

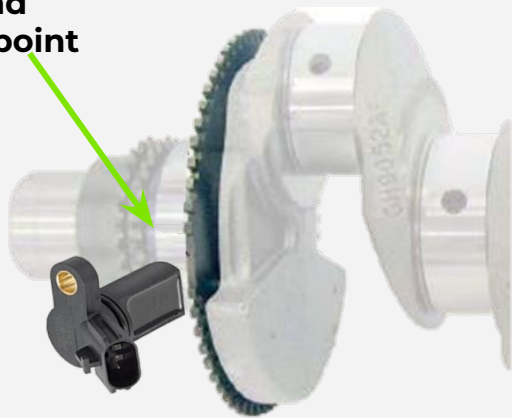
TIPS AND TRICKS

Crankshaft sensor

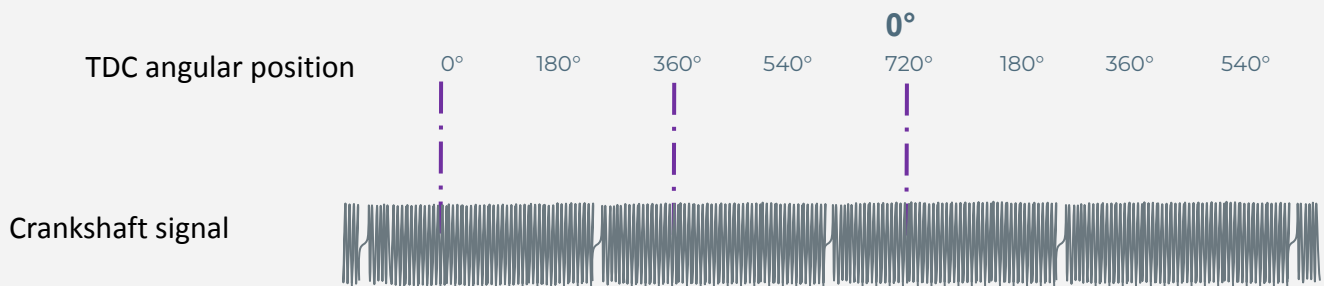
Application for
All engines

Crankshaft sensor, how does it work?

Top Dead
Center point



- The **crankshaft** sensor **verifies** the **Top Dead Center (TDC)** position by **detecting** the **position** of the **drive shaft**.
- The **engine control unit** uses this information to **calculate** the **time of injection** and the **ignition system**.
- The **crankshaft sensor** is used to display the engine RPM.



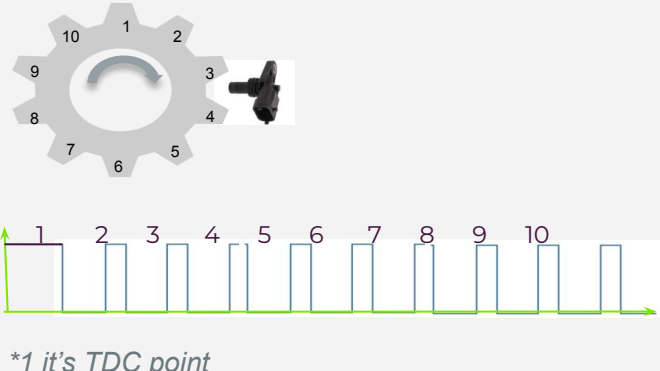
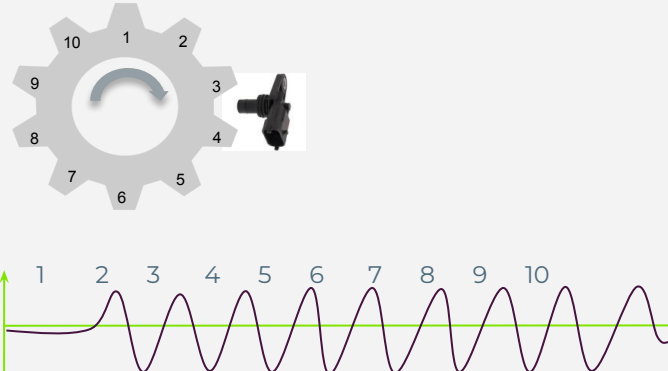
Website
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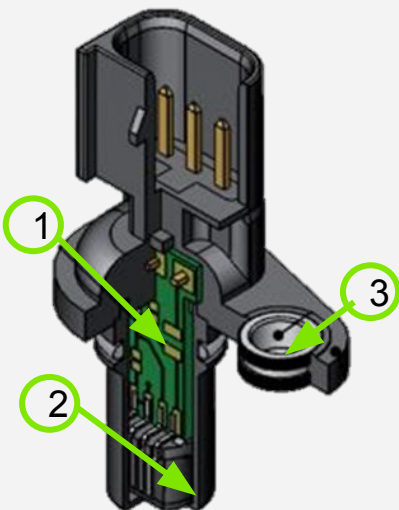
Technical Assistance
1-888-718-2536

valeservice.us

Types of crankshaft

Hall effect sensor	Variable reluctance sensor
<ul style="list-style-type: none"> ● 3 wire sensor, creates square wave output. ● Requires power to function. ● Edge of the trigger tooth corresponds to a rising or falling signal voltage. 	<ul style="list-style-type: none"> ● 2 wire sensor, creates sine wave output. ● Center of the tooth corresponds to “zero crossing”. ● The zero-crossing is what the ECU uses to indicate position.
 <p>*1 it's TDC point</p>	

Crankshaft structure & information (hall effect)

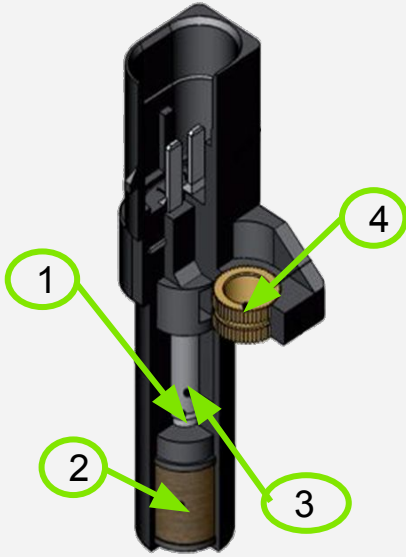


Note:
Standard Hall effect sensor

S	Item name
1	Electronic circuit (this electronic circuit protects the sensor from possible voltage peaks)
2	Hall element
3	Metallic fixation

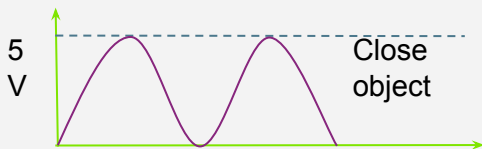
Sensor information	
Power supply	From ECU, 5V and ground
Signal type	Frequency varying
Signal level	Switching between 0V to 5V

Crankshaft structure & information (variable reluctance)



S	Item name
1	Magnetic core
2	Coil
3	Permanent magnet
4	Metallic fixation

Note:
Standard Variable reluctance sensor



Sensor information	
Power supply	The amplitude and frequency of the induced voltage is proportional to the speed of the target feature.
Signal type	
Signal level	


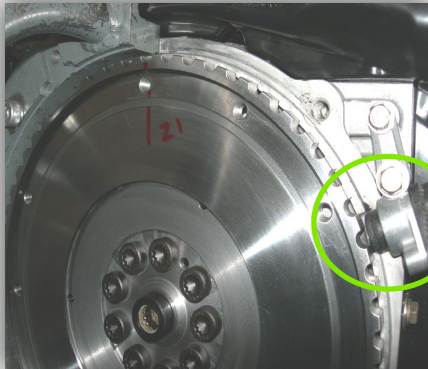
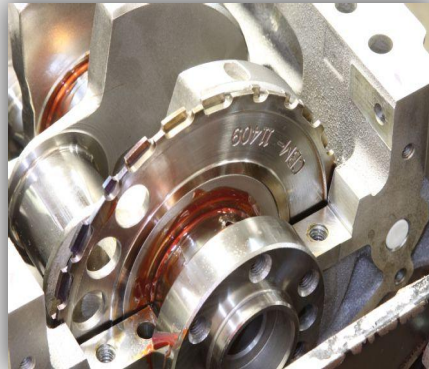
Characteristics of each sensor type

S	Advantage (hall effect)	Disadvantage (hall effect)
1	Contactless operation	Temperature sensibility
2	Unaffected by temperature fluctuations	
3	Unaffected by vibration	

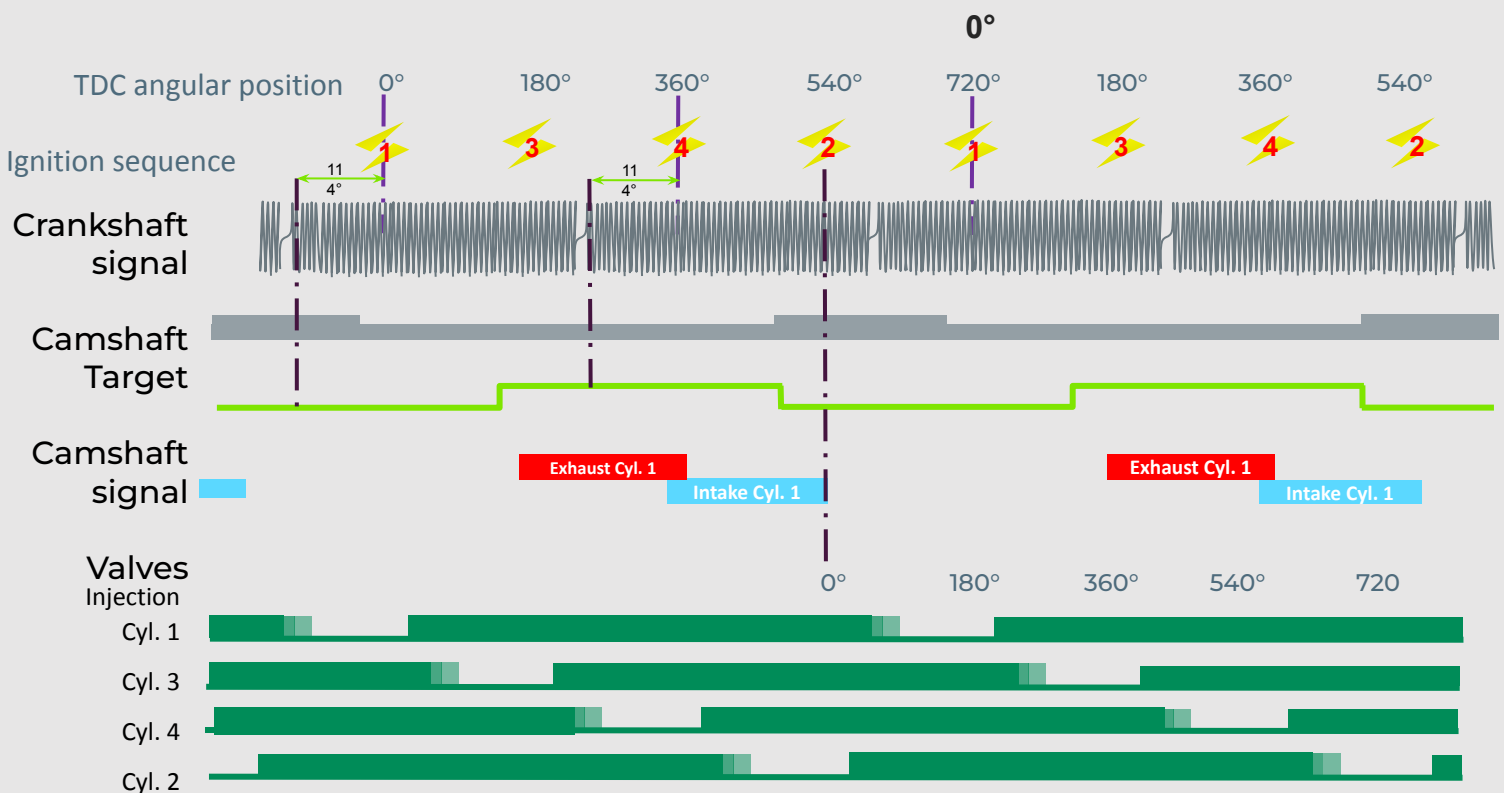
S	Advantage (variable reluctance)	Disadvantage (variable reluctance)
1	Self-generating electrical signal requires no external power supply	As low rotation speed the signal strength decreases
2	Fewer wiring connections contribute to excellent reliability	
3	Meets a wide range of output, resistance, and inductance requirements	

Crankshaft location

The **crankshaft sensor** is mounted near the **crankshaft**, **flywheel** or in the **engine block** depending on the manufacturer.

Crankshaft pulley	Flywheel	Engine block
		
Source from Ford	Source from Porsche	Source from Mitsubishi

Link between camshaft & crankshaft



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