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## Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by h2sammo - 2008/07/30 13:33

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this car has 169k miles, and ran fine for me for the past 1/2 year i have owned it.

it recently started to stop while driving or it would go dead as i was stopping and making turns on the road until it eventually wouldnt start up at all anymore.

i tried jumping it, tested the battery (turns out it was bad/low on acid/weak) so i purchased a new one but that didnt fix the problem.

i had checked for spark and initially i had none at the ignition coil. I took the coil out and checked the resistance and it is a good coil. i purchased a new crankshaft sensor and it now has spark at the ignition coil and at the spark plugs.

still cranking but no start.

i realized in my shotgun approach i had taken out the distributor and put it back in w/out aligning it, so i did that. i aligned the vibration damper to TDC and the distributor coil past the wire post coming out of spark plug number 1. i also made sure the spark plug wires are in the proper sequence (1-5-3-6-2-4). i realized i had turned the engine both clockwise and counterclockwise to achieve TDC to the 0 mark (i dont know if this is bad or not - i read to turn it clockwise only).

still cranking but no start, BUT, this time it seems the engine is almost close to starting, except it makes this loud thud pop from the exhaust pipe (backfire maybe?!) and it releases a bit of dark smoke when that happens. it does NOT start though. cranking but no start.

i checked the fuel valve on top of the engine and it squirts gas just fine.

i dont know what to do...and i cannot afford to take it to a shop.

i was thinking maybe because i turned the engine counterclockwise and clockwise to achieve TDC i messed up the alignment and i should borrow an alignment light but then i realized i cant do that because the car wont start/stay running...

please help me  
thank you

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/07/30 14:46

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You didn't mess anything up by turning it back and forth, but you do need to make sure it's on compression stroke (not exhaust) Top Dead Center of the #1 cylinder with the zero mark lined up.

To do that, do this (leave the distributor in place until this is done).

Yank the #1 spark plug and stuff a rag or a cork into the spark plug hole (something big enough not to go into the cylinder and get lost). Bump the starter in very small increments until the cork (or the rag) pops out of the hole. At that point you are APPROACHING TDC on cylinder number 1. Gently keep turning the engine until the mark is lined up with zero. That'll be #1 TDC compression stroke.

With the cap removed, see if the rotor is pointing at the #1 cylinder (just passing the firing post). It'll probably be pointing at #6.

If it's pointing at 6, remove the distributor and reinstall it with the rotor pointing so that it is just passing the firing post on #1. Put everything back together (including the spark plug) and see if it'll start - let me know....

Richard, Askamechanic.info webmaster

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by h2sammo - 2008/07/30 17:44

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I yanked the number 1 spark plug out and shoved in a roll made out of a piece of rag. i tried to make it as snug as possible. i bumped the started 3 times from the key and my rag cork jumped out with force, it also made a loud pop.

i rotated the engine to the 0 mark, took the cap off the distributor and the rotor was indeed pointing between posts 2 and 6 instead of post number 1.

i took the distributor out and i adjusted the oil pump hinge with a flat screwdriver until the distributor fit in with the rotor between posts 1 and 2 (past post number 1).

i put everything back in, reconnected the negative battery terminal (which i had to disconnect because i got shocked when i put my hands inbetween the A/C tubes to unscrew the distributor) and started the car.

it started very quickly. SUCCESS. i noticed however a knocking sound coming from the main engine body, where the pistons are, on the top. I would say in the middle of it, on top of pistons 3 and 4.

i thought that it has to do with me timing piston number 1 to the proper height as it compressed (popped) my rag cork out of it. so i tried the whole shabang 3 more times. i tried giving it one more key starter bump after the cork popped out but the the car didnt start at all (just liek before) so i knew i overshot my compression cycle. i did it again, this time i shoved more rag in the spark plug hole, trying to make a better seal. i went through the steps again and the car started again but STILL with the knocking noise. it is less noticeable now however.

i am not sure if this is the "engine knocking" i heard mechanics talk about. how can i go about fixing this, if it is that condition. now that my engine turns, would timing it with a timing light solve this problem?

i tried to find a good tutorial on timing a jeep cherokee 4.0 with a timing light bu couldnt find one. if thats what i need to do, could you direct me to one?

i want to clearly express my gratitude for helping me out. im sure others will benefit from this post just as i did from others'.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/07/30 20:32

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You don't set the timing on a Cherokee. The crank sensor is in the bell housing at about 10 o'clock, right by the driver's right foot. Moving the distributor alters the cam sensor signal timing and the rotor alignment but does nothing to the ignition timing.

You may have a carbon knock on those noisy cylinders. Buy and try some top combustion chamber carbon cleaner (pour in through the throttle body while the engine is hot and running and you're gassing it, but don't pour in too much, else you might hydro lock it). Do it outside and in an area where the smoke won't be a problem.

If it isn't carbon knock, something else will need to be done.

...hope this helps...

Richard

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by h2sammo - 2008/08/01 07:31

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i put some carbon cleaner in the throttle and some in the gas tank.

knocking went away.

car works fine.

thanks a bunch

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by h2sammo - 2008/08/14 10:12

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ok, i have driven the car around town for 1 week, then taken it for a long drive (450 miles) to S FL. The car drove down perfectly, but...

Once in S FL, it started stalling while driving on the highway. the car completely dies (electrical still stays on, radio, lights, windshield wiper, etc). it sort of happens randomly, but never at speeds under ~40 mph (while driving in town - off highway). i drove it all the way back yesterday, at ~40 mph best i could (no cruise control). it stalled on my twice, which is not bad for a 13 hour trip...phew. it stalled when i was getting brave, and pushing it to around 45 mph, even though it drove for long periods of time at 45 mph w/out stalling (sort of random, like i said).

i read around on the issue and the consensus seems to be an electrical short or a bad ECM unit. i also read something about a potentially bad ignition coil.

do you think it could be the ignition coil? i get spark just fine, the car wont give me any trouble on restart. it just dies as if something trips it dead. engine sounds smooth, start is fine, what do you suspect it might be?

is there a way i can troubleshoot the ECM unit? is that the black box with fuses in it, under the hood?

please let me know what i could do about it. it seems to be a reoccurring incident with my jeep cherokee (i read it got recalled for it a while ago). it seems i can drive in town just fine, but if i go faster then ~40 mph there is a chance the car dies down.

pls help  
thank you

keywords: jeep cherokee sport stalling on the highway...

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/08/14 12:27

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That kind of problem won't be an ignition coil. It's more likely to be an Engine Controller, but what you have to determine is what's being lost when it dies. When I'm working on one of those, I generally attach a fuel pressure gauge (you can buy one at the parts store) and try to set the gauge up so that I can read the fuel pressure while I'm driving. If you determine it isn't fuel pressure, you'll have to find a way to gather other data, which can be difficult without a datastream capable scan tool, and a good one costs about \$700. There are simply too many things that can cause a problem like that one.

(<http://www.tooltopia.com/index.asp?PageAction=VIEWPROD&ProdID=9991>)

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/28 08:30

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i took the PCM unit out, dusted it up, put it back in...now it cranks with no start like it did in the beginning.

i checked the fuel pressure when im cranking it and it goes to ~32 psi. i read on the web that this particular car often has a bad PCM. i will try to swap it from the junk yard...see what that does.

im waiting for wife to get home to crank it for me so i can check for spark...its still a possibility the ignition coil was in bad condition and it died...i will check it with an ohmmeter afterwards.

my other car...wont work now either...drove it through a puddle ( i made a different thread) so im kinda stranded...but will let you know if swapping the PCM did anything.

EDIT: i just checked the spark at the ignition coil: NONE

i checked the resistances on the ignition coil and it is within specifications.

so its exactly the same probelm i had in the very beggining. it seems to me like a wiring/computer problem. hopefully just a PCM swap will do the trick. will let you know

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/28 10:27

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ok, there are developments:

i followed instructions to check the cam shaft sensor:

<http://www.autozone.com/shopping/repairGuide.htm?pageId=0900c152800a9b14>

the distributor connector has 3 wires. i assumed the middle wire was ground and the 2 outer wires were the power wires (blue and white as they are given in the repair guide). the colors of the wires in my car are orange, black and yellow, in that order. Also, i am not sure why the guide says to put voltmeter in AC rather than DC, but i followed it anyways.

wires in the back of distributor connector give no voltage when ignition is ON (should read 5V). i tried voltage between power wires and their corresponding PCM (ECU) wire (C16 and C5). I read very low voltage, less then 1V with ignition ON.

I measured continuity between C16 and C5 and ground lead on battery and it has no continuity (infinite resistance). i dont have a way of running an OBD I diagnostic.

the results make sense with the following explanation:

bad computer or wiring.

i had gotten the car to start after taking things out and putting them back in, raplacing some parts (crankshaft sensor) as you can read in the thread.

Then the car was stalling. Now when i took the computer out and put it back in it wont start anymore (wont give spark). i read that if camshaft sensor stopped signaling (or stopped being read), then the car would continue running but it wont start as it cant assign cylinder 1 to spark plug 1.

im hoping the new PCM will solve my nightmare.

check this thread out for PCM related problems in my year vehicle (even though its a different type of PCM because i have a sport cherokee and they are talking about grand cherokees): [http://forums.cnet.com/5208-6035\\_102-0.html?forumID=78&threadID=248386&start=0&tag=forum-w;forums06](http://forums.cnet.com/5208-6035_102-0.html?forumID=78&threadID=248386&start=0&tag=forum-w;forums06)

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/08/28 11:48

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You should have 9 volts on the orange wire with the key on. Check to make sure and let me know...

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/28 13:31

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ok, i put one voltmeter lead on the orange wire.  
where do i put the other lead?

also, in DC or AC setting on voltmeter?

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/28 17:11

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Put the meter on 12 volt DC scale. Turn the key on. Put the black lead on the negative battery post. Put the red lead on the orange wire and you should read 9 volts. If you don't, then disconnect the TP sensor and check all three wires - one should have 5 volts with the key on. Also, when you're spinning it over, the injectors should have battery voltage (which comes from the ASD relay). Let me know what you find.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/29 07:21

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the yellow wire to ground have 5.0 volts with key ON.

orange wire to yellow wire have 5.0V with key ON.

orange wire to ground has 0 volts.

i just realized i didnt check the fuel injectors voltage. Also, i cant find the TP sensor (throttle position?)

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/29 15:07

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Let me know if you have power to the injectors - check while somebody turns the key on and briefly spins the engine.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/29 17:38

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these injector plugs are very hard to takeout. as a matter of fact i couldnt figure out how to take one out w/out breaking it partially, but i did.

the one i was able to take out and check did not give me any voltage whatsoever with key on (i should read battery voltage, right? 12V). and of course, as i was cranking the car, i didnt see anything.

so imnot getting the injectors pump any gas in my cylinders i dont think.

how can i troubleshoot further?

thank you

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/29 18:44

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That's why it won't start. Find the blown fuse or bad ASD relay - that'll get it going. Outside chance you might have a wiring problem, ground or something, but the PCM turns that ASD relay on, which supplies the injectors and the alternator field with power.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/29 20:45

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i troubleshot the ASD relay with a multimeter according to instructions here: [http://www.ehow.com/how\\_4421888\\_test-four-terminal-relay.html](http://www.ehow.com/how_4421888_test-four-terminal-relay.html)

i made it click, when powered, it has continuity when supposed to and doesnt have it when its not supposed to.

ASD relay is fine.

does it have a fuse for the fuel injectors as well? i couldnt find it. unless i get more troubleshooting advice i will go to a junk yard (if i can get a ride) and swap the PCM.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/30 03:08

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Now you need to know if the ASD relay has power available to it. If the injectors aren't powered up and you don't have 9 volts at the cam and crank sensors, well, that's significant. Check the cavities where the relay plugs it and see if you have power at any of them.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/30 06:47

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i have 5 volts in the cavities where the power terminals go into, with the ignition in the ON position.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/30 09:34

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swapped PCM for a used one, same serial number, etc from junk yard, same things, still no voltage on fuel injectors.

how do i troubleshoot this firther?

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/30 14:02

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you should have battery voltage there... find out why you don't

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/30 17:45

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ok, i figured out how to check voltage here.

i put one voltmeter lead on the battery ground, the other on one of the connectors going into the fuel injector. It reads 7.32V (not 12V...why?)

also, the connector going into the camshaft positioning sensor shows 5V between battery ground and one of its female leads.

so both of these parts seem to be getting voltages, but still no spark.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L**

Posted by Junius - 2008/08/30 18:39

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Sounds like the battery is weak... are you reading 12 volts at the battery? Both voltages you're reporting are slightly low. Low battery voltage will cause that AND a lack of spark.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4**

Posted by h2sammo - 2008/08/30 18:43

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battery reads 12.5V. It is new, had it for 1 month maybe.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4**

Posted by Junius - 2008/08/30 18:47

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Okay, here's the deal. If you have 12 volts at the battery and only 7 volts at the relay socket, you've got voltage drop problems between the positive side of the battery and the relay socket. Try temporarily running a new wire to the common relay terminal. If you can get get 12 volts at the relay's common terminal and if the relay is good, it should start.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L**

Posted by Junius - 2008/08/30 19:03

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You're dropping voltage between the battery hot circuit and that relay common terminal... fix that and it'll start. Send me an email through the 'contact us' link and I'll try to send a schematic.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4**

Posted by h2sammo - 2008/08/30 19:33

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i searched for this "relay common terminal" and cant really find anything useful.

what/where is this terminal? or is it just another relay?

i send you an email through "contact us"

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4**

Posted by h2sammo - 2008/08/31 05:38

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ok i undestand the common terminal is located on a 5 lead relay.

should the ASD relay common connector see 12V from its socket? It's seeing only 5V.

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**Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4**

Posted by Junius - 2008/08/31 06:05

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It should have 12 volts. Not 5

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/31 06:18

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ok, according to the schematic, ASD relay feeds into the PCM connector at pin 3.

battery ground to PCM connector pin 3 gives 12V indeed.

I cannot tell from the schematic where the battery is in the circuit.

is it in between the ASD relay and PCM connector or on either side of the ASD or PCM connector?

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/31 08:45

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i opened up the fuse box so i can access it from the back.

i took the metal strip plate out (the one connecting to the (-) battery lead) and put it back in.

now battery ground to common terminal of ASD relay reads 12.4V. the A/C relay (the one right next to the ASD) stopped showing any voltage now when connected to battery ground, from any terminal socket.

the fuel injector connector i managed to pull out yesterday shows ~7V still, only with ignition key to ON position.

the yellow wire on the camshaft sensor connector (in the distributor) shows 5.03V with ignition ON.

the yellow wire on crankshaft connector shows 5.03V with ignition ON.

i found another relay outside the fuse box, mounted to the metal frame holding the fuse box. i dont know what it is. it shows 12.43V with ignition ON, between battery ground and a control terminal, but no voltage between battery ground and common terminal...weird.

still no spark from ignition coil.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by Junius - 2008/08/31 13:35

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Use the wire colors on the schematic to determine which relay is which. You're learning.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/08/31 13:38

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Since you have the fuse panel disassembled, connect a jumper wire between the common terminal on the ASD relay and the B+ battery terminal and see what happens to the voltages.

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### Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/31 15:26

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i stuck a paper clip in the back of the common ASD relay in the back of the fuse box, and...

well nothing happened, voltages read the same.

i guess i wouldve seen a difference before, but now that i fixed the short, (-) battery ground to common ASD relay terminal reads 12.4V when it is jumped directly to (+) battery hot or when it is left untouched (since it is supposed to be connected to the (+) of battery anyways inside the fuse box.

is this correct?

BTW, i bought the Haynes manual for this vehicle...i was expecting it to mention exact voltage specifications for electrical components...but nothing.

i read somewhere that some vehicles need less than 12V to operate the fuel injection components, would this one be one of those? in that case the 7V at injectors would be ok.

the big problem is NO spark at a good ignition coil...

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4.0L

Posted by Junius - 2008/08/31 16:04

What do you mean you fixed the short? Did you short the ASD common terminal to ground with your paper clip?

The relay terminal numbers can be found on the bottom of the relay.

Terminal number 30 is connected to battery voltage and can be switched or B + (hot) at all times.

Terminal number 87A is connected (a circuit is formed) to terminal 30 in the de-energized (normally OFF) position.

Terminal number 87 is connected (a circuit is formed) to terminal 30 in the energized (ON) position. Terminal number 87 then supplies battery voltage to the component being operated.

Terminal number 86 is connected to a switched power source.

Terminal number 85 is grounded by the Engine Controller.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/08/31 16:38

yeah, i pretty much understand how this 5 terminal relay works.

by fixing the short i meant that the common terminal now reads battery voltage (12V) instead of 8V. I assumed the previous lower voltage was because of some metal parts touching (shorting) when they were not supposed to do so, which i fixed when i messed around with the metal backplate that connects the (+) battery electrode to the rest of the fuse box.

now it read 12V when i connected the terminal directly (jumped) to the (+) battery electrode or when i left it the way it is (which should be connected to the (+) battery electrode by default).

i tested the ASD relay and the starter relay. the circuitry in the fuse box seems OK. but still no spark at ignition coil.

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## Re:Crank but NO start on 93 Jeep Cherokee 6 cyl, 4

Posted by h2sammo - 2008/09/17 15:09

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if you're curious what happened...

i sold the car as a non-working lemon.

got 450 for it.

new owner got it to start btw:

changed crankshaft position sensor (even though i had a new one in...)

adjusted distributor timing, he said it was off by one tooth. (i dont know how i could've missed this because i put engine on top dead center - for sure - and had distributor rotor recognize cylinder one as directed earlier in this post).

anyways... vehicle works now. hope this helps someone else who reads this and has same problem.

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