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December 7th, 2008

#1

2k1Toaster Senior Member
HID LearnerJoin Date: Jul 2007
Location: Colorado
Posts: 164**2007 Lexus RX350 AFS 3phase motor Pinout (Koito HLSA-33001)**

Ok, I spent some time with the AFS motor disassembled tonight and think I figured it out. There is another AFS thread on here that has the same conclusions, but the wiring colours are not the same. So I am going off of wire colour, and pin number.

x is the actual spindle, and the connector is the pins. So looking at the box, with the connector on the right, pin 8 is on the far right.

Code:

```
*x* | 12345678 |
```

```
1: Coil A [Red]
2: Coil B [Blue]
3: Coil C [White]
4: Top Hall Effect Sensor (A) [Red]
5: Bottom Hall Effect Sensor (B) [Blue]
6: Middle Hall Effect Sensor (C) [White]
7: Ground [Black]
8: Power [Red]
```

Pins 1, 2, and 3 have 9.8ohms resistance between them, meaning they are the coils.

The PCB is a dual layer board, and the bottom is glued/stuck to the casing, so I am going blind on the bottom of the schematic. However, my motor has 8 pins, and 6 of them are matched pairs in location. I can confirm that the hall effect sensors are correct as they are routed on the top layer. The first 3 pins disappear into oblivion, but going on logic, they would coorespond to the coils the hall effect sensors wire's colour correspond to. So the coils are guesstimations as of 07/12/08.

There is a huge amount of gear reduction in the motor, and a little bit of grease, so be careful when you take yours apart. Also the spindle, all all 3 of the gears come out.

I was a little disappointed that the gears are plastic, not what I expected from a Lexus. I can see these failing easily.

If anyone is interested I can post some pictures too, I just need to find my camera.

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December 7th, 2008

#2

[alternativesurfer](#) ▾

Senior Member
HID KING



Join Date: Oct 2008
Location: San Diego, CA
Posts: 1,103



Pics!

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December 7th, 2008

#3

2k1Toaster ◉Senior Member
HID LearnerJoin Date: Jul 2007
Location: Colorado
Posts: 164

Also I should add, that these are indeed 3 phase motors as you would find in a CDROM drive, or pretty much anything else.

Ok pictures:

#1: Everything together. Top most gear is what turns the projector assembly, bottom-most round thing is the actual motor spindle. Each visible gear has 2 gears on it essentially to increase the torque to the headlights.

#2: Everything apart

#3: Closeup of the actual motor, spindle removed

#4: Those 3 little chips surrounding the motor, are the hall effect sensors. For those that don't know, they basically they sense the magnetic field around them. Because of the way they are placed, they can sense the current position of the motor giving feedback for the electronic controller. The one I referred to as "bottom" is on the left, and "top" is now on the right.

#5: Connector the AFS motor. Note the colour of wires and their order. Pin 8 is on the left.

#6: Wires coming out of magic voodoo box, that I have no idea what it is or what it is used for. I doubt it is the OEM AFS control unit as there are not enough inputs, but it drives this motor. I dont know. But notice that the wires are not in the same order here. They do a rewire in the middle of the heatshrink somewhere too. So be careful on which end you count your wires on!

[/img]

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December 8th, 2008

#4

2k1Toaster ◉

Senior Member
HID Learner



Join Date: Jul 2007
Location: Colorado
Posts: 164

I can now confirm this is the corret pinout. I have just built and tested a preliminary circuit for testing and it works. I will make a new thread on those findings.

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February 6th, 2011

#5

infinite012 ◉

Senior Member
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Join Date: Dec 2004
Location: Virginia
Posts: 959

I'm interested in moar info. I've got a school project that will use either the Lexus/Koito modules or a homebrew solution. I'd rather use the Koito motor, though, because I already have one.

It's been a while since my last retrofit...

[2001 Civic Retrofit](#)
[Swap: ZKW-R lens into Bosch/AL E46 Bi-xenon projector](#)

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