

HKS SLIDE CAM PULLEY

INSTRUCTIONS MANUAL

NAME OF PRODUCT	SLIDE CAM PULLEY
USE	AUTOMOBILE PARTS
PART NUMBER	22004-AT003
MANUAL'S PART NUMBER	E04127-T42010-00 Ver.3-1.01 (September, 2004)
MAKE	TOYOTA
ENGINE	1JZ-G(T)E, 2JZ-G(T)E
REMARKS	This product cannot be installed onto camshafts for VVT-i.

NOTICE

This manual assumes that you have and know how to use the tools and equipment necessary to safely perform service operations on your vehicle. This manual assumes that you are familiar with typical automotive systems and basic service and repair procedures. Do not attempt to carry out the operations shown in this manual unless these assumptions are correct. Always have access to a factory repair manual. To avoid injury, follow the safety precautions contained in the factory repair manual.

PRODUCT CHARACTERISTICS

- This product was developed to adjust the valve timing and was designed to be used for racing use in a closed circuit. Adjusting the valve timing has a great effect on the characteristics of the engine output and is effective in maximizing the engine's potential.
- To use this product on the public road, follow the necessary procedures if there are any regulations for a tuned vehicle.
- The center of the scale is designed to be the same phase of the factory pulley.
- **One scale of the inner plate is equivalent to approximately 2 degree of the crank angle.**
- The adjustable range of this product is $\pm 20^\circ$ of the crank angle.





THIS MANUAL & THIS PRODUCT

- This manual indicate items you need to pay attention in order to install this product safely and lists precautions to avoid any possible damages and/or accidents.
- HKS will not be responsible for any damage caused by incorrect use or use after modification and/or dismantling of this product or fitting was done.
- This product was designed based on installing it onto a factory vehicle or a vehicle using other HKS products. The performance and/or safety cannot be guaranteed if this product was installed onto other vehicles mentioned above.
- This product is designed for use in Japan only. It must not be used in any other country.
- The specifications of this product including fittings are subject to be changed without notice.
- This manual is subject to be revised without notice.

NOTE FOR HANDLING CAM PULLEY:

- The Alumite color may be change due to the heat or the engine oil.
- Repeated angle adjustments may discolor or scratch the pulley.
- To clean the scale, wipe it with a cloth or wash it with water.
- Using the cam pulley with the belt cover removed may cause damage to the belt and/or the teeth.
- Replacing the timing belt is recommended when installing the slide cam pulley.

PARTS LIST

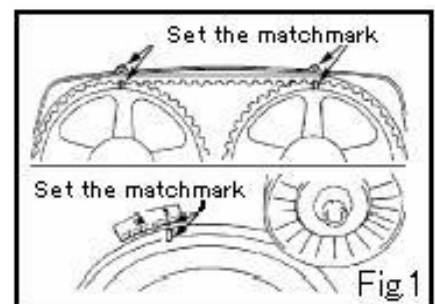
NO.	PART NO.	DESCRIPTION	QT	IMAGE	REMARKS
1		INNER PLATE	1		Scale for Angle Adjustment Duralumin Made Purple Alumite
2		OUTER PULLEY	1		Duralumin Made Nickel-plated
3		HEXAGON SOCKET HEAD FLANGE BOLT M6 P=1.0 L=14	3		For Angle Adjustment Parts
4		INSTRUCTIONS MANUAL	1		

INSTALLATION**BEFORE THE INSTALLATION:**

- Make sure the application is correct.
- Make sure if there are all necessary components are present and nothing is damaged.
- A special surface treatment has been applied to product; however, due to the processing reasons, there may be some areas where coloring was not done.

INSTALLING THE PULLEY**1. Removing the Timing Belt Cover**

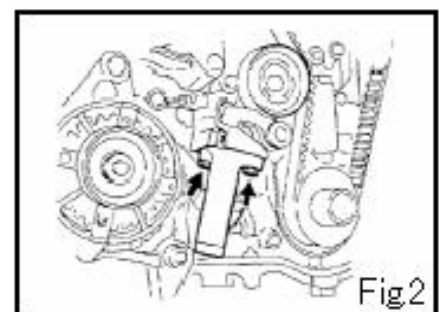
- (1) Remove the timing belt cover. (2 pcs)
- (2) Set the matchmark of the crank pulley to the position as shown in Fig.1.
Turn the crankshaft counterclockwise about 60 degree.
- (3) Cover the opening with a cloth to avoid entering foreign debris into the timing belt cover.

**2. Removing the Timing Belt**

- (1) Loosen the 2 bolts equally and remove the tensioner. (See Fig.2)
- (2) Remove the timing belt from the factory cam pulley.

ADVICE

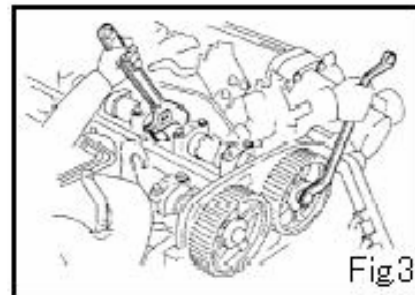
Do not turn the crankshaft after removing the timing belt. The valves may come in contact with pistons.



WARNING	Keep the timing belt clean. Oil, water, and any foreign objects on the belt may cause a breakage in the belt and damage to the engine.
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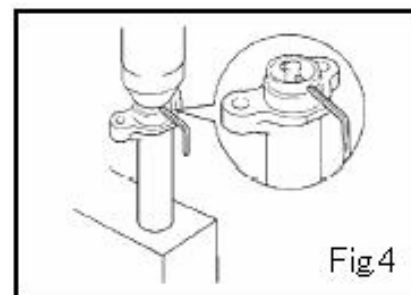
3. Removing the Factory Cam Pulley

- (1) Remove the cylinder head cover. (Bolt x 12, Nut x 4, Washer x 16)
- (2) Hold the hexagon wrench head portion of the camshaft with a wrench, and loosen the pulley bolt. (See Fig.3)
- (3) Remove the factory cam pulley.



4. Installing the Slide Cam Pulley

- (1) Before the installation, make sure that the center of the inner plate's scale and the outer pulley's mark are matched.
- (2) Set the torque spec of the angle adjusting bolt as follows:
Torque Spec of Angle Adjusting Bolt: T=8N·m (0.8kgf·m)
- (3) Install the slide cam pulley where the dowel pin of the camshaft can be inserted into the hole on the pulley.
- (4) Hold the camshaft's hexagonal section (to prevent cam movement); then tighten the cam pulley bolt. (See Fig.3)
Torque Spec of Cam Pulley Bolt: T=80N·m (8.0kgf·m)



WARNING	Each bolt must be tightened using the designated torque spec. If the torque is not enough, the bolt may loosen and cause damage to the engine.
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5. Installing the Timing Belt

- (1) Turn the slide cam pulley clockwise about 30 degree, and set the matchmark on the slide pulley. (See Fig.1)
- (2) Turn the crankshaft clockwise about 60 degree, and set the matchmark. (See Fig.1)
- (3) Install the timing belt onto the slide cam pulley.

6. Installing the Tensioner

- (1) Remove the boot of the tensioner, and set it on the press straight.
- (2) Compress the rod of the tensioner as slow as possible, and place the rod on the hole of the cylinder. Then, insert a hexagonal wrench (1.27mm width across flats) into the rod and the cylinder. (See Fig.4)
- (3) Remove the press from the tensioner after loosening compression.
- (4) Install the boot on the tensioner.
- (5) Install the tensioner with the hexagonal wrench, and tighten 2 bolts equally. (See Fig.2)
- (6) Pull the wrench out of the tensioner.
- (7) Turn the crankshaft clockwise twice, and make sure each matchmark is matched. (See Fig.1)

7. Installing the Timing Belt Cover

- (1) Install the cylinder head cover.
- (2) Install the timing belt cover.

AFTER INSTALLTION

- Make sure the installed components are not in contact with each other and other parts of the vehicle.
- Make sure the tightening torque specs of bolts are correct.
- Make sure the tension of the timing belt is correct.

WARNING	Use the provided bolt to adjust the angle. If another bolt is used, it may break the inner plate and/or be in contact with the belt cover which may cause the engine damage.
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INSTALLING POSITION OF SLIDE CAM PULLEY

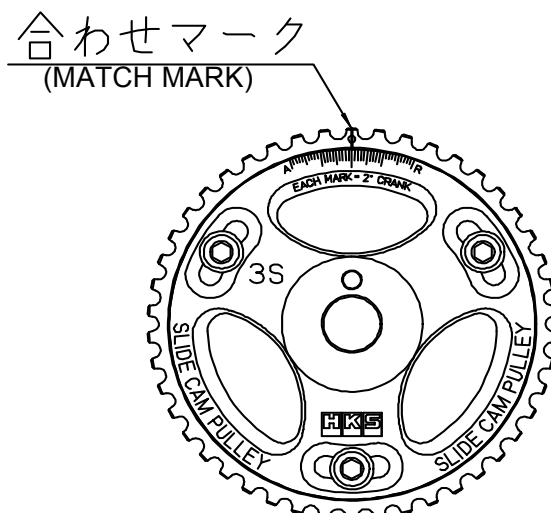


Fig.5 Intake / Exhaust

ADJUSTING VALVE TIMING

- Loosen the angle adjusting bolt, turn the outer pulley toward A (Advance); the valve timing is advanced. Turn it toward R (Retard); the timing is retarded. (See Fig.6)
- After adjusting the valve timing, tighten the angle adjusting bolt by the designated torque spec.

Torque Spec of Angle Adjusting Bolt: $T=8N \cdot m$ (0.8kgf·m)

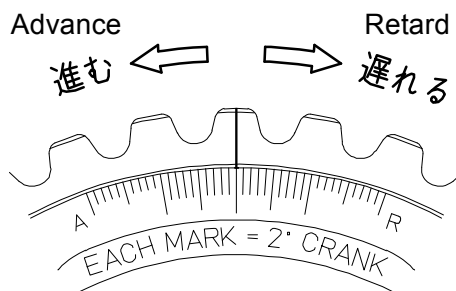


Fig.6 Scale of the Outer Pulley