

CHOHO

汽车链系统



征和 链系统技术领导者

Choho, Chain Transmission Technology Leader

行业首家A股上市公司
证券代码 003033



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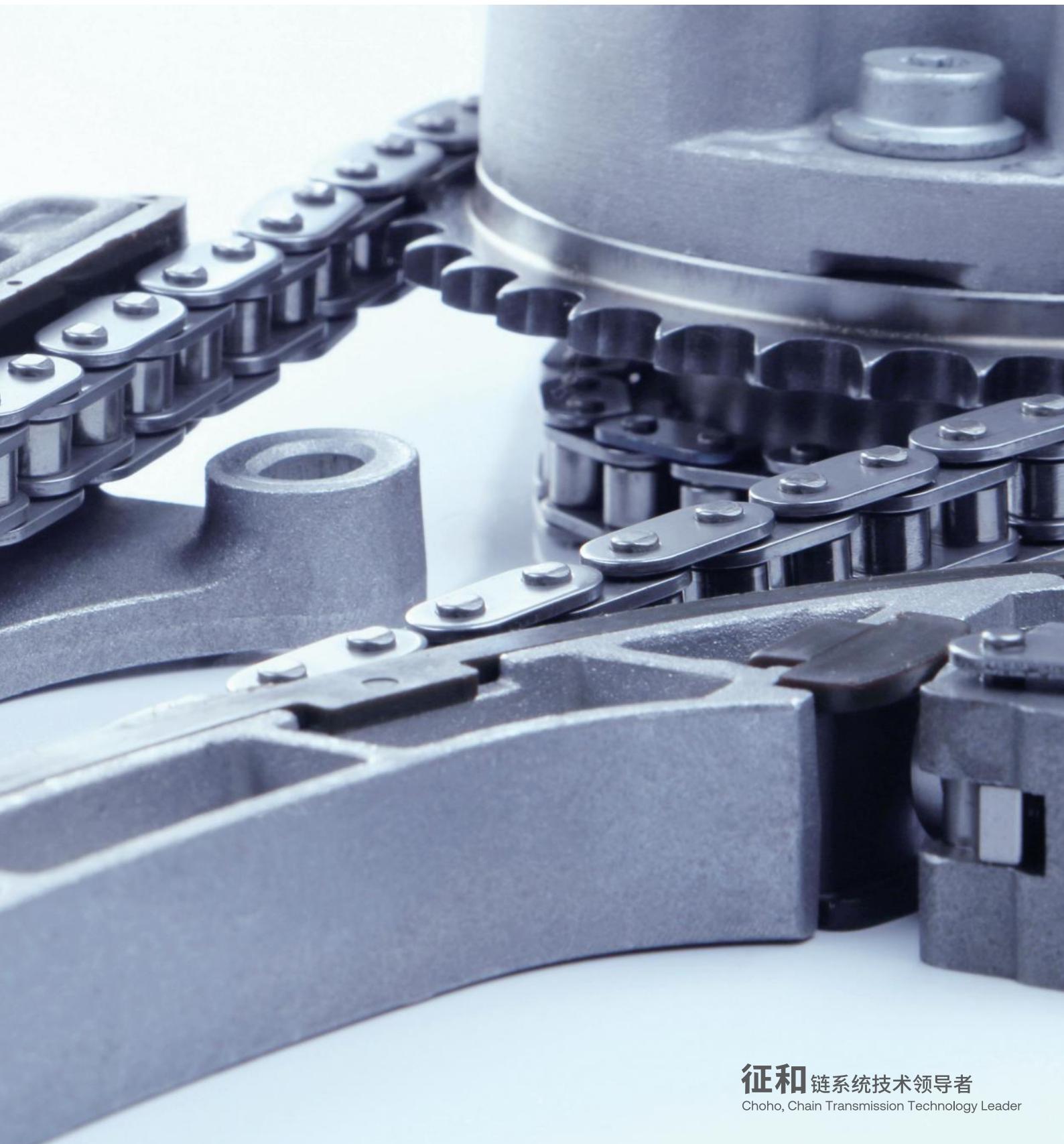
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CHOHO Automotive Timing Chain System



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青岛征和工业股份有限公司

Qingdao CHOHO Industrial Co., Ltd

青岛征和工业股份有限公司是国内链传动行业的领军企业，行业首家A股上市公司（证券代码：003033）、中国机械通用零部件工业协会链传动分会理事长单位。征和从事各类链传动系统的研发、制造和销售，产品主要应用于各类车辆的发动机和传动系统、农业机械传动和输送系统、工业设备传动和输送系统等。随着技术的升级与市场的积累，公司产品线不断拓展，已经延伸至舰船发动机等领域。

凭借行业领先的研发技术、产品质量及服务水平，征和工业积累了丰富优质的客户资源。公司为本田、铃木、雅马哈、宝马、哈雷、大长江、春风动力、钱江摩托、比亚迪汽车、长安汽车、长城汽车、上汽集团、德国克诺尔等知名车辆制造企业提供车辆链系统产品；为德国克拉斯、潍柴雷沃、约翰迪尔、爱科等境内外知名农业机械厂家提供相关农业机械链系统产品；为海尔、大疆、顺丰、广东信源、昆船物流及新松机器人等知名企业提供工业设备链系统产品。商标已在120多个国家完成注册，产品远销欧美、东南亚、南美、非洲等100多个国家及地区，服务客户超3000家。

征和十分重视产品创新及生产工艺优化，始终坚持产、学、研一体的研发方式，通过与国内多家主机厂、科研机构，以及吉林大学、山东科技大学、青岛理工大学、辽宁工业大学等高校建立合作研发关系，打造出一支技艺精湛、功底深厚的研发队伍，从而具备了多个研发项目并行开发、快速响应客户需求的技术能力。

征和秉承客户至上的服务理念，致力于通过科技创新，加大研发投入，不断升级迭代产品，向客户提供高端的传动系统，并不断向全球链系统技术领导者迈进。

征和 链系统技术领导者

Choho, Chain Transmission Technology Leader



Qingdao Choho Industrial Co., Ltd. is a leading enterprise in China's chain drive industry. It was the first A-share listed company in this field (Stock Code: 003033) and serves as the chairman unit of the Chain Drive Branch of the China Machinery General Components Industry Association. CHOHO is engaged in the R&D, manufacturing, and sales of various chain transmission systems. Its products are primarily used in engines and transmission systems of various vehicles, agricultural machinery transmission and conveying systems, and industrial equipment transmission and conveying systems. With technological advancements and market expansion, the company's product line has continuously grown, extending into fields such as marine engines.

Leveraging industry-leading R&D capabilities, product quality, and service levels, CHOHO has accumulated a diverse and high-quality customer portfolio. The company supplies vehicle chain system products to renowned manufacturers such as Honda, Suzuki, Yamaha, BMW, Harley-Davidson, Dachangjiang, CFMOTO, Qianjiang Motorcycles, BYD Auto, Changan Automobile, Great Wall Motors, SAIC Motor, and Knorr-Bremse. It also provides agricultural machinery chain systems to leading domestic and international manufacturers like CLAAS, Weichai Lovol, John Deere, and AGCO. Furthermore, CHOHO supplies industrial equipment chain systems to major companies such as Haier, DJI, SF Express, Guangdong Xinyuan, Kunming Shipbuilding Logistics, and SIASUN Robot. The company's trademark is registered in over 120 countries, with products exported to more than 100 countries and regions across Europe, America, Southeast Asia, South America, and Africa, serving over 3,000 customers.

CHOHO places great emphasis on product innovation and production process optimization, consistently adhering to an integrated R&D approach that combines production, academic research, and development. Through collaborations with numerous domestic OEMs, research institutions, and universities such as Jilin University, Shandong University of Science and Technology, Qingdao University of Technology, and Liaoning University of Technology, CHOHO has built a highly skilled and deeply knowledgeable R&D team. This enables the company to manage multiple R&D projects concurrently and respond swiftly to customer needs.

Adhering to a customer-first service philosophy, CHOHO is committed to increasing R&D investment through technological innovation, continuously upgrading and iterating its products to provide customers with high-end transmission systems, and steadily advancing towards becoming a global leader in chain system technology.

配套厂家 Original Suppliers



荣誉 Honor

- 国家认定企业技术中心
■ National Recognized Enterprise Technology Center
- 国家技术创新示范企业
■ National Technology Innovation Demonstration Enterprise
- 国家高新技术企业
■ National High-Tech Enterprise
- 国家制造业单项冠军示范企业
■ National Manufacturing Single Champion Demonstration Enterprise
- 国家工信部专精特新 " 小巨人 " 企业
■ National Specialized, Refined, Distinctive, and Innovative "Little Giant" Enterprise
- 国家级博士后科研工作站
■ National Postdoctoral Research Workstation
- 中国驰名商标
■ China Well-Known Trademark
- 300 余项国家发明和新型专利
■ Over 300 National Invention and Utility Model Patents



认证 Certifications

1999 年, 通过法国 BVQI ISO9001 质量管理体系认证

In 1999, achieved ISO9001 Quality Management System certification by BVQI, France.

2003 年, 通过挪威 DNV ISO9001 质量体系认证

In 2003, passed the ISO9001 Quality System certification by DNV, Norway.

2007 年, 通过 TS16949 质量管理体系认证

In 2007, obtained TS16949 Quality Management System certification.

2008 年, 通过 OHSAS18001 职业健康安全管理体系认证

In 2008, passed the OHSAS18001 Occupational Health and Safety Management System certification.

2008 年, 通过 ISO14001:2004 环境管理体系认证

In 2008, passed the ISO14001:2004 Environmental Management System certification.

2009 年 - 2015 年, 通过德国 TUV 莱茵 ISO9001:2008 质量管理体系认证

From 2009 to 2015, maintained ISO9001:2008 Quality Management System certification by TÜV Rheinland, Germany.

2009 年 - 2018 年, 通过德国 TUV 莱茵 TS16949: 2009 质量管理体系认证

From 2009 to 2018, maintained TS16949:2009 Quality Management System certification by TÜV Rheinland, Germany.

2015 年, 通过青岛世通 ISO9001:2008 质量管理体系认证

In 2015, passed the ISO9001:2008 Quality Management System certification by Qingdao Stone.

2018 年, 通过青岛世通 ISO9001:2015 质量管理体系认证

In 2018, passed the ISO9001:2015 Quality Management System certification by Qingdao Stone.

2018 年, 通过德国 TUV 莱茵 IATF16949:2016 质量管理体系认证

In 2018, achieved IATF16949:2016 Quality Management System certification by TÜV Rheinland, Germany.

2018 年, 获得 CNAS 实验室认可证书

In 2018, obtained CNAS Laboratory Accreditation Certificate.

2021 年, 获得 MAN Energy Solutions 船舶链认证

In 2021, received MAN Energy Solutions marine chain certification.

2023 年, 通过山东世通产品碳足迹认证

In 2023, passed the product carbon footprint certification by Shandong WorldCom.



开发流程

Development Process

征和可为客户提供链系统开发设计全流程服务。

从产品的最初构想到生产，我们通过在生产工艺和研发手段方面最先进的专有技术来为客户服务。我们通过各种动态的模拟、利用自主研发的专有计算软件以及有限元分析法来进行产品设计和分析，快速灵活的造型和生产技术可以使我们在极短的时间内完成各种样品，从而可以及早对产品的功能和寿命在实验室或实际应用环境下进行测试和优化。

这样我们既缩短了开发时间又保证了产品能达到的最高质量标准。我们的专有技术不仅仅针对单个产品，还延伸到了整个系统中。单个零部件除了进行台架试验外，也要被安装到系统总成或整车上进行测试，产品的优化总是在考虑整个系统的前提下完成的。

CHOHO provides comprehensive chain system development and design services, covering the entire process from concept to mass production.

From the initial product idea to final production, we serve our customers with the most advanced proprietary technologies in production processes and R&D methods. We utilize various dynamic simulations, self-developed proprietary calculation software, and Finite Element Analysis (FEA) for product design and analysis. Our rapid and flexible modeling and production technologies enable us to produce various prototypes in a very short time, allowing for early testing and optimization of product function and lifespan in both laboratory and real-world application environments.

This approach not only shortens development time but also ensures the highest achievable quality standards. Our expertise extends beyond individual components to encompass the entire system. In addition to bench testing individual parts, they are also tested as part of the complete system assembly or on the vehicle itself. Product optimization is always performed with consideration for the entire system.



分析和优化设计

Analyze and Optimize Design

利用多体动力学虚拟分析技术,研究汽车发动机正时链系统在具有多约束边界条件下不同转速工况的动态特性,得到正时链系统链节的运动轨迹、链节的张力、曲轴链轮与凸轮轴链轮的传动比、张紧器柱塞与张紧板的接触力,并通过变换得出链节张力和法向接触力在不同转速不同发动机谐波阶次下的动态幅值。对链系统样件制作和实际应用具有指导意义。

Using multi-body dynamics virtual analysis technology, we study the dynamic characteristics of automotive engine timing chain systems under various speed conditions and multiple constraint boundaries. This analysis provides data on the chain link trajectories, link tension, transmission ratio between the crankshaft sprocket and camshaft sprocket, and the contact force between the tensioner plunger and guide. Furthermore, it derives the dynamic amplitudes of chain tension and normal contact force across different engine speeds and harmonic orders. These findings provide crucial guidance for prototyping and the practical application of chain systems.





小排量发动机

Small Displacement Engine

OPEL



EA111



FIAT



中排量发动机

Middle Displacement Engine

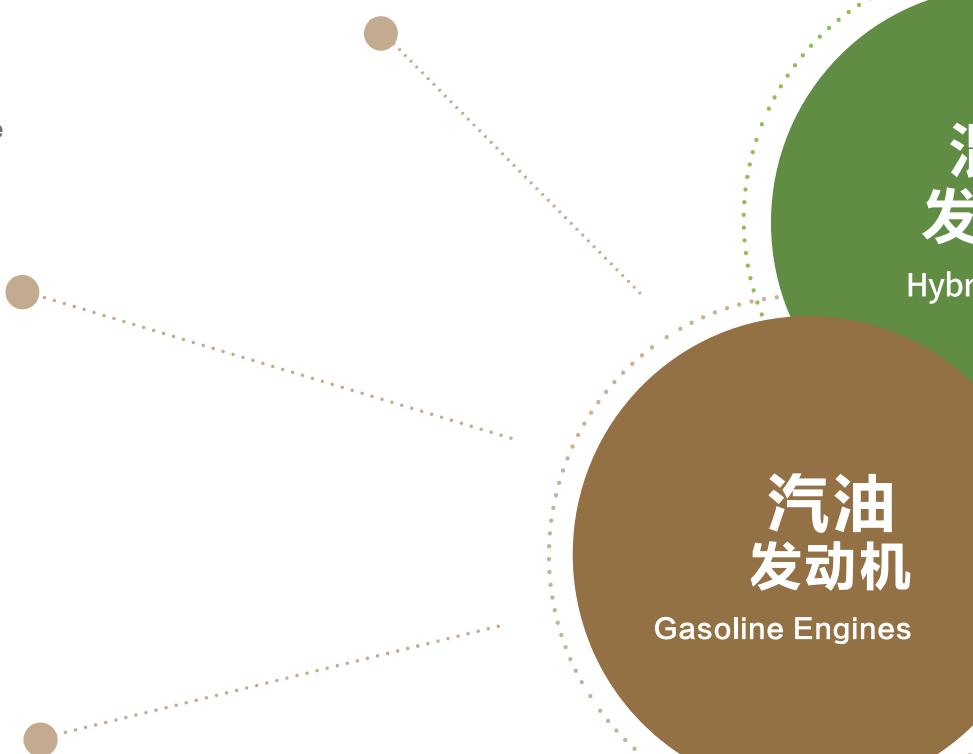
EA888



大排量发动机

Large Displacement Engine

Land Rover 3.0T





柴油发动机

Diesel Engines



小排量发动机
Small Displacement Engine



中排量发动机
Middle Displacement Engine

4D30 Jmc



大排量发动机
Large Displacement Engine

V348 V6 System



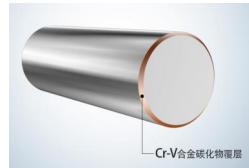
汽车链五重工艺保证 Five Key Process Guarantees for Automotive Timing Chain

铬钒共渗处理

Chrome-Vanadium Co-carburizing Treatment

销轴表面 Cr-V 共渗，增强耐磨性能

Cr-V Co-carburizing on the pin surface enhances
wear resistance.



进口原材料

Imported Raw Materials

**采用德国进口原材料，性能稳定，寿命高
表面光洁、平整、尺寸精度高和机械性能好**

Utilizes raw materials imported from Germany, ensuring stable
performance and long service life.

Features a clean, smooth surface, high dimensional accuracy,
and excellent mechanical properties.

进口设备制造

Manufactured with Imported Equipment

引进日本精密冲床和日本精密模具，链板精度高

引进德国销轴机和卷管机，零件尺寸精密一致

Utilizes precision punches and molds from Japan, ensuring high
accuracy of link plates.

Employs pin processing and tube rolling machines from
Germany, guaranteeing precise and consistent part dimensions.

等温处理

Isothermal Treatment

链板等温处理，增强疲劳性能

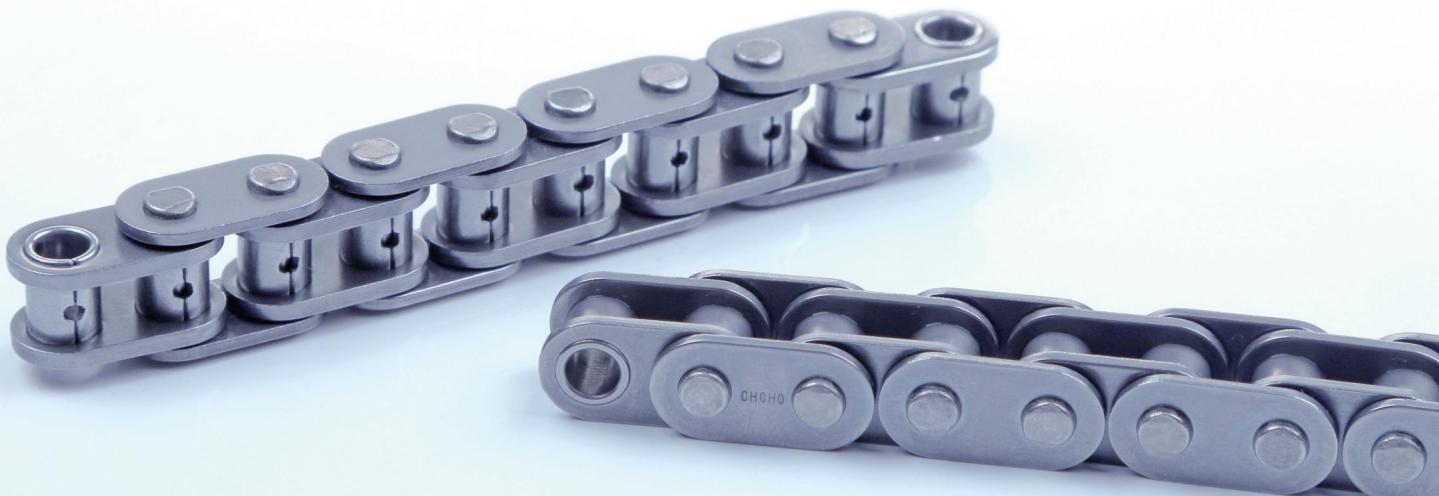
Isothermal treatment of link plates
enhances fatigue performance.

优质产品

High Quality Products

同样品质价格更优

Competitive pricing for equivalent quality.



十大核心技术 Ten Core Technologies

■ 高耐磨销轴表面处理技术, 包括碳氮共渗、渗钒、渗铬和铬钒共渗

High Wear-Resistant Pin Surface Treatment Technology, including Carbonitriding, Vanadium Carburizing, Chromizing, and Chrome-Vanadium Co-carburizing.

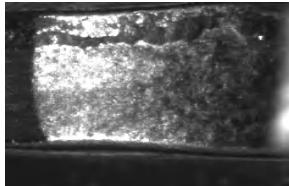
征和新一代碳氮共渗工艺加强了对氮化层深度、碳化层深度要求, 对渗层效果进行梯度硬度管控, 通过同条件下的耐磨试验对比, 新工艺较原工艺有明显的改善效果。

CHOHO's new carbonitriding process has strengthened the requirements for nitride layer depth and carbide layer depth, implementing graded hardness control over the case depth effect. Comparative wear tests under identical conditions demonstrate that the new process delivers significant improvements over the original process.



■ 征和链板超精冲孔 (SFA) 技术

CHOHO Super Finish Aperture (SFA) Technology for Chain Plates.



原工艺 Original	链板超精冲孔 SFA
平均破断面 Avg. Tear Zone <30%	平均破断面 Avg. Tear Zone <5%

■ 带油孔技术

Bush Oil Hole Technology

改善了套筒链的套筒和销轴之间的润滑、加强了冷却, 链条的磨损量可降低一半以上

Improves lubrication between the bush and pin in bush chains, enhances cooling, and can reduce chain wear by more than half.



■ 导轨全流程动态测试和设计技术

Full-Process Dynamic Testing and Design Technology for Guides

产品研发分析能力包括模流分析、有限元分析, 是国内最大的导轨生产、研发基地

R&D and analysis capabilities include mold flow analysis and finite element analysis. We are the largest guide rail production and R&D base in China.

■ 低摩擦技术 – 链板精抛: 通过调整滚磨工艺来改善链板表面粗糙度, 摩擦性能提高约 50%

Low Friction Technology - Precision Polishing of Link Plates: adjustments made to the tumbling process enhanced the surface roughness of the chain plates, leading to an approximate 50% improvement in frictional properties.



■ 复合模精密整形冲压技术

Precision Stamping and Sizing Technology using Compound Dies

■ 链条的强化预拉技术

Chain Reinforcement and Pre-tensioning Technology

可减少链条早期磨损伸长, 链条全寿命磨损量降低 30% 以上, 链条疲劳强度提高 80% 以上

Reduces early wear and elongation, decreases total lifetime wear by over 30%, and increases chain fatigue strength by over 80%.

应用一系列链条控制技术, 接合链条动态测试技术 (Chain Dynamic Testing Technology), 通过在发动机运行过程中监测发动机、链条、张紧器的工作状态, 精确匹配链系统的性能, 满足发动机全寿命、低摩擦功、低 NVH 的要求。

By applying a series of chain control technologies combined with Chain Dynamic Testing Technology, we monitor the operational status of the engine, chain, and tensioner during engine operation. This enables precise matching of the chain system's performance to meet requirements for full engine life, low friction loss, and low NVH (Noise, Vibration, and Harshness).

■ 链条动态测试技术

Chain Dynamic Testing Technology

■ 链轮精冲及齿形设计检测技术

Sprocket Fine Blanking and Tooth Profile Design & Inspection Technology

具备冷挤压工艺技术, 齿形检测设计技术, 精冲保证链轮的一致性, 同时具备动态测试能力

Capabilities include cold extrusion processes, tooth profile design and inspection technology. Fine blanking ensures sprocket consistency, complemented by dynamic testing capabilities.

■ 液压张紧器技术

Hydraulic Tensioner Technology

使用通用化设计方案, 易于发动机整机性能匹配良好的匹配可使寿命提升 30%

Utilizes modular design solutions for easy integration with overall engine performance. Optimal matching can increase service life by 30%.

高效的生产技术

Efficient Production Technology

国外进口设备 Equipment Imported From Overseas

征和从全球引进高端链条生产和检测设备，保证了产品的高品质。同时，从产品的研发到生产，征和也非常关注生产工艺的优化。作为全球化运作的供应商，我们拥有优秀员工、先进技术和生产设备，确保了全球范围内批量生产的经济性、高品质和及时供货。

高效的生产方式是精密产品大批量生产的前提。生产的高效率要归功于独特的专有技术，征和集团在冷成形技术、锻造技术、加工和装配等方面均处于行业的领先地位。高质量和高性价比的产品是我们对客户的承诺和回馈。

CHOHO has introduced high-end chain production and testing equipment from around the world, ensuring high product quality. Simultaneously, from product development to manufacturing, CHOHO places strong emphasis on the optimization of production processes. As a global supplier, we possess excellent staff, advanced technology, and production equipment, guaranteeing the cost-effectiveness, high quality, and timely delivery of mass production worldwide.

Efficient production methods are the prerequisite for the mass production of precision components. This high efficiency is attributed to unique proprietary technologies. The CHOHO Group holds a leading position in the industry in areas such as cold forming, forging, machining, and assembly. High-quality and cost-effective products are our commitment and feedback to customers.



日本金立精密冲床

Kyori Precision Punching Machine (Japan)

设备精度：

送料精度: $\pm 0.05\text{mm}$
真直度: $25\mu\text{m}$
平行度: $33\mu\text{m}$
直角度: $9\mu\text{m}$
保证链板冲裁节距公差 $\leq 0.005\text{mm}$
Equipment Precision:
Feeding accuracy: $\pm 0.05\text{mm}$
Straightness: $25\mu\text{m}$
Parallelism: $33\mu\text{m}$
Perpendicularity: $9\mu\text{m}$
Guarantees chain plate blanking pitch tolerance $\leq 0.005\text{mm}$

设备速度：

500 次 / 分钟
Equipment Speed: 500 strokes/minute



德国高精度切销机

High-Precision Pin Cutting Machine (Germany)

设备亮点：

切断与倒角同时完成，无需分步加工
Equipment Highlights:
Cutting and chamfering are completed simultaneously in a single process.

设备精度：

保证销轴切断长度公差 $\leq 0.04\text{mm}$
Equipment Precision:
Guarantees pin cut length tolerance $\leq 0.04\text{mm}$

设备速度：

700 次 / 分钟
Equipment Speed: 700 strokes/minute



德国高精度卷管机

High-Precision Tube Rolling Machine (Germany)

设备亮点：

套筒卷制同时可以进行油孔制作
Equipment Highlights:
Can produce oil holes simultaneously during the bushing rolling process.

设备精度：

保证套筒外经公差 $\leq 0.02\text{mm}$ ，
接缝 $\leq 0.02\text{mm}$
Equipment Precision:
Guarantees bushing outer diameter tolerance $\leq 0.02\text{mm}$,
Seam gap $\leq 0.02\text{mm}$

设备速度：

400 次 / 分钟
Equipment Speed: 400 strokes/minute

材料及性能检测设备 Material and Performance Testing Equipment



三坐标测量仪
Coordinate Measuring Machine (CMM)



德国光谱分析仪
German Spectrometer



日本金相显微镜
Japanese Metallographic Microscope

设备作用:
精密测量链条及其系统件的外形轮廓尺寸
Equipment Function:
Precisely measures the contour dimensions of chains and system components.

设备作用:
检测原材料的化学成分
Equipment Function:
Analyzes the chemical composition of raw materials.

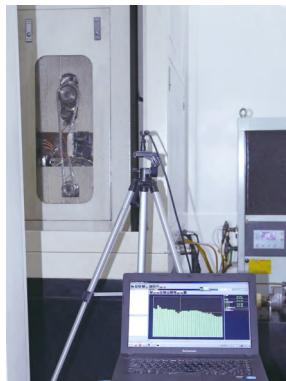
设备作用:
检测分析链条及其系统件的金相组织
Equipment Function:
Examines and analyzes the metallographic structure of chains and system components.

出厂检测设备 Factory Testing Equipment



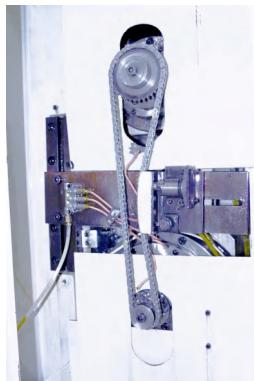
电涡流测功机试验台架系统
Eddy Current Dynamometer Test Bench System

设备作用:
主要用于以汽油及柴油发动机性能试验、可靠性试验、排放实验及使用方自定义的研发试验
Equipment Function:
Primarily used for performance testing, reliability testing, emission testing of gasoline and diesel engines, and user-defined R&D tests.



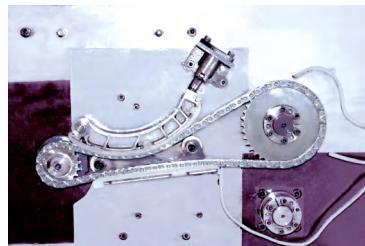
正时链系统噪声试验台
Timing Chain System Noise Test Rig

设备作用:
检测链系统噪声情况
Equipment Function:
Evaluates the noise characteristics of the chain system.



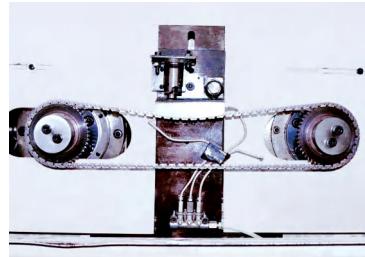
封闭式链条耐磨试验机
Enclosed Chain Wear Testing Machine

设备作用:
检测链条耐磨性能
Equipment Function:
Tests the wear resistance of chains.



正时链系统综合性能试验台
Timing Chain System Comprehensive Performance Test Rig

设备作用:
检测链条耐磨性能
Equipment Function:
Tests the wear resistance of the chain.



回转疲劳试验机
Rotary Fatigue Testing Machine

设备作用:
检测链条回转疲劳性能
Equipment function:
Determines the rotary fatigue performance of chains.

汽车链系统件目录

Automotive Timing Chain System Catalog

VW、Audi

Product name	OEM
ZH01-01	
Timing Guide Rail	06H 109 469 AF
Timing Tightening Rail	06H 109 509 L
Timing Slide	06H 109 469 AG
Balance Shaft Tension Rail	06H 109 509 P
Oil Pump Tensioner Rail	06H 109 507 N
Timing Chain/170L	06H 109 158 P
Balance Shaft Chain/96L	06H 109 158 Q
Oil Pump Chain/60L	06K 115 225 E
Crankshaft Sprocket	06H 109 158 H
Timing Tensioner	06K 109 467 S
Balance Shaft Tensioner	06H 109 467 AL
Balance Shaft Guide Rail (Short)	06H 109 469 AD
Balance Shaft Guide Rail (Long)	06H 109 469 AE
ZH01-03-01	
Timing Chain	03C 109 158 B
Timing Tensioner	03C 109 507 R
Timing Tightening Rail	03C 109 509 M
Timing Guide	03C 109 469 K
Oil Pump Chain/54L	03C 115 230 C
Oil Pump Tensioner Rail	03C 109 507 AG
ZH01-03-02	
Timing Chain	03C 109 158 B
Timing Tensioner	03C 109 507 R
Timing Tightening Rail	03C 109 509 M
Timing Guide	03C 109 469 K



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH01-04	
Timing Chain/130L	03C 109 158 B
Timing Tensioner	03C 115 230 C
Timing Tightening Rail	03C 109 507 R
Timing Guide	03C 109 571 F
Camshaft Sprocket	
Camshaft Sprocket	03C 109 507 AD
Oil Pump Chain/54L	03C 109 509 M
Oil Pump Tensioner Rail	03C 109 469 K
ZH01-04-01	
Timing Chain/130L	03C 109 158 B
Timing Tensioner	03C 115 230 C
Timing Tightening Rail	03C 109 507 R
Timing Guide	03C 109 571 F
Oil Pump Chain/54L	03C 109 509 M
Oil Pump Tensioner Rail	03C 109 469 K
ZH01-17	
Oil Pump Chain	03E109229
Oil Pump Sprocket (Big)	03E115121D
Oil Pump Sprocket (Small)	03E105209L
Oil Pump Guide Rail	03E109507P
Timing Chain	03C109158B
Camshaft Sprocket *2	03E109571D
Crankshaft Sprocket	03E109209S
Timing Tensioner	03E109507AE
Timing tensioning rail	03C109509
Timing Guide	03C109469K



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH01-21	
Chain	06K109158AD
Timing Tensioner	06F109217A
ZH01-21-01	
Chain	06K109158AD
VVT Sprocket	06F109088J
Timing Tensioner	06F109217A
ZH01-30	
Chain/106L	059109229J
Chain/72L	059109229M
Chain/58L	059109229K
Chain/104L	06E109465AQ
Sprocket 1	057109116H
Sprocket 2	057109116J
Sprocket 3	079109570AP
Sprocket 4	057109116J
Timing Tensioner 1	059109467E
Timing Tensioner 2	057109217J
Timing Guide 1	057109510A
Timing Guide 2	057109513B
Timing Tensioner 3	057109218K
Timing Guide 3	079109510M
Timing Guide 4	057109469G
Timing Guide 5	057109469H
Timing Guide 6	059109507D



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH01-30-01	
Chain/106L	059109229J
Chain/72L	059109229M
Chain/58L	059109229K
Chain/104L	06E109465AQ
Sprocket(Big) 1	057109077
Sprocket(Big) 2	059109077E
Sprocket 1	057109116H
Sprocket 2	057109116J
Sprocket 3	079109570AP
Sprocket 4	057109116J
Timing Tensioner 1	059109467E
Timing Tensioner 2	057109217J
Timing Guide 1	057109510A
Timing Guide 2	057109513B
Timing Tensioner 3	057109218K
Timing Guide 3	079109510M
Timing Guide 4	057109469G
Timing Guide 5	057109469H
Timing Guide 6	059109507D



汽车链系统件目录

Automotive Timing Chain System Catalog

HYUNDAI

Product name	OEM
ZH03-01	
Timing Guide Rail	24431-2B000
Timing Tensioner (Iron)	24410-25001
Crankshaft Sprocket	23121-2B000
Timing Chain (Wide Tooth)	24321-2B000
Timing Tightening Rail	24420-2B000
Camshaft Sprocket	24221-2B000
ZH03-01-01	
Timing Guide Rail	24431-2B000
Timing Tensioner (Iron)	24410-25001
Timing Chain (Wide Tooth)	24321-2B000
Timing Tightening Rail	24420-2B000



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH03-16	
Chain/84L	24351-2A000
Chain/76L	24361-2A001
Camshaft Sprocket	24322-2A000
Sprockets (Double Row)	24335-2A000
Crankshaft Sprocket *2	24312-2A000
Timing Tensioner 1	24410-2A000
Timing Tensioner 2	24370-2A000
Timing Guide Rail 1	24386-2A000
Timing Guide Rail 2	24377-2A000
Timing Guide Rail 3	24376-2A000
Timing Guide Rail 4	24377-2A000
Timing Guide Rail 5	24387-2A010
ZH03-17	
Chain/90L	24361-2F000
Chain/72L	24351-2F000
Timing Tensioner 1	23121-2F000
Timing Tensioner 2	24335-2F000
Sprocket 1	24410-2F000
Sprocket 2	24510-2F000
Timing Guide Rail 1	24376-2F000
Timing Guide Rail 2	24387-2F000
Timing Guide Rail 3	24377-2F000
Timing Guide Rail 4	24386-2F000



汽车链系统件目录

Automotive Timing Chain System Catalog

FORD

Product name	OEM
ZH04-05	
Timing Chain	XS6E 6268 AA
Timing Guide Rail	XS6E 6M256 AD
Timing Tightening Rail	XS6E 6K255 AA
Timing Tensioner	XS6E 6L266 AE
Crankshaft Sprocket	XS6E 6306 AA
Camshaft Sprocket	XS6E 6256 AB
ZH04-10	
Chain	BK2Q6268AA
Timing Tensioner Rail	8C1Q6K254AB
Timing Tensioner	BK2Q6K261AA
Timing Slide	8C1Q6M256CA
Timing Guide	BK2Q-6M256AB
Camshaft Sprocket *2	8C1Q6256AA
Crankshaft Sprocket	BK2Q6306A1A



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH04-11	
Chain	0816J1
Timing Guide	SA1203
Timing Tensioner	SA1202
ZH04-12	
Chain	1099874
Timing Tensioner	2S7Q6K261BA 1138760
Timing Tensioner Rail	XS7Q6K254AK 1096496
Timing Guide Rail (Long)	XS7Q6M256BE 1099793
Timing Guide Rail (Short)	3S7Q6M256FA 1253958
timing slide	XS7Q6M256AD 1097642



汽车链系统件目录

Automotive Timing Chain System Catalog

TOYOTA

Product name	OEM
ZH06-01	
Timing Chain	13506-21020
Camshaft Sprocket	13523-22020
Crankshaft Sprocket	
Timing Tightening Rail	13559-21010
Timing Guide Rail	13561-21010
Timing Tensioner	13540-21020
ZH06-01-01	
Timing Chain	13506-21020
Camshaft Sprocket	13523-22020
Timing Tightening Rail	13559-21010
Timing Guide Rail	13561-21010
Timing Tensioner	13540-21020
ZH06-02	
Timing Chain	13506-22030
Camshaft Sprocket	13523-22020
Crankshaft Sprocket	13521-22020
Timing Tensioner	13540-22022
Timing Tightening Rail	13559-22011
Timing Guide Rail	13561-22020
ZH06-02-01	
Timing Chain	13506-22030
Timing Tensioner	13540-22022
Timing Tightening Rail	13559-22011
Timing Guide Rail	13561-22020



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH06-03	
Timing Chain	13506-28011
Oil Pump Chain	13507-28010
Camshaft Sprocket	13523-22020
Crankshaft Sprocket/Thick	13521-28030
Crankshaft Sprocket/Thin	13519-28010
Oil Pump Sprocket	15163-28010
Timing Tensioner	13540-28010
Timing Tightening Rail	13559-28010
Timing Guide Rail	13561-28010
Oil Pump Tensioner Rail	13549-28012
ZH06-03-01	
Timing Chain	13506-28011
Oil Pump Chain	13507-28010
Timing Tensioner	13540-28010
Timing Tightening Rail	13559-28010
Timing Guide Rail	13561-28010
Oil Pump Tensioner Rail	13549-28012
ZH06-04	
Timing Chain	13506-21030
Camshaft Sprocket	13523-22020
Crankshaft Sprocket	
Timing Tensioner	13540-21020
Timing Tightening Rail	13559-21010
Timing Guide Rail	13561-21010



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH06-22	
Timing Chain	13506-0N010
Camshaft Sprocket	13523-33021
Crankshaft Sprocket	13521-33020
Timing Tensioner	13540-33020(13540-0N010)
Timing Tightening Rail	13559-33010(13559-0N010)
Timing Guide Rail	13561-33020(13561-0N010)
ZH06-23	
Chain/140L	13506-37010
Chain/52L	13507-37010
Sprocket 1	13521-37010
Sprocket 2	13519-37010
Timing Tensioner	13540-37010
Oil Pump Tensioner Rail	13549-0T020/13565-0T020
Timing Guide Rail	13559-37010
Timing Tightening Rail	13561-37010
Timing Slide	13562-0T010/37010
ZH06-24	
Chain/124L	13506-0Q020
Camshaft Sprocket	13523-22020
Crankshaft Sprocket	13521-40020
Timing Tensioner	13540-0Q010
Timing Guide Rail	13591-0Q010
Timing Tightening Rail	13566-0Q010



汽车链系统件目录

Automotive Timing Chain System Catalog

NISSAN

Product name	OEM
ZH09-01	
Timing Chain	13028-ED000
Oil Pump Chain	15041-ED000
Camshaft Sprocket	13024-ED000
Crankshaft Sprocket	13021-ED000
Oil Pump Sprocket	15043-ED000
Timing Tightening Rail	13091-ED000
Timing Guide Rail	13085-ED000
Oil Pump Tensioner Rail	13070-ED010
Timing Tensioner	13070-ED000
ZH09-01-01	
Timing Chain	13028-ED000
Oil Pump Chain	15041-ED000
Timing Tightening Rail	13091-ED000
Timing Guide Rail	13085-ED000
Oil Pump Tensioner Rail	13070-ED010
Timing Tensioner	13070-ED000



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH09-16	
Chain/94L	13028-EB70A
Chain/92L	13028-AD212
Sprocker(Double Row)	13014-EB70A
Camshaft Sprocket	13021-EB70A
Crankshaft Sprocket	13024-AD200
Tensioner 1	13070-BN310/48610
Tensioner 2	13070-EB70A
Timing Guide Rail 1	13091-AD200/5N200
Timing Guide Rail 2	13091-AD210
Timing Guide Rail 3	13085-AD210/5N205
Timing Guide Rail 4	13085-AD205/5N210
Timing Guide Rail 5	13085-EB70A
Timing Guide Rail 6	13085-AD215/48670
Timing Guide Rail 7	13085-AD220/5N200
Oil Seal	OIL SEAL(50*62*7)
ZH09-17	
Chain/94L	13028-EB70A
Chain/92L	13028-AD212
Tensioner 1	13070-EC00A(SA1351)
Tensioner 2	13070-AD200
Timing Tightening Rail	13091-AD210(EB70A)
Timing Guide Rail 1	13085-EB70A
Timing Guide Rail 2	13085-AD210/5N205
Timing Guide Rail 3	13091-AD200/5N200
Timing Guide Rail 4	13085-AD215/48670
Timing Guide Rail 5	13085-AD220/5N200



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH09-18	
Chain/80L	13028-53Y10(9-4174)
Chain/54L	13028-53Y00(9-4175)
Sprocker(Double Row)	13077-53Y00(S737)
Camshaft Sprocket *2	13024-53Y00(S720)
Crankshaft Sprocket	13021-53Y00(S731)
Tensioner 1	13070-53Y10(9-5229)
Tensioner 2	13070-53Y00(9-5230)
Timing Tightening Rail	13091-53Y00(9-5234)
Timing Guide Rail	13085-0M300(9-5347)
Timing Slide 1	13085-53Y15(9-5231)
Timing Slide 2	13085-53Y10(9-5232)
Oil Seal	OIL SEAL/40*52*7
Gasket *2	15066-5E510 *2
ZH09-19	
Chain/76L	13028-99B00
Chain/52L	13028-99B10
Tensioner 1	13070-99B11
Tensioner 2	13070-41B01
Timing Guide Rail	13085-99B00
Timing Slide	13091-99B00



汽车链系统件目录

Automotive Timing Chain System Catalog

OPEL

Product name	OEM
ZH18-01	
Tensioner	55197785
Timing Chain	46804589/55221385
Guides	55205447
Tension Rail	55205448
Camshaft Sprocket	55195293
Crankshaft Sprocket	55251472
ZH18-02	
Timing Chain	5636360;90529570;55562234; 0637241;95522267
Timing Tensioner	55562235;0636059
Upper Guide	5636966;0636807;55353999;90531861
Tension Rail	5636248;0636821; 5636964 ; 636821; 55353998; 90572153 ; 55565005
Guide Rail	55353997;5636965;90531862;636808
Screw	11099641;2005638
Crankshaft Sprocket	55355345; 0614536
Camshaft Sprocket *2	5636453;0636400



汽车链系统件目录

Automotive Timing Chain System Catalog

Product name	OEM
ZH18-03	
Timing Chain	55197785
Camshaft Sprocket	55195294
Crankshaft Sprocket	55195293
Timing Guide Rail	96788787
Timing Tightening Rail	46788785
Timing Tensioner	46788786
ZH18-04	
Timing Chain	55562234
Camshaft Sprocket *2	55353162
Crankshaft Sprocket	55355345
Timing Tensioner	55352909
Timing Tightening Rail	55565006
Timing Guide Rail	55353999
Timing Slide	55353997
ZH18-05	
Timing Chain	55573867
Camshaft Sprocket	55571672
Sprock (Double Row)	55500071
Crankshaft Sprocket	55596894
Timing Tensioner	55494321
Timing Tightening Rail	55571669
Timing Guide Rail	55573867
Timing Slide	55573868
Bolt *1	55582910/Bolt *1
Bolts *3	11588728/Bolt *3



汽车链系统件目录

Automotive Timing Chain System Catalog

RENAULT

Product name	OEM
ZH30-01	
Chain	130C10990R
Timing Guide	130C17602R
Timing Tension Plate	130C18809R
Timing Tensioner	13 0C 176 02R SK
Crankshaft Sprocket	130C18229R
Camshaft Sprocket	130C18929
ZH30-02	
Chain	13028-ED000
Timing Tension Plate	13091-ED000
Timing Guide	13085-ED000
Timing Tensioner	13070-ED000
VVT Sprocket	
Bolts *5	



汽车链系统件目录

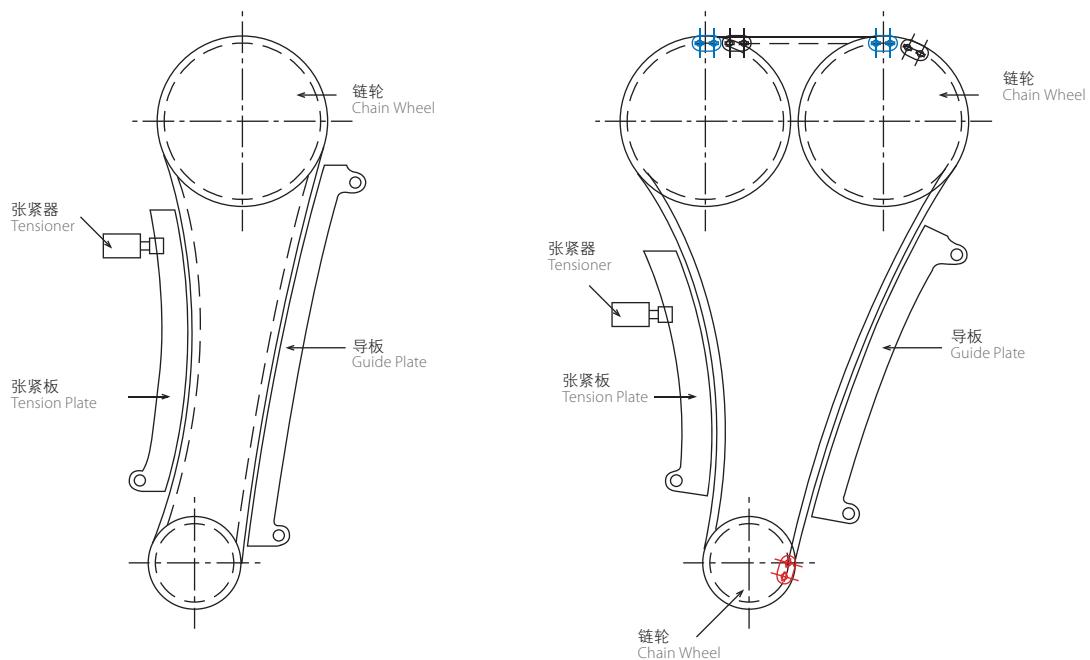
Automotive Timing Chain System Catalog

Product name	OEM
ZH30-02	
Chain/152L	13028-ED000
Chain/52L	15041-ED000
Timing Tension Plate	13091-ED000
Timing Guide	13085-ED000
Timing Tensioner	13070-ED000
Camshaft Sprocket	13024-ED000
Crankshaft Sprocket	13021-ED000
Oil Pump Sprocket	15043-ED000
Oil Pump Tensioner Rail	13070-ED010
VVT Sprocket	



安装步骤 Installation Steps

下图为已安装后的示意图



- **步骤一** 将待装配的各零件清洗干净并涂抹适量的润滑机油；
- **步骤二** 安装曲轴链轮并使配合表面朝外，注意后续待安装零件均将标识面朝外，以便检查；
- **步骤三** 使曲轴处于压缩上止点并将排气凸轮轴链轮与缸体定位位置对正；
- **步骤四** 安装正时链条的导向装置和张紧装置（导板、张紧板、张紧器）；
- **步骤五** 在正时链条上有3个着色的链节，其中2个是表面发蓝处理的蓝片，1个是镀铜的紫铜色。安装链轮、正时链条到进气凸轮轴，并将链条安装到曲轴链轮和排气凸轮轴上。注意对准正时链条和链轮上的配合标识；
- **步骤六** 将链轮、VVT-I 阀相位器的固定螺栓拧紧，并使其力矩达到规定的要求；
- **步骤七** 系统安装完后，将张紧器上的插销拔下，使柱塞弹出顶紧链条张紧板。

注意：如果发动机没有进行正时，则发动机可能会出现异常振动或发出噪声。滚子链使用于悬挂装置时，严禁进入装置下方。

The following diagram shows the installed configuration.

■ Step 1

Thoroughly clean all parts to be assembled and apply an appropriate amount of lubricating oil.

■ Step 2

Install the crankshaft sprocket with its mating surface facing outward. Note: All subsequent parts should also be installed with their identification marks facing outward for inspection.

■ Step 3

Position the crankshaft at compression top dead center (TDC) and align the exhaust camshaft sprocket with the alignment mark on the cylinder block.

■ Step 4

Install the timing chain guide and tensioner (including the guide, tensioner rail, and tensioner assembly).

■ Step 5

There are three colored links on the timing chain: two with a blue finish and one with a copper-plated finish. Install the sprockets and timing chain onto the intake camshaft, and then route the chain around the crankshaft sprocket and exhaust camshaft sprocket. Ensure the timing marks on the chain align correctly with those on the sprockets.

■ Step 6

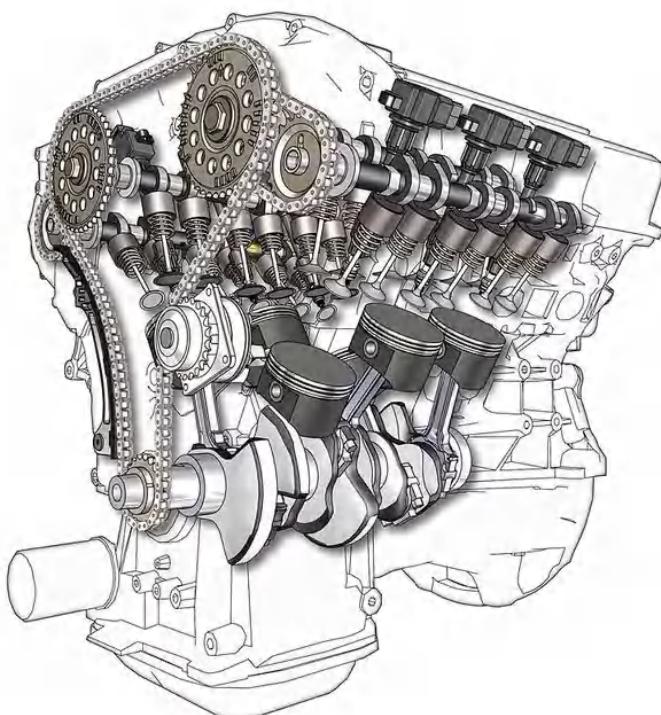
Tighten the mounting bolts for the sprocket and VVT-i actuator to the specified torque.

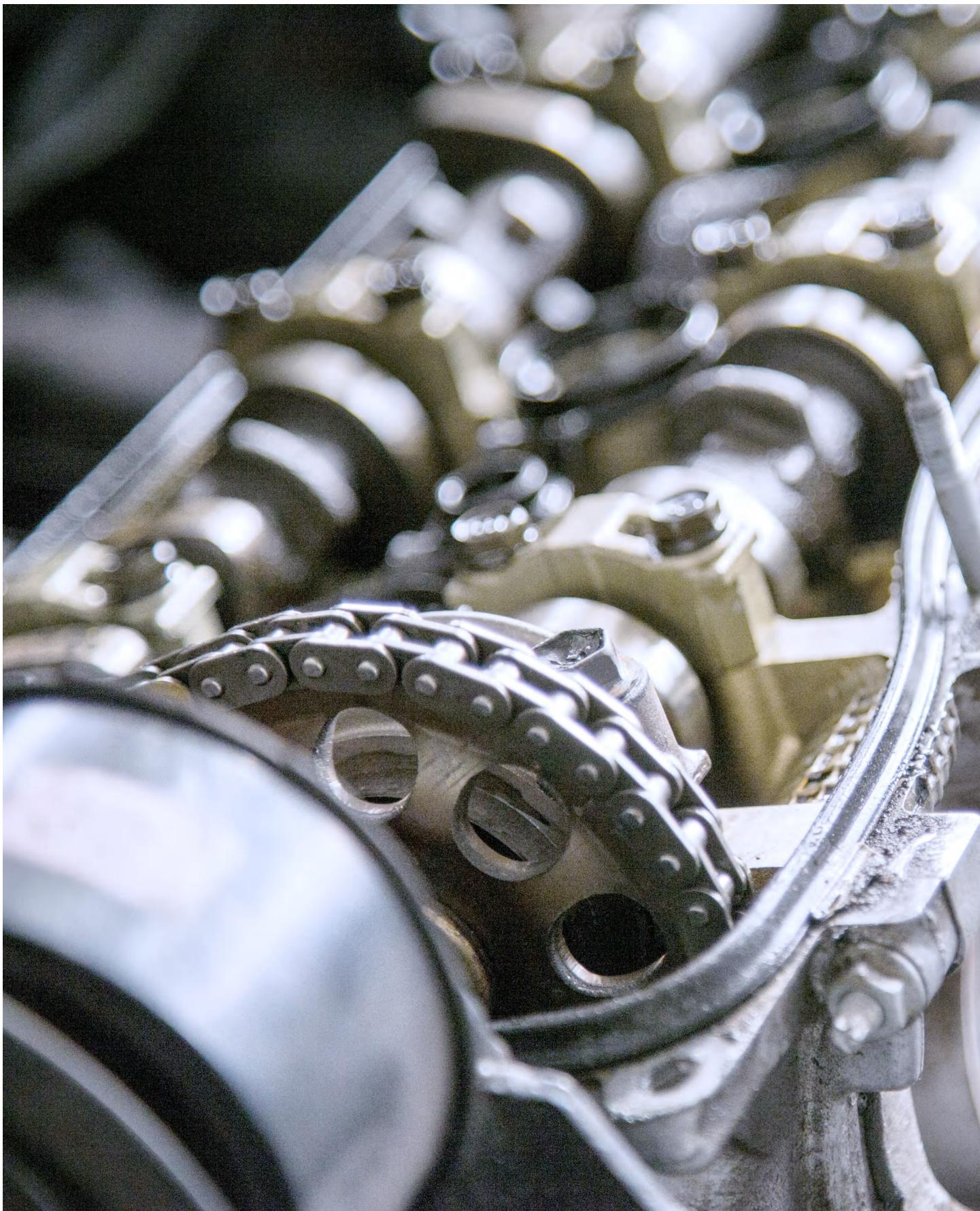
■ Step 7

After the system installation is complete, remove the locking pin from the tensioner to release the plunger, which will then press against the chain tensioning rail.

Note: If the engine timing is incorrect, abnormal vibration or noise may occur.

Warning: When a roller chain is used in a suspension application, never position yourself beneath the equipment.







“零缺陷”管理

"Zero Defect" Management

质量至上的理念一直深深地扎根于征和的企业文化中，渗透于流程中。我们的质量方针注重采取有效措施来防止从研发到批量生产各个环节中缺陷的出现——不是去发现缺陷，而是要防止缺陷的发生。“零缺陷”作为征和的质量目标也被写入了公司的发展战略。

质量安全是征和的首要企业目标，质量是征和的首要关注点。我们通过了众多国际权威质量体系的认证，如 IATF 16949 和 ISO 9001 等。全世界统一的质量管理体系确保了我们从产品开发到批量生产都始终实现最高的质量标准，并通过定期的审核来检查和监控标准的执行情况。

The principle of "Quality First" is deeply ingrained in CHOHO's corporate culture and permeates all our business processes. Our quality policy focuses on implementing effective measures to prevent defects at every stage, from R&D to mass production—our aim is not to discover defects, but to prevent them from occurring. The "Zero Defects" objective is an integral part of CHOHO's corporate development strategy.

Quality and safety are paramount at CHOHO, with quality being our foremost priority. We hold multiple internationally recognized quality management certifications, such as IATF 16949 and ISO 9001. Our globally unified quality management system ensures that the highest quality standards are consistently met from product development through to mass production, with regular audits conducted to verify and monitor compliance.



IATF16949质量管理体系认证

IATF16949 QUALITY CERTIFICATION



CHOHO

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Your sales representative

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