THM 4L80-E AND THM 4L60-E

DIGITAL RATIO ADAPTER CONTROLLER (DRAC) LOCATIONS AND DIAGNOSIS

WHAT DOES THE DRAC DO?

The Digital Ratio Adapter Controller (DRAC), and since 1997 referred to as a Vehicle Speed Buffer, recieves an AC voltage signal from the Output Speed Sensor (OSS), or the Vehicle Speed Sensor (VSS). The DRAC then converts this AC voltage signal, to a digital DC voltage signal that can now be interpreted by the PCM/TCM, as well as changing the frequency of that signal and sends it in two different directions. One signal (2002 pulses) is sent to the PCM/TCM and used for upshifting the transmission, and another signal (4004 pulses) is sent to the speedometer for speedometer operation. The Anti-lock Brake System, Cruise Control and other systems also depend on an accurate vehicle speed signal from the DRAC.

The DRAC helps the PCM/TCM to calculate vehicle speed by pulsing a 5 Volt DC signal sent to it by the PCM/TCM at an extremely rapid speed, via circuit number 437. The PCM/TCM will calculate vehicle speed by monitoring the amount of time between these pulses. The DRAC will also allow for changes in tire size and axle ratio to be easily adapted to the vehicle systems by using DRAC modules of different calibrations. ***You must however, remain within the axle ratios and tire sizes available from OEM, if you intend to use an OEM calibrated DRAC.***

Of course, if you are expected to diagnose and repair the "Dreaded DRAC", the first thing that you must do is ***FIND the "Dreaded DRAC".***

NOTE: Any 1995 and later truck or van equipped with an external DRAC that is mentioned in this bulletin, is NON-OBDII. Any vehicle that is OBDII certified will NOT have an external DRAC, as this function is performed internally within the Vehicle Control Module (VCM).

WHERE DO I FIND THE DRAC?

1991 "C" and "K" Trucks - DRAC would be extremely difficult to find unless you knew where to look. As you can see in Figure 1, ***it is an integral part of the speedometer cluster,*** and must be serviced or repaired as a complete assembly, ***as there are no service parts available for this model.*** Refer to Figure 2 for the diagnostic tree and internal wire schematic, for 1991 model "C/K" Trucks with the ***integral*** DRAC.

1991 "R" and "V" Trucks - On these models the DRAC is external, and is located under the lower left center of the dash, as shown in Figure 3. Refer to Figure 6 for the diagnostic tree and internal wire schematic, for 1991 "R/V" Trucks with the ***external*** DRAC. 1991 was the last year for "R/V" Trucks.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

1991-Up "G" Series Vans - On these models the DRAC is external, and is located on the parking brake bracket, as shown in Figure 4. Refer to Figure 6 for the diagnostic tree and internal wire schematic, for the 1991-Up "G" Series Vans with the ***external*** DRAC.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

Continued on Page 2

WHERE DO I FIND THE DRAC? (Continued From Page 1)

1991 "P" Series Step Vans and Motorhome Chassis - On these models the DRAC is external, and the locations for the individual vehicles are shown in Figure 5. Refer to Figure 6 for the diagnostic tree and internal wire schematic, for the 1991 "P" Series Vans with the ***external*** DRAC.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

1992-Up (2WD) "C" Trucks - On these models the DRAC is external, and is located behind the glove box, as shown in Figure 7. Refer to Figure 6 for the diagnostic tree and internal wire schematic, for the 1992-Up (2WD) "C" Trucks with the ***external*** DRAC.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

1992-Up "P" Series Step Vans - On these models the DRAC is external, and is located on the driver side bulkhead, as shown in Figure 8. Refer to Figure 6 for the diagnostic tree and internal wire schematic, for the 1992-Up "P" Series Step Vans with the ***external*** DRAC.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

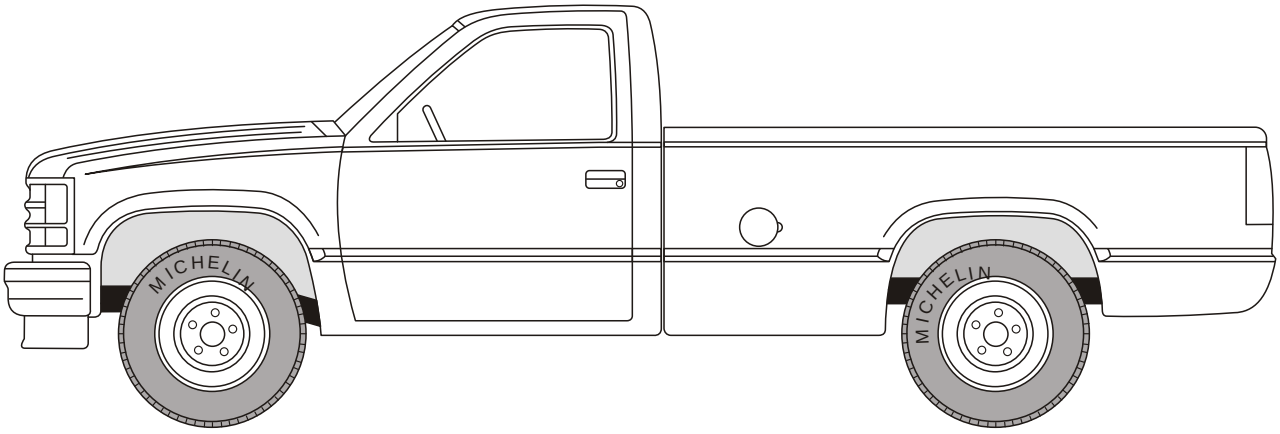
1993-1994 "M" & "L" Vans - On these models, which are equipped with the THM 4L60-E, the DRAC is external, and is located behind the dash and acessed by removing the glove box, as shown in Figure 9. Refer to Figure 12 for the diagnostic tree and internal wire schematic, for 1993-1994 "M" & "L" Vans equipped with the ***external*** DRAC.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

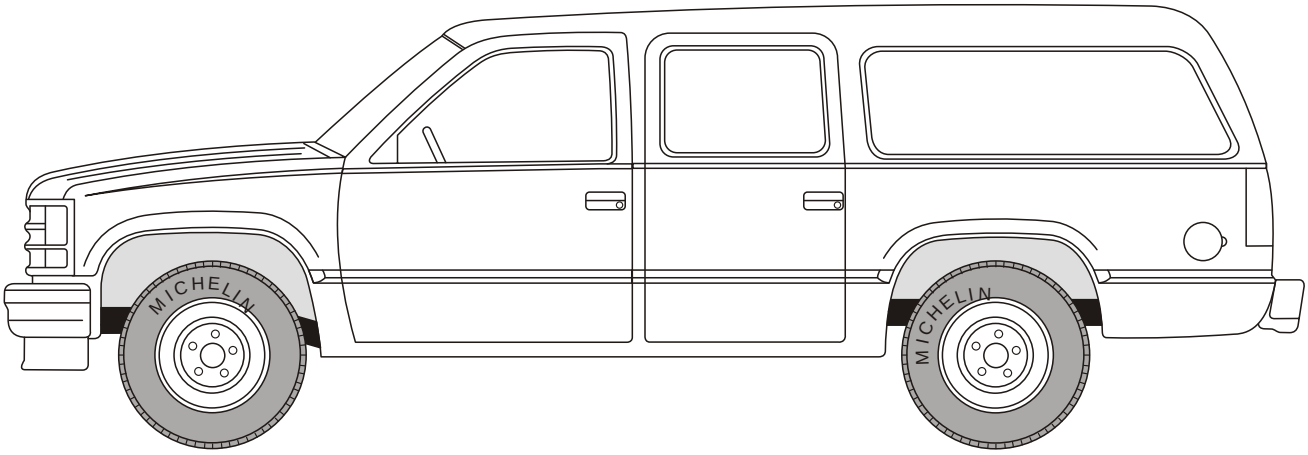
1993-Up "S" & "T" Trucks - On these models, which are equipped with the THM 4L60-E, the DRAC is external, and the location is shown in Figure 11. Refer to Figure 12 for the diagnostic tree and internal wire schematic for 1993-Up "S" (2WD) Trucks only. The 1993-Up "T" (4WD) Truck diagnostic tree and internal wire schematic is found in the 4WD section of this bulletin.
Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

1995 "M" & "L" Vans - On these models, which are equipped with the THM 4L60-E, the DRAC is external, and is located under the dash on right side of instrument cluster, as shown in Figure 10. Refer to Figure 12 for the diagnostic tree and internal wire schematic, for 1995 "M" & "L" Vans with the external DRAC.

SEE PAGE 15 FOR FOUR WHEEL DRIVE DIAGNOSIS

1991 "C/K" SERIES PICK-UP & SUBURBAN
DRAC LOCATION





DRAC IS LOCATED *INSIDE*
SPEEDOMETER CLUSTER

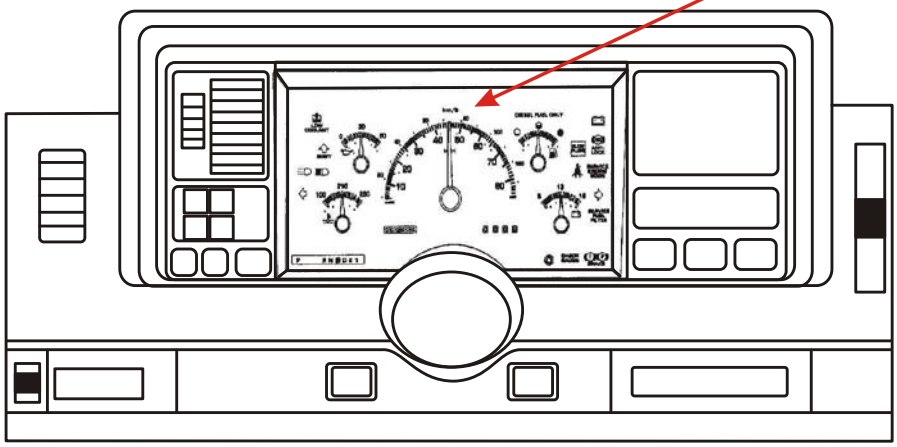


Figure 1

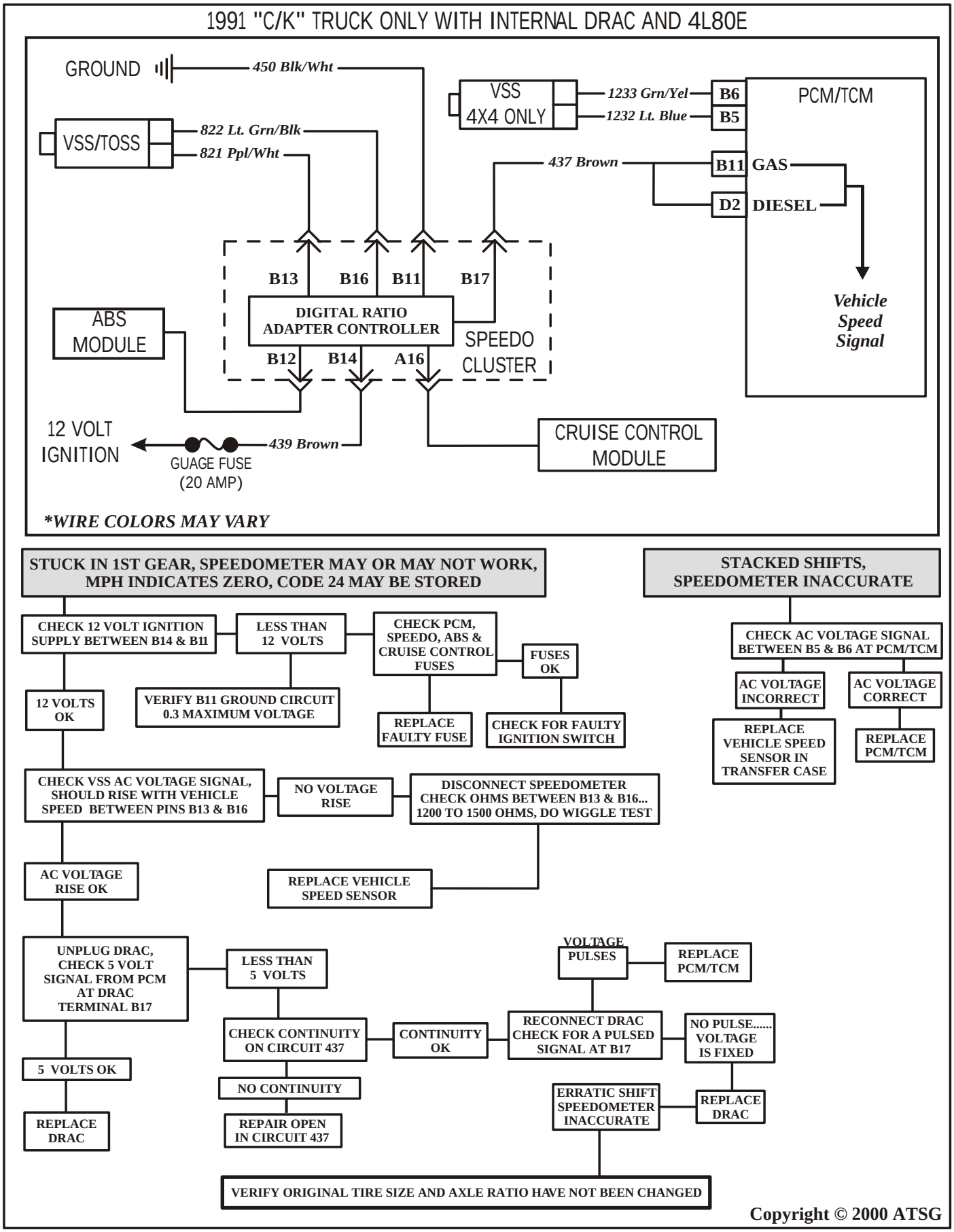

1991 "C/K" TRUCK ONLY WITH INTERNAL DRAC AND 4L80E
GROUND
450 Blk/Wht
VSS/TOSS
822 Lt. Grn/Blk
821 Ppl/Wht
VSS 4X4 ONLY
1233 Grn/Yel
1232 Lt. Blue
B6
B5
PCM/TCM
437 Brown
B11
GAS
D2
DIESEL
Vehicle Speed Signal
B13
B16
B11
B17
DIGITAL RATIO ADAPTER CONTROLLER
SPEEDO CLUSTER
ABS MODULE
B12
B14
A16
12 VOLT IGNITION
439 Brown
GUAGE FUSE (20 AMP)
CRUISE CONTROL MODULE
*WIRE COLORS MAY VARY
STUCK IN 1ST GEAR, SPEEDOMETER MAY OR MAY NOT WORK, MPH INDICATES ZERO, CODE 24 MAY BE STORED
CHECK 12 VOLT IGNITION SUPPLY BETWEEN B14 & B11
LESS THAN 12 VOLTS
CHECK PCM, SPEEDO, ABS & CRUISE CONTROL FUSES
FUSES OK
12 VOLTS OK
VERIFY B11 GROUND CIRCUIT 0.3 MAXIMUM VOLTAGE
REPLACE FAULTY FUSE
CHECK FOR FAULTY IGNITION SWITCH
CHECK VSS AC VOLTAGE SIGNAL, SHOULD RISE WITH VEHICLE SPEED BETWEEN PINS B13 & B16
NO VOLTAGE RISE
DISCONNECT SPEEDOMETER CHECK OHMS BETWEEN B13 & B16... 1200 TO 1500 OHMS, DO WIGGLE TEST
AC VOLTAGE RISE OK
REPLACE VEHICLE SPEED SENSOR
UNPLUG DRAC, CHECK 5 VOLT SIGNAL FROM PCM AT DRAC TERMINAL B17
LESS THAN 5 VOLTS
CHECK CONTINUITY ON CIRCUIT 437
CONTINUITY OK
5 VOLTS OK
NO CONTINUITY
REPLACE DRAC
REPAIR OPEN IN CIRCUIT 437
STACKED SHIFTS, SPEEDOMETER INACCURATE
CHECK AC VOLTAGE SIGNAL BETWEEN B5 & B6 AT PCM/TCM
AC VOLTAGE INCORRECT
AC VOLTAGE CORRECT
REPLACE VEHICLE SPEED SENSOR IN TRANSFER CASE
REPLACE PCM/TCM
VOLTAGE PULSES
REPLACE PCM/TCM
RECONNECT DRAC CHECK FOR A PULSED SIGNAL AT B17
NO PULSE..... VOLTAGE IS FIXED
ERRATIC SHIFT SPEEDOMETER INACCURATE
REPLACE DRAC
VERIFY ORIGINAL TIRE SIZE AND AXLE RATIO HAVE NOT BEEN CHANGED
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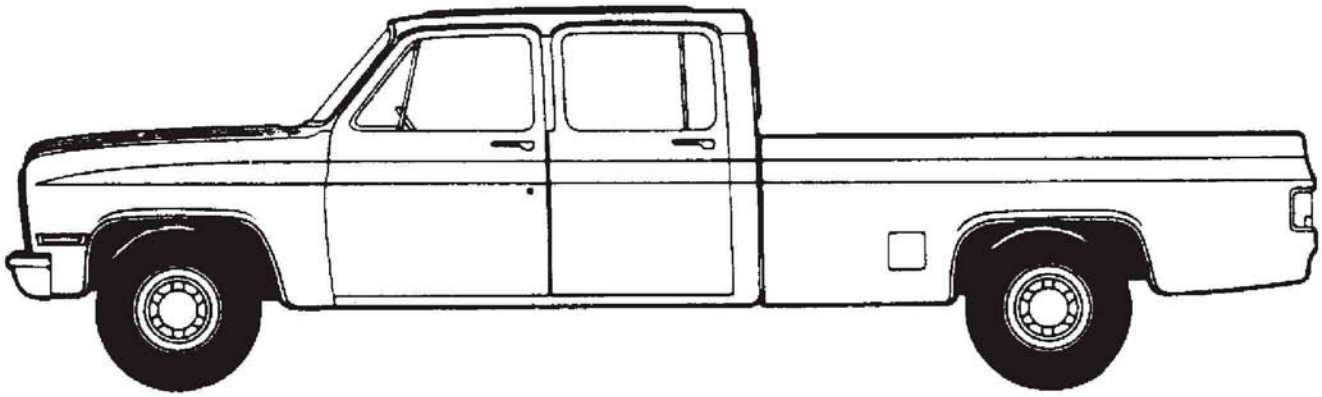
Figure 2

1991 "R/V" SERIES TRUCKS
EXTERNAL DRAC LOCATION



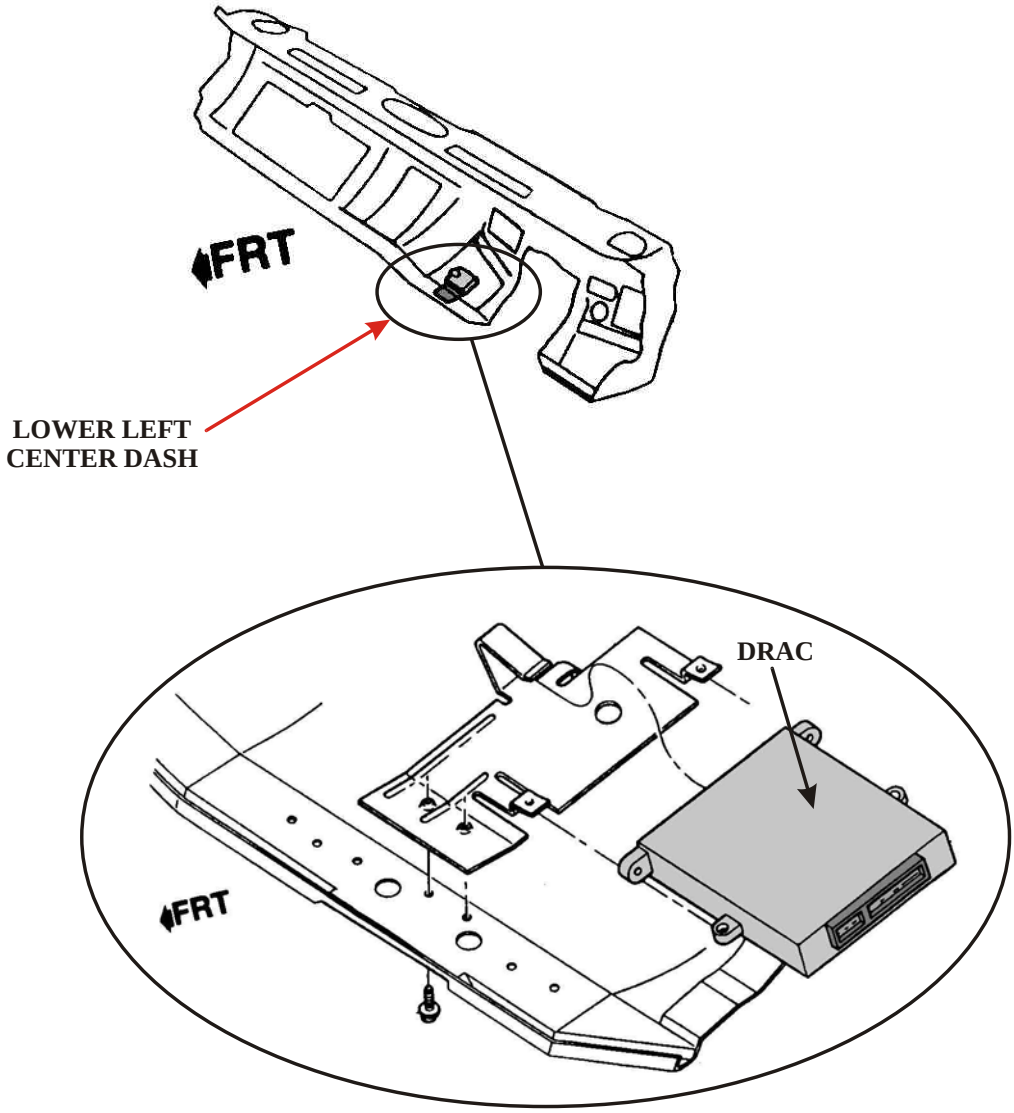
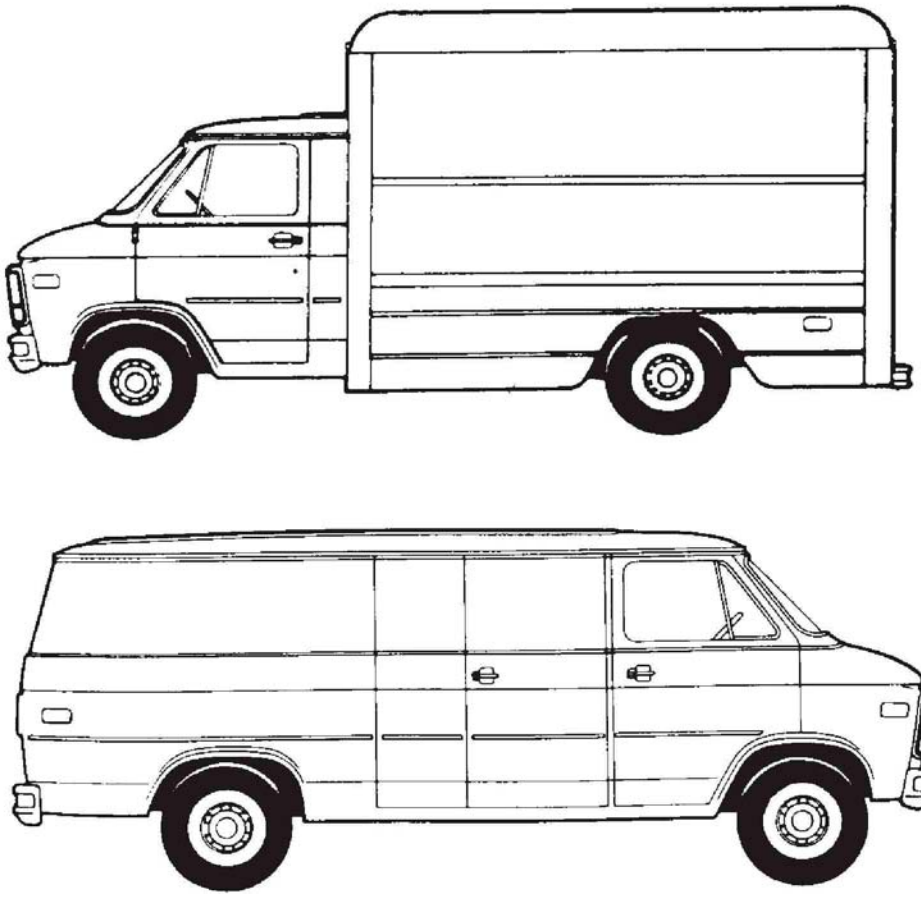


Figure 3

1991-UP "G" SERIES VANS
EXTERNAL DRAC LOCATION



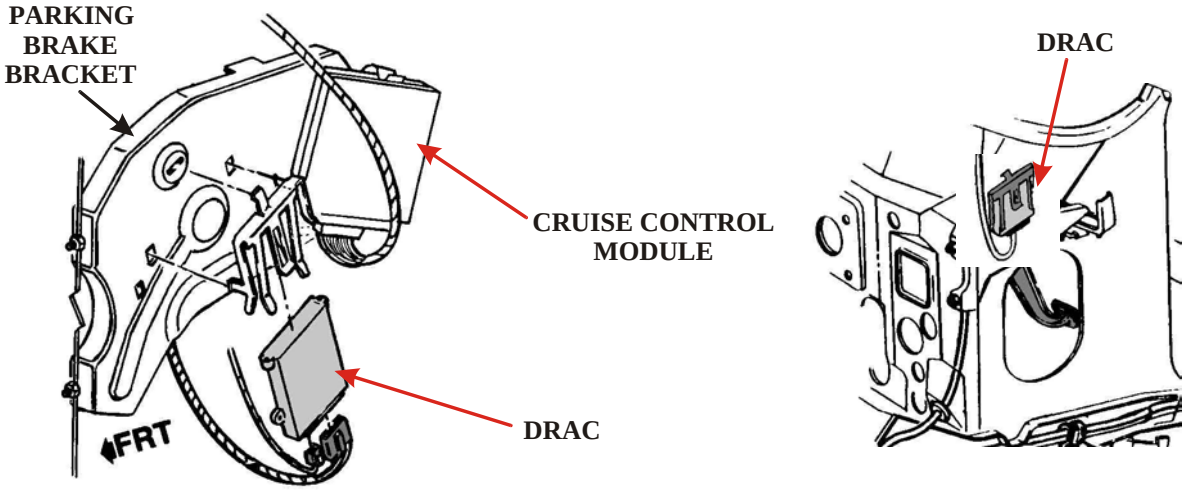
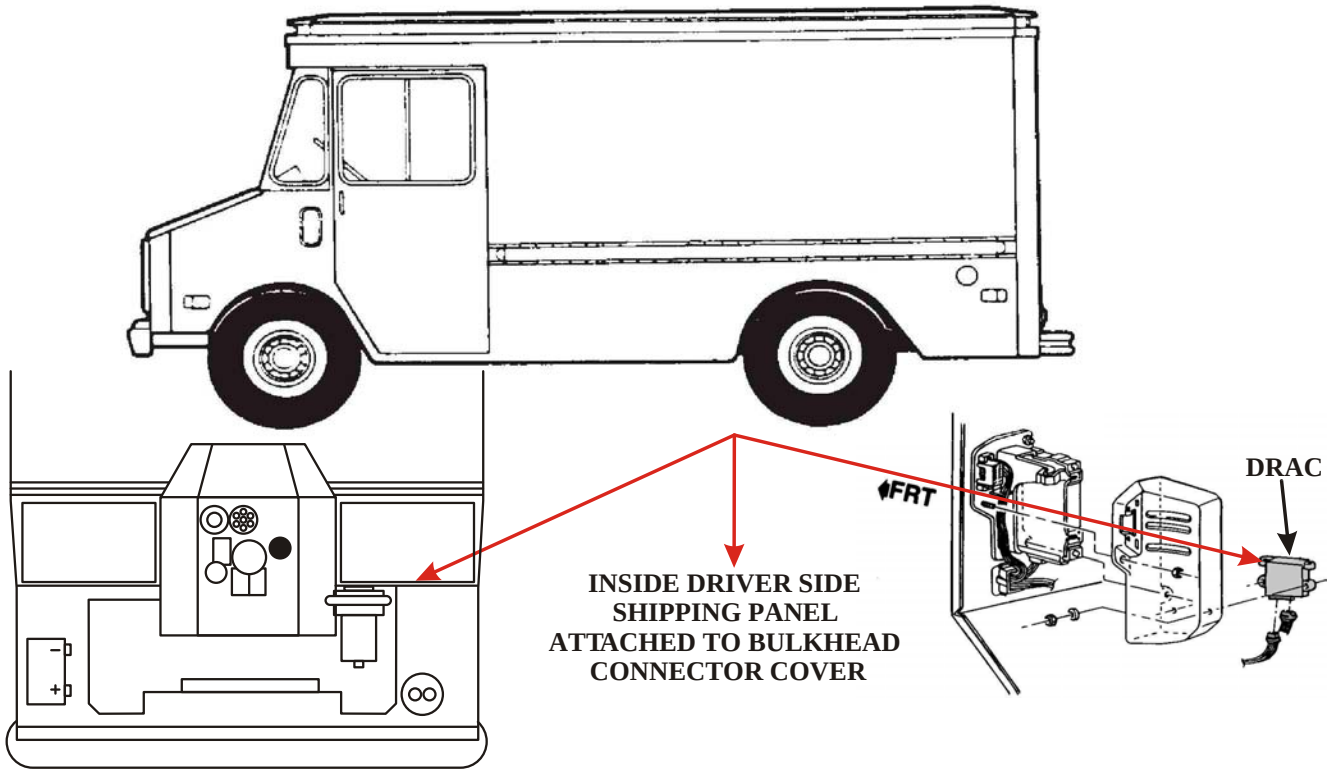


Figure 4

1991 "P" SERIES STEP VAN DRAC LOCATION



1991-UP "P" SERIES MOTORHOME AND COMMERCIAL CHASSIS
EXTERNAL DRAC LOCATION

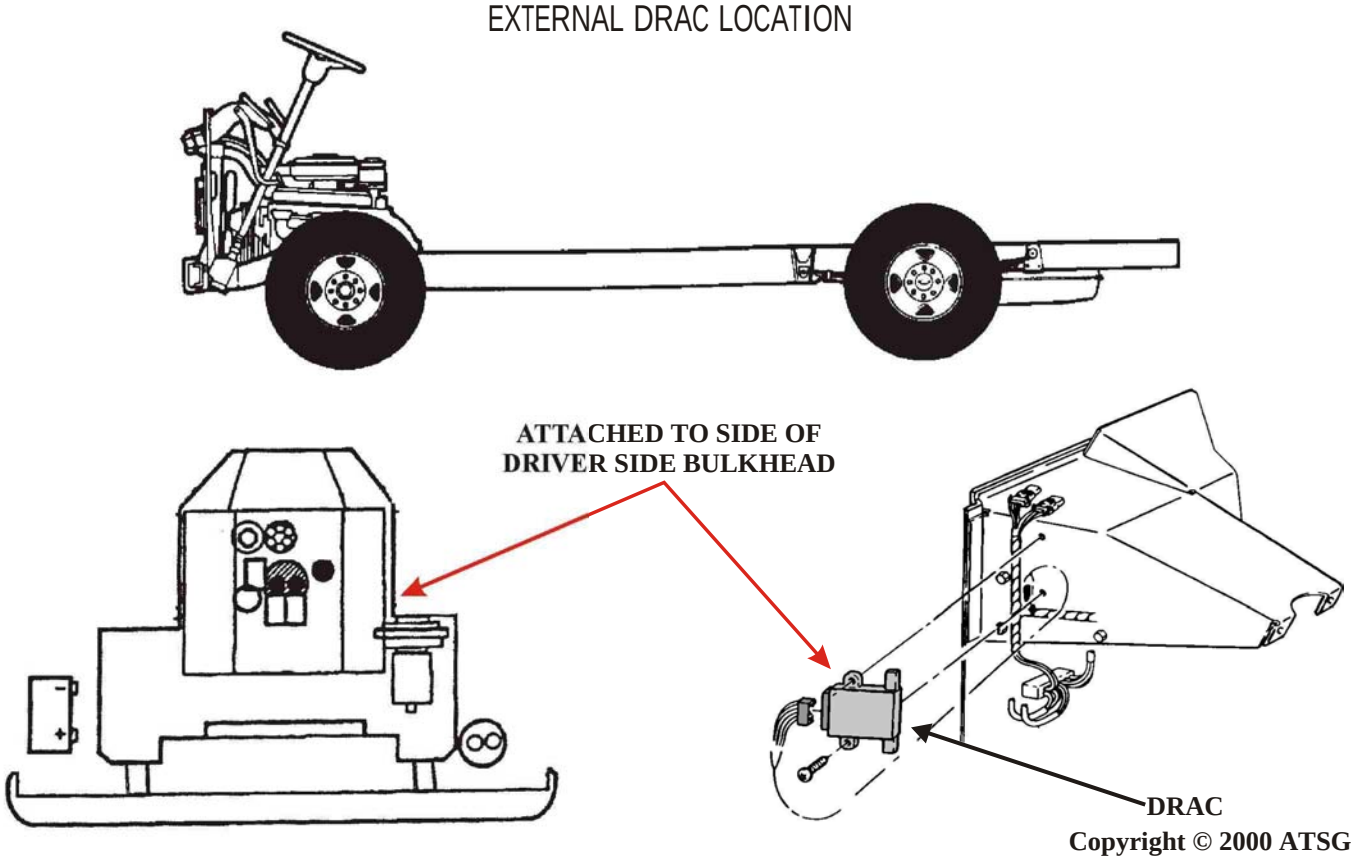


Figure 5

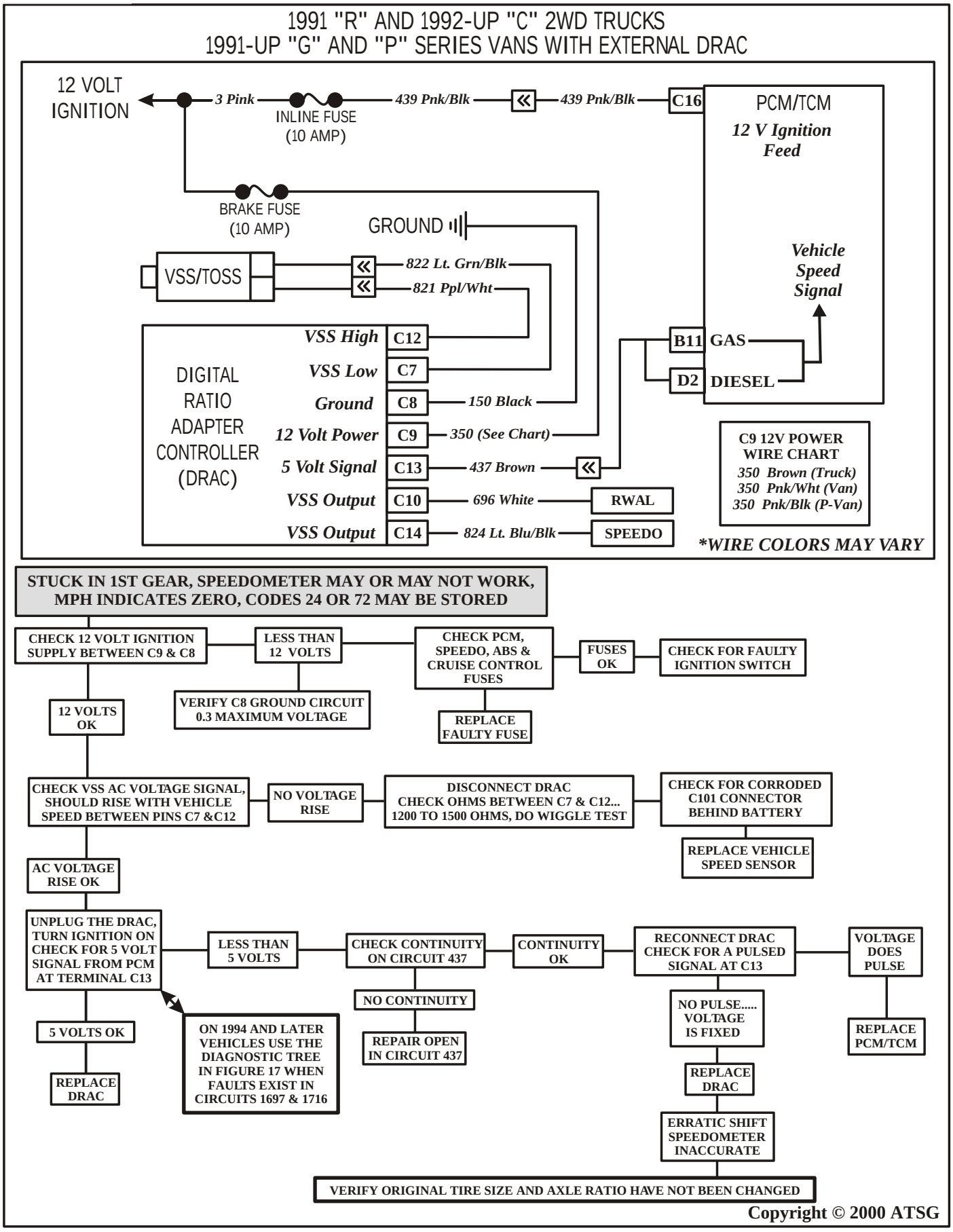

1991 "R" AND 1992-UP "C" 2WD TRUCKS
1991-UP "G" AND "P" SERIES VANS WITH EXTERNAL DRAC
12 VOLT IGNITION
3 Pink
INLINE FUSE (10 AMP)
439 Pnk/Blk
439 Pnk/Blk
C16
PCM/TCM
12 V Ignition Feed
BRAKE FUSE (10 AMP)
GROUND
VSS/TOSS
822 Lt. Grn/Blk
821 Ppl/Wht
Vehicle Speed Signal
DIGITAL RATIO ADAPTER CONTROLLER (DRAC)
VSS High C12
VSS Low C7
Ground C8
150 Black
12 Volt Power C9
350 (See Chart)
5 Volt Signal C13
437 Brown
VSS Output C10
696 White
RWAL
VSS Output C14
824 Lt. Blu/Blk
SPEEDO
B11 GAS
D2 DIESEL
C9 12V POWER WIRE CHART
350 Brown (Truck)
350 Pnk/Wht (Van)
350 Pnk/Blk (P-Van)
*WIRE COLORS MAY VARY
STUCK IN 1ST GEAR, SPEEDOMETER MAY OR MAY NOT WORK, MPH INDICATES ZERO, CODES 24 OR 72 MAY BE STORED
CHECK 12 VOLT IGNITION SUPPLY BETWEEN C9 & C8
LESS THAN 12 VOLTS
CHECK PCM, SPEEDO, ABS & CRUISE CONTROL FUSES
FUSES OK
CHECK FOR FAULTY IGNITION SWITCH
12 VOLTS OK
VERIFY C8 GROUND CIRCUIT 0.3 MAXIMUM VOLTAGE
REPLACE FAULTY FUSE
CHECK VSS AC VOLTAGE SIGNAL, SHOULD RISE WITH VEHICLE SPEED BETWEEN PINS C7 &C12
NO VOLTAGE RISE
DISCONNECT DRAC CHECK OHMS BETWEEN C7 & C12... 1200 TO 1500 OHMS, DO WIGGLE TEST
CHECK FOR CORRODED C101 CONNECTOR BEHIND BATTERY
REPLACE VEHICLE SPEED SENSOR
AC VOLTAGE RISE OK
UNPLUG THE DRAC, TURN IGNITION ON CHECK FOR 5 VOLT SIGNAL FROM PCM AT TERMINAL C13
LESS THAN 5 VOLTS
CHECK CONTINUITY ON CIRCUIT 437
CONTINUITY OK
RECONNECT DRAC CHECK FOR A PULSED SIGNAL AT C13
VOLTAGE DOES PULSE
NO CONTINUITY
REPAIR OPEN IN CIRCUIT 437
NO PULSE..... VOLTAGE IS FIXED
REPLACE PCM/TCM
5 VOLTS OK
ON 1994 AND LATER VEHICLES USE THE DIAGNOSTIC TREE IN FIGURE 17 WHEN FAULTS EXIST IN CIRCUITS 1697 & 1716
REPLACE DRAC
REPLACE DRAC
ERRATIC SHIFT SPEEDOMETER INACCURATE
VERIFY ORIGINAL TIRE SIZE AND AXLE RATIO HAVE NOT BEEN CHANGED
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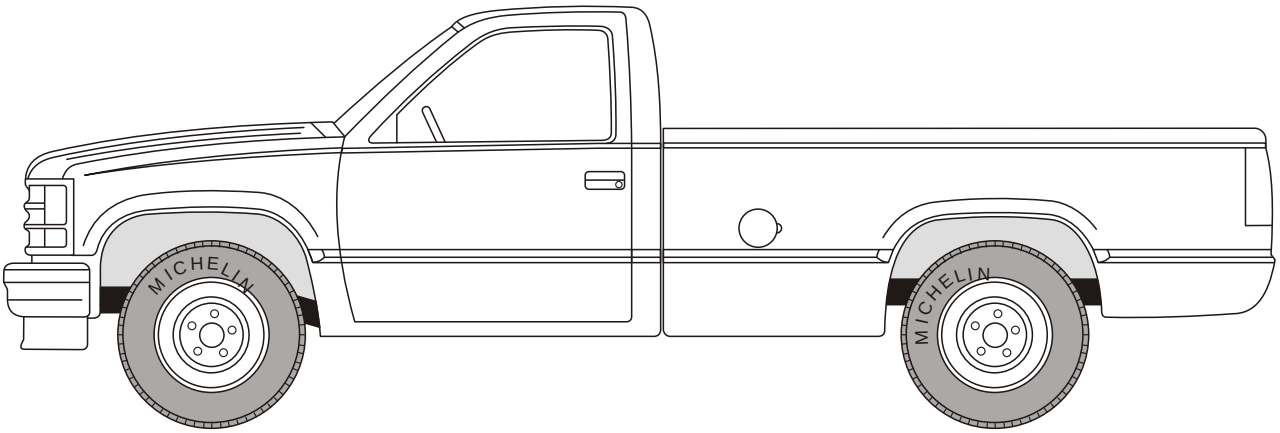
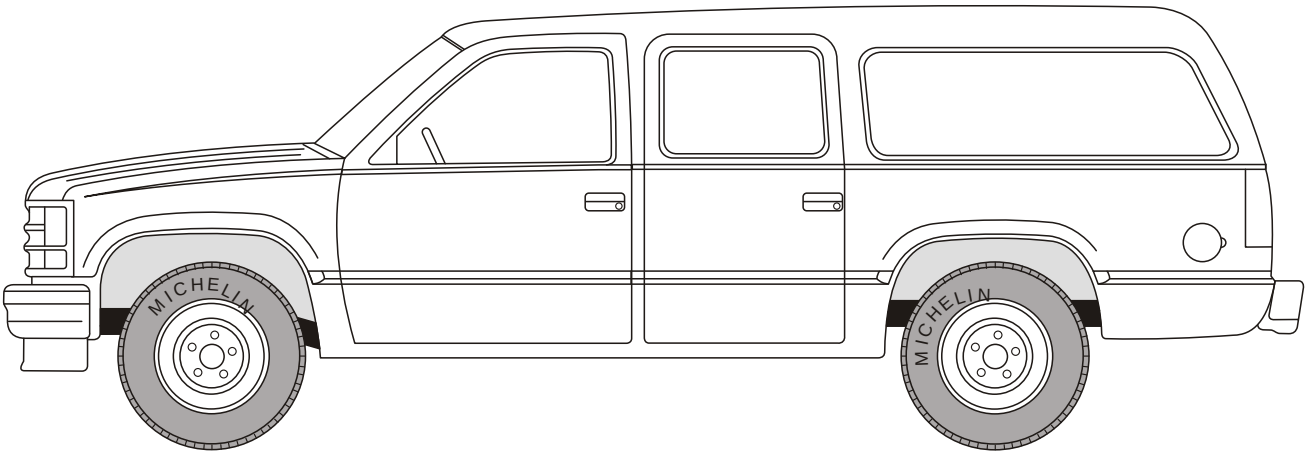
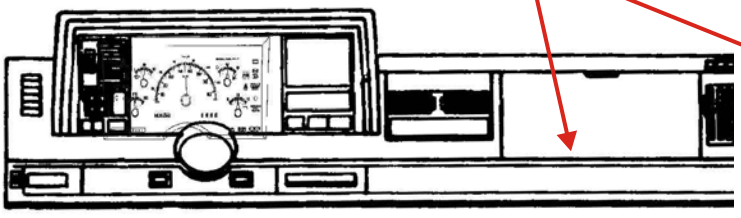
Figure 6

1992-UP "C" & "K" SERIES TRUCKS





BEHIND GLOVE BOX
REMOVE GLOVE BOX INSERT
AND ACCESS DRAC THROUGH
GLOVE BOX OPENING



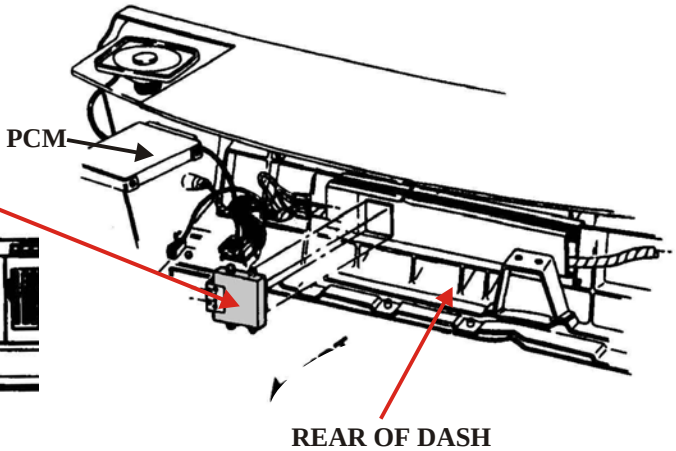


Figure 7

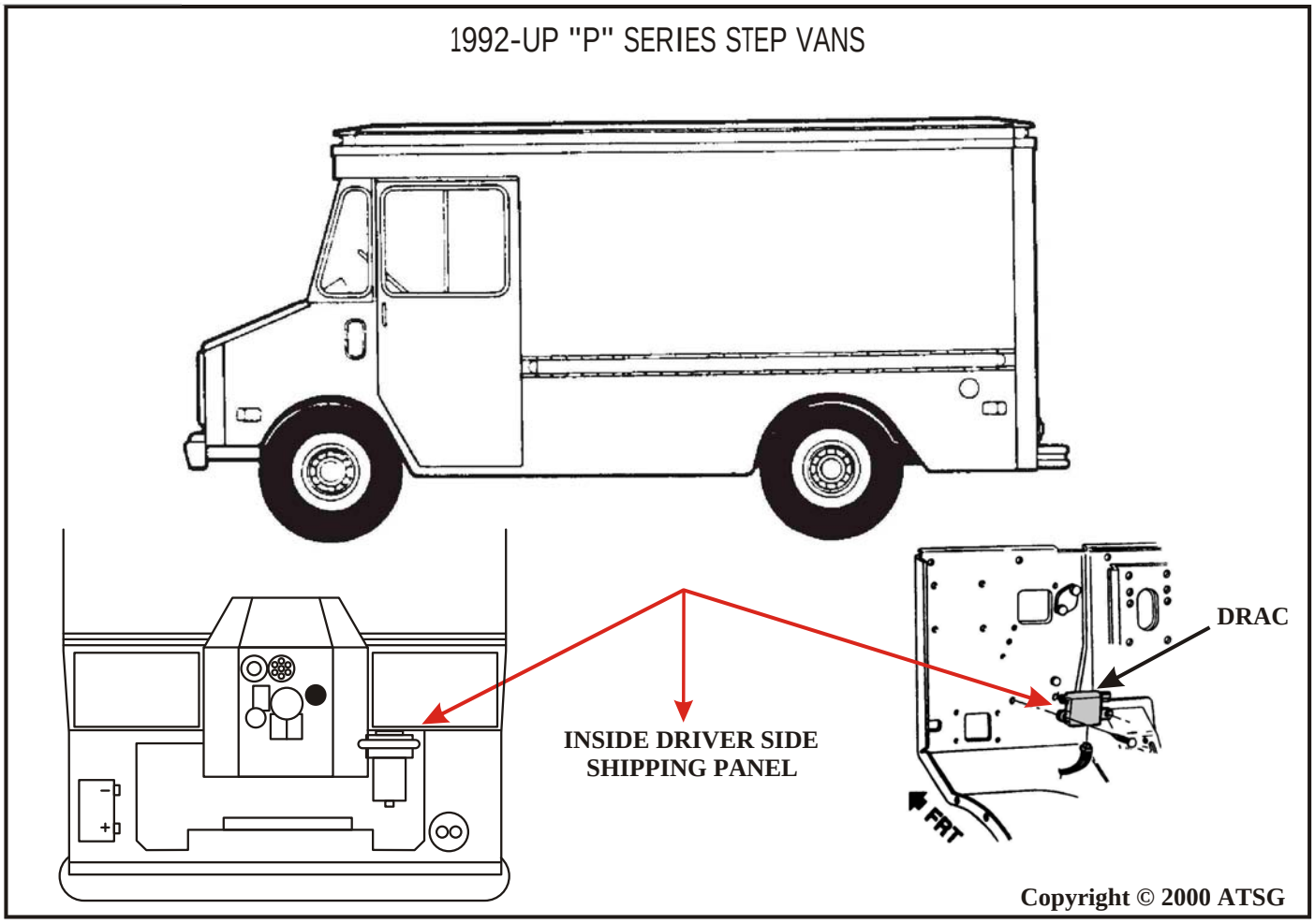

1992-UP "P" SERIES STEP VANS
DRAC
INSIDE DRIVER SIDE
SHIPPING PANEL
FRT
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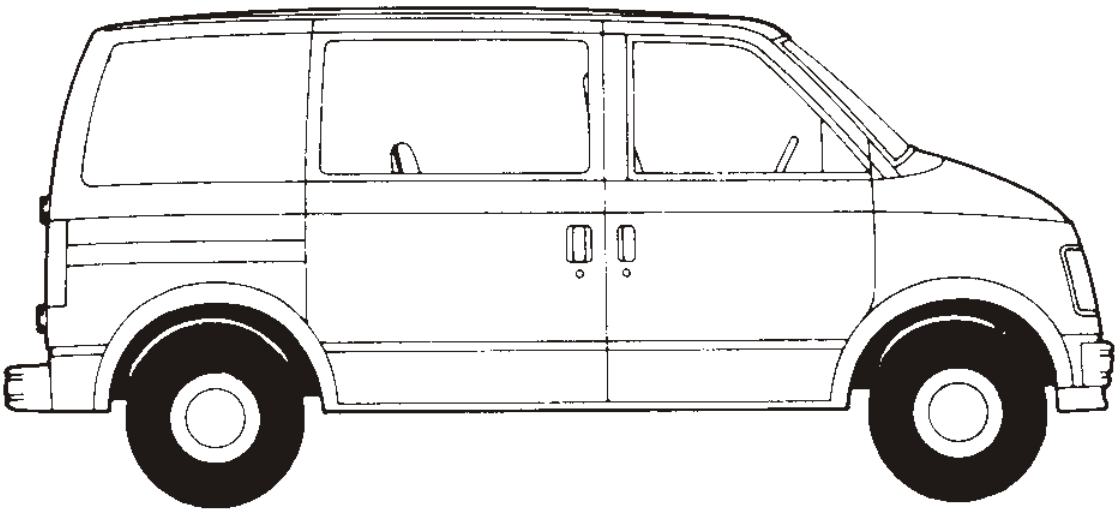
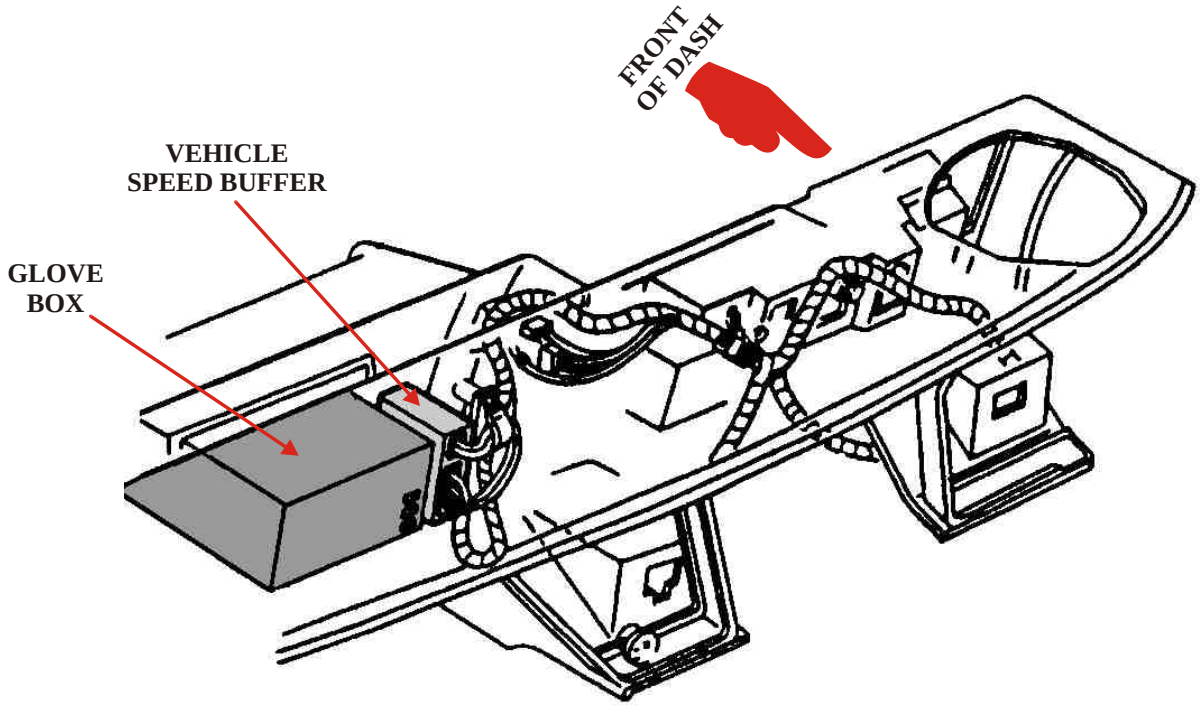
Figure 8

1993-1994 "M" & "L" VANS WITH THM 4L60-E

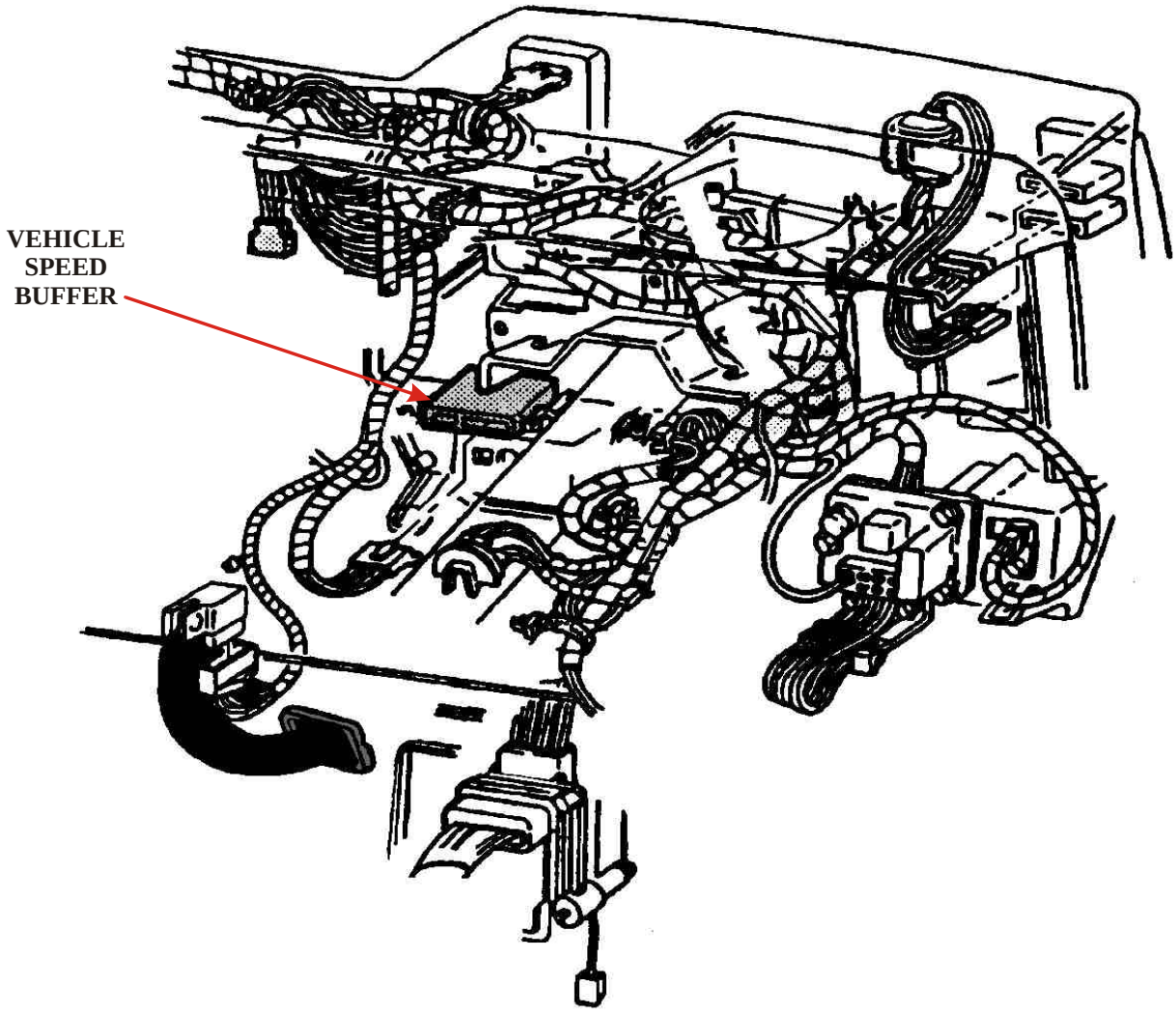




VIEW IS FROM REAR OF DASH BOARD

Figure 9

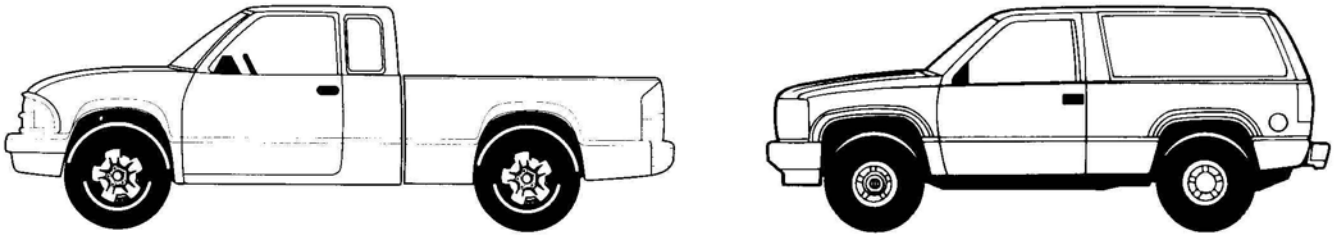
1995 "M" & "L" VANS WITH THM 4L60-E

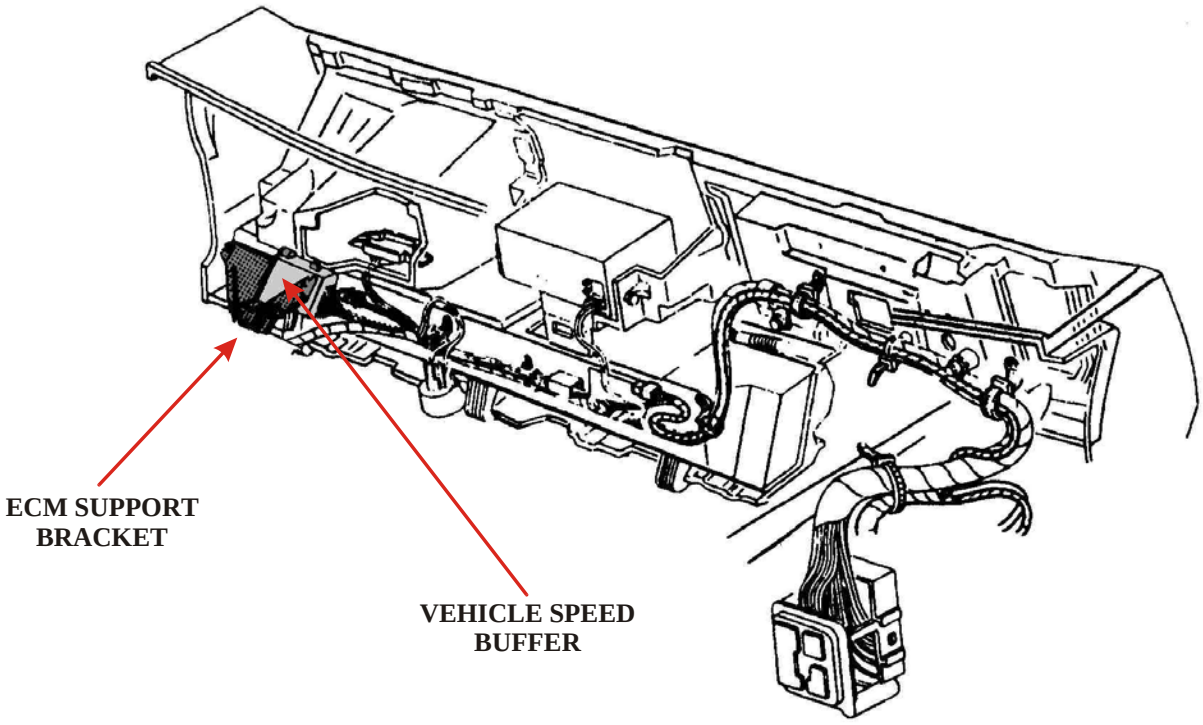


VIEW IS FROM DRIVER'S SIDE REAR OF DASHBOARD

Figure 10

1993-UP "S" & "T" TRUCKS WITH THM 4L60-E





VIEW IS FROM REAR OF DASHBOARD

Figure 11

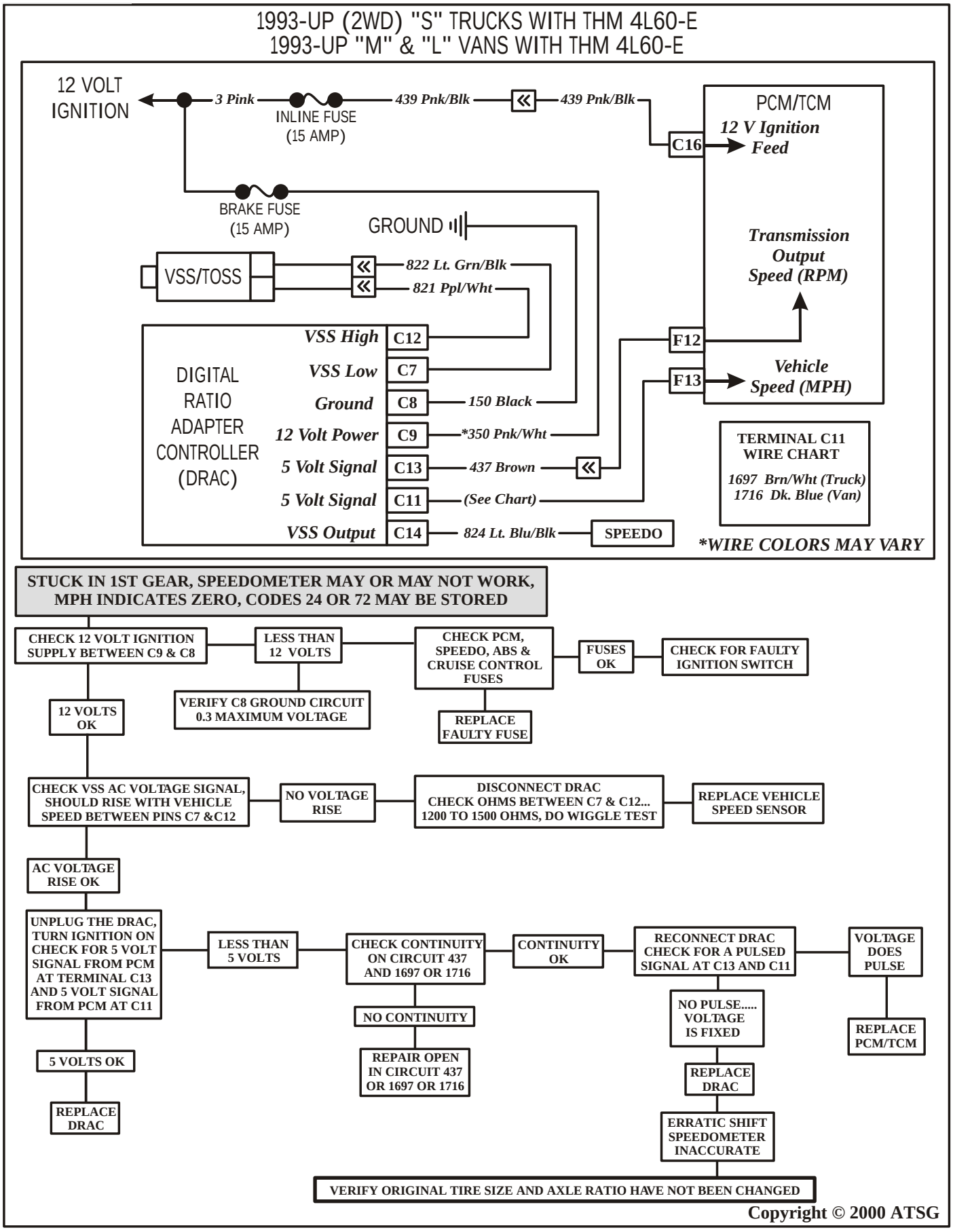

1993-UP (2WD) "S" TRUCKS WITH THM 4L60-E
1993-UP "M" & "L" VANS WITH THM 4L60-E
12 VOLT IGNITION
3 Pink
INLINE FUSE (15 AMP)
439 Pnk/Blk
439 Pnk/Blk
C16
PCM/TCM
12 V Ignition Feed
BRAKE FUSE (15 AMP)
GROUND
Transmission Output Speed (RPM)
VSS/TOSS
822 Lt. Grn/Blk
821 Ppl/Wht
DIGITAL RATIO ADAPTER CONTROLLER (DRAC)
VSS High C12
VSS Low C7
Ground C8
150 Black
12 Volt Power C9
*350 Pnk/Wht
5 Volt Signal C13
437 Brown
5 Volt Signal C11
(See Chart)
VSS Output C14
824 Lt. Blu/Blk
SPEEDO
F12
F13
Vehicle Speed (MPH)
TERMINAL C11 WIRE CHART
1697 Brn/Wht (Truck)
1716 Dk. Blue (Van)
*WIRE COLORS MAY VARY
STUCK IN 1ST GEAR, SPEEDOMETER MAY OR MAY NOT WORK, MPH INDICATES ZERO, CODES 24 OR 72 MAY BE STORED
CHECK 12 VOLT IGNITION SUPPLY BETWEEN C9 & C8
LESS THAN 12 VOLTS
CHECK PCM, SPEEDO, ABS & CRUISE CONTROL FUSES
FUSES OK
CHECK FOR FAULTY IGNITION SWITCH
12 VOLTS OK
VERIFY C8 GROUND CIRCUIT 0.3 MAXIMUM VOLTAGE
REPLACE FAULTY FUSE
CHECK VSS AC VOLTAGE SIGNAL, SHOULD RISE WITH VEHICLE SPEED BETWEEN PINS C7 &C12
NO VOLTAGE RISE
DISCONNECT DRAC CHECK OHMS BETWEEN C7 & C12... 1200 TO 1500 OHMS, DO WIGGLE TEST
REPLACE VEHICLE SPEED SENSOR
AC VOLTAGE RISE OK
UNPLUG THE DRAC, TURN IGNITION ON CHECK FOR 5 VOLT SIGNAL FROM PCM AT TERMINAL C13 AND 5 VOLT SIGNAL FROM PCM AT C11
LESS THAN 5 VOLTS
CHECK CONTINUITY ON CIRCUIT 437 AND 1697 OR 1716
CONTINUITY OK
RECONNECT DRAC CHECK FOR A PULSED SIGNAL AT C13 AND C11
VOLTAGE DOES PULSE
NO CONTINUITY
NO PULSE..... VOLTAGE IS FIXED
REPLACE PCM/TCM
5 VOLTS OK
REPAIR OPEN IN CIRCUIT 437 OR 1697 OR 1716
REPLACE DRAC
REPLACE DRAC
ERRATIC SHIFT SPEEDOMETER INACCURATE
VERIFY ORIGINAL TIRE SIZE AND AXLE RATIO HAVE NOT BEEN CHANGED
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Figure 12

1992-1993 "K" & 1991 "V" TRUCKS "ONLY"
FOUR WHEEL DRIVE SECTION

1992-1993 (4WD) "K" Trucks With 4L80-E - On these models the DRAC is external, and is found behind the glove box, which must be removed for access to the DRAC, as shown in Figure 7. This system uses ***only*** the Transmission Output Speed Sensor (TOSS) to shift the transmission and provide speedometer accuracy, ***as long as the transfer case is in 2WD or 4WD high.*** This system also ***compares*** transmission output shaft speed (TOSS) to the transfer case output speed (VSS), ***only when transfer case is shifted into 4WD Low,*** as shown in Figure 13. At this time the PCM switches strategy to compensate for the gear reduction that occured in 4WD Low, so that shift timing and speedometer operation is still accurate.

The diagnostics for this type of system require some additional diagnostic steps due to the TOSS being the speed sensor that upshifts the transmission and is "HARD WIRED" to the PCM/TCM and is internally buffered by the PCM/TCM. The VSS in the transfer case, which is wired to the DRAC is responsible for the gear reduction calibration to compensate for shift timing and speedometer accuracy that is necessary when 4 wheel low is selected. Refer to Figure 14 for the diagnostic tree and internal wire schematic, for the 1992-1993 (4WD) "K" Trucks with the external DRAC and equipped with the 4L80-E.

Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

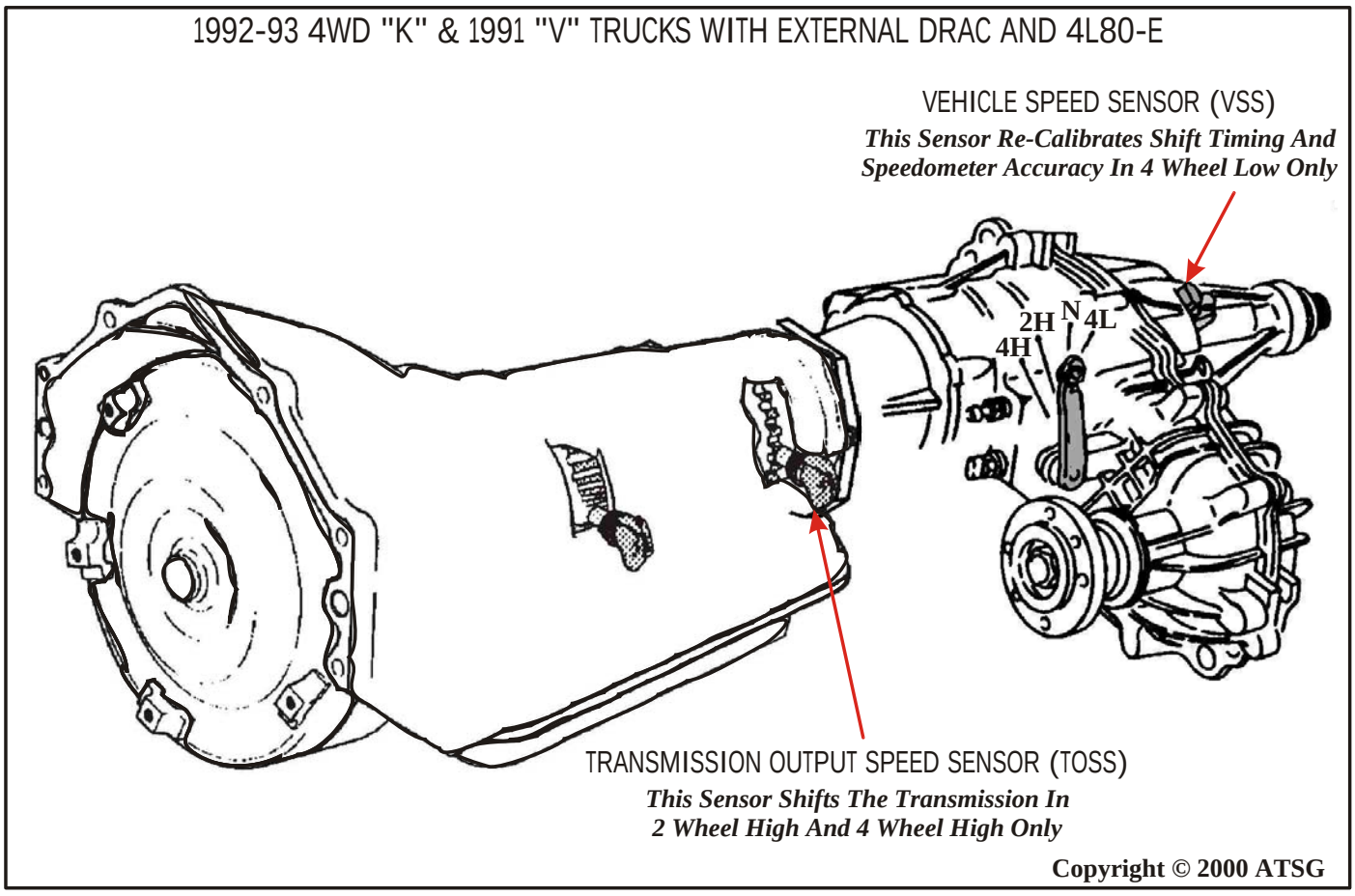

Figure 13

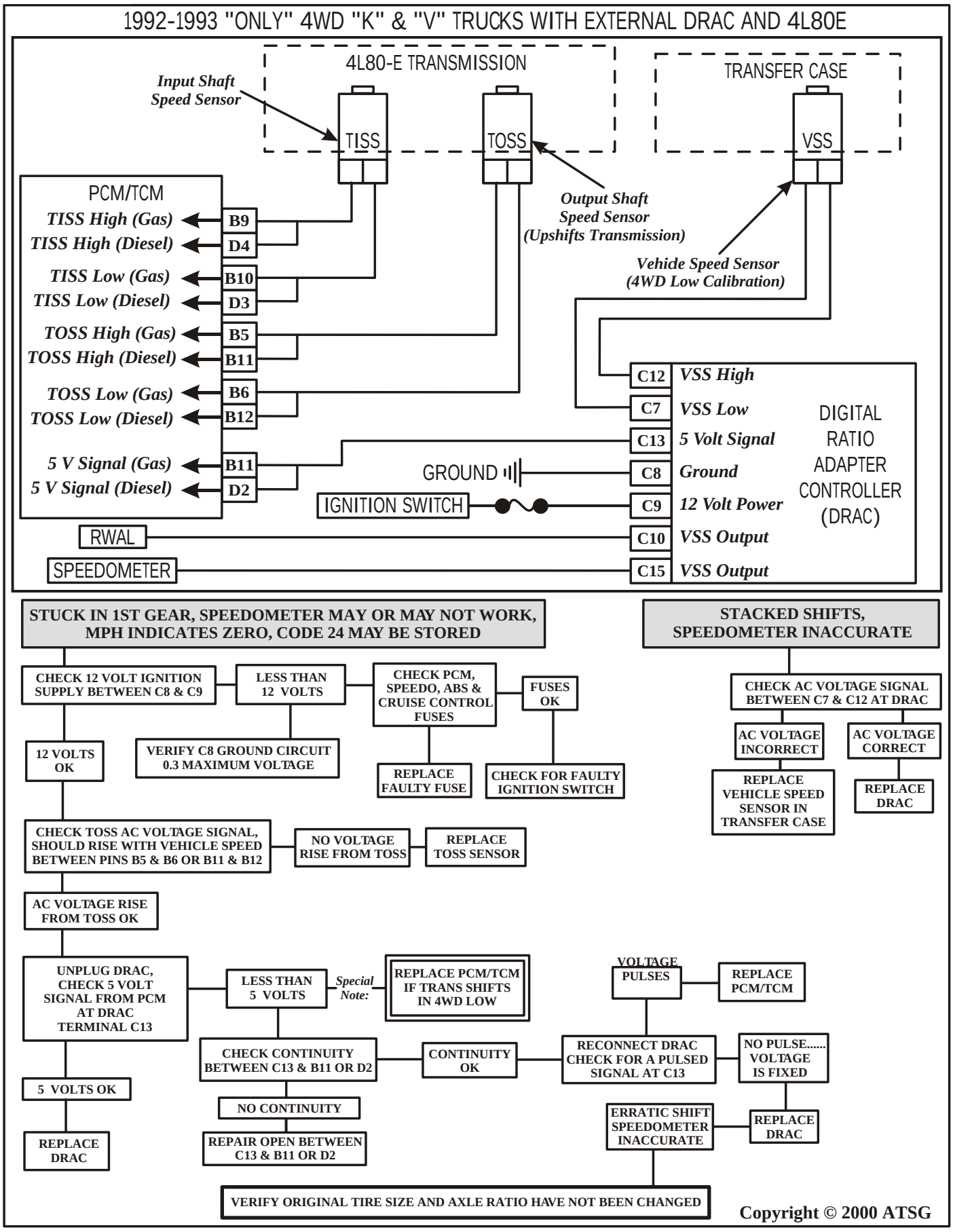
1992-1993 "ONLY" 4WD "K" & "V" TRUCKS WITH EXTERNAL DRAC AND 4L80E
4L80-E TRANSMISSION
TRANSFER CASE
Input Shaft Speed Sensor
TISS
TOSS
VSS
Output Shaft Speed Sensor (Upshifts Transmission)
Vehide Speed Sensor (4WD Low Calibration)
PCM/TCM
TISS High (Gas) B9
TISS High (Diesel) D4
TISS Low (Gas) B10
TISS Low (Diesel) D3
TOSS High (Gas) B5
TOSS High (Diesel) B11
TOSS Low (Gas) B6
TOSS Low (Diesel) B12
5 V Signal (Gas) B11
5 V Signal (Diesel) D2
RWAL
SPEEDOMETER
GROUND
IGNITION SWITCH
C12 VSS High
C7 VSS Low
C13 5 Volt Signal
C8 Ground
C9 12 Volt Power
C10 VSS Output
C15 VSS Output
DIGITAL RATIO ADAPTER CONTROLLER (DRAC)
STUCK IN 1ST GEAR, SPEEDOMETER MAY OR MAY NOT WORK, MPH INDICATES ZERO, CODE 24 MAY BE STORED
CHECK 12 VOLT IGNITION SUPPLY BETWEEN C8 & C9
LESS THAN 12 VOLTS
CHECK PCM, SPEEDO, ABS & CRUISE CONTROL FUSES
FUSES OK
12 VOLTS OK
VERIFY C8 GROUND CIRCUIT 0.3 MAXIMUM VOLTAGE
REPLACE FAULTY FUSE
CHECK FOR FAULTY IGNITION SWITCH
CHECK TOSS AC VOLTAGE SIGNAL, SHOULD RISE WITH VEHICLE SPEED BETWEEN PINS B5 & B6 OR B11 & B12
NO VOLTAGE RISE FROM TOSS
REPLACE TOSS SENSOR
AC VOLTAGE RISE FROM TOSS OK
UNPLUG DRAC, CHECK 5 VOLT SIGNAL FROM PCM AT DRAC TERMINAL C13
LESS THAN 5 VOLTS
Special Note:
REPLACE PCM/TCM IF TRANS SHIFTS IN 4WD LOW
5 VOLTS OK
REPLACE DRAC
CHECK CONTINUITY BETWEEN C13 & B11 OR D2
CONTINUITY OK
NO CONTINUITY
REPAIR OPEN BETWEEN C13 & B11 OR D2
STACKED SHIFTS, SPEEDOMETER INACCURATE
CHECK AC VOLTAGE SIGNAL BETWEEN C7 & C12 AT DRAC
AC VOLTAGE INCORRECT
AC VOLTAGE CORRECT
REPLACE VEHICLE SPEED SENSOR IN TRANSFER CASE
REPLACE DRAC
VOLTAGE PULSES
REPLACE PCM/TCM
RECONNECT DRAC CHECK FOR A PULSED SIGNAL AT C13
NO PULSE..... VOLTAGE IS FIXED
ERRATIC SHIFT SPEEDOMETER INACCURATE
REPLACE DRAC
VERIFY ORIGINAL TIRE SIZE AND AXLE RATIO HAVE NOT BEEN CHANGED
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Figure 14

1994 AND LATER 4WD "K" TRUCKS NON-OBDII WITH 4L60-E

FOUR WHEEL DRIVE SECTION

The1994 & later 4x4 with 4L80E transmission and 1993 and later 4x4 with 4L60E transmission - On these models the DRAC is external, and is found behind the glove box, which must be removed for access to the DRAC, as shown in Figure 7. These utilize a ***4WD Low Switch,*** located in the transfer case to signal the computer that 4W LOW has been selected. It does this by supplying 12V to the PCM when in 2WD or 4W HI modes. When 4W LOW is selected the 4W LOW switch grounds it's 12V signal, changing it to ZERO VOLTS. The computer, recognizing this voltage difference, then changes its strategy which adjusts for correct shift timing and speedometer operation in order to compensate for the gear reduction that occurs when 4W Low is selected.

Vehicles equipped with the 4L80E transmission may have a dummy speed sensor located in the output speed sensor location, there is no wiring for this speed sensor as it is there only to plug the hole!

Later models will have a plug in this location as the TOSS function on 1994 and later vehicles with the 4L80E transmission was eliminated. The VSS in the transfer case along with the 4W Low Switch takes over the functions of calibrating vehicle speed signal input, shift timing and speedometer operation and accuracy in all transfer case modes as shown in Figure 15. 1993 and later vehicles equipped with the 4L60E transmission will have the VSS in the transfer case ONLY and the 4W Low Switch located there as well. Refer to Figure 16 for the diagnostic tree and internal wire schematic, for 1994 and later "K" Trucks with the 4L80-E and 1993 and later "K" Trucks with the 4L60-E.

NOTE: Even though the vehicle you are working on is a 2WD model, the vehicle harness includes the wiring for the 4 Wheel Low switch, which if grounded for what ever reason, would create a stack shifting condition. Ensure that you check the status of the 4 Wheel Low switch parameter on your scan tool, and if it says "YES", look for a grounded 1493 circuit.

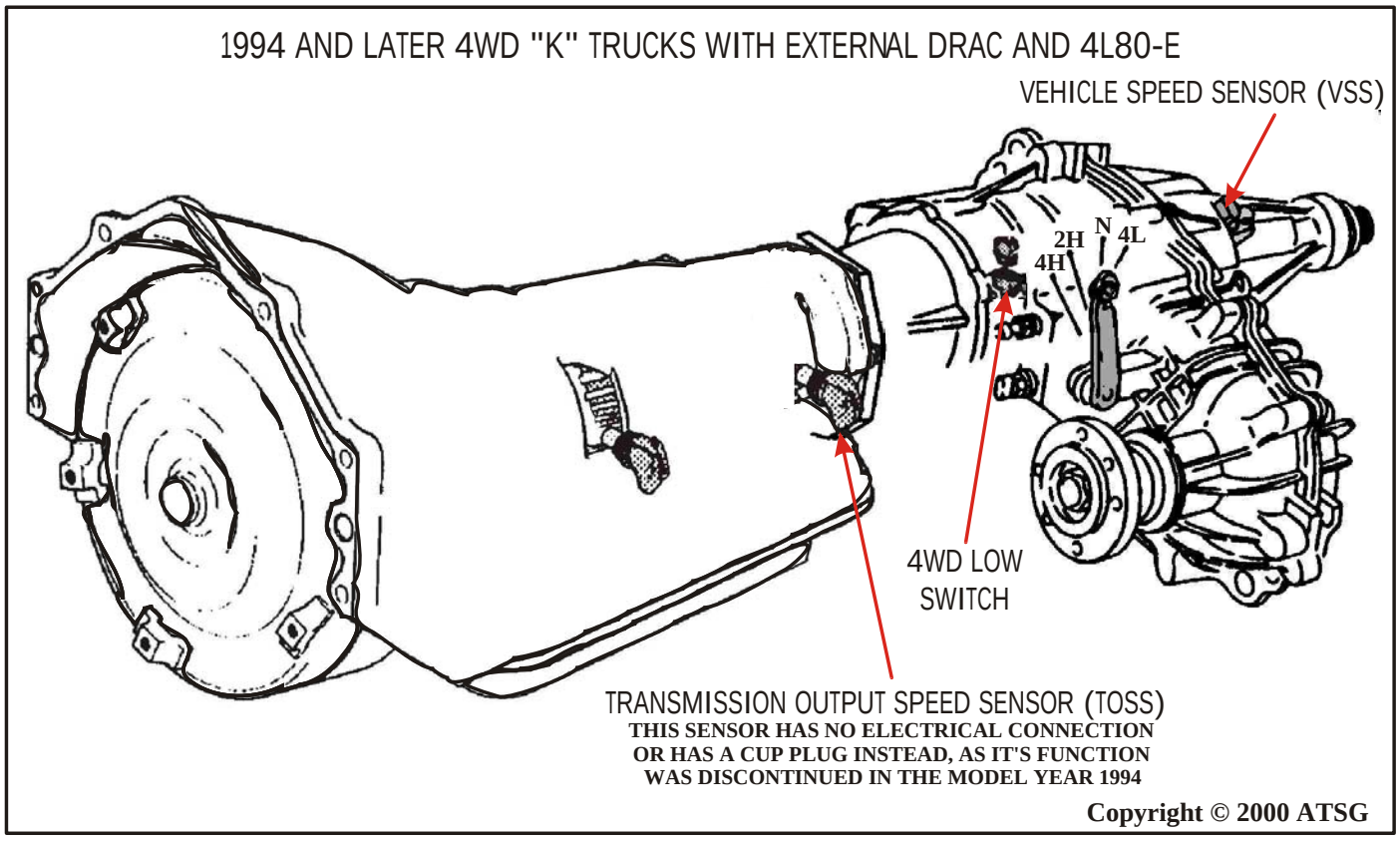

Figure 15

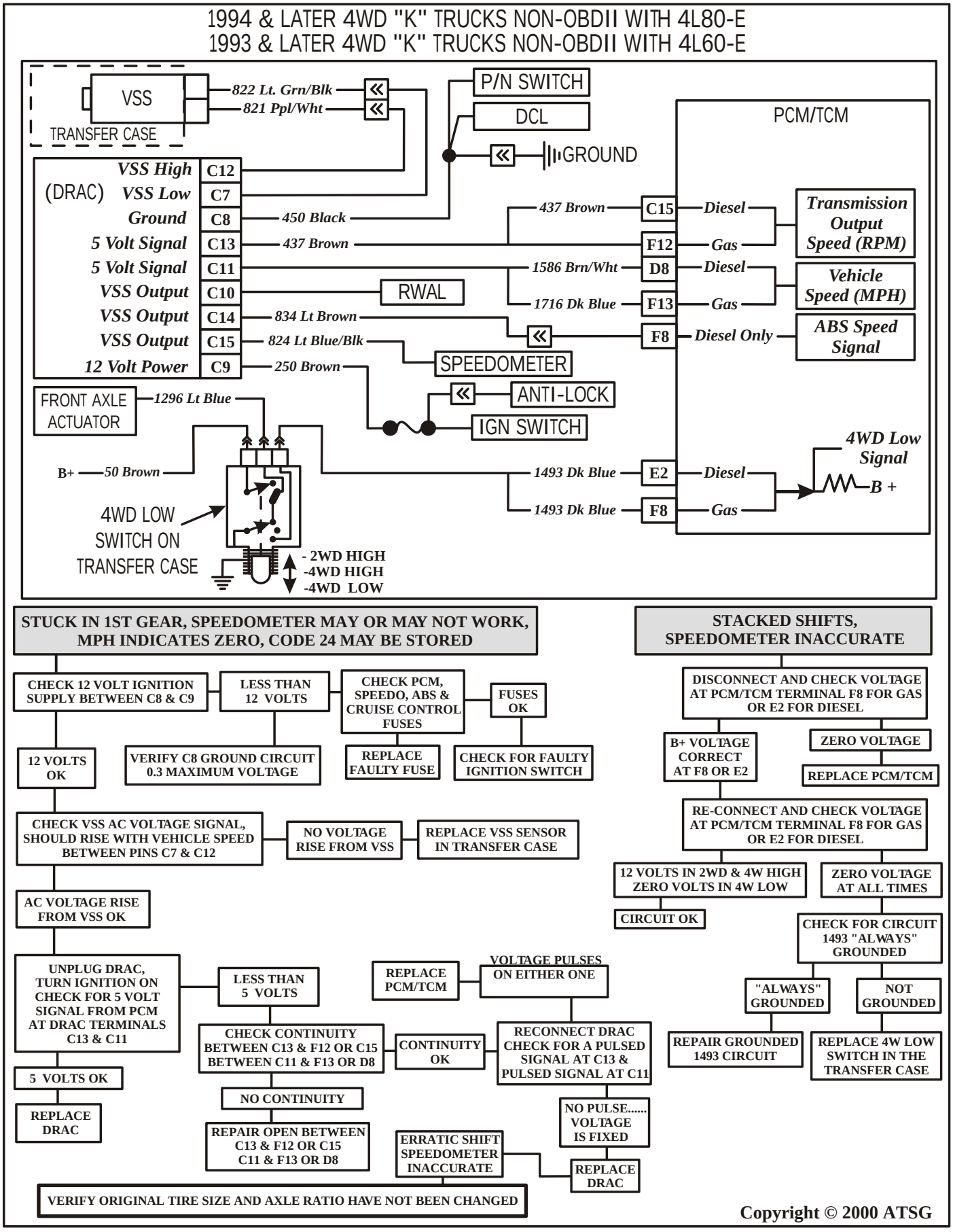
1994 & LATER 4WD "K" TRUCKS NON-OBDII WITH 4L80-E
1993 & LATER 4WD "K" TRUCKS NON-OBDII WITH 4L60-E
VSS
TRANSFER CASE
822 Lt. Grn/Blk
821 Ppl/Wht
P/N SWITCH
DCL
GROUND
PCM/TCM
(DRAC)
VSS High C12
VSS Low C7
Ground C8
5 Volt Signal C13
5 Volt Signal C11
VSS Output C10
VSS Output C14
VSS Output C15
12 Volt Power C9
450 Black
437 Brown
437 Brown
1586 Brn/Wht
1716 Dk Blue
834 Lt Brown
824 Lt Blue/Blk
250 Brown
RWAL
SPEEDOMETER
ANTI-LOCK
IGN SWITCH
C15 Diesel
F12 Gas
D8 Diesel
F13 Gas
F8 Diesel Only
Transmission Output Speed (RPM)
Vehicle Speed (MPH)
ABS Speed Signal
FRONT AXLE ACTUATOR
1296 Lt Blue
B+ 50 Brown
1493 Dk Blue
1493 Dk Blue
E2 Diesel
F8 Gas
4WD Low Signal
B +
4WD LOW SWITCH ON TRANSFER CASE
- 2WD HIGH
-4WD HIGH
-4WD LOW
STUCK IN 1ST GEAR, SPEEDOMETER MAY OR MAY NOT WORK, MPH INDICATES ZERO, CODE 24 MAY BE STORED
CHECK 12 VOLT IGNITION SUPPLY BETWEEN C8 & C9
LESS THAN 12 VOLTS
CHECK PCM, SPEEDO, ABS & CRUISE CONTROL FUSES
FUSES OK
12 VOLTS OK
VERIFY C8 GROUND CIRCUIT 0.3 MAXIMUM VOLTAGE
REPLACE FAULTY FUSE
CHECK FOR FAULTY IGNITION SWITCH
CHECK VSS AC VOLTAGE SIGNAL, SHOULD RISE WITH VEHICLE SPEED BETWEEN PINS C7 & C12
NO VOLTAGE RISE FROM VSS
REPLACE VSS SENSOR IN TRANSFER CASE
AC VOLTAGE RISE FROM VSS OK
UNPLUG DRAC, TURN IGNITION ON CHECK FOR 5 VOLT SIGNAL FROM PCM AT DRAC TERMINALS C13 & C11
LESS THAN 5 VOLTS
REPLACE PCM/TCM
VOLTAGE PULSES ON EITHER ONE
CHECK CONTINUITY BETWEEN C13 & F12 OR C15 BETWEEN C11 & F13 OR D8
CONTINUITY OK
RECONNECT DRAC CHECK FOR A PULSED SIGNAL AT C13 & PULSED SIGNAL AT C11
5 VOLTS OK
REPLACE DRAC
NO CONTINUITY
REPAIR OPEN BETWEEN C13 & F12 OR C15 C11 & F13 OR D8
NO PULSE..... VOLTAGE IS FIXED
ERRATIC SHIFT SPEEDOMETER INACCURATE
REPLACE DRAC
VERIFY ORIGINAL TIRE SIZE AND AXLE RATIO HAVE NOT BEEN CHANGED
STACKED SHIFTS, SPEEDOMETER INACCURATE
DISCONNECT AND CHECK VOLTAGE AT PCM/TCM TERMINAL F8 FOR GAS OR E2 FOR DIESEL
B+ VOLTAGE CORRECT AT F8 OR E2
ZERO VOLTAGE
REPLACE PCM/TCM
RE-CONNECT AND CHECK VOLTAGE AT PCM/TCM TERMINAL F8 FOR GAS OR E2 FOR DIESEL
12 VOLTS IN 2WD & 4W HIGH ZERO VOLTS IN 4W LOW
ZERO VOLTAGE AT ALL TIMES
CIRCUIT OK
CHECK FOR CIRCUIT 1493 "ALWAYS" GROUNDED
"ALWAYS" GROUNDED
NOT GROUNDED
REPAIR GROUNDED 1493 CIRCUIT
REPLACE 4W LOW SWITCH IN THE TRANSFER CASE
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Figure 16

1993-Up "T" Trucks - On these models, which are equipped with the THM 4L60-E transmission, the DRAC is external, and the location is shown in Figure 11. The VSS system diagnostics for 1993 and later 4WD NON-OBDII "T" trucks becomes more involved, and will vary, depending on whether it is equipped with a ***mechanically*** shifted transfer case, or an ***electronically*** shifted transfer case.

The internal wire schematic for the ***mechanically*** shifted transfer case model can be found in Figure 17, and the diagnostic tree for the ***mechanically*** shifted transfer case model can be found in Figure 18.

The internal wire schematic for the ***electronically*** shifted transfer case model can be found in Figure 19, and the diagnostic tree for the ***electronically*** shifted transfer case model can be found in Figure 20.

Note: 1991-1993 external DRAC's are serviced only as a remanufactured item, and may have to be sent out to the remanufacturing station for repair and calibration, and then returned to you.

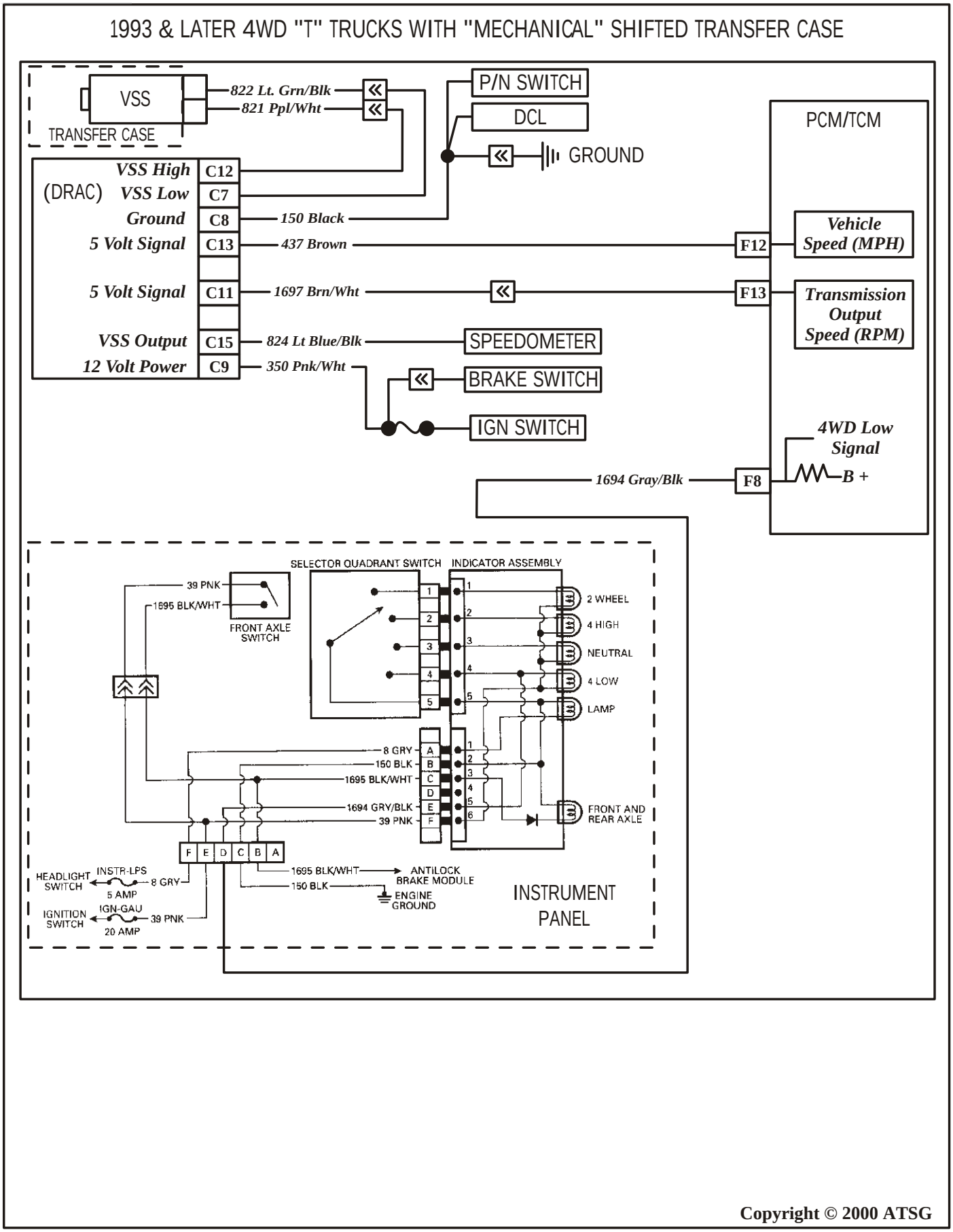

Figure 17

1993 & LATER 4WD "T" TRUCKS WITH "MECHANICAL" SHIFTED TRANSFER CASE

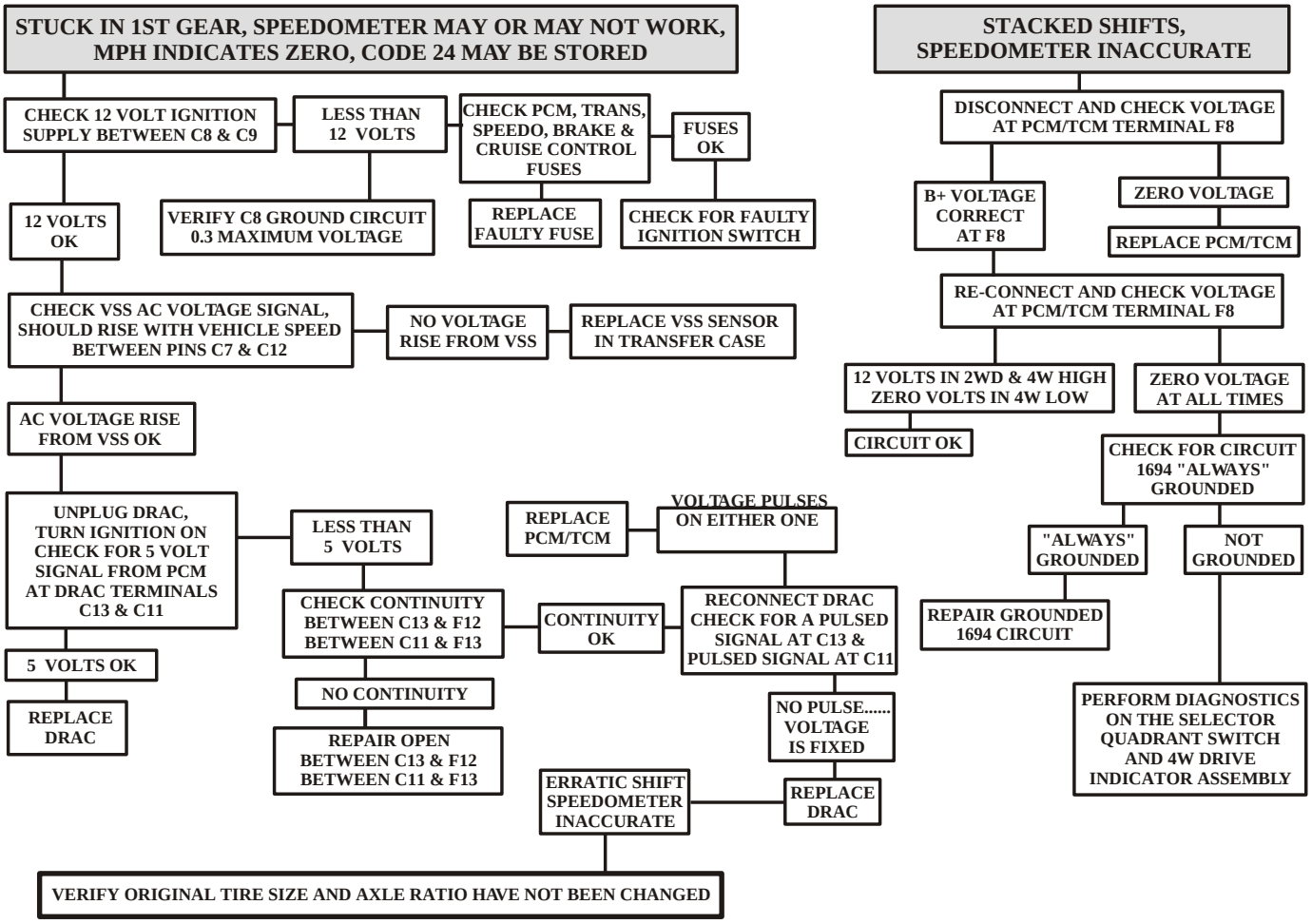

Figure 18

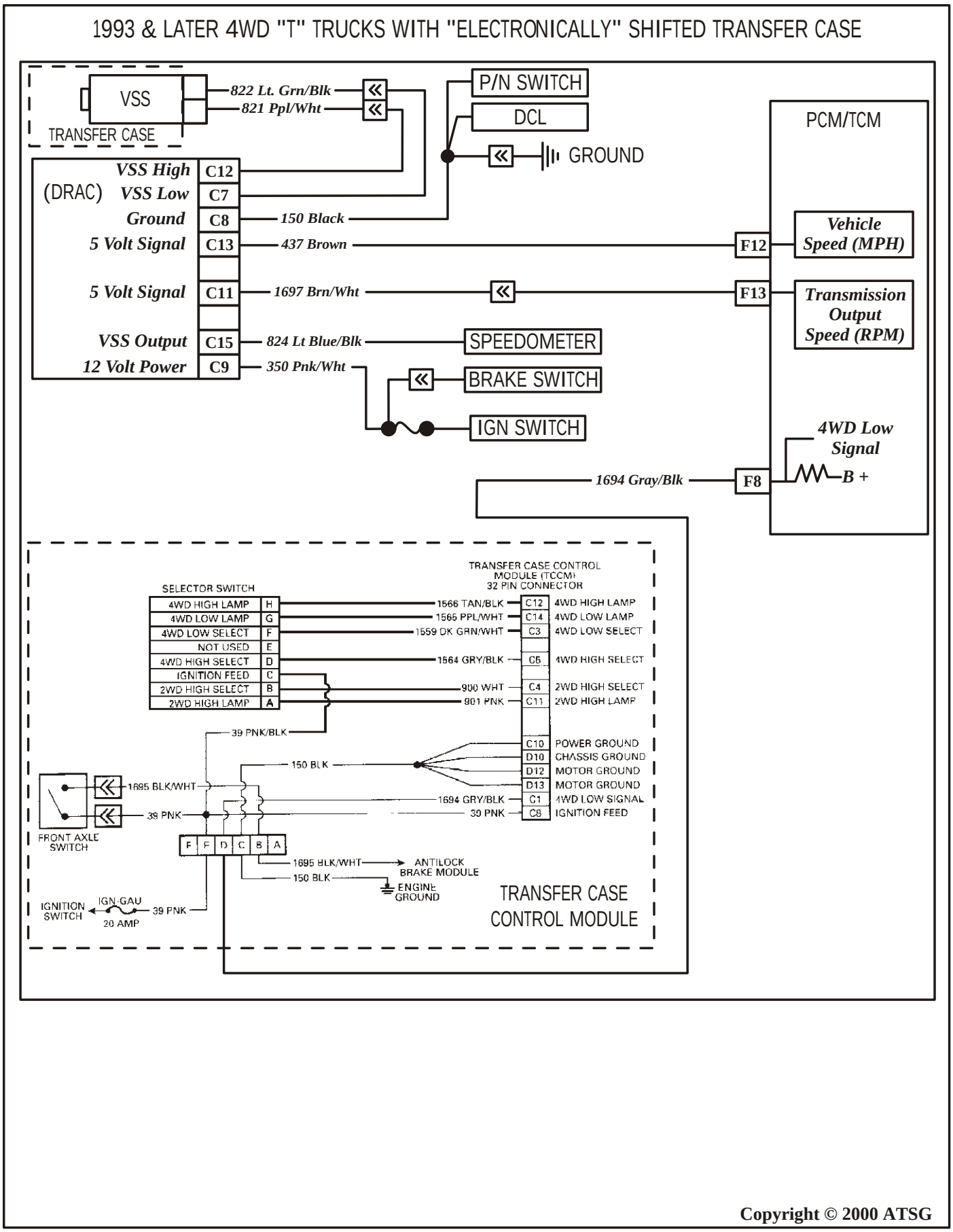

Figure 19

1993 & LATER 4WD "T" TRUCKS WITH "ELECTRONICALLY" SHIFTED TRANSFER CASE

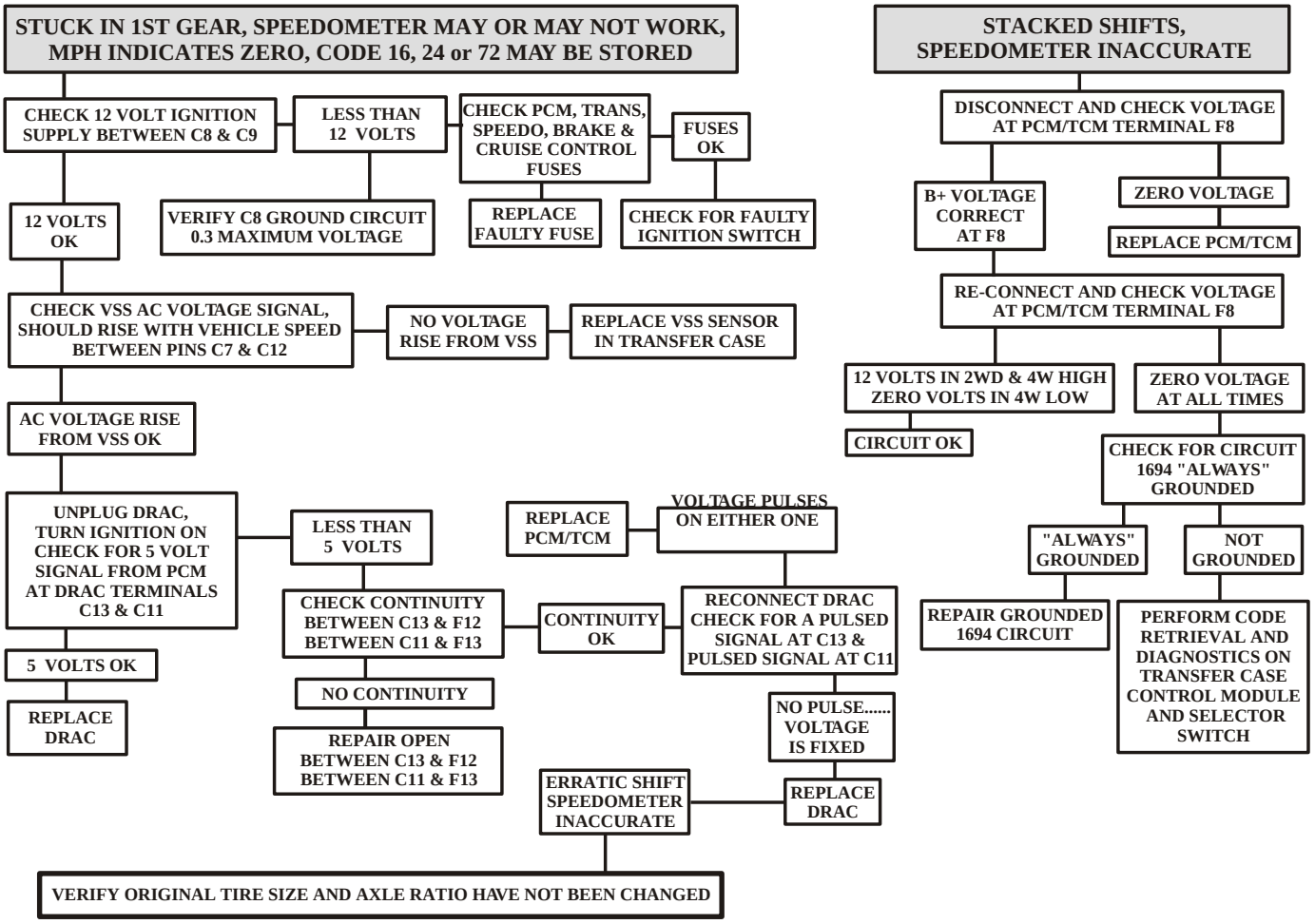

Figure 20