Component Location

General Description

Variable swirl control actuator consists of DC motor and motor position sensor(potentiometer) which detects the position of swirl valve.
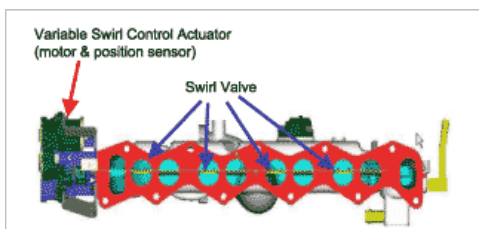
As closing one intake port out of two at idle and below 3000RPM, swirl effect is taken on intake air. This swirl effect increases air flow rate.

However, because air flow rate is too high, swirl effect is neglectable thus, swirl valve is opened for efficient intake of air.

To prevent swirl valve and shaft form being stuck by foreign metarial, and to learn max opening and closing position of swirl valve, it is fully opened and closed twice at turning engine OFF.

※ Swirl

The air flow which indicates Intake air swirls with respect to the axis passing through the centre of piston with length-direction by intake port which is eccentric from the centre of combustion chamber.
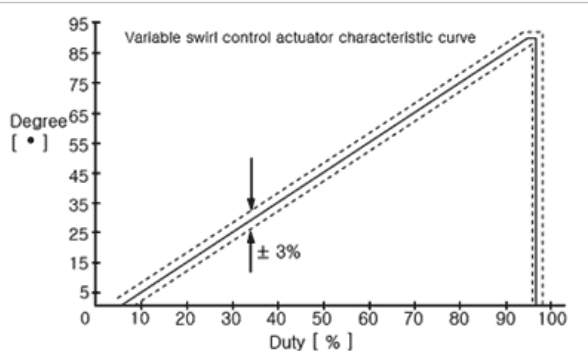

DTC Description

P2015 is set if variable swirl valve position fails to reach target position within 1 sec. while ECM already outputted motor driving signal(swirl valve fully open or close signal). This code is due to 1)swirl valve shaft stuck or problem of link device or 2)variable swirl valve position sensor output value stuck.
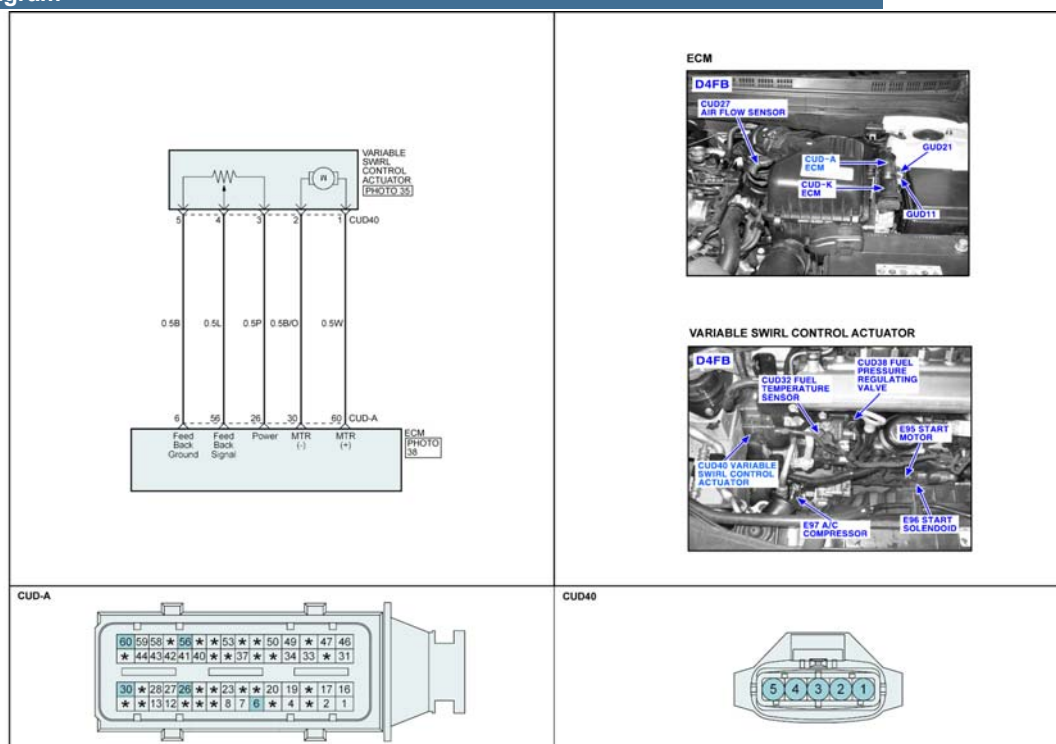
DTC Detecting Condition

Item	Detecting Condition			Possible Cause
DTC Strategy	● Voltage monitoring			● Variable swirl valve shaft stuck ● Variable swirl valve link device problem ● Variable swirl valve position sensor component
Enable Conditions	● IG KEY "ON"			
Threshold Value	● Variable swirl valve operating motor mechanically stuck			
Diagnostic Time	● 1.0 sec.			
Fail Safe	Fuel Cut	NO	● Swirl valve opened at variable swirl control actuator failure	
	EGR Off	YES		
	Fuel Limit	NO		
	Check Lamp	NO		

Specification
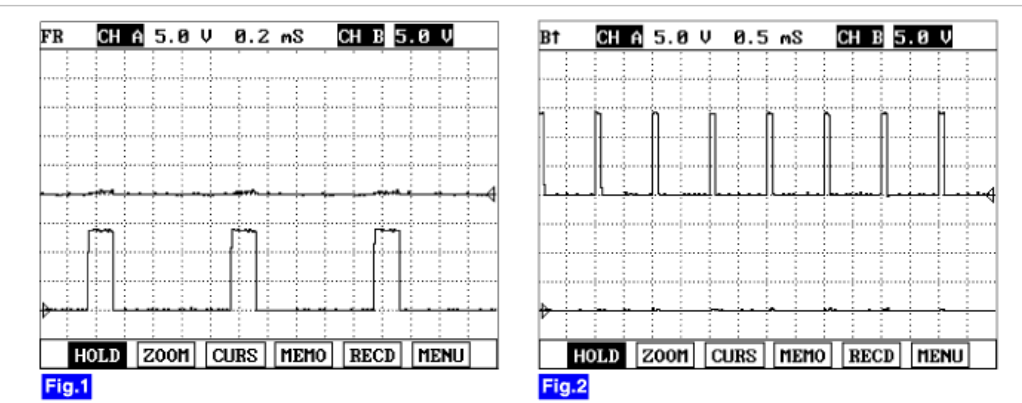
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Variable swirl control actuator characteristic curve
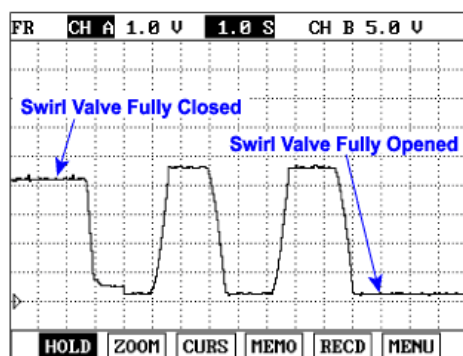
Schematic Diagram

Signal Waveform

Fig.1

Fig.2

Fig.3

Fig 1) Waveform when variable swirl valve closed at idle. Terminal 1 is (+) and 2 is (-).
Fig 2) Waveform when variable swirl valve opened at above 3000RPM. Terminal 1 is (-) and 2 is (+).
Fig 3) Waveform of variable swirl control actuator motor position sensor at the point of turning engine OFF. 4.3V at swirl valve closed and 0.3V at swirl valve opened. Swirl valve is opened and closed twice at engine "OFF".