

# CHOHO 征和

汽车链系统



**征和** 链系统技术领导者  
*Choho, Chain Transmission Technology Leader*

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证券代码 003033



## 汽车链系统 – 开发流程

### Automotive Chain System - 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机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 can provide chain system development and design whole process service for customer.

From initial idea to production of product , we serve for customer by the most advanced proprietary technology of production process and research and development. Through a variety of dynamic simulation, we use independent research and development of proprietary software and finite element analysis method for product design and analysis, rapid flexible modelling and production technology can make us in a very short time to complete all kinds of samples, which could help for the product function and life in the laboratory or the practical application environment for testing and optimization.

So we can shorten the development time and ensure the product can reach the highest quality standards. Our proprietary technology, not only for a single product, but also extends to the whole system. Individual parts except for bench test, also want to be installed to the system assembly or on the vehicle test, the optimization of product is always done on the premise of whole system.



## 汽车链系统 - 分析和优化设计

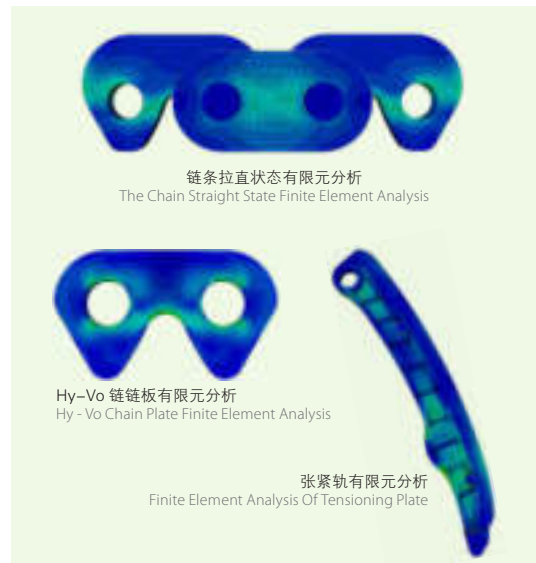
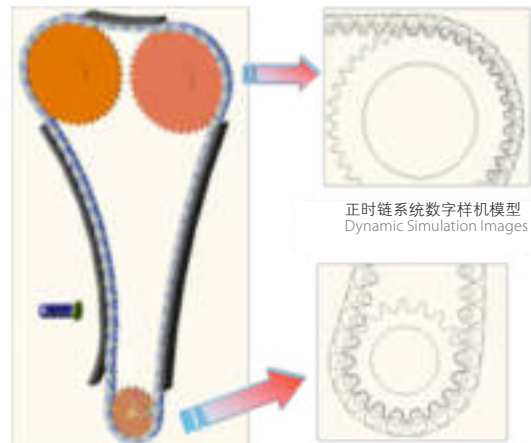
### Automotive Chain System - Analysis And Optimization Design

发动机正时链系统由曲轴链轮、凸轮轴链轮、正时链条、导板、张紧板和张紧器组成，主要作用是在规定的曲轴转角时刻准确开启和关闭进排气门。链条驱动方式传动可靠、耐久性好并且还可节省空间。导向板又称阻尼板，通常安装在正时链传动系统的紧边，它的作用主要是在工作中有效地防止链条在激烈的作用下产生的振动和噪音，消除链条在紧边的横向振动。张紧板的作用是在张紧器柱塞推力的作用下时刻对链条进行张紧，在张紧过程中随着链条的运动围绕着铰链副来旋转。液压张紧器可自动调节张紧力，使链条张力始终如一，并且终身免维护，这就使其与发动机同寿命，不但安全、可靠性得到了一定提升，还将引擎的使用、维护成本降低了不少。

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。

Engine timing system composed of crankshaft sprocket, camshaft sprockets, timing chain, guide plate, tensioning plate and tensioner, main effect is open and close in the regulation of crankshaft rotation moment accurately into the exhaust valve. Chain drive mode is reliable, good durability and also can save a space. Guide plate is also called the damping plate, usually installed in the tension side of timing system, its role mainly in the work to effectively prevent the action vibration and noise of chain under excitation, to eliminate the chain transverse vibration on the edge of tight. Tensioning plate is used in the tensioner plunger under the action of thrust moments of chain tension, as the movement the chain in the process of tensioning vice rotate around the hinge. Hydraulic tensioner, can automatically adjust the tension of chain tension to consistent, and lifetime maintenance free, which makes with engine life, not only improved safety, reliability, but also reduced cost of use and maintenance a lot.

Using virtual technology of multi-body dynamics analysis, the automobile engine timing system constraint boundary conditions in a dynamic characteristic of the different speed conditions, the trajectories of timing system link, link, crank sprocket, and the tension of the camshaft sprocket gear ratio, tensioner plunger and tensioning plate contact force, and through changing the chain tension and the normal contact force in different rotating speed dynamic amplitude under different engine harmonic order time. On the chain system sample production has guiding significance for practical application.



# 汽车链系统 - 产品种类

Auto Chain System - Product Category

## Welcome to **CHOHO** Engine Chain



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



汽  
发动  
Gasoline Engine



汽油  
发动机  
Engines

## 柴油 发动机

Diesel Engines

0.8L-1.5L



小排量发动机

Small Displacement Engine

2.0L-3.0L



中排量发动机

Middle Displacement Engine

4D30 Jmc



3.0L以上



大排量发动机

Large Displacement Engine

V348 V6 System



# 汽车链系统 – 性能特点

Auto Chain System - Performance Characteristic

## 汽车链五重工艺保证 Five Heavy Technology Guarantee For Auto Chain

### 铬钒共渗处理

Chrome Vanadium Permeability Process

销轴表面 Cr-V 共渗，增强耐磨性能

Pin surface Cr-v altogether permeability, enhance the wear resistance



### 进口原材料

Import Of Raw Material

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

Use German import of raw material, stable performance, high life.  
Surface is bright and clean, smooth, high dimensional accuracy  
and mechanical performance is good

### 进口设备制造

Imported Equipment Manufacturers

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

Introduce Japanese precision mold, precision punch of  
Japan, chain plate with high precision. Introduce Germany pin  
machine and roll machine, the size precision

### 等温处理

Isothermal Treatment

链板等温处理，增强疲劳性能

Pin and plate isothermal treatment,  
enhance the fatigue performance

### 优质产品

High Quality Product

同样品质价格更优

The same quality better price



## 带油孔套筒 Roller With Oil Hole

套筒带油孔对链条有冷却、润滑的作用,适用于链条在更恶劣的环境下运行,可以提高链条的使用寿命,拥有带油孔套筒定向装配技术,并申请了国家专利;带油孔套筒的制作,是在专制的卷管机上,通过四个工步,实现了带油孔套筒卷制、打孔同步进行,该项技术获得了国家专利。

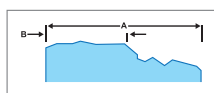
Bushing with oil hole on the chain has the effect of cooling and lubrication, apply to the chain work under more bad environment, can improve life of chain, has bushing with oil hole directional assembly technology, and applied for national patent. Manufacture for roller with oil hole, it is on the coil pipe machine of despotism, through four steps, realized synchronization of roll and punching for roller with oil hole, the technology won the national patent.



## 链板光洁冲裁处理 Chain Plate Bright Cut Processing

自主研发的光洁冲裁技术,主要应用于链板孔冲裁及周边冲裁,能够使孔光亮带达到90%,可提高链条耐久寿命50%以上。

The bright and clean blanking technology independently developed is mainly applied to the blanking of chain plate holes and surrounding blanking, which can make the hole bright belt reach 90% and increase the life of chain more than 50%.



光亮带定义  $=B/A \times 100$  (%)  
Dynamic Simulation Images



齿面表面粗糙度图例 外围表面粗糙度图例  
Dynamic Simulation Images Dynamic Simulation Images

零件名称 part no	目的 item	要求要点 Requirement specification	要求规格 Requirement specification	单位 item
链板 pin	抗磨损性能 surface hardness	销轴孔光亮带 surface hardness	90 以上	%
		销轴孔内面粗糙度 surface hardness	3.0	Rz
	降低噪音 surface hardness	链板外围粗糙度 surface hardness	2.0	Rz
	降低磨损 surface roughness	齿面 & 外围粗糙度 surface roughness	2.0	Rz

## 系统件优点 System Merit

### 动定轨 Guide And Tension Plate

- 选用抗拉强度及延伸率较高的 PA66 101L 材料
- 产品有较好的耐磨性、耐油腐蚀性及耐冷热性
- 抗冲击性能强

- Choose elongation PA66 101L material with high tensile strength
- Product has good abrasion resistance, oil resistance corrosion resistance and resistance to heat and cold
- Strong shock resistance Surface is bright and clean, smooth, high dimensional accuracy and mechanical performance is good

### 钢制链轮 Steel Sprocket

- 表面光滑, 端面平整
- 节距准确, 跳动小
- 齿面硬度高, 心部韧性好
- 键槽光滑无刀痕

- Surface is smooth, face is flat and level
- Accurate pitch and beating
- Hardness of tooth surface is high, Good toughness of core is good
- Smooth keyway without scar

### 张紧器 Tensioner

- 张紧器重要部件均采用优质材料
- 加工、装配设备精度高, 保证产品性能稳定, 使用寿命长
- 产品结构紧凑, 占用空间小, 易安装

- Important parts of tensioner adopt imported materials from Germany
- Precision of processing and assembly equipment is high, guarantee the stability of product performance, long service life
- Product structure is compact, small footprint, easy to install

### 粉末冶金链轮 Powder Metallurgy Sprocket

- 成本低, 生产效率高, 一次成型, 成型后不需要或较少再加工
- 链轮成型过程中没有废料, 对于钢铁资源的利用是最好的
- 粉末冶金链轮保证材料成分配比的正确性和均匀性, 加压成型使其具有一定密度和强度, 具有稳定独特的化学组成和机械、物理性能

- Low cost, high production efficiency, On-line lamination process, need not or less reprocessing after processing
- We can ensure correctness and uniformity of the material composition ratio and uniformity for powder metallurgy sprocket, extrusion forming has the certain density and strength, has a stable unique chemical composition and the mechanical and physical properties
- Sprocket forming process without waste, for resource utilization of steel is the best

## 系统件的目录 A catalog of system items

### VW、Audi

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Magotan 1.8T/2.0T/EA888 three generations (13 sets)</b>		
<b>Timing chain kit: Magotan 1.8T/2.0T/EA888 third-generation (12-piece set) without sprocket</b>		
Timing chain/170L		06K 109 158 AC
Timing tensioner		06K 109 467 AA
Timing guide		06K 109 469 D
Timing slide		06K 109 469 E
Timing tightening rail		06K 109 509 D
Oil pump tensioner rail		06H 109 507 N
Balance shaft tension rail		06K 109 509 C
Balance shaft chain/96L		06K 109 158 AH
Oil pump chain/60L		06K 115 225 H
Crankshaft sprocket		06H 109 158 H
Balance shaft tensioner		06H 109 467 AS
Balance shaft guide rail (short)		06H 109 469 AD
Balance shaft guide rail (long)		06H 109 469 AE
<b>Timing chain kit: Lavida 1.6/EA111 (10-piece set)</b>		
<b>Timing chain kit: Lavida 1.6/EA111 (6-piece set)</b>		
<b>Timing chain kit: Lavida 1.6/EA111 (4 piece set) without sprocket</b>		
Timing chain/130L		03C 109 158 B
Timing tensioner		03C 109 507 R
Timing tightening rail		03C 109 509 M
Timing guide		03C 109 469 K
Camshaft sprocket	There are two in a set	03C 109 571 F
Camshaft sprocket		03C 105 209 AB
Oil pump chain/54L		03C 115 230 C
Oil pump tensioner rail		03C 109 507 AG



## 系统件的目录 A catalog of system items

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Lavida 1.4T/EA111 (8-piece set)</b>		
<b>Timing chain kit: Lavida 1.4T/EA111 (6-piece set) without sprocket</b>		
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
<b>Timing chain kit: Audi C6 2.8/3.0T (16-piece set)</b>		
<b>Timing chain kit: Audi C6 2.8/3.0T (12-piece set) without wheels</b>		
Tensioner arm assembly/left (large hole)		06E 109 217 Q
Tensioner arm assembly/right (small hole)		06E 109 218 T
Timing chain/108L		06E 109 465 BC
Timing chain/78L		06E 109 465 AT
Timing chain/74L		06E 109 465 AS
Oil pump chain/104L		06E 109 465
Timing sprocket	There are two in a set	079 109 077 G
Timing Tensioner		079 109 507 T
Oil pump sprocket (large)		057 109 116 J
Oil pump sprocket (small)		079 109 570 AP
Oil pump tensioner arm assembly		059 109 507 D
Timing guide (straight)		079 103 469 AM
Timing guide (with holes)		079 103 469 AL
Timing slide	There are two in a set	079 109 479

## 系统件的目录 A catalog of system items

GM

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Regal 2.4/LAF (10-piece set) without sprockets</b>		
tensioner		12578209
Guide plate		24449448
Guide plate		13104978
Guide plate		90537337
tensioner		90537300
Guide plate		90537336
Guide plate		90537299
Guide plate		90537369
chain		24461834
chain		90537370
<b>Timing chain kit: Lacrosse 3.0/LF1 (12-piece set) without sprockets</b>		
tensioner		12609259/12609258
tensioner		12609261/12609260
tensioner		12609263/12609262
Guide plate		12623513/12586961
Guide plate		12623514/12586960
Guide plate		12587418
Guide plate		12597417/12586962
Guide plate		12597416/12589010
Guide plate		12586959/R76179
chain		12633452
chain		12633451
chain		12633452

## 系统件的目录 A catalog of system items

### HYUNDAI

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Freddy 1.6 (6-piece set) G4FA</b>		
<b>Timing chain kit: Freddy 1.6 (4 piece set) without sprocket</b>		
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
<b>Timing chain kit: Rena 1.4 (4 piece set)</b>		
Timing tensioner (aluminum)		24410-2B300
Timing chain/158L (narrow teeth)		24321-2B300
Timing tightening rail		24420-2B300
Timing guide rail		24431-2B300
<b>Timing chain kit: Yuxiang 2.0 (7-piece set)</b>		
Oil pump chain		24322-25000
Oil pump tensioner rail		24460-25000
Oil pump guide rail		24471-25000
Timing chain		24321-25000
Timing guide rail		24431-25000
Timing tightening rail		24420-25002
Timing tensioner		24410-25000
<b>Timing chain kit: Yuxiang 2.4 (10-piece set)</b>		
<b>Timing chain kit: Yuxiang 2.4 (8-piece set) without sprocket</b>		
Timing chain		24321-25000
Timing guide rail		24431-25000
Timing tensioner		24410-25000
Camshaft sprocket		24221-25000
Oil pump chain		24322-25050
Timing tightening rail		24420-25002
Oil pump tensioner		24470-25050
Crankshaft sprocket		23121-25050
Oil pump tensioner rail		24461-25050
Oil pump guide rail		24471-25050

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### FORD

Product name	Auxiliary quantity	OEM
<b>Timing kit: Carnival 1.3/1.6 (6-piece set)</b>		
Timing chain /114 links		XS6E 6268 AA
Timing guide rail		XS6E 6M256 AD
Timing tightening rail		XS6E 6K255 AA
Timing inflator		XS6E 6L266 AE
Crankshaft Sprocket		XS6E 6306 AA
Camshaft sprocket		XS6E 6256 AB
<b>Timing kit: Ford Transit V348/2.4 (12-piece set)</b>		
Timing chain		BK3Q6268AA
Oil pump chain		3S7Q6A895AA/KP2-6A895-AA
Timing tensioner		BK2Q6K261AA
Timing guide rail (short)		8C1Q6M256AA
Timing guide rail (long)		8C1Q6M256BA
timing slide		8C1Q6M256CA
Timing tensioner rail		8C1Q6K254AA
crankshaft sprocket		BK2Q6306A1A
Camshaft sprocket	There are two in a set	8C1Q6256AA
Oil pump sprocket		6C1Q9P919B1A
Oil pump guide		8C1Q6L266AA
<b>Timing kit:Ford Transit V362 (8-piece Set)</b>		
Timing chain		BK2Q6268AA
Timing tensioning track		8C1Q6K254AB
Timing tensioner		BK2Q6K261AA
Timing slide		8C1Q6M256CA
Timing guide board		BK2Q-6M256AB
Camshaft sprocket	There are two in a set	8C1Q6256AA
Crankshaft sprocket		BK2Q6306A1A

## 系统件的目录 A catalog of system items

### TOYOTA

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Corolla 1.8/1ZZ-FE (6-piece set)</b>		
<b>Timing chain kit: Corolla 1.8/1ZZ-FE (4-piece set) without sprocket</b>		
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
<b>Timing chain kit: Camry 2.0/2.4 (10-piece set)</b>		
<b>Timing chain kit: Camry 2.0/2.4 (6-piece set) without sprocket</b>		
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
<b>Timing chain kit: Vios 1.3/2NZ-FE (6-piece set)</b>		
<b>Timing chain kit: Vios 1.3/2NZ-FE (6-piece set) without sprocket</b>		
Timing chain		13506-21030
Camshaft sprocket		13523-22020
Crankshaft sprocket		
Timing tensioner		13540-21020
Timing tightening rail		13559-21010
Timing guide rail		13561-21010

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Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Corolla 1ZR/2ZR-FE (10-piece set)</b>		
<b>Timing chain kit: Corolla 1ZR/2ZR-FE (7-piece set) without Crankshaft sprocket</b>		
Timing chain		13506-37010
Oil pump chain		13507-28010
Crankshaft sprocket (Thin)		13519-0T010
Oil pump sprocket		15163-28010
Timing tightening rail		13559-37010
Timing guide rail		13561-37020
Oil pump tensioner rail		13549-37020
Timing slide		13562-37020
Timing tensioner		13540-37030
<b>Crankshaft sprocket (Thick)</b>		
<b>Timing chain kit: 3GR/5GR (12-piece set)</b>		
<b>Timing chain kit: 3GR/5GR/2GR (10-piece set) without sprocket</b>		
Timing chain		13506-31031
Camshaft chain	There are two in a set	13507-31020
Timing tensioner		13540-31021
Crankshaft sprocket		13521-31041
Timing tightening rail		13559-31020
Timing guide rail		13561-31021
Timing slide	There are two in a set	13562-31020
Tensioner two holes (right)		13550-31020
Tensioner three holes (left)		13560-31020
Timing sprocket		13530-31021
<b>Timing chain kit: Prado 4.0/1GR-FE (14-piece set)</b>		
<b>Timing chain kit: Prado 4.0/1GR-FE (10-piece set) without Crankshaft sprocket</b>		
Timing chain		13506-31010
Oil pump chain	There are two in a set	13507-31010
Tensioner (left)		13550-31010
Tensioner (right)		13560-31010
Timing tensioner		13540-31011
Timing guide rail		13561-31010
Timing tightening rail		13559-31010
Camshaft sprocket	There are two in a set	13523-31030
Timing sprocket		13530-31011
Crankshaft sprocket		13521-31060
Timing slide	There are two in a set	13562-31010

## 系统件的目录 A catalog of system items

### Honda

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Seven-generation Accord 2.0/CM4 (11-piece set)</b>		
<b>Timing chain kit: Seven-generation Accord 2.0/CM4 (8-piece set) without sprocket</b>		
Timing chain		14401-PNA-004
Oil pump chain		13441-PNA-004
Camshaft sprocket		14210-PNA-000
Crankshaft sprocket		13620-RAA-A02
Oil pump sprocket		13432-PNA-000
Timing guide rail		14530-PNA-003
Timing tightening rail		14520-PNA-003
Oil pump tensioner		13450-PNA-004
Timing tensioner		14510-PNA-003
Timing slide		14540-PRB-A01
Oil pump guide rail		13460-PNA-004
<b>Timing chain kit: Seven-generation Accord 2.4/CM5 (11-piece set)</b>		
<b>Timing chain kit: Seven-generation Accord 2.4/CM5 (8-piece set) without sprocket</b>		
Timing chain		14401-PPA-004
Oil pump chain		13441-PNA-004
Camshaft sprocket		14210-PNA-000
Crankshaft sprocket		13620-RAA-A02
Oil pump sprocket		13432-PNA-000
Timing guide rail		14530-PPA-003
Timing tightening rail		14520-PPA-003
Timing tensioner		14510-PNA-003
Timing slide		14540-PRB-A01
Oil pump tensioner		13450-PNA-004
Oil pump guide rail		13460-PNA-004

## 系统件的目录 A catalog of system items

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Fit 1.3 (6-piece set)</b>		
<b>Timing chain kit: Fit 1.3 (4 piece set) without sprocket</b>		
Timing chain		14401-PWA-004
Crankshaft sprocket		13621-PWA-010
Camshaft sprocket		14211-PWA-000
Timing tightening rail		14510-PWA-004
Timing guide rail		14530-PWA-014
Timing tensioner		14512-REJ-W00
<b>Timing chain kit: Civic 1.8/FA1 (6-piece set)</b>		
<b>Timing chain kit: Civic 1.8/FA1 (4-piece set) without sprocket</b>		
Timing chain		14401-RNA-A01
Camshaft sprocket		14211-RNA-A01
Crankshaft sprocket		13620-RNA-A01
Timing tightening rail		14520-RNA-A01
Timing guide rail		14530-RNA-A01
Timing tensioner		14510-RNA-A01
<b>Timing chain kit: Eight generations of Accord 2.0/CP1 (10-piece set)</b>		
<b>Timing chain kit: Eight-generation Accord 2.0/CP1 (7-piece set) without sprocket</b>		
Timing chain		14401-RNA-A01
Oil pump chain		13441-RZP-013
Timing tensioner		14510-RNA-A01
Oil pump tensioner		13450-RZP-004
Timing tightening rail		14520-RNA-A01
Timing guide rail		14530-RNA-A01
Oil pump guide rail		13460-RZP-003
Crankshaft sprocket		13620-RZP-003
Oil pump sprocket		13432-RZP-003
Camshaft sprocket		14211-RNA-A01



## 系统件的目录 A catalog of system items

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Eight generations of Accord 2.4/CP2 (11-piece set)</b>		
<b>Timing chain kit: Eight-generation Accord 2.4/CP2 (8-piece set) without sprocket</b>		
Timing guide rail		14530-PPA-003
Oil pump guide rail		13460-PNA-004
Timing tightening rail		14520-RAH-H01
Timing slide		14540-RWC-A02
Oil pump tensioner		13450-R40-A01
Oil pump sprocket		13432-PNA-000
Crankshaft sprocket		13620-RAA-A02
Camshaft sprocket		14210-PNA-000
Timing tensioner		14510-R40-A01
Timing chain		14401-R40-A01
Oil pump chain		13441-R40-A01
<b>Timing chain kit: Fit 1.5 (6 piece set)</b>		
<b>Timing chain kit: Fit 1.5 (4 piece set) without Crankshaft sprocket</b>		
Timing chain		14401-PWC-004
Crankshaft sprocket		13621-PWA-010
Camshaft sprocket		14211-PWA-000
Timing tightening rail		14510-PWC-004
Timing guide rail		14530-PWC-014
Timing tensioner		14512-PWC-000
<b>Timing chain kit: Nine Generations Accord 2.4 (9-piece set)</b>		
Timing chain		14401-5A2-A01
Oil pump chain		13441-5A2-A01
Timing guide rail		14530-5A2-A01
Timing tightening rail		14520-5A2-A01
Timing slide		14540-5A2-A01
Timing tightening rail (small)		14550-5A2-A00
Timing tensioner		14510-5A2-A0 1
Oil pump tensioner		13450-5A2-A01
Oil pump sprocket		13432-5A2-A00

## 系统件的目录 A catalog of system items

### NISSAN

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: HR16 (9-piece set)</b>		
<b>Timing chain kit: HR16 (6-piece set) without Crankshaft sprocket</b>		
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
<b>Timing chain kit: HR15 (10-piece set)</b>		
<b>Timing chain kit: HR15 (6-piece set) without sprocket and screws</b>		
Timing chain		13028-3AA0A
Oil pump chain		15041-3AA0A
Camshaft sprocket		13024-CJ00B
Crankshaft sprocket		13021-EE50A
Timing tensioner		13070-ED50B
Oil pump tensioner rail		13070-3AA1A
Timing guide rail		13085-ED50B
Timing tightening rail		13091-ED50B
Camshaft sprocket screw		13012-CJ00A
Oil pump sprocket		15043-1HC0A
<b>Timing chain kit: MR20 (10-piece set)</b>		
<b>Timing chain kit: MR20 (7-piece set) without sprocket</b>		
Timing chain		13028-CJ70A
Oil pump chain		15041-CJ70A
Crankshaft sprocket		13021-EE50B
Camshaft sprocket		13024-EE50B
Oil pump sprocket		13024-EE50C
Timing slide		13085-CJ70B
Timing tightening rail		13091-CJ70A
Timing guide rail		13085-CJ70A
Timing tensioner		13070-CJ70A
Oil pump tensioner		13070-CJ70B

## 系统件的目录 A catalog of system items

### MAZDA

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Mazda 3 1.6 (6-piece set)</b>		
<b>Timing chain kit: Mazda 3 1.6 (4 piece set) without sprocket</b>		
Timing chain		ZJ01-12-201
Crankshaft sprocket		ZJ01-11-316
Camshaft sprocket		ZJ01-12-425
Timing guide rail		ZJ01-12-610
Timing tightening rail		ZY08-12-670A
Timing tensioner		ZJ01-12-500B
<b>Timing chain kit: Mazda 6 2.0(11-piece set)</b>		
<b>Timing chain kit: Mazda 6 2.0(7-piece set) without crankshaft sprocket</b>		
Timing chain		LF01-12-201
Oil pump chain		LF01-14-151
Camshaft sprocket	There are two in a set	LF01-12-425
Oil pump sprocket		LF01-14-143A
Timing guide rail		LF01-12-614
Timing tightening rail		L501-11-316B
Timing tensioner		LF02-12-500
Crankshaft sprocket		L501-11-316B
Oil pump tensioner rail		LF01-14-500B
Oil pump guide rail		LF01-14-614
<b>Timing chain kit: Mazda 6 2.3 (10 piece set)</b>		
<b>Timing chain kit: Mazda 6 2.3 (7piece set) without sprocket</b>		
Crankshaft sprocket		L305-11-316
Camshaft sprocket		L305-12-425
Oil pump sprocket		L321-14-143
Timing guide rail		L305-12-614
Timing tightening rail		L305-12-671
Oil pump tensioner rail		L321-14-500A
Oil pump guide rail		L321-14-614
Timing chain		L301-12-201
Oil pump chain		L321-14-151
Timing tensioner		LF02-12-500

## 系统件的目录 A catalog of system items

### BENZ

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Benz 271/new (8-piece set)</b>		
Timing chain		A 000 993 10 78
Oil pump chain		A 000 993 58 76
Crankshaft sprocket		A 271 052 19 03
Timing tensioner		A 271 050 09 11
Timing tightening rail		A 271 050 01 16
Timing guide rail		A 271 052 15 16
Timing slide		A 271 052 16 16
Oil pump tensioner		A 271 030 11 63
<b>Timing chain kit: Benz 271/old (7-piece set)</b>		
Timing chain		A 000 993 21 76
Oil pump chain		A 000 993 20 76
Timing slide		A 271 052 04 16
Timing tensioner		A 271 050 04 11
Timing tightening rail		A 271 052 11 16
Timing guide rail		A 271 052 10 16
Oil pump tensioner		A 271 030 11 63

## 系统件的目录 A catalog of system items

### BMW

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: BMW N20 (4 piece set)</b>		
Timing chain		11 31 8 648 732
Timing guide rail assembly		11 31 7 592 877
Timing slide		11 31 7 592 850
Timing tensioner		11 31 7 567 680
<b>Timing chain kit: BMW Brilliance N20 (4-piece set)</b>		
Timing chain		11 31 8 648 732
Timing guide rail assembly		11 31 7 621 097
Timing slide		11 31 7 621 099
Timing tensioner		11 31 7 567 680
<b>Timing chain kit: BMW N46 (6-piece set)</b>		
Timing chain		11 31 1 439 854
Timing guide rail assembly		11 31 7 512 520
Timing slide		11 31 7 505 608
Timing tensioner		11 31 8 685 091
Crankshaft sprocket		11 31 7 502 180
Screw pack		
<b>Timing chain kit: BMW N52/N55 (5-piece set)</b>		
Timing chain		11 31 8 648 732
Timing guide rail assembly		11 31 7 585 020
Timing slide		11 31 7 592 850
Timing tensioner		11 31 7 584 723
Crankshaft sprocket		11 31 7 502 180

## 系统件的目录 A catalog of system items

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: BMW 1.6T (6-piece set)</b>		
Timing chain		11 31 8 618 318
Timing guide rail		11 31 7 577 301
Timing tightening rail		11 31 7 533 879
Timing slide		11 31 7 577 631
Timing tensioner		11 31 7 607 551
Crankshaft sprocket		11 21 7 588 996
<b>Oil pump set: BMW N46 (7-piece set)</b>		
Oil pump chain		11 27 7 500 502
Oil pump guide rail assembly		11 41 7 548 800
Oil pump tensioner		11 41 7 505 842
Oil pump sprocket		11 31 7 507 551
Crankshaft sprocket		11 31 7 502 180
Hex bolts		07 11 9 903 488
Hex nuts		11 41 7 506 378
<b>Oil pump set: BMW N20 (5 piece set)</b>		
Oil pump chain		11 41 8 651 102
Oil pump guide rail assembly		
Oil pump tensioner		
Oil pump sprocket(large)		11 41 7 605 367
Oil pump sprocket(small)		11 41 7 602 653
<b>Timing chain kit: BMW N54 (4-piece set)</b>		
Timing chain		11318618317
Timing guide rail assembly		11317542837
Timing slide		11317516093
Timing tensioner		11317584723

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### DODGE

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Coolway 2.7 (10-piece set)</b>		
Timing chain		4892 349AA
Camshaft chain	There are two in a set	4663 674AF
Timing guide rail		4892 353AB
Timing tightening rail		4892 350AA
Timing slide (long)		4892 351AA
Timing slide (short)		4892 352AA
Timing tensioner		4792 443AB
Camshaft chain tensioner	There are two in a set	68137 973AA
<b>Timing chain kit: Chrysler 2.7 old model (13-piece set)</b>		
Timing chain		4892 349AA
Camshaft chain	There are two in a set	4663 674AD
Timing guide rail		4892 353AA
Timing tightening rail		4892 350AA
Timing slide (long)		4892 352AA
Timing slide (short)		4892 351AA
Timing tensioner		4792 443AB
Camshaft chain tensioner	There are two in a set	466 3676
Crankshaft sprocket		4892 342AA
Intake camshaft sprocket		4892 341AA
Exhaust camshaft sprocket		

## 系统件的目录 A catalog of system items

### GREAT WALL

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: Great Wall 4G15 (6-piece set)</b>		
Timing Chain /124 Links		1021300-EG01
Timing guide rail		1021500-EG01
Timing tightening rail		1021400-EG01
Timing tensioner		1021200-EG01
Crankshaft sprocket		1005102-EG01
Camshaft sprocket		1021011-EG01
<b>Timing chain kit: Great Wall 4G13 (6-piece set)</b>		
Timing Chain /120 Links		1021300-EG02
Timing guide rail		1021500-EG02
Timing tightening rail		1021400-EG02
Timing tensioner		1021200-EG01
Crankshaft sprocket		1005102-EG01
Camshaft sprocket		1021011-EG01
<b>Timing chain kit: Great Wall 4C20 (13-piece set)</b>		
Chain: 170 Links		1021300XEC01
Chain: 96 Links		1021900XEC01
Chain: 64 Links		1021700XEC01
Timing guide rail		1021013XEC01
Timing tightening rail		1021400XEC01
Timing guide rail		1021014XEC01
Balance axis guide rail (long)		1021016XEC01
Balance axis guide rail (short)		1021017XEC01
Balance shaft tightening rail		1021040XEC01
Oil pump tightening rail		1021800XEC01
Timing tensioner		1021600XEC01
Balance shaft tensioner		1021030XEC01
Oil pump sprocket		1011011AEC01



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### BYD

Product name	Auxiliary quantity	OEM
<b>Timing chain kit: BYD 4761.5T (6-piece set)</b>		
Timing Chain /130 Links		10499272-00
Timing guide rail		10499247-00
Timing tightening rail		10499248-00
Timing tensioner		10499270-00
Camshaft sprocket		10499275-00
Crankshaft sprocket		10499274-00
<b>Timing chain kit: BYD 473 1.5 (6-piece set)</b>		
Timing chain /132 Links		10149565-00
Crankshaft sprocket		10149557-00
Camshaft sprocket		10149563-00
Timing tightening rail		10149576-00
Timing guide rail		10149437-00
Timing inflator		10033308-00

CHERY

Product name	Auxiliary quantity	OEM
<b>Timing Set: Chery 4G16 (5-piece set)</b>		
Timing Chain /138 Links		E4G16-1007080
Timing guide rail		E4G16-1007060
Timing tightening rail		E4G16-1007050
Timing slide rail		E4G16-1007070
Timing tensioner		E4G16-1007040
<b>Timing Set: Chery 4G15 (11-piece set)</b>		
<b>Timing Set: Chery 4G15 (5-piece set)</b>		
Timing Chain /138 Links		E4G15-1007080
Timing guide rail		E4G16-1007060BA
Timing tightening rail		E4G16-1007050BA
Timing slide rail		E4G15-1007070
Timing tensioner		E4G16-1007040BA
Oil pump chain		E4G15-1011060
Oil pump inflator		E4G16-1011070BA
Oil pump sprocket		E4G15-1011037
Crankshaft sprocket		E4G15-1007021

DFSK

Product name	Auxiliary quantity	OEM
<b>Timing Set: DFSK /DK15 (5-piece set)</b>		
<b>Timing Set: DFSK/DK15 (4-piece set)</b>		
Timing Chain /154 Links		1021060-E01-00
Timing guide rail		1021200-E01-00
Timing tightening rail		1021101-E01-00
Timing inflator		1021300-C03-00
Crankshaft sprocket		1021048-E01-00
<b>Timing Set: DFSK /DK13 (5-piece set)</b>		
<b>Timing Set: DFSK/DK13 (4-piece set)</b>		
Timing Chain /154 Links		1021150D0000
Timing guide rail		1021130D0000
Timing tightening rail		1021120D0000
Timing inflator		1021140D0000
Crankshaft sprocket		

## 安装后 After Installation

### After The Schematic Diagram Below Shows Installed

■ **Step 1**

Make all the parts clean first and lay appropriate oil on the surface.

■ **Step 2**

Assemble crank-sprocket and make the marking surface of all pending-assembling parts out in order to make testing easily.

■ **Step 3**

Make the exhaust camshaft aim at jar orientation.

■ **Step 4**

Install oriented and stretch-tighten device.

■ **Step 5**

There are 3 colored chain links on the timing chain, of which two is blue and one is copper-colored. When assembling, please aim at the mark of timing chain and sprockets.

■ **Step 6**

Tighten the riveted bolt of sprocket and VVT-I phasic ware.

■ **Step 7**

After assembling the system, please pull out the cotter on the stretch-tighten device.

Note: If not timing between engines, there will possibly occur noise and shake singularly. When the roller chain is used in suspension, forbidden below the device.





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