

**VALCON Plus V CAM KIT Pro for EVO9 4G63 MIVEC****1 : General Information**

This product is a camshaft for MITSUBISHI 4G63 MIVEC ( Variable Valve Timing System ) engine.

The engine of Lancer Evolution 9 has improved torque characteristic compared with previous models.

Camshaft profile and valve timings are optimized for the MIVEC engine.

**2 : Features and specification of the product**

VALCON Plus V CAM KIT Pro is a set of an intake camshaft and Valve Timing Controller with special data.

V CAM is an intake shaft for MIVEC engine.

Exhaust camshaft can be changed from the current lineup of HKS Camshaft.

**Performance and functions**

- As intake camshaft has MIVEC system, torque at low rpm is improved. In addition, HKS Camshaft + Valcon improves for all rpm range.
- Valve timing control of stock ECU is just for a limited range ( 30 degree of crankshaft angle ) . HKS VALCON maximizes variable range of MIVEC unit.

The most advanced and retarded valve timings are decided to have most effective valve timing for all rpm range.

	HKS	Stock
Intake	<b>272 ° ( 90-120 ) 10.8 mm</b>	260 ° ( 105-130 ) 10.3 mm
Exhaust	264-280 ° ( 110 ) 10.2 mm	256 ° ( 110 ) 9.5 mm

- The camshaft has a profile, which is optimized for the roller locker arm and its open side and close side have different profile to enable optimized valve movement. < No symmetrical profile >
- The hollow material enables lightweight. The metal material of the camshaft is selected to match with the roller type tappet, which has high contact surface pressure.
- Maximum rpm with stock valve train is 7,600rpm, which is the same as stock.

**Installation and quality****Camshaft**

Dimensions of all part other than profile are the same as stock. Only camshaft can be replaced. It can be used with stock valve train and piston. No modification is required. ( For HLA only. Applicable for stock valve spring. )

HKS 2.3L Kit is designed to be used with the camshaft.

( Caution : No other HKS Piston Kits for 4G63 can be used for EVO9. )

## Valve Timing Controller

It is the same items as VALCON Pro for EVO9 ( 45011-AM001 ) .

- It has data for HKS Camshaft.
- Vehicle specified harness is included.
- 3 Dimensions map enables precise valve timing control.  
( VALCON has Large Map [16 x 16] and Small Map [5 x 5]. In order to use the large map, VALCON PowerWriter Ver. 3 is required. )

## 3 : Cautions

Usually, intake valve opens before Top Dead Center of piston.

Engine with variable valve timing system such as MIVEC opens valve earlier when the timing is advanced.

As a result, clearance between valve and piston can be too small during engine operation.

It might not be able to use for the following engines.

1. In case other manufacturers' piston or piston, which is not for EVO9 are used.
2. In case lower surface of cylinder head is shaved or thin head gasket is used.
3. In case installation angle of pulley for MIVEC unit is changed to advance valve timing.
4. In case MIVEC unit was modified to increase variable angle of valve timing.

## 4 : Test result

### Specification of test vehicle

- |                    |  |
|--------------------|--|
| • Model            | CT9A < LANCER EVO9 GSR >   |
| • Engine           | 4G63 MIVEC [ Maximum variable angle About 30 degree<br>Crank Angle ] |
| • Intake Camshaft  | HKS VCAM 272 ° 10.8mm  |
| • Exhaust Camshaft | HKS 272 ° ( 110 ° ) 10.2mm   |
| • Turbo            | Mitsubishi Stock   |
| • Intake           | HKS Super Power Flow   |
| • Exhaust          | HKS Front Pipe, Silent Hi-Power Muffler                              |
| • Management       | HKS F-CON iS, EVC5, VALCON   |

### Test condition

It was tested with Dynojet.

Boost level is set at 1.3kg/cm<sup>2</sup> with EVC and operated up to revolution limiter.

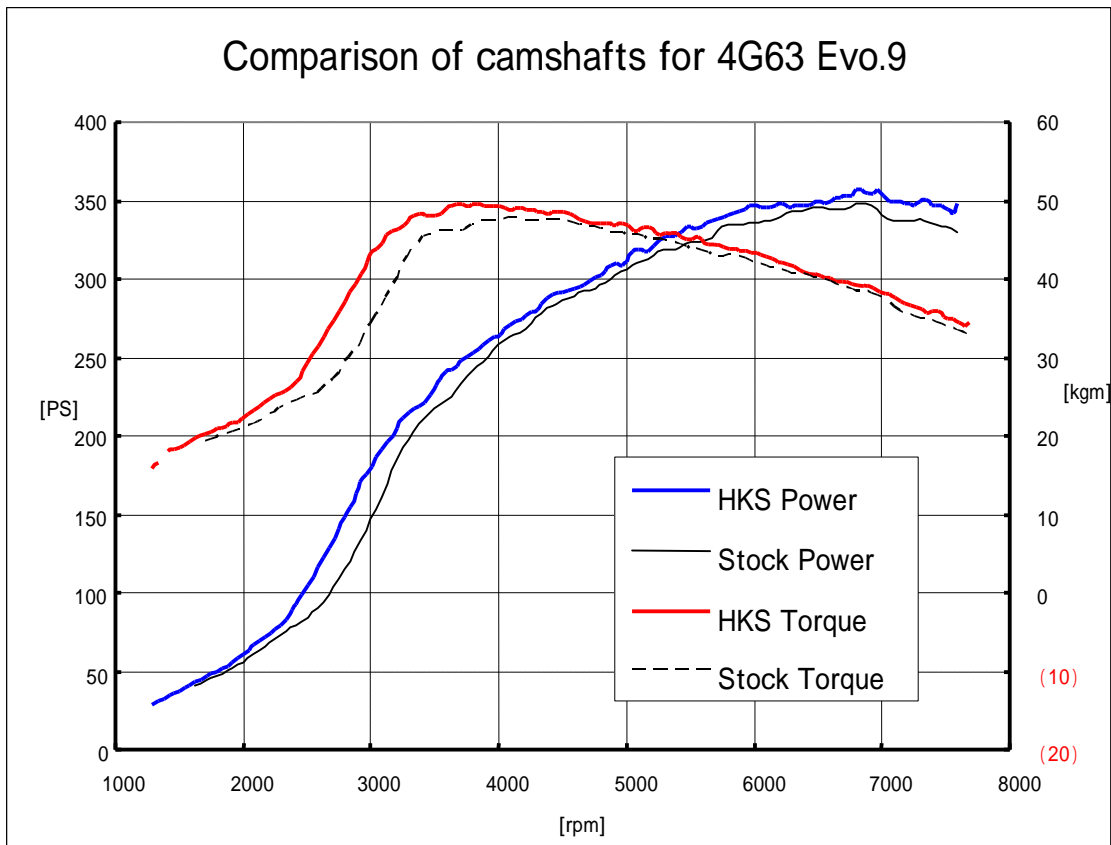
Valve timing is controlled and ignition timing is set as the same as stock control.

### Test result

Torque increases rapidly and maximum torque is also increased.

Since specification of the test vehicle was similar to stock vehicle, there was not so big improvement at high rpm.

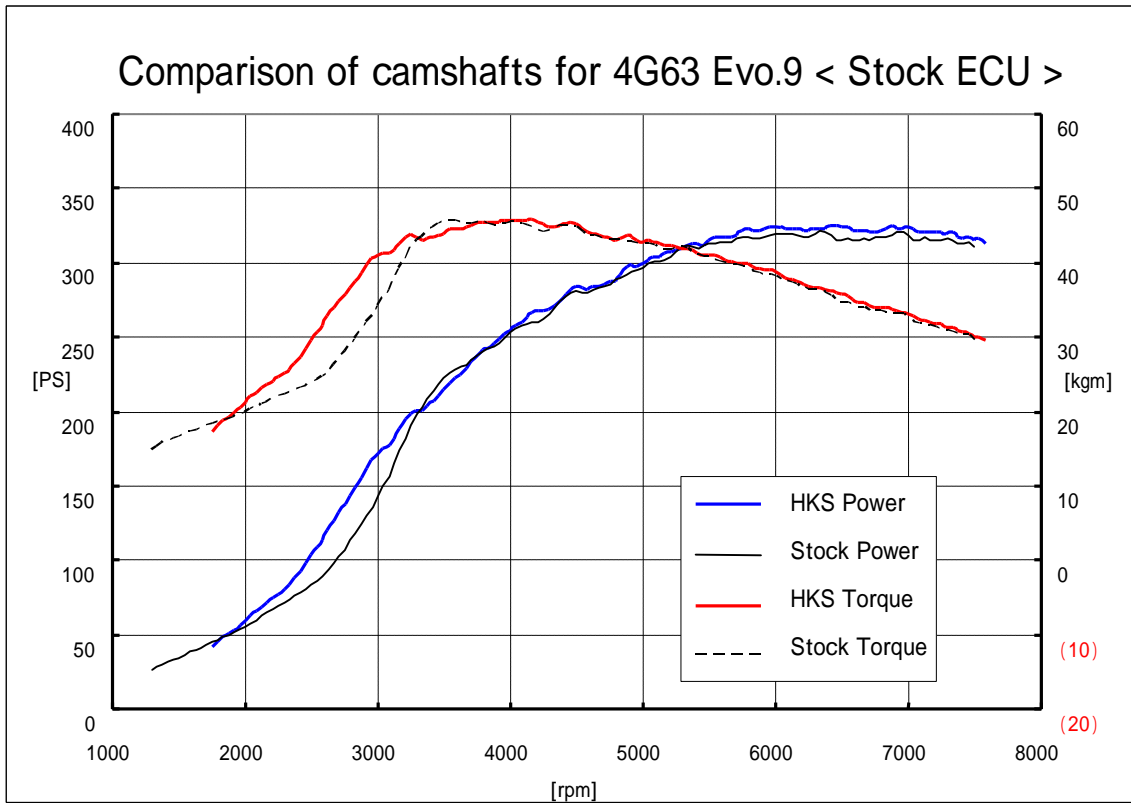
On street, acceleration response is improved.



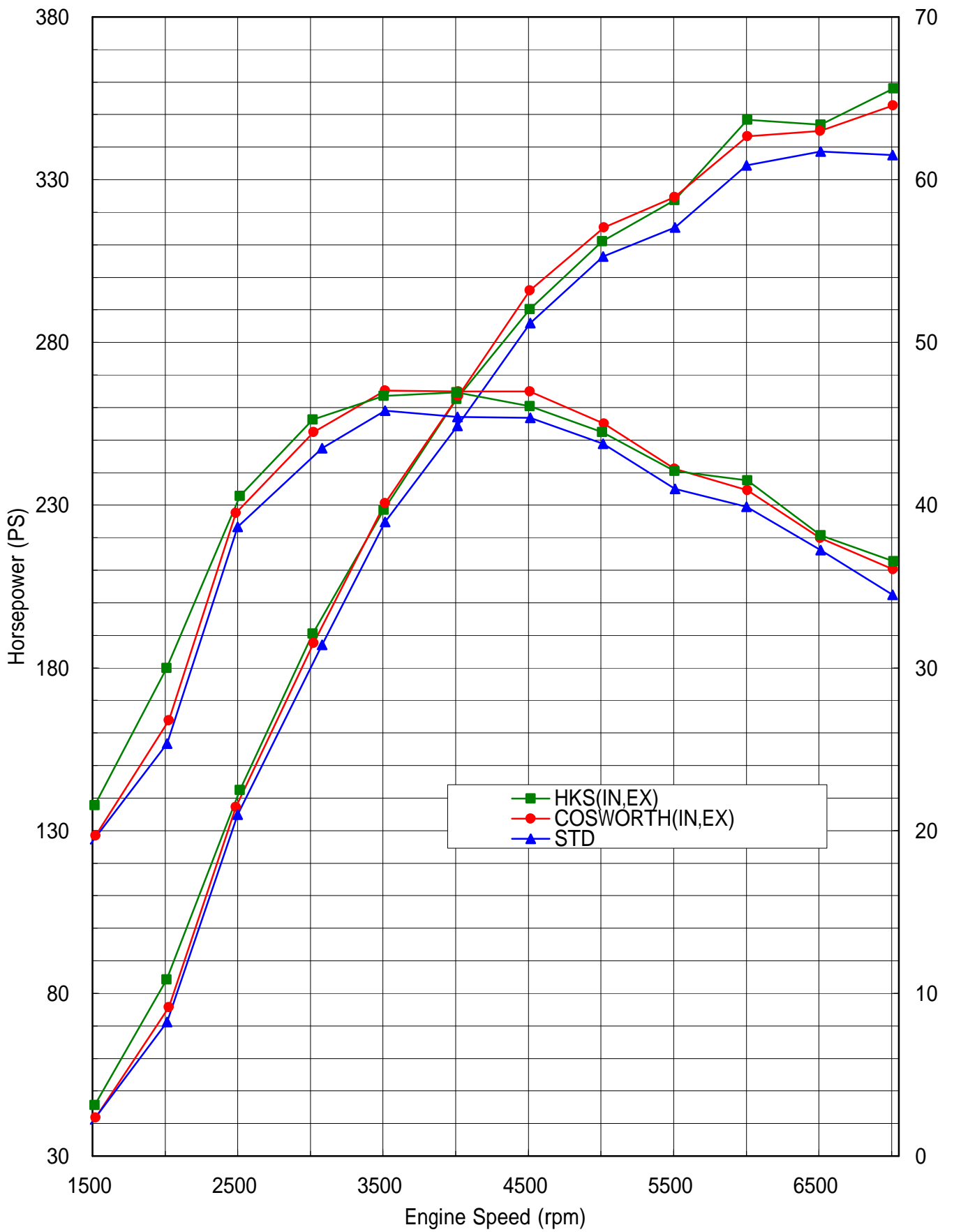
Caution : Proper valve timing depends on specification of camshaft and engine.  
 After camshaft replacement, re-setting of valve timing map is required.

## Comparison with stock ECU

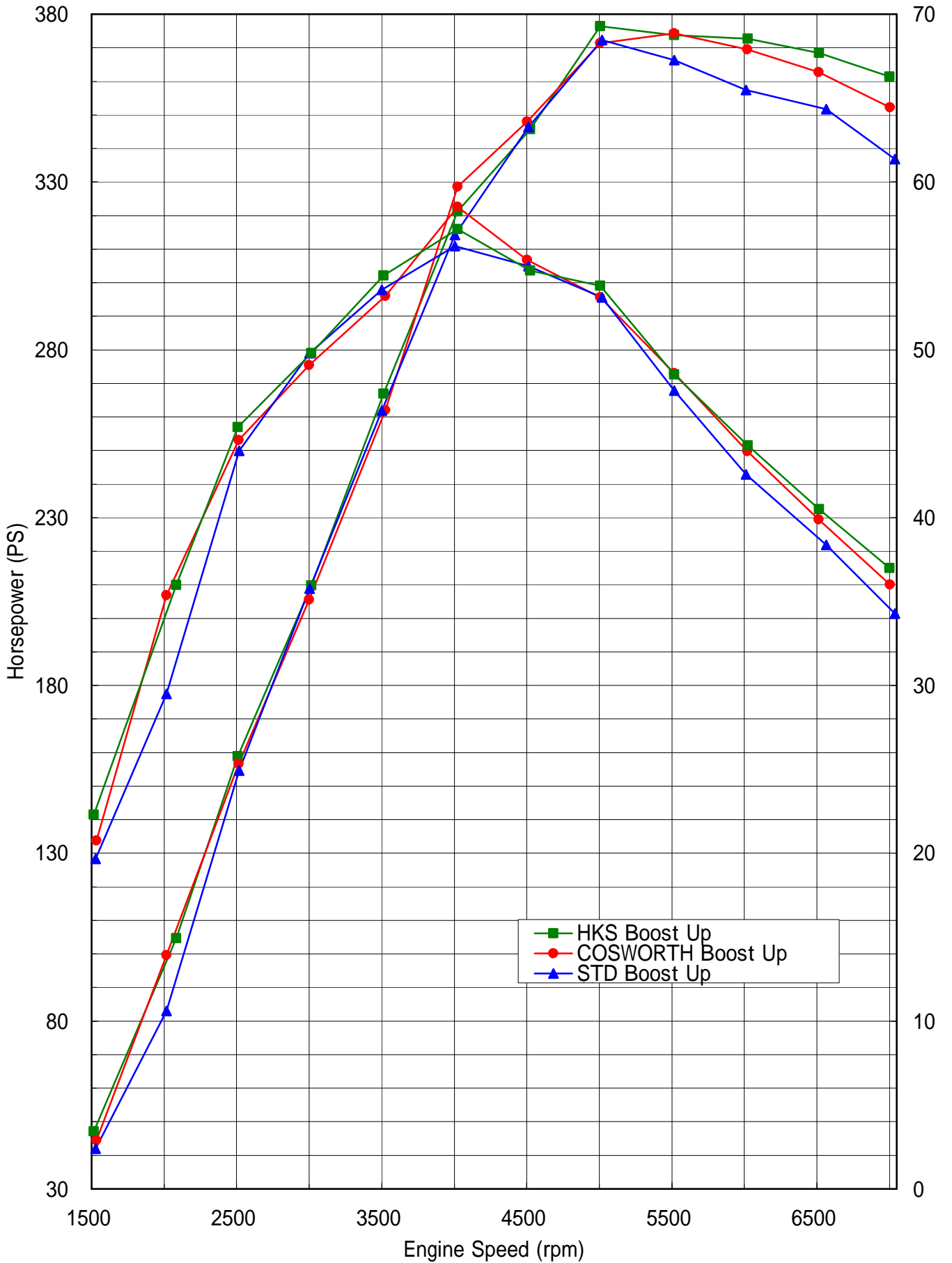
Installation position of camshaft angle sensor of HKS Camshaft is designed to be used with stock ECU. However, setting is required as intake air flow increases, ignition timing and air / fuel ratio will be changed.



# EVO9 CAMSHAFT TEST



EVO9 CAMSHAFT TEST (Boost Up)



Vehicle	Model	Engine	Model Year	Remarks
LANCER EVOLUTION IX	CT9A	4G63 MIVEC	2005/03-	

Product	Specification	Code No.	Price	Remarks
VALCON Plus V CAM KIT Pro	IN 272 ° Valve Lift: 10.8mm	22007-AM001	¥131,000	Not for EVO9 MR.
CAMSHAFT	IN 272 ° Valve Lift: 10.8mm	22002-AM009	¥44,000	Not for EVO9 MR.

**HKS CO., LTD.**