

The Thor "Lectro-Matic" hubs off of my 1955 CJ5 were a bit of a mystery. These must have been some of the first "push button" 4WD systems to come out. There was little to no information on them so I decided to take them apart and see just how they work. Here is what I have learned.

When my Dad said that they were electric, I assumed that they had a little motor that would "spin" them in or out of engagement. What I realized was that they were more like a solenoid or electromagnet. There is a coil of wire on the wheel side of the hub. When power is applied to the coil it becomes a magnet and draws itself to the axle side of the hub. There are little "teeth" machined into the facing sides of the hub. These teeth engage and the axle side of the hub turns the wheel or magnet side of the hub. A wire is ran through the back of the backing plate through a hole and provides the electricity to the magnetic coil. A contact mounted on a spring transmits this electric power through a slip ring inside the brake drum to the hub. I imagine that the hubs could be engaged while the vehicle is moving, but I think this would cause the teeth to slip for a moment and lead to premature wear of the teeth.

A toggle switch or a maintained push button could be used to turn the hubs on and off. One could even use a limit switch on the 4WD lever of the transfer case to automatically turn them on when the vehicle was shifted into 4WD. The hubs would only remain engaged as long as power is applied to the magnetic coil. If you left the switch on and had run power directly off of the battery to the switch, it would eventually drain your battery after the engine is shut off. If you ran power from the ignition switch to the on/off switch, your hubs would automatically disengage as soon as you shut off your engine.

If for some reason they didn't want to work, there was a little screw on the outside face of the hub that you could turn to manually engage or disengage the hubs.



Here is the face of the hub. You can see the center screw for manual operation of the hub.



On the top of the hub you can see the wire that passes through the brake drum to power the magnetic coil.

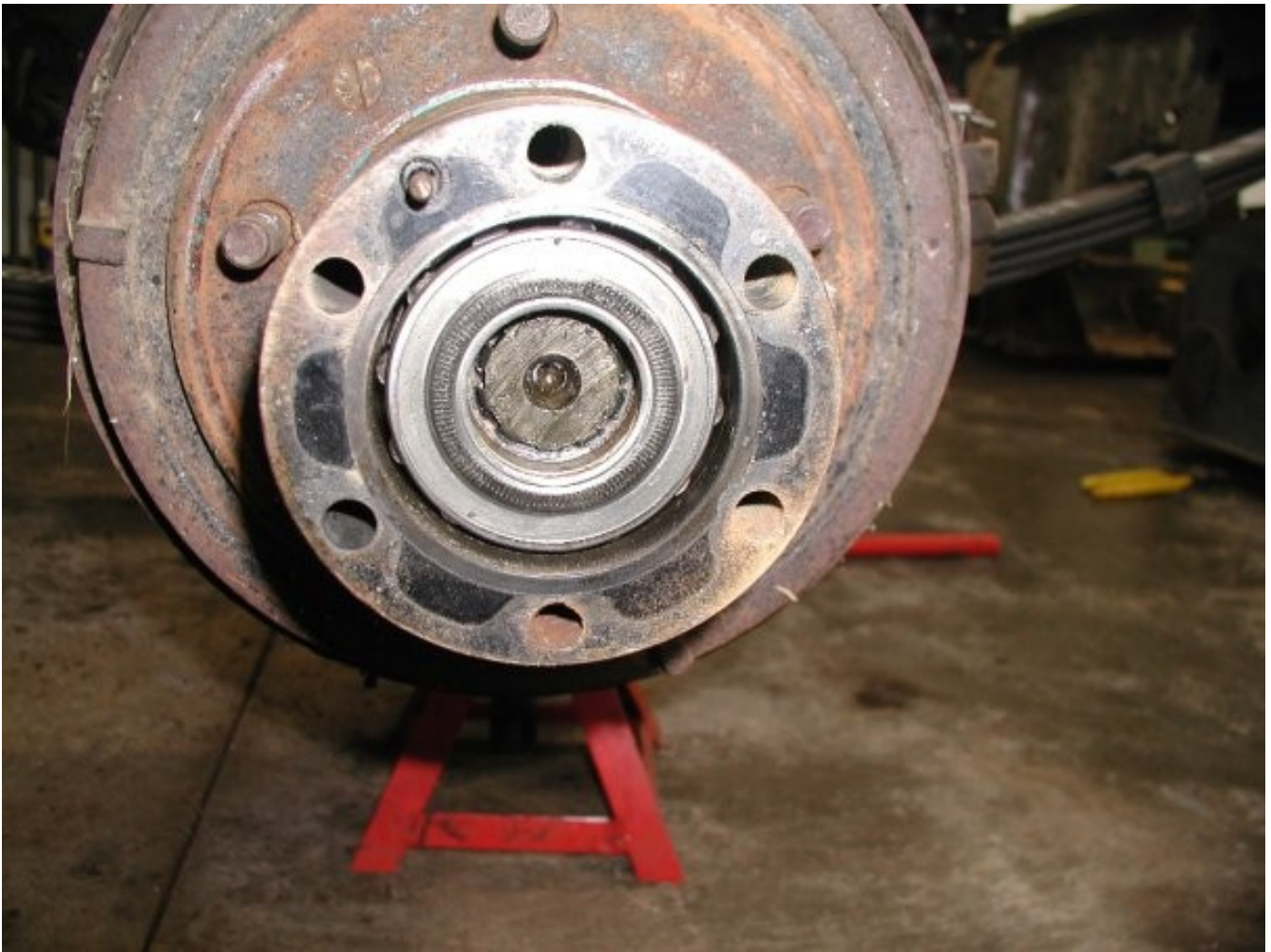


As the hubs came apart you could see the electrical connections between the two halves. The electric coil is in the outside half of the hub.





This is the back side of the electric coil. Notice the little teeth machined into the steel. Also note the 12V stamping and the sticker warning not to use grease in the hub.



The axle side of the hub with mating teeth machined all the way around it's inner circumference.





After removing the axle side of the hub you can see it's back side and the snap ring that holds the bearing in place.



There is a rubber seal and brass shim between the hub and axle nut.





Removing the brass shim.



On the back side of the brake you can see the little hole and grommet for the wire to pass through.



After removing the brake drum you can see the slip ring on the back side of the drum. Notice the wire on the upper left side.





Cleaning up the slip ring you can see the screws that hold it on.



Removing the screws and electrical insulator that was between the drum and slip ring.



Here you can see the wire that passed through the drum to the hub.





The removed slip ring.



If you look closely you can see the contact for the slip ring in the upper left side. Also notice how my brake pads had completely de-laminated and came off.



A close up shot of the contact that rides on the slip ring. You can see the wire that passes through the back side of the brake.





The removed contact.