Re: WEIRD problem with CD player

Source: http://sci.tech−archive.net/Archive/sci.electronics.repair/2007−01/msg00062.html

- *From*: bill@xxxxxxxxx
- *Date*: Mon, 01 Jan 2007 16:05:28 −0500

I don't know if I will ever get this working right, but I sure am learning a lot.

I'm sure this has to be looking for a reflection before it decides to starts up the spindle.

I can't see the lens with the CD in. If I put a clear protective disc in, nothing happens because it sees no reflection.

The unit is a CDP−302, a high end unit. The tag on the laser assy is
BU−1
119712

And from its construction, to replace it might cost the same as what I paid for the unit new.

Since it will play in any position once started, is it possible the focus/tracking drive isn't working till it starts and the at rest position is causing the reflection to totally miss the target.

On Mon, 01 Jan 2007 18:18:05 GMT, "Arfa Daily" <arfa.daily@xxxxxxxxxxxx> wrote:

> "Sam Goldwasser" <sam@xxxxxxxxxxxxxxxxxxxx> wrote in message news:6wejqergfw.fsf@xxxxxxxxxxxxxxxxxxxxxx
>
> > bill@xxxxxxxxx writes:
> >
> > > I have run thru the solders on the drive board and elsewhere. The drive is fine when it runs and the "tilt" is a specific angle and
> > > repeatable with bumping and jarring having no effect.
> > >
> > > I am suspecting that it has something to do with the laser itself

since the fix (tilt) is so repeatable. It is definitely on the deck. I checked out all the switches and the board on the deck removing and
replacing all connectors.

Apparently the electronics need feedback from the laser to tell it
there is a CD in the deck before it will generate the drive for the
spindle. >> Is this correct???

Therefore the Laser needs to see a reflection. So if the laser is
tipped, the reflection won't hit the right spot on the assy. I see only a movement, apparently controlled by coils, that adjusted the
laser along the radius of the CD.

When it does play, I see the sled shaking back and forth as if following the CD. Shouldn't the laser itself be moving by the coils
mentioned above. I think this deck has three lasers to control tracking. I have no idea how this works. I only see one lens.

See the CD Player Repair guide at the site below.

The sled should not be shaking back and forth, only the lens. The sled should just move occasionally to maintain the lens centered withint its range.

I agree with Sam. As to whether the player needs to see a disc on the turntable to spin it up, this depends on the unit. Some players will just go ahead and turn on the laser, and spin up the disc, as soon as a 'laser home' signal is detected. Some coarse speed adjustments then take place, along with focus seek, until the spindle servo starts to see valid data coming off the disc, whereupon, it will lock, and the rotational speed will stabilize to the correct value. Other players will switch on the laser as soon as the home signal is detected, and go ahead and look for a reflection from a disc. Coarse focus search will take place at the same time, until the focus servo locks. At this point, the drive to the spindle motor will be switched on, and the data search will commence. Some players, if they fail to detect an initial reflection, will pulse the spindle motor to rotate the disc some, in case there was a jammy fingermark right above the lens, so there is no simple answer to your question regarding the point at which the disc should start to spin.

Whether or not the deck is on the tilt, the outgoing and returning beams, should not hit any different place on the disc, or the pickup photodiode

array. This is the whole purpose of the tracking and focus servos. The lens suspension is very soft, and the mass of the suspension and lens is very small. The focus and tracking motors, which are actually like tiny loudspeakers acting on the lens suspension in all directions, are plenty pwerful enough to hold the lens in the right place, irrespective of gravity acting on the pickup in any direction.

When the disc is rotating, you should be able to see the lens moving up and down a little, as it follows the irregularities in the flatness of the disc (don't believe the specs about disc flatness and eccentricity ...) You may also be able to see *slight* side to side movement of the lens if the disc is particularly eccentric. To see these movements, you will need to be on the last track of the disc so that the lens is at the disc edge. These are the only movements that you should see with the disc playing normally. The laser is moved on by another motor via a gear reduction system. Approximately once every four to six seconds, you should see the whole laser head move on by about one tooth. This movement should be smooth and regular, and there should not be any overshoot. You certainly should not see any shaking or violent movements of the lens, or pickup, in normal play. If the problem is within the laser, then I think that it would have to be something like a loose critical−angle mirror, that only lays in the right place with the laser tipped, in which case, the only solution would be a replacement laser. What laser type is fitted, as a matter of interest ? Many Sony lasers are really quite cheap. Also, I take it that the disc is clamping correctly to the turntable ?

Regarding your question about the three lasers. It does not have three lasers as such. It is a single laser diode, whose output passes through a splitter, to create three beams. The middle one of these is the one which should be centred on the disc's spiral data track. This is accomplished by keeping the two side beams an even distance either side of the track. To do this, these two beams are focused onto two diodes in the pickup array. They are called the "E" diode and "F" diode − hence the servo adjustment "E−F balance". When the middle beam is exactly on the disc track, and the E−F balance adjustment is set correctly, the outputs from the E and F diodes will be equal, and there will be a null servo condition. As soon as the beam moves off track, the E−F output will become unbalanced, and a positive or negative servo condition will be created to correct the beam path. Focus servo operation is likewise based on signal imbalance, but this time as a result of the central beam being focused onto the "A", "B", "C" and "D" diodes. When the beam is correctly in focus, it will be circular, and all four diodes will be equally illuminated. If the beam is out of focus, an astigmatic condition will be created, illuminating two of the diodes by a greater degree, creating an inbalance, which drives the focus servo in the appropriate direction to restore correct focus. Which two diodes are illuminated more, depends on which direction the beam is out of focus. Data output is the result of adding the outputs from these four diodes.

Not all optical blocks are 3 beam. Some are single, and use a completely different scheme for deriving the servo information.

Arfa

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