



# Technical Service Information

## FORD/MAZDA CD4E PERSISTENT GEAR RATIO ERROR OR TCC SLIP CODES

**COMPLAINT:** After Turbine Speed Sensor (TSS) replacement, TCC slip codes 628 or P1744 may be stored. Gear ratio error codes 645, 646, 647, 648, PO731, PO732, PO733 or PO734 may also be stored. After clearing these codes, they immediately return during the road test. No matter what parts are replaced, or what procedure is followed, these codes keep returning.

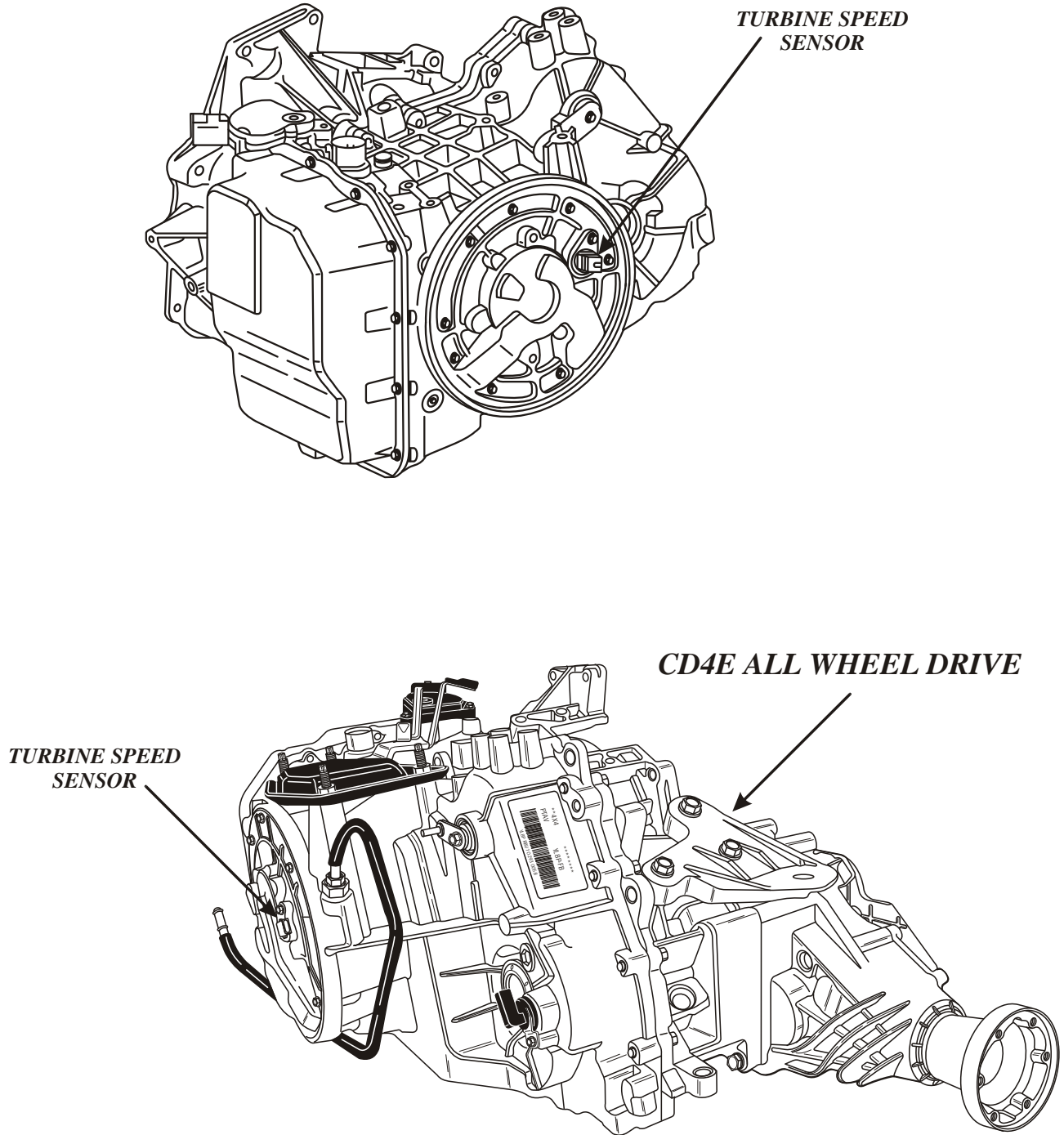
**CAUSE:** *The cause, believe it or not, is the replacement Turbine Speed Sensor.* The replacement TSS was redesigned and has an *enclosed* pickup as seen in Figure 2. The previous design TSS has an *exposed* pickup also seen in Figure 2. It seems, when the pickup was enclosed, the air gap between the TSS and the reverse clutch hub was increased. When the signal was checked and compared to the previous sensor signal, the new sensor signal exhibited a voltage difference but, when checked with an oscilloscope the previous sensor puts out a wider pattern than the current design sensor which means, the computer has more time to read the signal with the previous design sensor. In other words, with the current design turbine sensor, the computer does not have enough time to read the signal and may miss alternate signal pulses which causes the above complaint, on some models only.

**CORRECTION:** Ford Motor Co. has now released a new design white TSS with a "green" connector that is to be used on 1994-1997 Probe vehicles, as shown in Figure 2. The new design white TSS with the "black" connector is to be used on "All Other" models using the CD4E transaxle, as shown in Figure 2. Install the proper TSS depending on the model that you are working on and service part numbers are shown below.

### SERVICE INFORMATION:

Turbine Shaft Sensor, 1994-1997 Probe Only, Green Connector ..... F7RZ-7M101-KA  
Turbine Shaft Sensor, All Other Models, Black Connector ..... 1S7Z-7M101KA

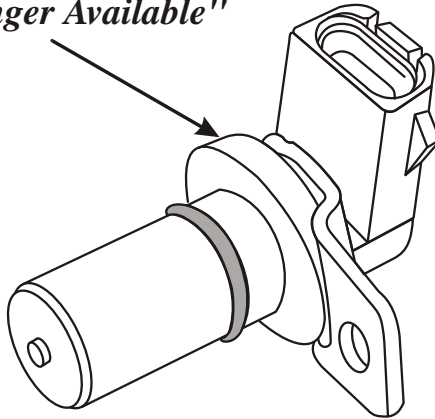
## FORD/MAZDA CD4E



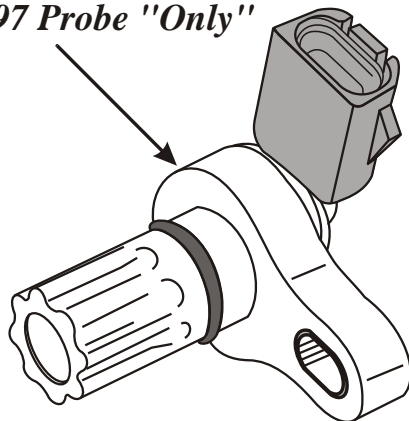
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Figure 1

***"All Black" Sensor  
Part Number F7RZ-7M101-AA  
"No longer Available"***

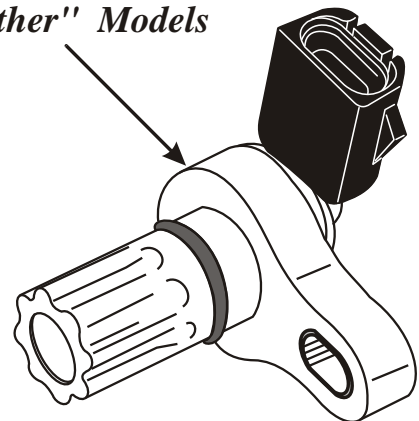


***White With "Green" Connector  
Part Number F7RZ-7M101-KA  
1994-1997 Probe "Only"***



***550 - 950 Ohms***

***White With "Black" Connector  
Part Number 1S7Z-7M101-KA  
"All Other" Models***



***625 - 1150 Ohms***

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Figure 2