



青 岛 华 焜 耐 磨 钢 有 限 公 司
Qingdao Huakun Wear-resistant Steel Co.,LTD.

华焜耐磨材料(五莲)有限公司(生产基地)
Huakun Wear-resistant Materials (Wulian) Co., LTD.(Production base)



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耐磨耐蚀.免维护.长寿命销轴衬套

To provide you with wear-resistant and corrosion-resistant,
Maintenance-free、 long-life pin bushings



青島華焜耐磨鋼有限公司
華焜耐磨材料(五蓮)有限公司

Qingdao Huakun Wear-resistant Steel Co., Ltd.
Huakun Wear-resistant Materials (Wulian) Co., Ltd.

COMPANY PROFILE

公司简介

青島華焜耐磨鋼有限公司是集研發、生產、貿易為一體，專業生產金屬耐磨材料產品的高新技術企業。公司成立於2006年，經重組搬遷，產地坐落於日照五蓮縣許孟鎮綠色鑄造工業園，註冊資金3000萬元，擁有衬套商標“利寶士LusBush”，銷軸商標“千球”，生產各類耐磨耐蝕銷軸衬套產品，客戶群分佈於長江中下游、沿海省市，承接生產海外（美國、德國、澳大利亞、俄羅斯）礦產公司耐磨件，產品多用於散貨機械行業抓斗、鏟斗、鏈斗銜接部位，具有耐磨、耐蝕、免維護、長壽命特征，原創技術、獨特工藝，廣泛贏得市場信譽。

公司占地6000平方米，離心鑄造、等溫處理、自動化機加工車間設備先進，理化實驗室、耐磨試驗台、綜合辦公樓功能齊全；信息化、MES數字化生產高效運行，為全球礦山散貨裝卸機械用戶提供銷軸衬套產品服務。

Qingdao Huakun Wear-resistant Steel Co., Ltd. is a high-tech enterprise specializing in metal wear-resistant material products, integrating R&D, production and trade. Founded in 2006, the company has undergone restructuring and relocation. Its factory is located in Green Casting Industrial Park, Xumeng Town, Wulian County, Rizhao City. With a registered capital of 30 million RMB, the company owns the bushing trademark "LusBush (利寶士)" and pin trademark "Qianqiu (千球)". We manufacture a full range of wear-resistant and corrosion-resistant pin bushings. Our customers are distributed across the middle and lower reaches of the Yangtze River as well as coastal provinces and cities in China. We also accept manufacturing orders of wear-resistant components from overseas mining companies in the (United States, Germany, Australia and Russia). Our products are widely applied to hinge joints of grab buckets, shovel buckets and chain buckets in the bulk handling machinery industry. Featuring wear resistance, corrosion resistance, maintenance-free performance and long service life, our products adopt original technologies and exclusive craftsmanship, earning a solid reputation in the market.

The production plant covers an area of 6,000 square meters. It is equipped with advanced workshops for centrifugal casting, isothermal treatment and automatic machining, together with fully furnished physical and chemical laboratories, wear resistance test benches and a comprehensive office building. Driven by information-based management and efficient MES digital production systems, we provide pin bushing products and services to global users of mining and bulk cargo handling machinery.



企业资质

Enterprise qualification

公司同属中国铸造协会耐磨材料与铸件分会、中国铸造协会铸铁暨等温淬火委员会会员企业，参与审议《等温淬火球墨铸铁件》T/CFA，主旨起草《挖掘机挖斗 离心铸造销轴衬套 技术条件》T/CFA020101211-2024，执行ISO9001三项体系认证，以质量体系为根基，以技术创新为引领，技术持续迭代，产品全球销售。

The company is a member enterprise of both the Wear-resistant Materials & Castings Branch and the Ductile Iron & Austempering Committee under China Foundry Association. It participated in the review of the group standard Austempered Ductile Iron Castings (TCFA), and took the lead in drafting the group standard Technical Specifications for Centrifugally Cast Pin Shafts and Bushings of Excavator Buckets (T/CFA020101211-2024). The enterprise has obtained ISO 9001 three-system certification. Guided by industrial standards, grounded in quality management systems and driven by technological innovation, we keep upgrading product technologies and sell our products worldwide.



技术

企业发展的支撑 Technology-support for enterprise development

公司以离心铸造工艺生产耐磨耐蚀销轴衬套，其中“利宝士LusBush”牌常规高锰钢衬套产品，晶粒度3~5级，最高达到7级，远远高于砂型铸造0级。“千球”牌离心铸造销轴，铸铁组织球墨形态呈现1000个/mm²，能够逐层分布石墨润滑剂，使销轴具备自润滑长寿命特征，适应沼泽、泥泞、极寒环境作业。

The company produces wear-resistant and corrosion-resistant bushing inserts using centrifugal casting technology. Among them, the regular high manganese steel bushing inserts of the "LusBush" brand have a grain size of 3-5, with a maximum of 7, which is far higher than the 0 grade of sand mold casting and belongs to the top-grade wear-resistant material. "Qianqiu" brand centrifugal cast bushing, cast iron organization spheroid shape shows 1000 / mm², can layer distribution graphite lubricant, so that the bushing has self-lubricating long life characteristics, adapt to swamp, muddy, extremely cold environment operation.



质量

企业生存之本 Quality the foundation of enterprise survival

“止于至善，意诚心安”作为企业道德行为标准，视服务质量为生存之本。产品实行逐一检验，信息永久储存，满足用户在线追溯，形成全流程质量管理体系。

The standard of the company moral behaviors is that the quality of product and service is regarded as the foundation of enterprise survival. The products are inspected one by one, the information is stored permanently. So the customer requirements about the product information online tracking could be satisfied by the whole process quality management.



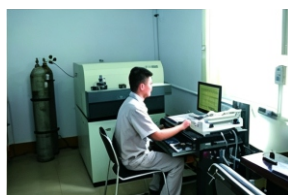
办公楼
Office building



机加工车间
Machining workshop



产品检测
Product testing



炉前光谱分析
Spectral analysis in front of the furnace



热处理
Heat treatment



荣誉证书
Certificate of honor



1 同心高锰钢衬套 / CONCENTRIC HIGH MANGANESE STEEL BUSHING

具有耐磨耐蚀性能，使用寿命长久，与港机抓斗等寿命。适应无润滑作业环境，衬套挤压摩擦面呈现逐层硬化，耐腐蚀性相当于3Cr13, 不锈钢，常用于港机散货抓斗铰接处。

Using extreme pressure lithium grease lubrication, long service life, and the same service life as harbor crane grabs. In a non-lubricated environment, the friction surface of the bushing is hardened layer by layer, and its corrosion resistance is equivalent to that of 3Cr13 and stainless steel. It is often used in the hinge joints of bulk cargo grabs in port machinery.



2 带止挡偏心法兰衬套 / ECCENTRIC BUSHING WITH STOP FLANGE



挡边锰钢套，有利于轴向定位，装配精度高，轴向冲击载荷不产生位移，维修更换可利用挡边施加轴向拉力，更换快捷。

The manganese steel sleeve with retaining edge is advantageous to the axial positioning, high assembly accuracy, no displacement caused by the axial impact load, and the retaining edge can be used to exert the axial tension for quick replacement.

3 同心内外纵横油线油孔衬套 / CONCENTRIC INNER AND OUTER LONGITUDINAL AND HORIZONTAL OIL LINE OIL HOLE BUSHING

在衬套内外表面加工4-6mm宽深1mm的油线钻孔4-8个，起到环形储油均匀布油的作用，轴、孔磨损均匀。

Processing 4-8 drilling holes in 4-6 mm wide and 1 mm deep oil line on the inner and outer surface of bushing can play the role of circular oil storage and uniform oil distribution, and wear of shaft and hole is uniform.



4 同心内油线油孔衬套 / CONCENTRIC INNER OIL LINE OIL HOLE BUSHING

在内环油线上钻上径向孔4-8个，可以将油道设置在机体上，铰轴无需开设油道，使铰轴加工方便，对于细长铰轴加工尤为重要。

By drilling 4-8 radial holes on the inner ring oil line, the oil passage can be set on the body, and the hinge axle does not need to open the oil passage, so that the processing of the hinge axle is convenient, which is particularly important for the processing of slender hinge axle.



5 高锰钢偏心衬套 / ECCENTRIC BUSHING MADE OF HIGH MANGANESE STEEL

采用偏心模具离心铸造偏心耐磨衬套，用于露天矿场拉铲链斗铰接处，不间断生产，一整年免维护。以壁厚尺寸确定水韧处理参数，获得高晶粒度，通过专用工装机加工，达到精度光洁度。

The eccentric wear-resistant bushing is cast by centrifugal casting with an eccentric mold, which is used in the hinge joint of the bucket chain of the draglines in the open-pit mine, with continuous production and maintenance-free all year round. Determine the water-hardening treatment parameters based on the thick-walled size, obtain a high grain size, and achieve precision and smoothness through special machine processing.



6

工程机械高锰钢衬套 / HIGH MANGANESE STEEL BUSHINGS FOR CONSTRUCTION MACHINERY ADI等温淬火球墨铸铁衬套 / ADI AUSTEMPERED DUCTILE IRON BUSHINGS

用于大型挖掘机、装载机、推土机铲斗铰接处，在沼泽、泥泞工况下保持耐磨耐蚀性能，大量中试比对，优于40Cr表面高频淬火组织2~3倍。

Construction machinery high manganese steel bushing / adi isothermal quenching ductile iron bushing: used in large excavators, loaders, and bulldozer shovel joints, maintaining wear and corrosion resistance in swampy and muddy conditions. A large number of pilot tests show that it is 2-3 times better than the surface high-frequency quenching organization of 40Cr.



7

ADI挖掘机、装载机、推土机铲斗销轴 / ADI BUCKET PINS FOR EXCAVATORS LOADERS AND BULLDOZERS

在30~40倍重力系数下非真离心铸造成型，经等温回火处理，加工中心成品。用于大型挖掘机、装载机、推土机铲斗铰接处，在沼泽、泥泞工况下保持耐磨耐蚀性能，大量中试比对，优于40Cr表面高频淬火组织2~3倍。

CADI excavator, loader, bulldozer bucket spindle: non-true centrifugal casting under a gravity coefficient of 30 ~ 40, annealed at a constant temperature, processed in a machining center. It is used for large excavators, loaders, and bulldozers, and maintains wear-resistant and corrosion-resistant performance in swampy and muddy conditions. A large number of trial comparisons show that it is 2-3 times better than the surface high-frequency quenching organization of 40Cr.



8

ADI矿石抓斗销轴 / ADI ORE BUCKET PIN

在20~30倍重力系数下非真离心铸造成型，经等温回火处理，加工中心成品。用于散货抓斗如矿石抓斗铰接处，能适应船舱底泥浆矿石作业环境，作业期间无需停机加注润滑油，提高流程机械作业效率，并保持耐蚀性能。

Non-true centrifugal casting at a gravity coefficient of 20 ~ 30, annealed at a constant temperature, and processed in a machining center. It is used for bulk cargo grabbers such as ore grabbers, can adapt to the mud and ore operation environment of the ship's hold, does not need to stop and add lubricant during operation, improves the operation efficiency of the process machinery, and maintains corrosion resistance.



9

离心铸造球墨铸铁油缸 / CENTRIFUGAL CAST DUCTILE IRON CYLINDER

采用立式离心铸造，正火处理，精密数控机加工，油压5~10MPa条件下无渗漏，力学性能稳定。油缸外径300~800mm，长度200~600mm，重量300~500kg。

Vertical centrifugal casting, normalizing treatment, precision CNC machining, no leakage under oil pressure of 5~10MPa, stable mechanical properties. The outer diameter of the cylinder is 300~800mm, the length is 200~600mm, and the weight is 300~500kg.

10

离心铸造球墨铸铁长轴 / CENTRIFUGAL CASTING DUCTILE IRON LONG SHAFT

采用托辊式离心机铸造，退火处理，数控加工成型，可制造空心长轴，外径200~400mm，长度1000~1500mm，重量300~500kg。

Casting adopts roller type centrifugal machine, annealing treatment, numerical control machining forming, can manufacture hollow long shaft, outer diameter 200 ~ 400mm, length 1000 ~ 1500mm, weight 300 ~ 500kg.



11 常用衬套一览表 / LIST OF COMMON BUSHINGS

$D \approx (1.15 \sim 1.30) d$ 表面粗糙度 $\sqrt{1.6}$ D外径公差 $\begin{smallmatrix} K6 \\ r6 \end{smallmatrix}$ d内径公差 $\begin{smallmatrix} H8 \\ 0.02 \end{smallmatrix}$ L长度公差 $\begin{smallmatrix} 0.10 \\ 0.30 \end{smallmatrix}$

外径 内径 长度	Φ 60	Φ 85	Φ 90	Φ 80	Φ 85	Φ 90	Φ 95	外径 内径 长度	Φ 100	Φ 105	Φ 110	Φ 115	Φ 120
Φ 40								Φ 75					
Φ 50								Φ 80					
Φ 60								Φ 85					
Φ 65								Φ 90					
Φ 70								Φ 95					
Φ 75								Φ 100					
Φ 80								Φ 105					

外径 内径 长度	Φ 125	Φ 130	Φ 140	Φ 150	Φ 155	Φ 160	外径 内径 长度	Φ 165	Φ 170	Φ 180	Φ 185	Φ 190	Φ 200	Φ 210
Φ 100							Φ 140							
Φ 105							Φ 145							
Φ 110							Φ 150							
Φ 115							Φ 160							
Φ 120							Φ 170							
Φ 125							Φ 180							
Φ 130							Φ 185							
Φ 135							Φ 190							
Φ 140							Φ 195							

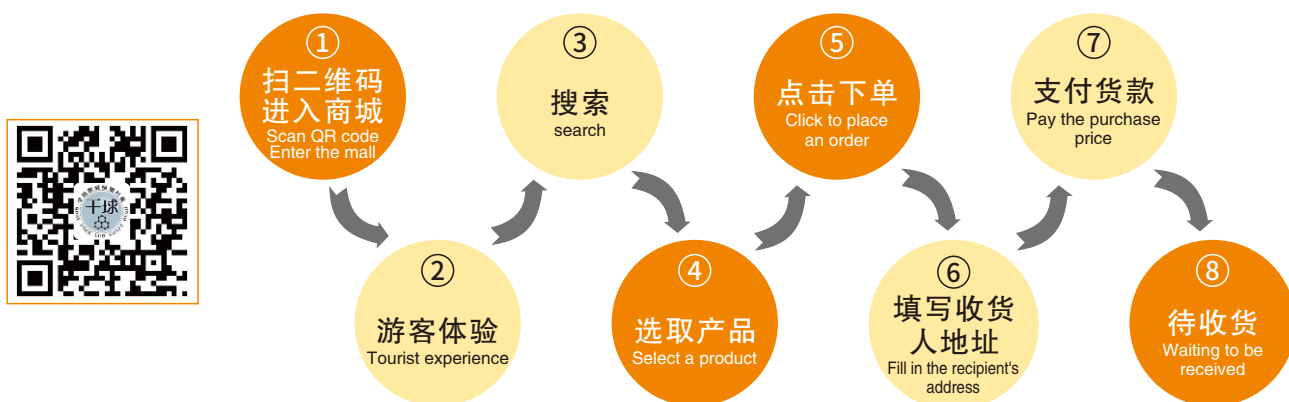
外径 内径 长度	Φ 220	Φ 225	Φ 230	Φ 235	外径 内径 长度	Φ 240	Φ 250	Φ 255	Φ 260	Φ 270	Φ 280	Φ 300	Φ 310	Φ 320
Φ 180					Φ 220									
Φ 185					Φ 225									
Φ 190					Φ 230									
Φ 195					Φ 240									
Φ 200					Φ 245									
Φ 205					Φ 260									
Φ 210					Φ 270									
Φ 215					Φ 290									

● 为常用轴套区域，轴套长度按用户图纸尺寸加工，常规 L=50~150mm。

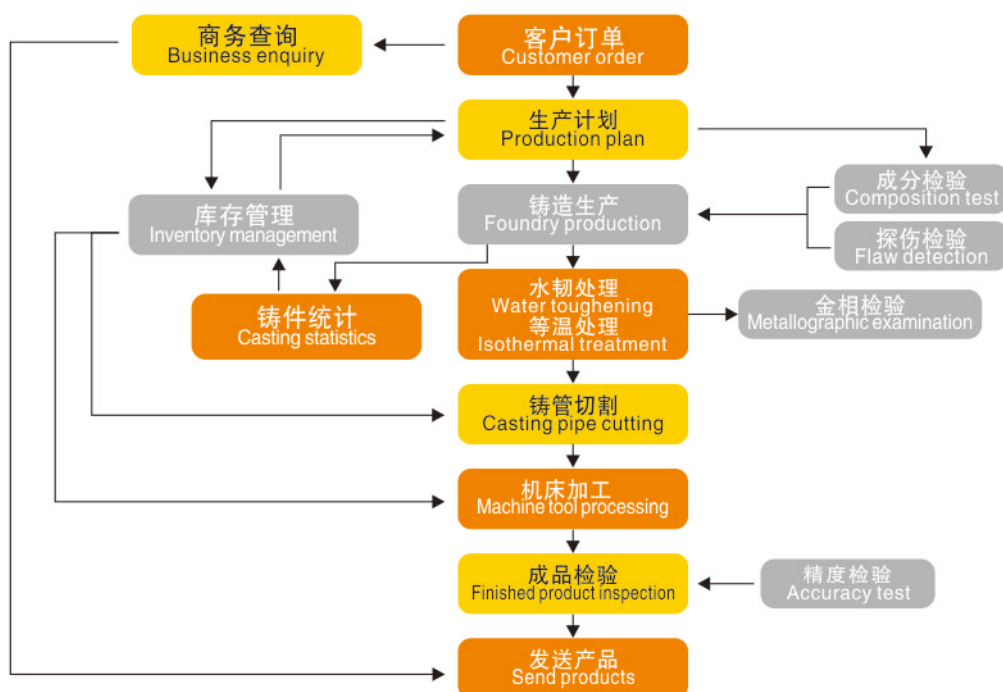
12 用户订货流程1 / CUSTOMER ORDERING PROCESS 1

传真合同、图纸至0532-85131209，签字盖章确认。
Fax contract, drawings to 0532-85131209, signature and seal confirmation.
或电子版合同图纸发送至qduhuakun@qduhuakun.com
Or electronic contract drawings sent to qduhuakun@qduhuakun.com

13 用户订货流程2 / CUSTOMER ORDERING PROCESS 2



14 销轴衬套生产管理流程 / PRODUCTION MANAGEMENT PROCESS OF SPINDLE BUSHING





15 高锰钢成分对照表 / COMPARISON TABLE OF COMPOSITION OF HIGH MANGANESE STEEL

T/CFA 020101211-2024

材质名称	牌号	化学成分 (质量分数, %)								
		C	Si	Mn	Cr	Mo	Ni	Cu	S	P
奥氏体 锰钢	WZZT-ZG120Mn13	1.05 ~ 1.35	0.3 ~ 0.9	11.0 ~ 14.0	-	-	-	-	≤0.03	≤0.04
	WZZT-ZG120Mn13Cr2	1.05 ~ 1.35	0.3 ~ 0.9	11.0 ~ 14.0	1.5 ~ 2.5	-	-	-	≤0.03	≤0.04
	WZZT-ZG120Mn17	1.05 ~ 1.35	0.3 ~ 0.9	16.0 ~ 19.0	-	-	-	-	≤0.03	≤0.04
	WZZT-ZG120Mn17Cr2	1.05 ~ 1.35	0.3 ~ 0.9	16.0 ~ 19.0	1.5 ~ 2.5	-	-	-	≤0.03	≤0.04

16 晶粒度与力学性能对照 / EFFECT OF GRAIN SIZE ON MECHANICAL PROPERTIES OF HIGH MANGANESE STEEL

组织晶粒大小对其力学性能抗拉强度Rm、伸长率A影响明显。采用离心铸造工艺，可以显著细化高锰钢晶粒，大大提高耐磨寿命。

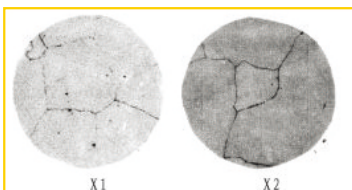
The grain size of the structure has obvious influence on the mechanical properties, tensile strength Rm and elongation A. Centrifugal casting process can significantly refine the grain size of high manganese steel and greatly improve the wear resistance life.

晶粒度/Grain size	Rm/Mpa	A(%)
1	381.2	4.3
2	447.3	11.0
3	500.8	18.0
4	555.7	21.2
5	995.8	23.4

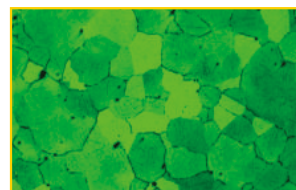
17 高锰钢金相组织标准 / METALLOGRAPHIC STANDARD FOR HIGH MANGANESE STEEL

执行高锰钢ZG120Mn13金相国家标准，未溶碳化物W1；W2；W3与析出碳化物X1；X2；X3三级以内为合格，通过激烈搅拌水循环淬火设备，淬火件均在二级以内W1；W2；X1；X2，组织晶粒细化，强韧耐磨。

Implement the national metallographic standard of high manganese steel ZG120Mn13, the undissolved carbides W1; W2; W3 and precipitated carbides X1; X2; X3 are qualified within the third level. Through the intensive stirring water circulation quenching equipment, the quenched parts are all within the second level of W1; W2; X1; X2, the structure grain refinement, toughness and wear resistance.



国家标准 ZG120Mn13金相



离心铸造 ZG120Mn13金相

钜献最佳 **轴套**

免维护方案



中国铸协耐磨材料铸件分会 会员企业



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先进工艺

独创技术

自主知识产权

产品质量可追溯

自硬化

自润滑

自储油



青岛华焜耐磨钢有限公司

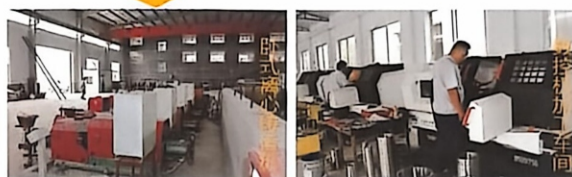


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Qingdao Huakun Wear-resistant Steel Co., LTD.
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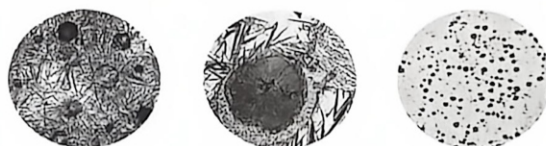
青岛华焜企业概况

青岛华焜耐磨钢有限公司是专业从事金属耐磨材料研发与生产的高新技术企业，公司始建于2006年，注册资金三千万元。以离心铸造工艺生产制造高锰钢衬套；ADI奥铁体销轴与衬套，广泛应用于港口机械、矿山机械、工程机械等行业。公司“利宝士LusBush”品牌系列产品销往全国22个省市，并出口到美国、德国、澳大利亚等国家。



ADI奥铁体轴套自润滑机理

奥铁体ADI球状石墨组织是一种良好的润滑剂，对摩擦部位起到润滑作用，大大减轻衬套与销轴的磨损，石墨部位还可以储存润滑油，即使缺乏润滑油也会使衬套与销轴处于自润滑状态，减轻磨损提高寿命。



球型石墨 自润滑剂



逐件检测 一件一号 在线追溯

ADI最先进耐磨材料技术



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止于至善 意诚心安

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本区域直营电话：

产品质量追踪电话：0633-5679005

地址：青岛市黄岛区滨海十路337号2栋1单元1403

网址：www.qdhuakun.com

邮箱：qdhk@qdhuakun.com





18 ADI 奥铁体衬套自润滑性能 / ADI SELF-LUBRICATING PROPERTY OF AUSTENITIC BUSHING

奥铁体ADI球状石墨组织，是一种良好的润滑剂，衬套摩擦使表层石墨脱落，石墨粉对摩擦部位起到良好的润滑作用，从而大大减轻了衬套与轴的磨损，在干磨工况条件下，尤为明显。

石墨在摩擦脱落而后在基体上形成的微观小凹坑，可以储存润滑油，即使没有润滑油，也会使衬套与轴处有良好的润滑状态，减轻了衬套与轴的磨损。

奥铁体ADI衬套全使用寿命周期，处于摩擦表面自硬化、自润滑、自降温状态，区别于普通碳钢同类产品。

Austenitic ADI spherical graphite is a good lubricant. The surface graphite is peeled off by bushing friction. Graphite powder plays a good lubricating role on the friction part, thus greatly reducing the wear of bushing and shaft, especially under dry grinding conditions.

The micro-pits formed by Graphite on the matrix after friction shedding can store lubricating oil. Even if there is no lubricating oil, the bushing and shaft will have a good lubrication state and reduce the wear of bushing and shaft.

The ADI bushing of titanium body is in the state of self-hardening, self-lubricating and self-cooling of the friction surface from the beginning to the middle and late period of service, which is a typical feature different from the similar products of common carbon steel.



19 ADI销轴衬套材质成分 / MATERIAL COMPOSITION OF ADI SPLINE BUSHING

T/CFA 020101211-2024

材质名称	牌号	化学成分 (质量分数, %)								
		C	Si	Mn	Cr	Mo	Ni	Cu	S	P
等温淬火球墨铸铁	WZZT-QTD900-4	3.30 ~ 3.70	2.4 ~ 2.8	0.2 ~ 0.4	—	—	—	—	≤0.02	≤0.04
	WZZT-QTD1050-3	3.50 ~ 3.80	2.5 ~ 2.8	0.2 ~ 0.4	—	0.1 ~ 0.2	—	0.5 ~ 0.7	≤0.02	≤0.04
耐磨合金钢	WZZT-ZG30CrNiMo	0.25 ~ 0.35	0.4 ~ 0.8	0.4 ~ 1.0	0.5 ~ 2.0	0.2 ~ 0.8	0.3 ~ 2.0	—	≤0.035	≤0.035
	WZZT-ZG42Cr2Si2MnMo	0.38 ~ 0.48	1.5 ~ 1.8	0.8 ~ 1.2	1.8 ~ 2.2	0.2 ~ 0.6	—	—	≤0.04	≤0.04

20 ADI销轴衬套力学性能表 / ADI AXLE BUSHING MECHANICAL PROPERTIES TABLE

T/CFA 020101211-2024

材料名称	牌号	磨损部位表面硬度		冲击吸收能量			抗拉强度 Rm/MPa
		HRC	HBW	KV ₂ /J	KU ₂ /J	KN/J	
等温淬火球墨铸铁销轴衬套	ZWZT-QTD900-4	≥50	—	—	—	≥100	≥820
	ZWZT-QTD1050-3	≥50	—	—	—	≥80	≥970
耐磨合金钢销轴衬套	ZWZT-ZG30CrNiMo	≥50	—	≥12	—	—	≥1200
	ZWZT-ZG42Cr2Si2MnMo	≥50	—	≥15	—	—	≥1200

注: V、U分别代表V型缺口、U型缺口试样, N表示无缺口试样

21 其他国家材质力学性能 / MECHANICAL PROPERTIES OF MATERIALS IN OTHER COUNTRIES

相关标准: ISO17804:2005(E) 美国: ASTM897-90ADI SAEJ2477-2004ADI.

牌号 Brand name	抗拉强度 Tensile strength	0.2%屈服强度 0.2% yield strength	伸长率 ≥ % Elongation rate ≥ %
JS/800-10	800	500	10
JS/1050-6	1050	700	6

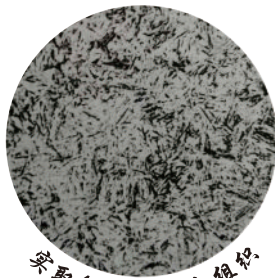
22 力学性能检测报告 / MECHANICAL PROPERTIES TEST REPORT



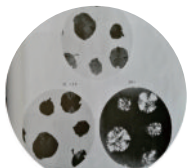
23 衬套金相组织对比 / METALLOGRAPHIC COMPARISON OF BUSHING



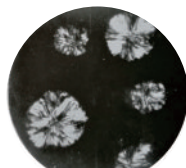
实取ADI衬套石墨组织
Graphite Microstructure of Solid Bushing



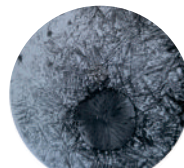
实取40Cr钢淬火组织
Quenching Microstructure of 40Cr Steel



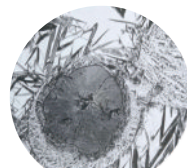
静态明场石墨组织
As-cast Open-field Graphite Microstructure



静态暗场石墨组织
Graphite Microstructure in Cast Dark Field

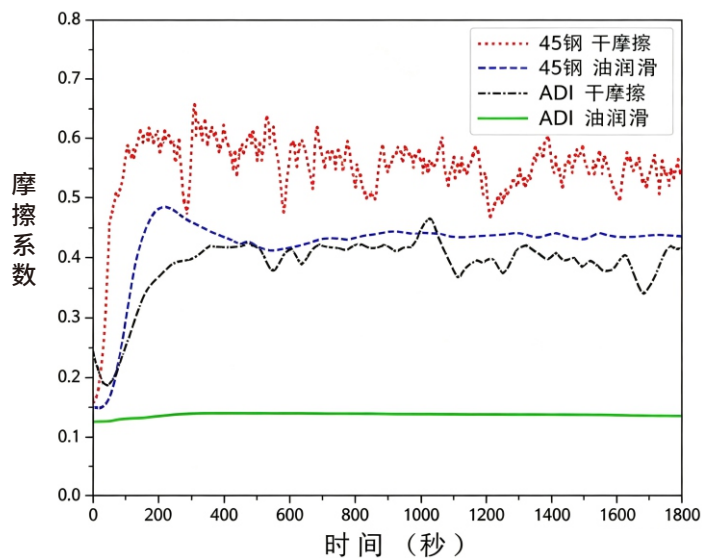


ADZ/CADI 石墨组织
ADZ/CADI Graphite structure

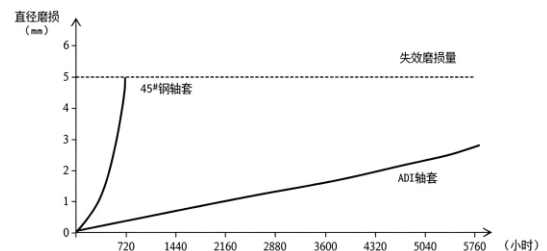


ADZ/CADI 石墨组织
ADZ/CADI Graphite structure

24 相对耐磨性检测 / RELATIVE WEAR RESISTANCE TESTING



ADI、45#淬火钢摩擦系数实验结果



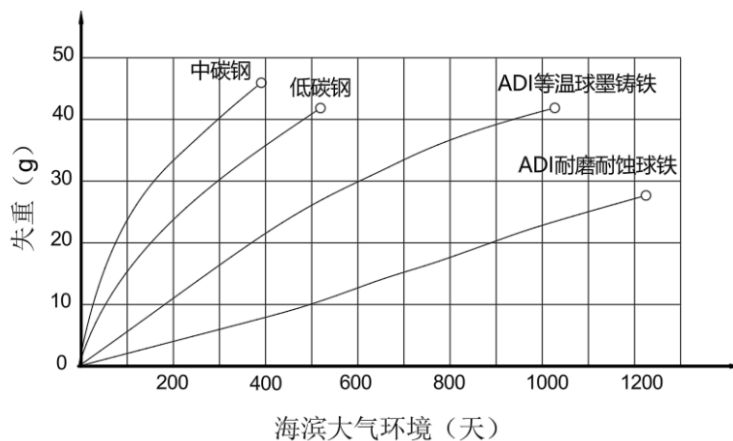
挖掘机挖斗轴套水沙作业磨损曲线



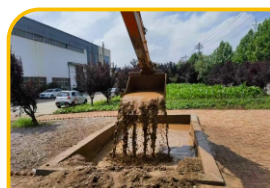
神钢260挖掘机配装ADI轴套挖沙作业



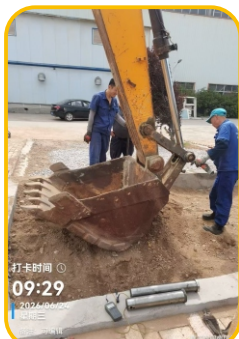
25 耐蚀性（盐雾）检测 / CORROSION RESISTANCE (SALT SPRAY) TESTING



26 泥砂物料试验台测试 / MUD AND SAND MATERIAL TEST BENCH TEST



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ADI BUCKET PINS FOR EXCAVATORS LOADERS AND BULLDOZERS
ADI矿石抓斗销轴
ADI ORE BUCKET PIN
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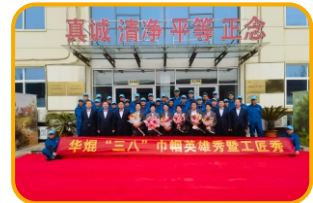
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MUD AND SAND MATERIAL TEST BENCH TEST
ADI销轴衬套安装实例
INSTALLATION EXAMPLE OF ADI SPLINE BUSHING

12

职工风采 Workers' style



强韧耐磨轴套 成就世纪工程

Strong and Durable Wear-Resistant Shaft Sleeve

Achievement of Century Project



青岛华焜耐磨钢有限公司

Qingdao HuaKun Wear-resistant Steel Co.,LTD

华焜耐磨材料(五莲)有限公司 (生产基地)

Huakun Wear-resistant Materials (Wulian) Co., LTD.(Production base)

地址：山东省青岛市黄岛区滨海十路337号2栋1单元1403

Add: Building 2, Unit 1, 1403, No. 337, Binhai Road, Huangdao District, Qingdao City, Shandong Province.

山东省日照市五莲县许孟镇铸造工业园二期3号

Add: No. 3, Phase II, Casting Industrial Park, Xumeng Town, Wulian County, Rizhao City, Shandong Province.

电话/传真(Tel/Fax): 0532-85131209 0633-5679005

电子邮箱/E-mail: qdhk@qdhvakun.com

邮编/Zip code: 266404

网址/Website: www.qdhvakun.com