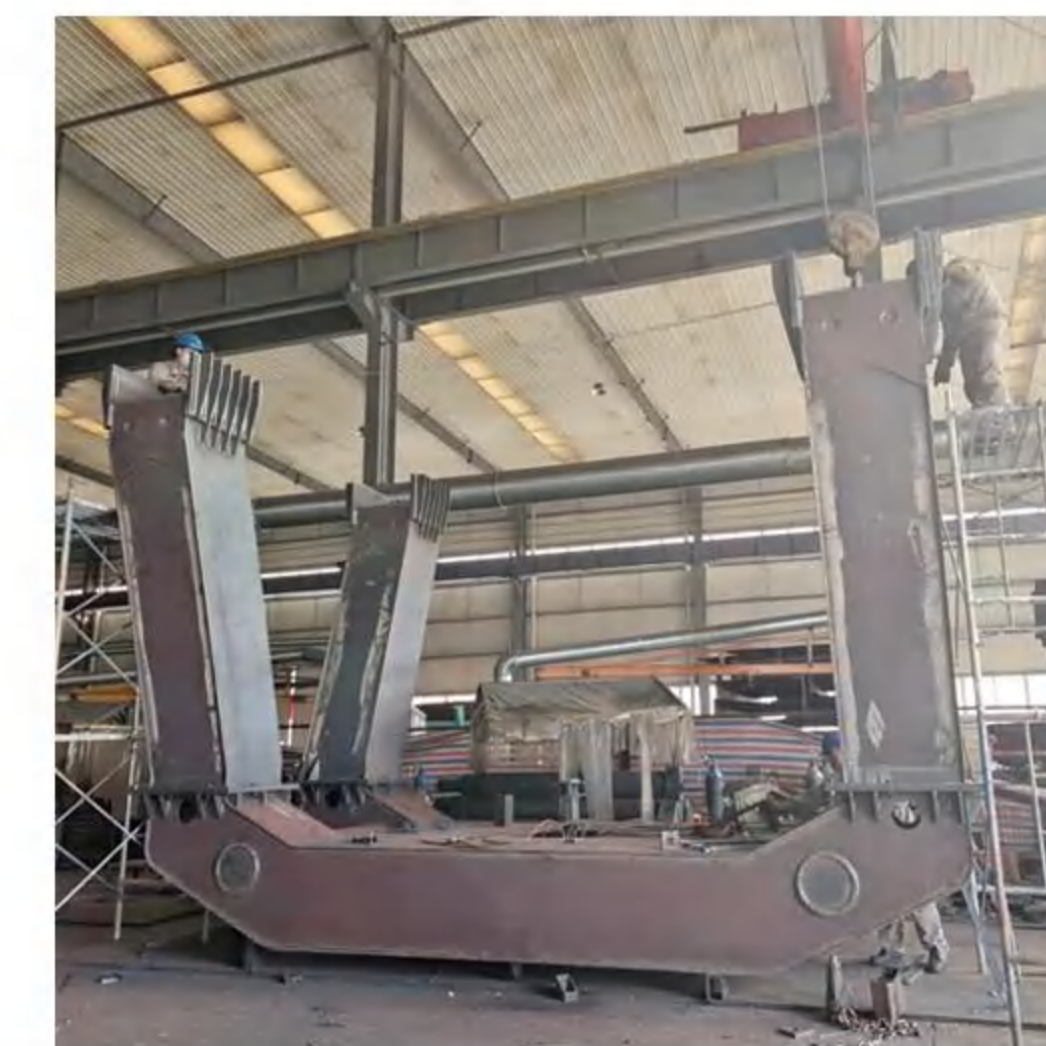
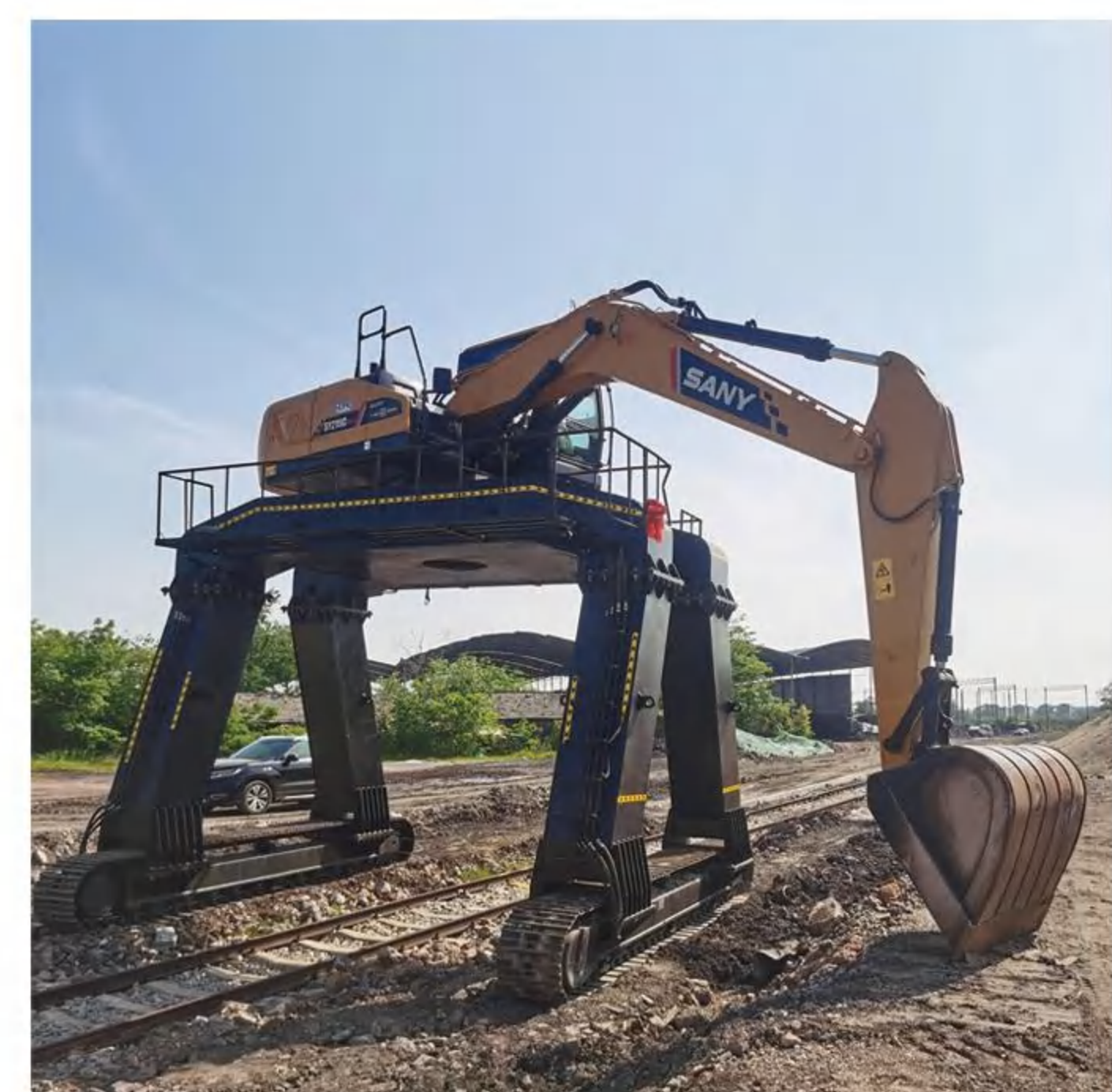
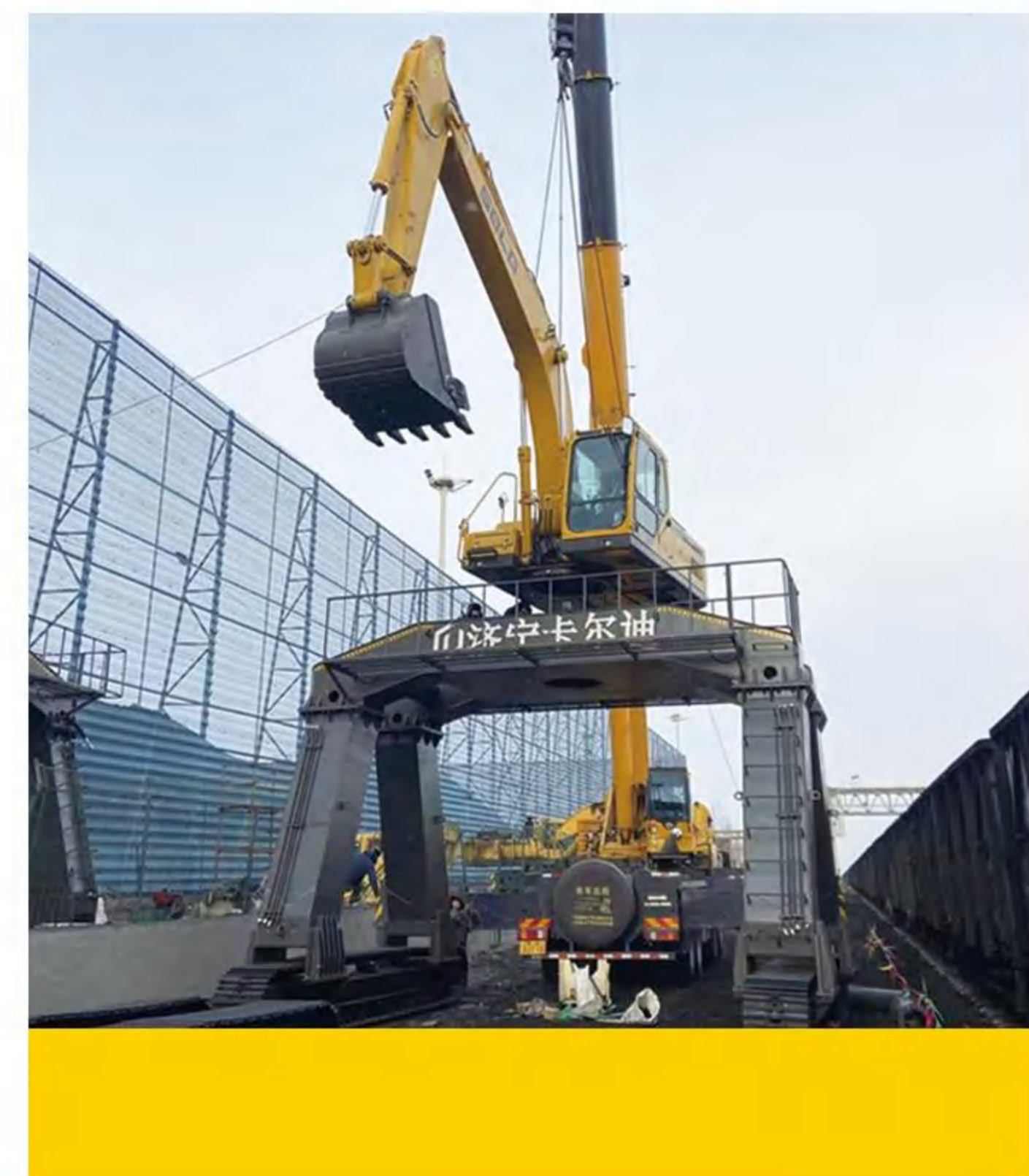
骑在火车上卸料的挖掘机

我公司定制改装的大长腿挖掘机有以下几个特点：

1. 采用特殊钢材，具有韧性高，耐磨性高的优点；
2. 高支腿、大开口，有效通过高度 4200mm；横跨在火车厢上卸料，操作视野开阔；
3. 配备大挖斗，铲斗居中作业，可轻松清除箱底及侧面物料，平均 5-8 分钟卸一车厢；
4. 所卸物料直接装车，无需落地二次中转，节能降耗；
5. 履带加长，增加接触面积，配备多个防护栏，增加设备的安全系数；
6. 产品灵活，可根据客户不同的需求更改开口、高度，满足不同作业需求；
7. 操作便捷，成本低，效益高；

Excavator riding on train to unload materials The long-legged excavator customized and modified by our company has the following characteristics

1. It uses special steel with the advantages of high toughness and high durability;
2. High outriggers, large opening, effective passing height of 4200mm; it unloads materials across the train carriage, with a wide operating field of vision;
3. Equipped with a large bucket, the bucket operates in the center, which can easily remove the materials at the bottom and sides of the box, and unloads a carriage in an average of 5-8 minutes;
4. The unloaded materials are directly loaded onto the truck without the need for secondary transfer on the ground, which saves energy and reduces consumption;
5. The crawler is lengthened to increase the contact area, equipped with multiple guardrails, and the safety factor of the equipment is increased;
6. The product is flexible, and the opening and height can be changed according to the different needs of customers to meet different operating needs;
7. Convenient operation, low cost and high efficiency;



挖掘机龙门架技术参数			
适用机型	Applicable models		13-40吨
作业方式	Assignment style		火车上方
有效通过高度	Effective pass height	毫米 (mm)	4300(可定制)
有效通过宽度	Effective passing width	毫米 (mm)	4200(可定制)
支腿数量	Number of legs	个 (Units)	4
履带行走操作方式	Crawler walking operation mode		主机履带操纵杆操纵
安全装置	safety devices		配备防护栏
挖斗斗容	Bucket capacity		2-3.5

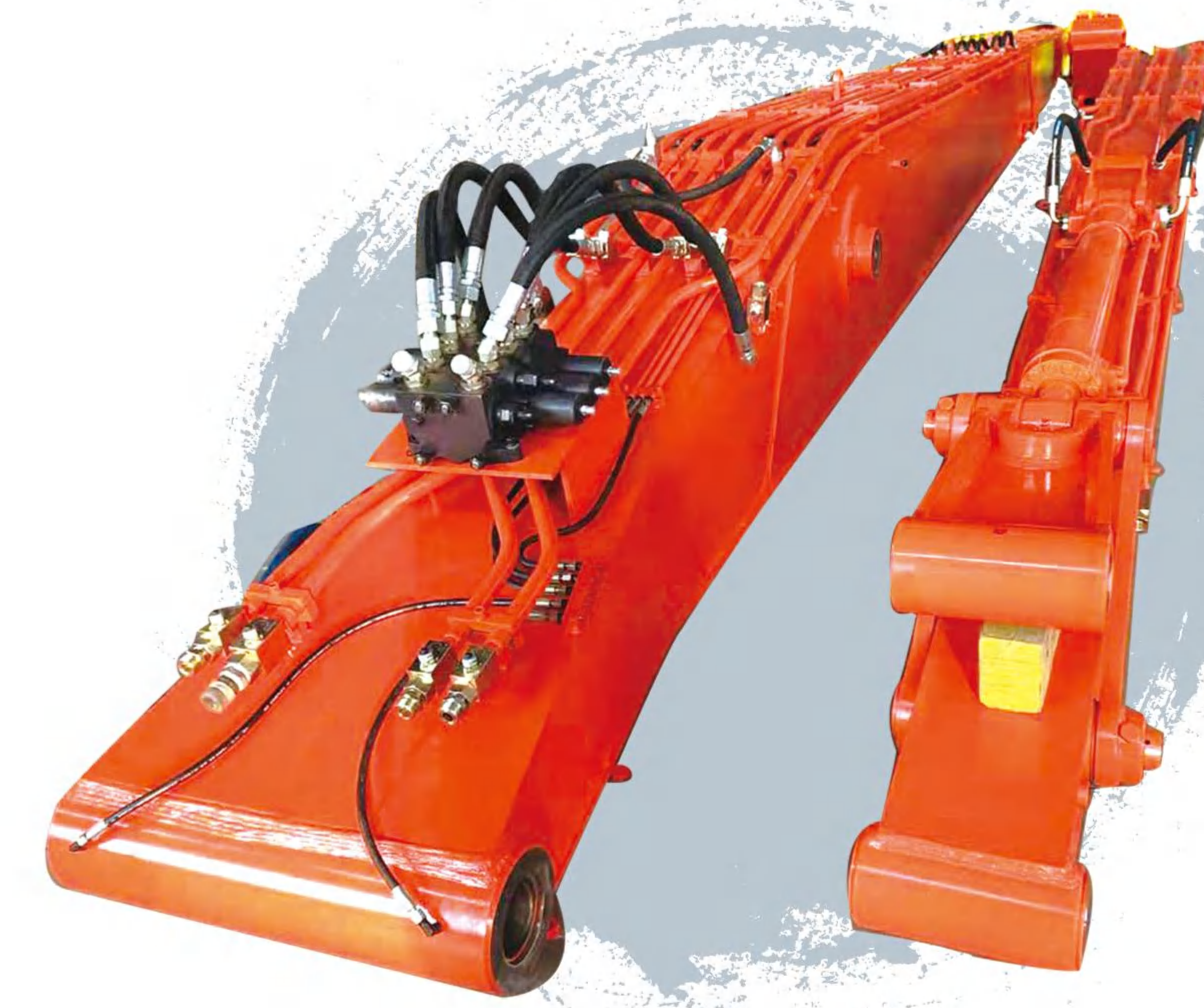
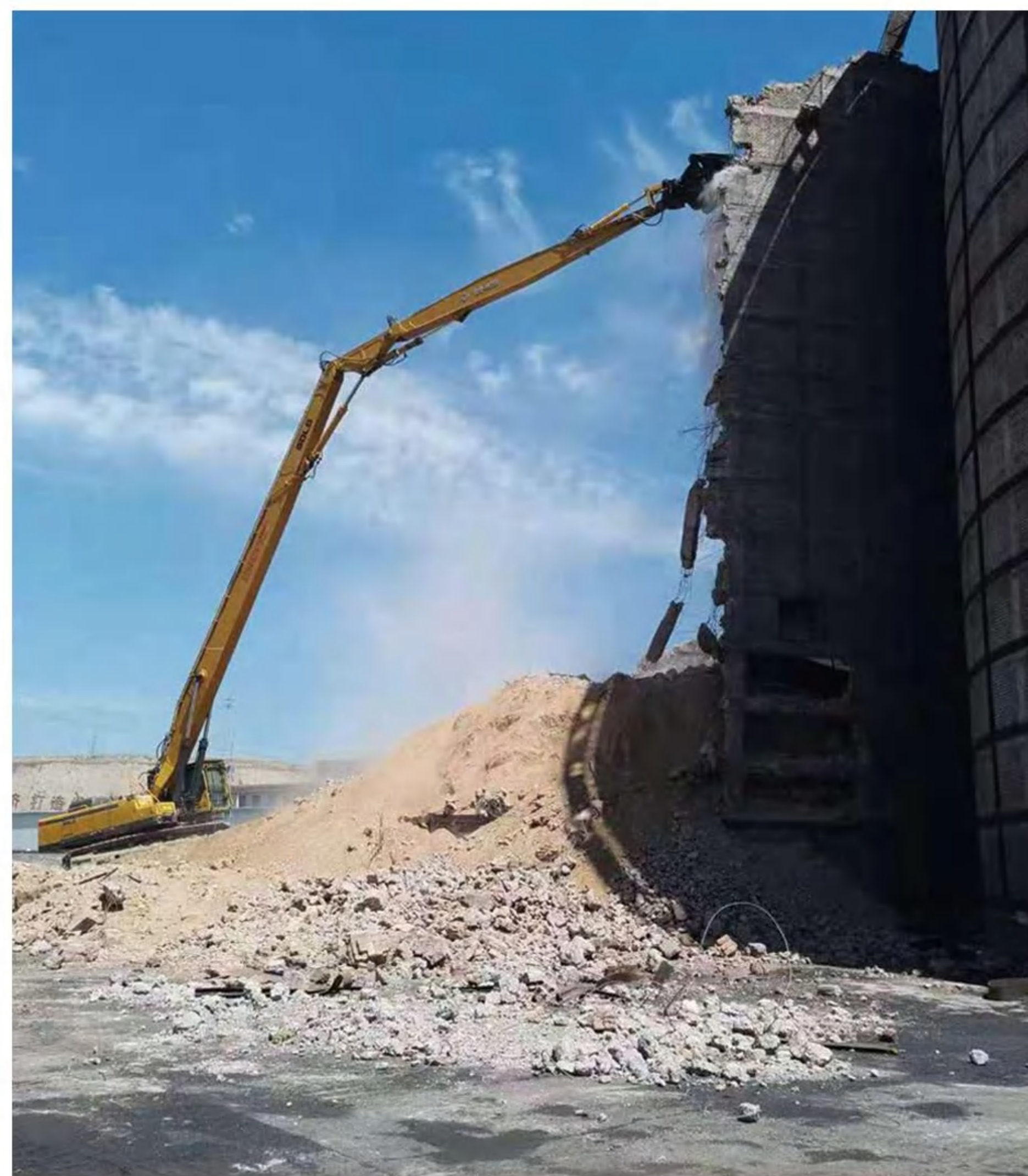
三节拆楼臂

Three section demolition arm

三节拆楼臂，主要适用于高层建筑拆迁。
挖掘机三节臂配置液压剪，破碎锤等高效作业。

the three-section demolition boom is mainly suitable for high-rise building demolition.

The three-section boom of the excavator is equipped with hydraulic shears, breaker hammers and other efficient operations.



拆楼臂挖机改装分为三个部分：

- 1、拆楼臂改装
- 2、液压油路改装 + 阀组
- 3、属具改装

可根据客户机型和需求，设计定做。

The modification of the building demolition arm excavator is divided into three parts

1. Modification of the building demolition arm
2. Modification of the hydraulic oil circuit + valve group
3. Modification of accessories can be designed and customized according to the customer's model and needs.



三节拆楼臂技术参数					
适配挖机吨位	Applicable excavator tonnage	Unit	30-36T	40-47T	
三节臂总长臂	Three-section arm total length arm	mm	21000	22000	24000 26000
最大作业高度	Maximum operating height	mm	22050	23100	25100 27200
最大作业半径	Maximum operating radius	mm	20000	21000	23000 25000
运输长度	Transport length	mm	15330	16400	17900 19600
运输高度	Transport height	mm	3320	3460	3570 3630
后端回转半径	Rear turning radius	mm	3320	3670	3670 3670
最大作业高度时半径	Radius at maximum working height	mm	3100	3100	3100 3100
小臂长度	Forearm length	mm	7200	7500	8000 8500
中臂长度	Middle arm length	mm	2300	2300	2300 2300
大臂长度	Upper arm length	mm	11500	12200	13700 15200
增加配重	Add weight	T	5	5	5.5 6
最大前端工作装置重量	Maximum front working configuration weight	T	2	1.5	1.8 1.6

打桩臂

Excavator Piling Arm



打桩臂专用于挖掘机打桩而配置的臂，与挖掘专用的大臂有区别，打桩臂为直臂，利于举高，配有一节短小臂，打桩锤弯臂可与小臂连接，更好的操控打桩锤的起桩与压桩作业。

挖掘机打桩臂适用范围：适用于我国广大地区，是建筑、高等公路、铁路、机场、桥梁、港口、码头等基础施工的理想设备。

The Excavator Piling Arm is specially configured for excavator piling. It is different from the large arm dedicated to excavation. The driving arm is a straight arm, which is convenient for lifting. It is equipped with a short small arm. The bent arm of the pile hammer can be connected to the small arm to better control the pile lifting and pressing operations of the pile hammer. The scope of application of the excavator pile driving arm: It is suitable for a wide range of areas in my country. It is an ideal equipment for basic construction such as buildings, highways, railways, airports, bridges, ports, and docks.

挖掘机打桩臂特点：

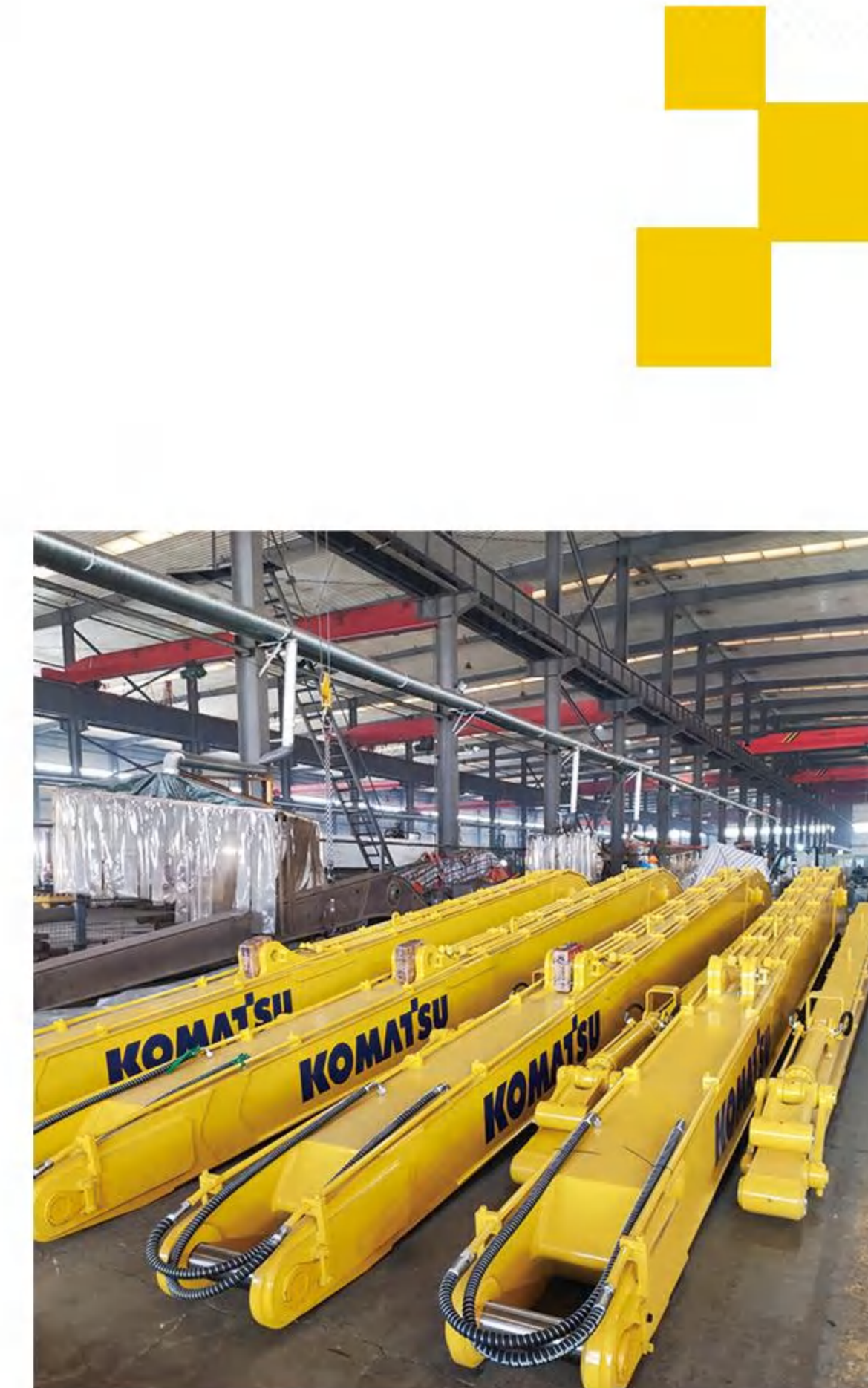
- 1、不改变原有挖掘机的使用性能；
- 2、采用高强度钢板制造；
- 3、极大提供工作范围
- 4、方便与客户现有挖掘机安装。



打桩臂技术参数					
适配挖机吨位	Applicable excavator tonnage	Unit	36	45	
打桩臂长度	Piling arm length	mm	13000	15000	18000
打桩深度	Piling depth	mm	12500	14500	17500
运输长度	Transport length	mm	12500	14300	16500
运输高度	Transport height	mm	3100	3100	3380
小臂长度	Forearm length	mm	4000	4000	4500
大臂长臂	Upper arm length	mm	9000	11000	13500
增加配重	Add weight	T	后移 40	后移 60	后移 60
前端工作装置最大重量	Maximum front working configuration weight	T	2.8	2.8	3.5

两节加长臂

Two-section extension arm



不改变原有挖掘机的使用性能,采用高强度合金板制造,极大提高作业范围,工作范围 13 米 -30 米,挖掘机加长臂使用范围较广、功能较多,其本身具有挖掘、破碎、清钩、钻孔、推土等功能,从某种角度上来说切实的实现了一机多用的功能。挖掘机加长臂提升了挖掘机的机械化程度,机身 360° 无压力旋转更是为设备的后续施工提供了便捷,此外该设备能够在一些相对狭小的区域内工作,更是增加了施工的便利性。

Without changing the performance of the original excavator, it is made of high-strength alloy plates, which greatly improves the operating range. The working range is 13 meters -30 meters. The extended arm of the excavator has a wider range of use and more functions. It has the functions of excavation, crushing, hook cleaning, drilling, bulldozing, etc. From a certain perspective, it has truly realized the function of one machine for multiple uses. The extended arm of the excavator improves the mechanization level of the excavator, and the 360 ° pressure-free rotation of the fuselage provides convenience for the subsequent construction of the equipment. In addition, the equipment can work in some relatively small areas, which increases the convenience of construction.



两节加长臂技术参数										
适配挖机吨位	Applicable excavator tonnage	Unit	20-25T		30-36T			40-47T		
加长臂长度	Extended arm length	mm	16000	18000	18000	20000	22000	20000	22000	24000
最大挖掘半径	Maximum digging radius	mm	15300	17300	17300	19200	21020	19200	21020	23020
最大挖掘深度	Maximum digging depth	mm	11200	12200	12200	14200	15600	14200	15600	16500
最大挖掘高度	Maximum digging height	mm	13500	15300	15300	16600	17170	15600	16170	17170
最大卸载高度	Maximum unloading height	mm	11500	12200	12200	13500	14830	13700	14920	15630
最小前端回转半径	Minimum front end turning radius	mm	4750	5150	5200	6250	6250	6250	7750	7750
大臂长度	Upper arm length	mm	9800	10300	10500	11500	12500	11750	12750	13750
小臂长度	Forearm length	mm	6200	7700	7500	8500	9500	8250	9250	10250
小臂最大挖掘力 ISO	Maximum digging force of forearm ISO	KN	82	64	115	94	78	167	138	109
铲斗最大挖掘力 ISO	Bucket maximum digging force ISO	KN	151	99	151	151	151	151	151	151
铲斗容积	Bucket capacity	m3	0.5	0.4	0.8	0.7	0.5	1	0.8	0.6
增加配重	Add weight	T	0	2	0	3	4	2	3	4

卸料臂

Discharge arm

主要用于铁路 / 海运码头 / 煤碳场 / 矿场等领域对煤 / 沙石 / 沙状矿石 / 淤泥等的装载 / 搬运作业，施工效率高。所以又可叫做卸煤挖掘机贝型斗，清淤挖掘机贝型斗；

挖掘机贝型斗（贝型抓斗）按客户需要量身订做，有液压回转和不带液压回转两种；

不带液压回转的贝型抓斗采用挖掘机铲斗油缸的油路，不用另外添加液压阀块及管路；

带液压回转的贝型抓斗要添加一套液压阀块及管路来控制，油缸配置活塞保护装置；



It is mainly used for loading/handling of coal/sand/sandy ore/silt in railway/sea terminal/coal field/mine field, etc., with high construction efficiency. So it can also be called coal unloading excavator shell bucket, dredging excavator shell bucket:

Excavator shell bucket (shell grab bucket) is tailor-made according to customer needs, with two types:

hydraulic rotation and non-hydraulic rotation;; Shell grab bucket without hydraulic rotation uses the oil circuit of the excavator bucket cylinder, without adding hydraulic valve block and pipeline;

Shell grab bucket with hydraulic rotation needs to add a set of hydraulic valve block and pipeline to control, and the cylinder is equipped with piston protection device;



抓斗技术参数						
型号	Model	Unit	TN120	TN200	TN300	TN400
重量	Weight	kg	900	1500	2200	2700
最大开口	Maximum Opening	mm	1000	1850	2050	2200
斗容	Bucket volume	m3	0.8	1.5	2.5	4
自身高度	Height	mm	1600	2050	2250	2350
适配挖机吨位	Applicable excavator tonnage	Ton	12-16	20-27	30-38	40-49

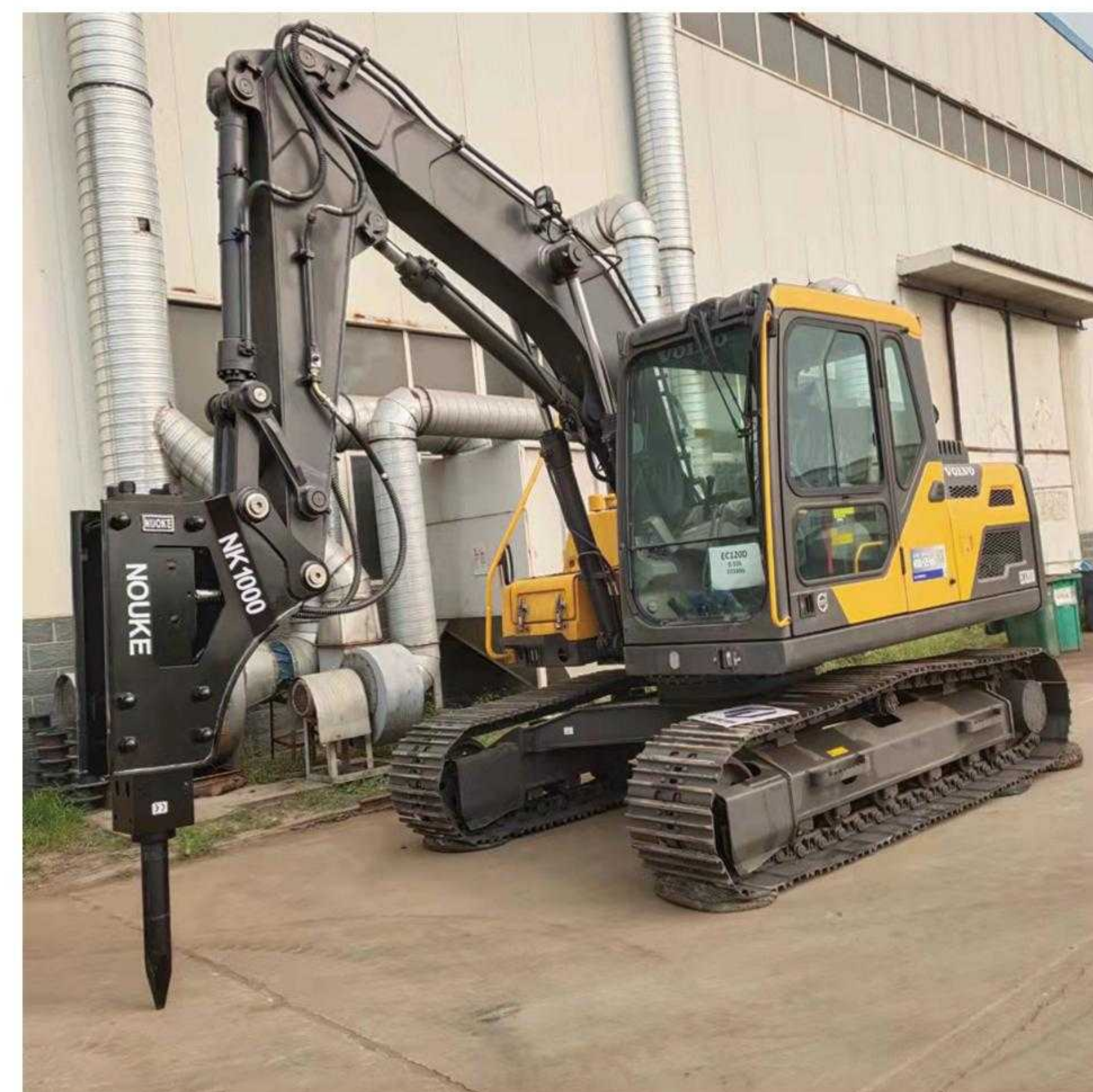
岩石臂

The rock arm

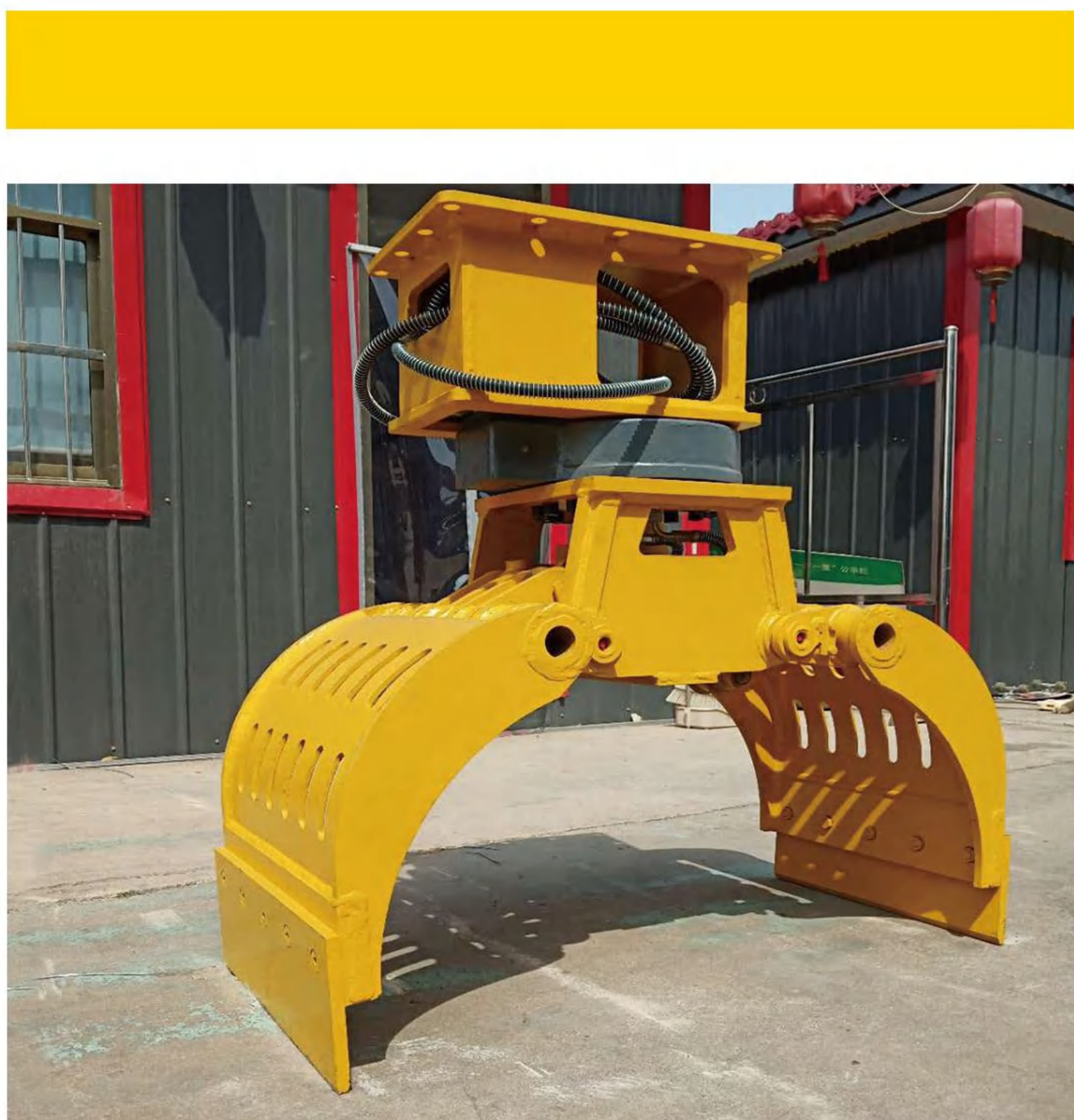
挖掘机岩石臂也称鹰嘴臂、超级勾是风化石、页岩石、红沙岩等挖掘破碎的利器，比传统的破碎锤作业，具有效率高低损耗的好处，相比传统的爆破作业而言作业效率更高，破碎成本更低，维护成本也很低。因为整体的臂进行缩短和内部填充加重，像 45 吨左右的机型大小臂可达 16-17 吨，能够很大程度上面增加了挖掘机的挖掘力度，能够克服更加恶劣的工作环境。



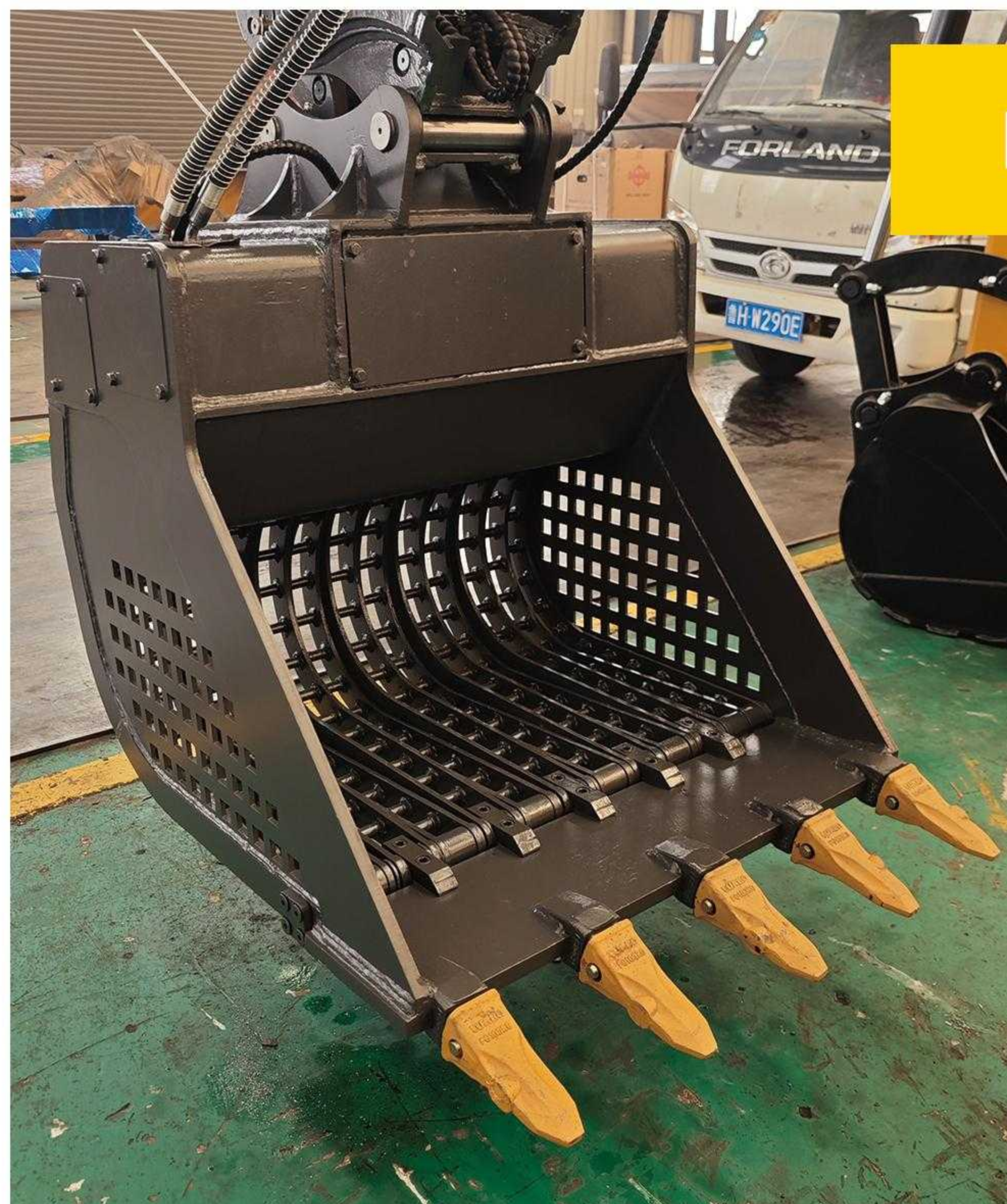
The rock arm of the excavator, also known as the eagle's beak arm or super hook, is a powerful tool for excavating and crushing weathered rocks, shale rocks, red sandstone, etc. Compared with traditional breaker operations, it has the advantages of high efficiency and low loss. Compared with traditional blasting operations, it has higher operating efficiency, lower crushing cost, and low maintenance cost. Because the overall arm is shortened and the internal filling is heavier, the arm size of a 45-ton model can reach 16-17 tons, which can greatly increase the excavation force of the excavator and overcome more severe working environments.



岩石臂技术参数					
适配挖机吨位	Applicable excavator tonnage	Unit	40-45T	60-65T	80-100T
最大作业范围	Maximum operating range	mm	6300	7400	7600
最大作业半径	Maximum operating radius	mm	7100	7900	8100
运输高度	Transport height	mm	3870	4320	4730
油缸内径	Cylinder inner diameter	mm	200	220	3670
活塞杆直径	Piston rod diameter	mm	140	170	3100
大臂长度	Upper arm length	mm	5100	6020	7100
小臂工作长度	Working length of forearm	mm	1400	1600	1700
松土齿	Soil loosening teeth		D11	D12	D12
重量	Weight	T	16	25	32

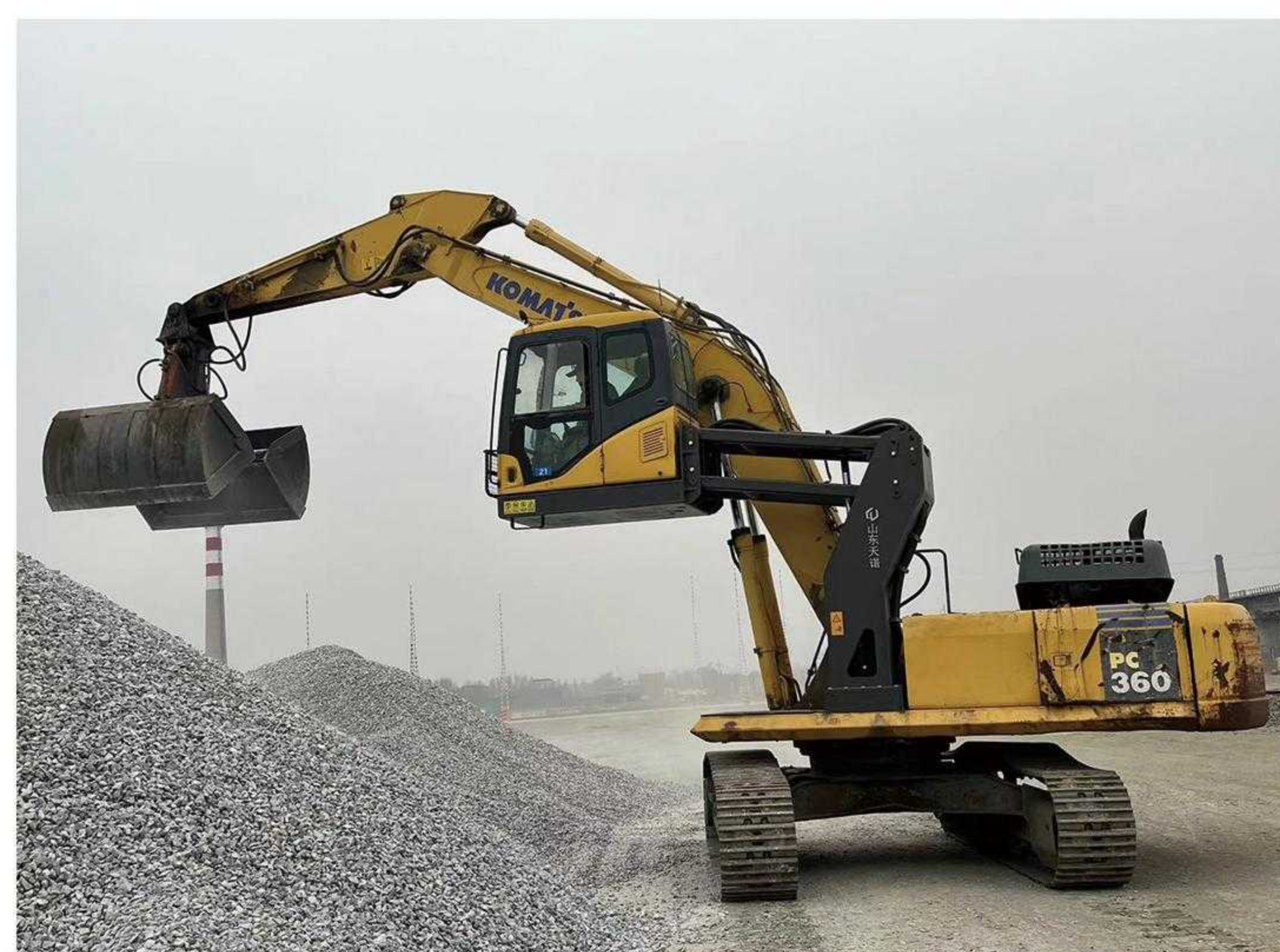


PRODUCT INTRODUCTION



挖掘机铲斗按材质分为标准斗、加强斗、岩石斗、碎石斗、栅格斗等。标准斗材料选用国产优质高强度结构钢 16Mn，适用于一般黏土、松土的挖掘和沙、土、砾石的装载等较轻作业环境。加强斗的易损部位齿座板和侧刃板材料选用国产优质高强度耐磨钢 WH60A，适用于挖掘混有较软碎石的硬土或碎石、砾石的装载等重载作业。岩石斗的齿座板和侧刃板材料选用高强度合金板，适用于挖掘混有较硬碎石的硬土、次坚石、风化石或坚石、爆破后的矿石的装载等重载作业环境。

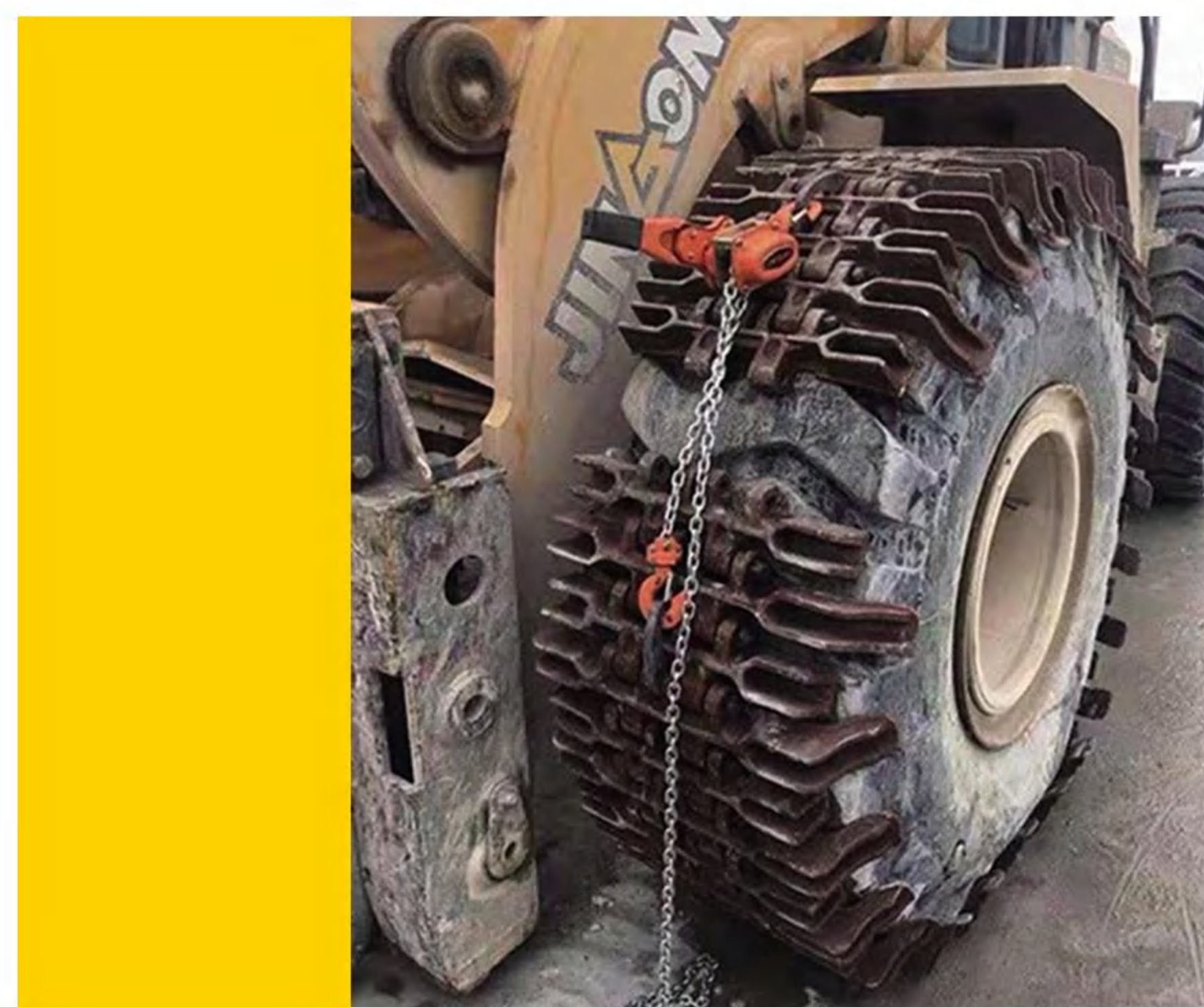
Excavator buckets are divided into standard buckets, reinforced buckets, rock buckets, gravel buckets, grid buckets, etc. according to the material. The standard bucket is made of domestic high-quality high-strength structural steel 16Mn, which is suitable for light working environments such as controlled excavation of general clay and loose soil and loading of sand, soil, and gravel. The tooth seat plate and side blade plate of the reinforced bucket are made of domestic high-quality high-strength wear-resistant steel WH60A, which is suitable for heavy-duty operations such as excavating hard soil mixed with softer gravel or loading of gravel and gravel. The tooth seat plate and side blade plate of the rock bucket are made of high-strength alloy plate, which is suitable for heavy-duty working environments such as excavating hard soil mixed with harder gravel, semi-hard stone, weathered stone or hard stone, and loading of blasted ore.



挖斗技术参数											
整机重量	Total Weight	Unit	6T	13T	15T	20T	25T	30T	35T	40T	45T
标配斗容	Standard bucket capacity	cubic	0.3	0.53	0.6	0.8	1.2	1.4	1.6	1.9	2.1
重量	weight	kg	280	400	500	680	1100	1300	1550	1900	2000

装载机保护履带

The loader protects the tracks



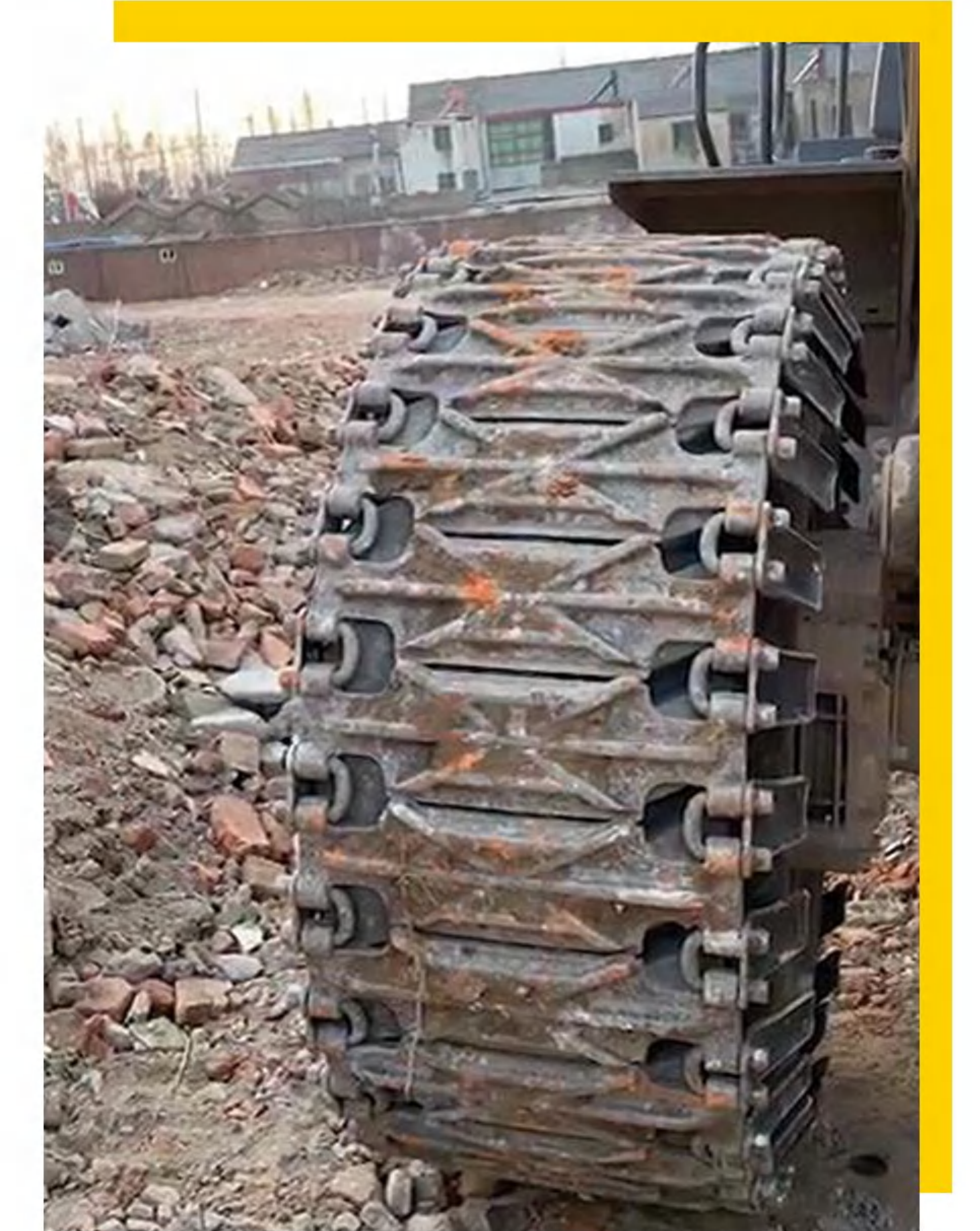
轮胎防滑保护履带会对轮胎形成有力保护，同等工况下延长三倍使用寿命。省时省力，履带仅需两人一个小时就可装好两条。故障率低，不需要经常维修。没有过多配件，装上后既不用管也无需维护。防滑保护效果好，提高机械工作效率、加快工作进度，同等工作量的前提下降低油耗、节约工时的效果非常明显。



The tire anti-skid protection crawler will provide strong protection for the tire, extending the service life three times under the same working conditions. It saves time and effort, and only two people can install two crawlers in one hour. The failure rate is low and does not require frequent maintenance. There are not too many accessories, and after installation, there is no need to manage or maintain it. The anti-skid protection effect is good, which improves the working efficiency of the machine, speeds up the work progress, and reduces fuel consumption and saves working hours under the premise of the same workload.



“PRODUCT PHOTOS”



销轴衬套

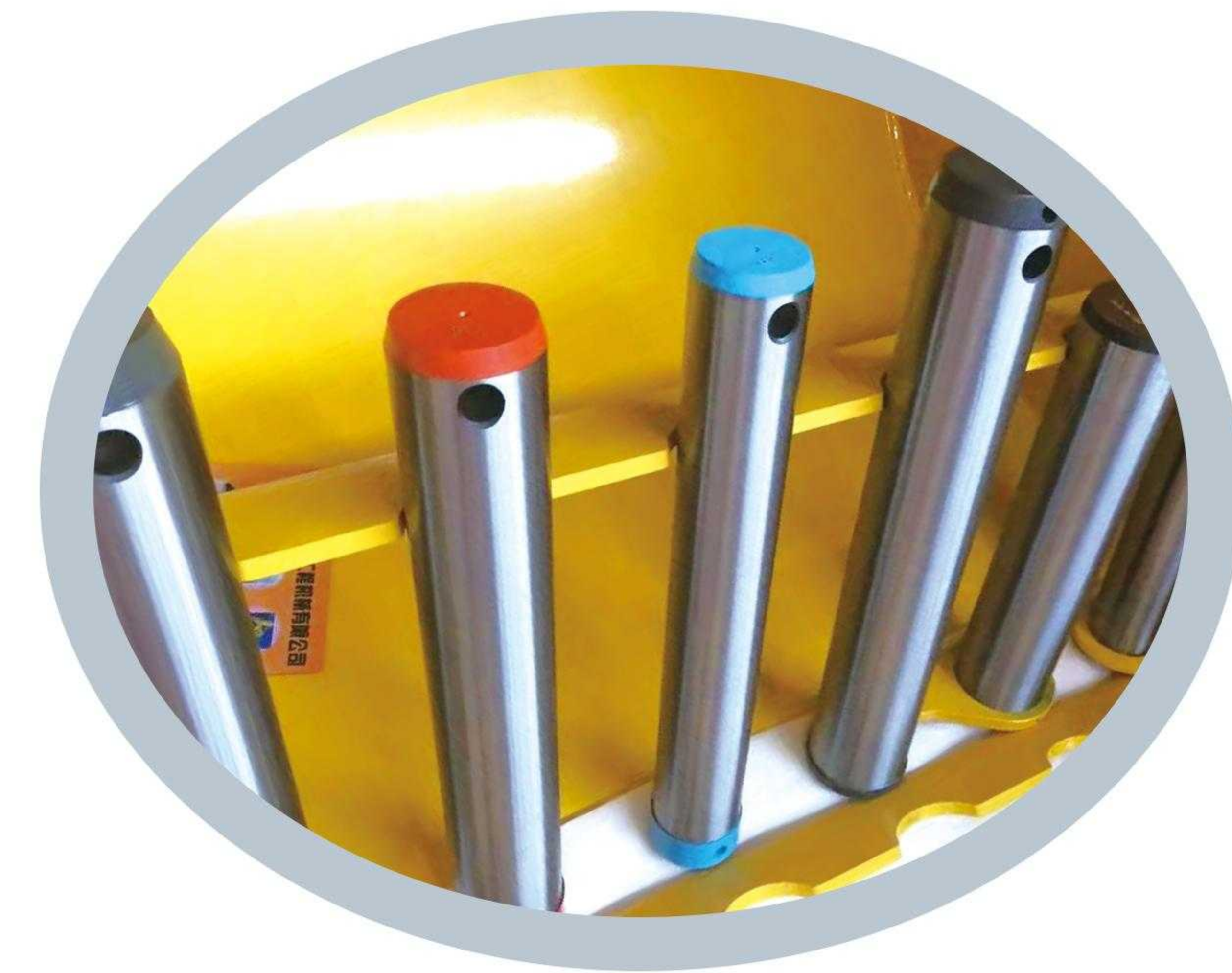
Pin shaft bushing

斗轴的材质通常用 40Cr，一般经热处理：调质、正火、淬火等，增加了斗轴的硬度、韧性，延长了使用寿命。

挖掘机衬套采用的材质是球墨铸铁，一种高强度铸铁材料，其综合性能接近于钢，已成功地用于铸造一些受力复杂，强度、韧性、耐磨性要求较高的零件。应用十分广泛的铸铁材料。所谓“以铁代钢”，主要指球墨铸铁。

The bucket shaft is usually made of 40Cr, which is generally heat treated: quenching and tempering, normalizing, quenching, etc., which increases the hardness and toughness of the bucket shaft and prolongs its service life.

The material used for the excavator bushing is ductile iron, a high-strength cast iron material with comprehensive properties close to steel. It has been successfully used to cast some parts with complex forces and high requirements for strength, toughness and wear resistance. It is a widely used cast iron material. The so-called "iron instead of steel" mainly refers to ductile iron.



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