



Yeepers Jeep

This article is a true description of a problem presented to our technical support team

Vehicle

Jeep Wrangler 2007 2.8 Ltr 4cyl turbo Common rail Diesel, 250,000⁺ kms



Picture sourced from the internet

Problem presented to the technical support team

We have a Jeep Wrangler that was happily driving around on the highway. It suddenly shut down while driving, no hesitation or any misfires. It was flat deck towed to our workshop and it does wind over but does not fire at all.

We have the AECS Launch scanner, an ATS scope and have done AECS training. The Launch scanner showed the following fault codes:

User Operation: Health Report Health Report > PCM (Powertrain Control Module) Health Report > PCM (Powertrain Control Module) > Read Data Stream					
DTC					
DTC	Description	State		System	
P0590	Speed Control Switch 2 Stuck	Active		PCM (Powertrain Control Module)	
P0578	Speed Control Switch 1 Stuck	Active		PCM (Powertrain Control Module)	
P0336	Crankshaft Position Sensor Performance	Stored		PCM (Powertrain Control Module)	
			Print	Share	Quick Access



Let's analyse

Just looking at the codes, the speed control switch, made us think about cruise control switches, not 100% sure but for now if they are cruise control they would not have caused a terminal failure of the engine. The crankshaft sensor fault code could certainly cause an engine stop issue.



Quick and Simple

Measure, measure! It is that simple. Most technicians would replace the crank sensor at this stage, that makes for me 100% no sense! I am all for quick and simple please understand that! Quick and simple means bills get paid and happy customers. Lingering on a job is just frustrating and expensive and does not produce the throughput you need in any workshop.

ATS scope

This customer reached for the ATS 500XM scope of which most self respecting garages in NZ have one. The following no frills recording was made of the crankshaft sensor while winding over. A math channel was added to see the speed of the crankshaft while winding over, just quickly to determine if the compressions where okay, to eliminate a broken cam chain or gears.



ATS 500XM crankshaft sensor scope recording.

The RPM trace shows beautifully 2x compressions and 2x decompressions in one revolution, nothing wrong there.

So why no injection and why the fault code?

Zoom

When zoomed in the problem suddenly becomes visible.





This crankshaft tone wheel seems to have 2 reference marks! If we place the cursors across both marks and do a teeth count, the counter shows 56 teeth. That is unusual for most brands (is normal for Mitsubishi). So that by itself is not conclusive.

The gap (missing teeth) as circled in the picture certainly does not look cosher!

Damage to the tone wheel was our help desk's conclusion instantly.

Mirror

The technician was asked to have a look at the tone wheel, there maybe bend teeth or other damage to the crankshaft rear where the sensor is fitted.

A small workshop mirror was placed awkwardly over the hole besides the sensor and a photo was made.



Picture of crank sensor in position, note the damaged 'tone wheel' (magnetic strip)



After slowly cranking the engine around it was pretty obvious that the transmission had to be removed to replace the magnet strip tone wheel.

Parts

After some problems sourcing the parts the transmission and flywheel were removed.



Picture of the rear of the engine with the transmission and flywheel removed

The tone wheel was removed and replaced. The transmission was refitted, and the customer was sent on its way again with a perfect running vehicle.

Not long after we came across an identical case and were given a picture of the tone wheel from that vehicle. Common?





Jeep Faulty Tone wheel

Conclusion

Without the help of the ATIS scope, how would you have found that the transmission had to be removed in minutes? A job which on this 4WD is not a small job, so you do not start a job like this with certainty.

The ATS scope got us to that conclusion quick and easy, that is what it is all about! As to the 2 speed control switch fault codes, these codes where gone after the repair and have not been further investigated.

Quality equipment, a decent training and technical support has made this job profitable.

For *AECS* Ltd Herbert Leijen Trainer/Research www.aecs.net



Special offer

Take the benefit of a brand new car scantool kit with 3 years worth of updates for:

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Offer includes (free) Launch BST360 and TSGUN (lite) Note: Until stocks lasts

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BATTERY ANAYLSER

The Launch BST360, is a quick and easy to use battery, charging system and starting system analyser.

Bluetooth is connectable to any Launch android tablet, mobile phone, or tablet that you may wish to use. The accompanying app can be installed on multiple devices, with no complex registration is needed.

Are you doing vehicle inspections with a tablet at hand? Why not add a PDF report about one of the more troublesome parts of the car? A comprehensive battery report is created in less than 30 seconds.

You can create a report when the car is in for just simple maintenance.

Tech details:

Connection method: Bluetooth Applicable for: 6V/12V Lead-acid, GEL and AGM battery systems. Supported battery standards: CCA, BCI, CA, MCA, JIS, DIN, IEC, EN, SAE, GB

Measurement capacity range: 30AH - 80 AH Working temp: -10°C +60°C

No internal batteries are required, the tool powers up from the car battery.





BLUETOOTH THROUGH YOUR SCAN TOOL





AECS

TPMS SENSOR ACTIVATOR

TPMS TPMS V10.26 > PEUGEOT > 508 > 2010/09-2013/09(433MHz) W2 > Continental > 5430T4 Active Learning Programming AT Normal CE181233 FR ((1)) 29 240 Normal CE181BE3 RR ((1)) 29 274 Normal D:CE181BE3 ID:CE181BE7 433MHz CE181BE7 RI ((1)) 32 259 Normal Lite \$ 392.10+gst))) Pro \$492.10+gst X .

BLUETOOTH THROUGH YOUR SCAN TOOL



AUSCAN 3

EUROTAB 3

AECS



The Launch TSGUN is a Tyre Pressure sensor wand (activator) for TPMS systems on most cars.

Bluetooth is connectable to any modern Launch android tablet that has the TMPS function integrated.

The Lite vesion is the tool as illustrated.
The Pro version comes with 4 durable aluminium tyre valves.

Tech details:

Connection method: Bluetooth Applicable for: 315MHz and 433MHz valves (most common systems)

Easy to use when installed correctly.

Activate tyre valves when the vehicle sits idle in the workshop to teach locations and to test battery and actual tyre pressures.

Can also be used to activate OEM sensors.





DID YOU KNOW ??



Merger affecting training

You may be aware that MITO and the Polytechs have merged as a result of government policy.

This has the following consequence:

AECS has been delivering the NZQA accredited EV/Hybrid training for MITO as a result of a partnership we built in 2018. This partnership has now come to a friendly end.

All trainees that come in through the old MITO channels will be guided towards the Polytech EV training as a direct result of the merger.

Make sure you get what you expect!

It is important to know that the Polytech training seminars and the *AECS* training seminars are two completely different products.

Without down playing the value of the Polytech training, *AECS* has been and still is making training content, based on research and practical problems from field experience and our engineering background.

If you have been to one of our training seminars, enjoyed it, and would like to learn more with *AECS*, do not expect the AECS training if you book through the MITO channels, instead from now on <u>please book through us direct</u>.

So what is different?

We are still delivering our highly practical and energetic seminars throughout the country, with one difference: You will not get an NZQA diploma at the end of it, but as per normal the highly recognised *AECS* certificate.

Scroll through our training calendar, or even integrate it with your own calendar https://aecs.net/trainingdates/

Enrolling (or just to have a chat) is easy:

Web: aecs.net Email: info@aecs.net Phone: 06-8749 077 Post or Visit: 897 Valley rd, Hastings

We hope to see you soon!

Kind regards,

Herbert Leijen

