FORD MOTOR COMPANY
NEW DIGITAL TRANSMISSION RANGE (DTR) SENSOR FOR SOME 1997 AND LATER MODEL VEHICLES

CHANGE: Beginning at the start of production for 1997, some vehicles will be equipped with a new Digital Transmission Range (DTR) sensor, and externally looks identical to the previous Manual Lever Position Sensor (MLPS), with the exception of 12 pin locations in the connector of the DTR. Refer to Figure 1.

Internally however, the new Digital Transmission Range (DTR) sensor operates totally different than the previous sensor. The new DTR sensor completes the start circuit in Park and Neutral, the backup lamp circuit in Reverse, and the neutral sense circuit (4WD Only) when in Neutral. The new DTR sensor also opens/closes a set of four different switches that are monitored by the Powertrain Control Module (PCM) to determine the position of the transmission manual lever.

REASON: Increased accuracy of information to the PCM, and increased durability of the sensor.

PARTS AFFECTED:

DTR SENSOR - Replaces the previous manual lever position sensor and is identified by the new basic part number which is -7F293-, as shown in Figure 1. The prefix and suffix will be different depending on the vehicle model and transmission type.

INTERCHANGEABILITY:

The new design Digital Transmission Range (DTR) sensor ***will not*** back service ***any*** previous model vehicles built before 1997, nor ***any***1997or later model vehicles that are equipped with the manual lever position sensor.

Manual Lever Position Sensor (MLPS) = basic part number -7A247- (Stamped on Part)

Digital Transmission Range Sensor (DTR) = basic part number -7F293- (Stamped on Part).

SPECIAL NOTES:

In Figure 1 we have provided you with pin number identification for both the transmission range sensor and the vehicle harness connector.

In Figure 2 we have provided a chart that will give you the open/closed state of each internal switch, dependent on selector position, and notice that three positions read a 270W resistor that is also internal. Also in Figure 2 we have included a chart with wire colors, which is for the 1997 Ranger.

In Figure 3 we have provided you with a schematic of the Digital Transmission Range sensor in each of the six selector positions for those of you that want to follow each circuit.

Refer to following Page for Diagnostic Procedures.

TESTING PROCEDURE FOR THE 1997 AND LATER DESIGN LEVEL DIGITAL TRANSMISSION RANGE SENSOR (DTR)

NOTE: ***All testing that we have provided for you is done with a DVOM, set to the ohms position, and all tests are performed with the ignition switch in the "OFF" position.***

(1) Testing the transmission range 3A switch, and the 270W internal resistor is done across pins 2 and 3 of the DTR sensor, and must be checked in each selector position to determine the switch and resistor integrity. Refer to Figure 4.

(2) Testing the transmission range 1 switch is done across pins 2 and 4 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 5.

(3) Testing the transmission range 2 switch is done across pins 2 and 5 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 6.

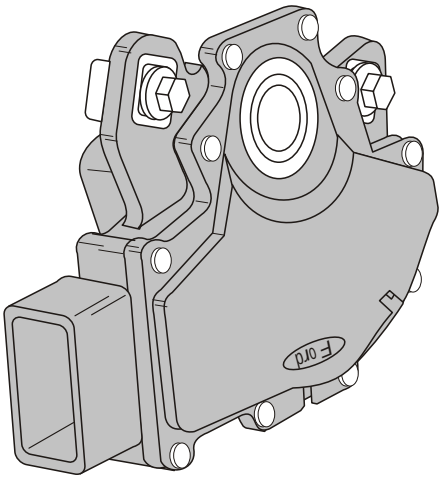
(4) Testing the transmission range 4 switch is done across pins 2 and 6 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 7.

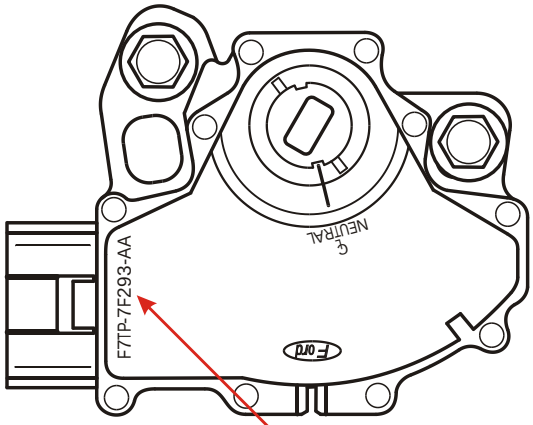
(5) Testing the reverse lamp circuit is done across pins 9 and 11 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 8.

(6) Testing the neutral start circuit is done across pins 10 and 12 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 9.

In Figure 10 we have provided a chart that is based on data for the DTR that is seen when using the Snap-On Scanner. A brief description of voltage values has been provided as an aid in Digital Transmission Range sensor diagnosis.

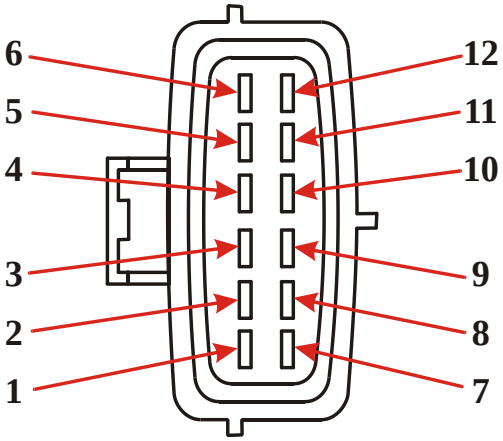
Refer to Figure 11 for an Index of charts that will provide you with pin identification and wire color information for DTR equipped vehicles up through model year 2000.





Identification

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side

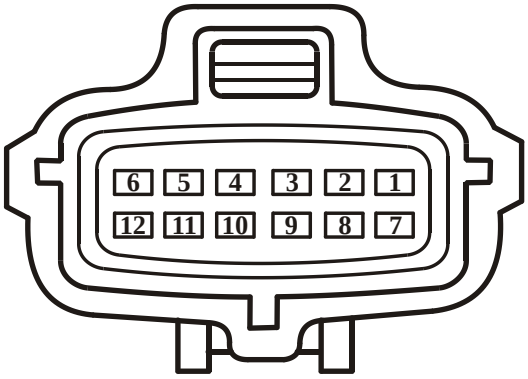
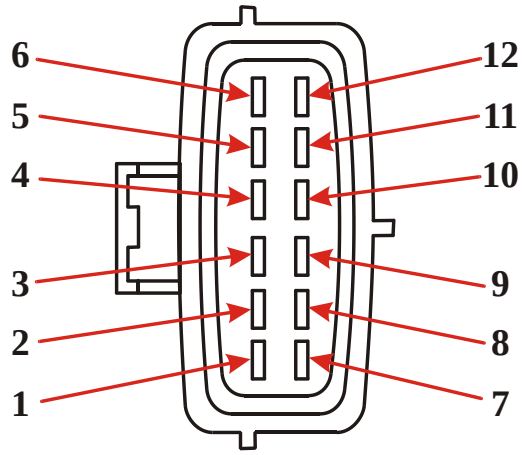
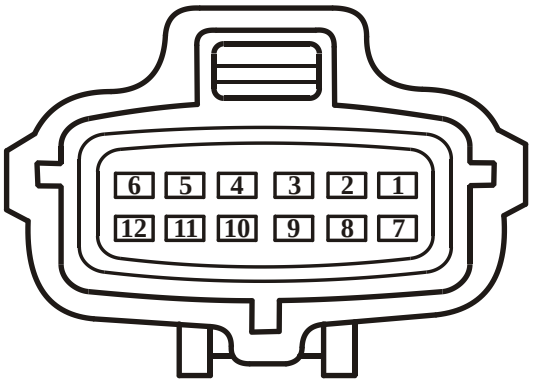


Figure 1



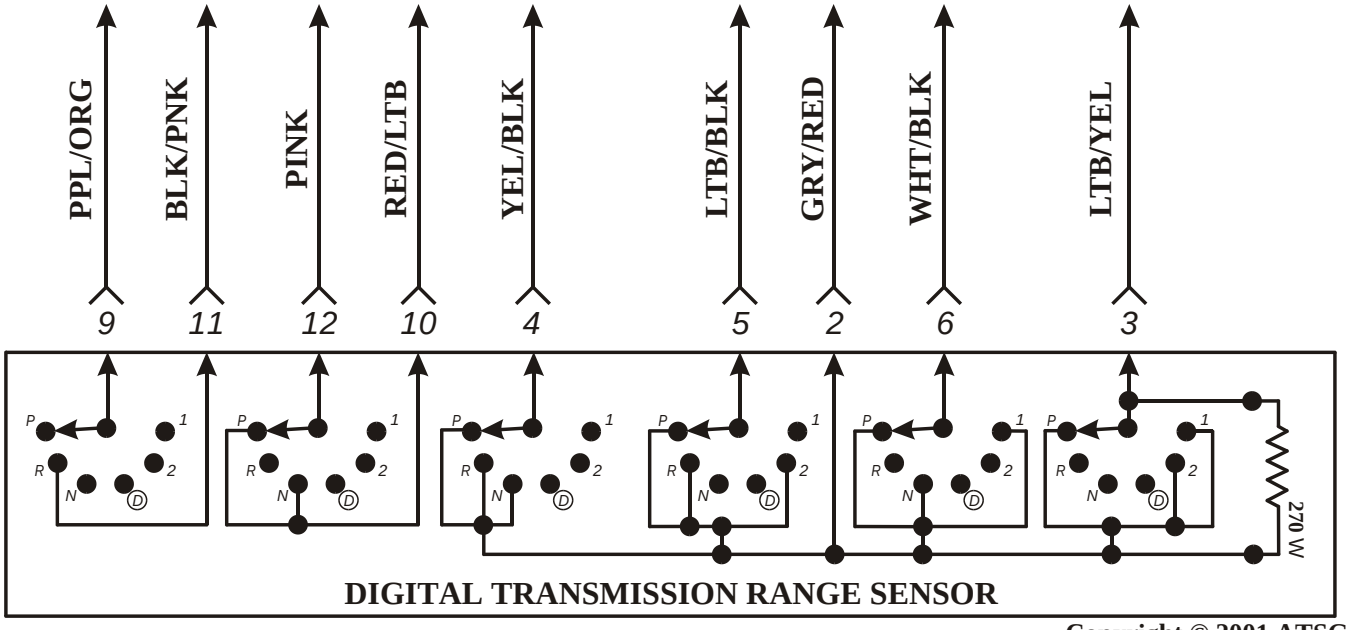
View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side

TERMINALS	P	R	N	Ⓓ	2	1
2 AND 3	CLOSED	269.5W	269.5W	269.5W	CLOSED	CLOSED
2 AND 4	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN
2 AND 5	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN
2 AND 6	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED
9 AND 11	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN
10 AND 12	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN

NOTE: Colors listed below are for 1997 Ranger with 5R55E.



DIGITAL TRANSMISSION RANGE SENSOR

Figure 2

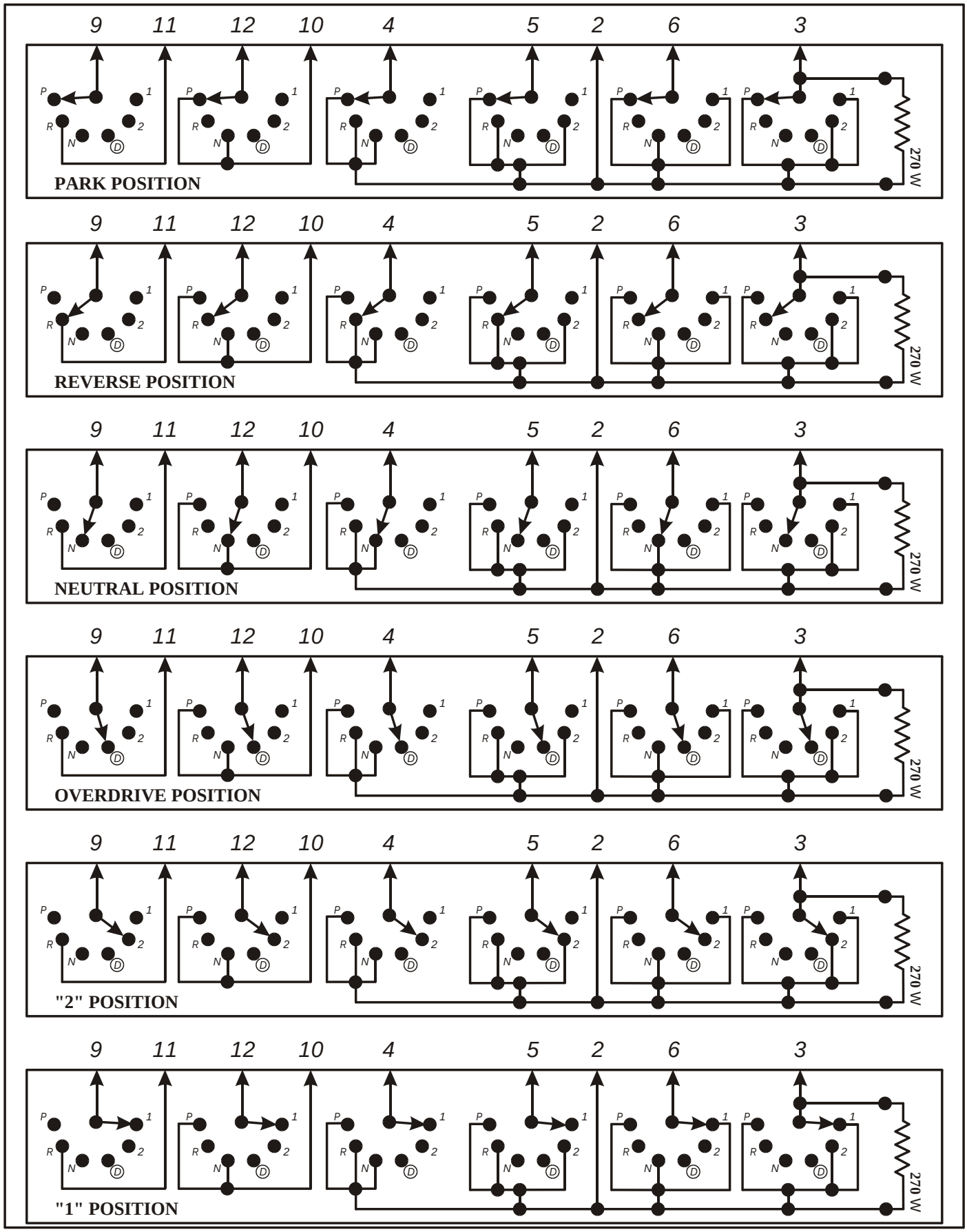
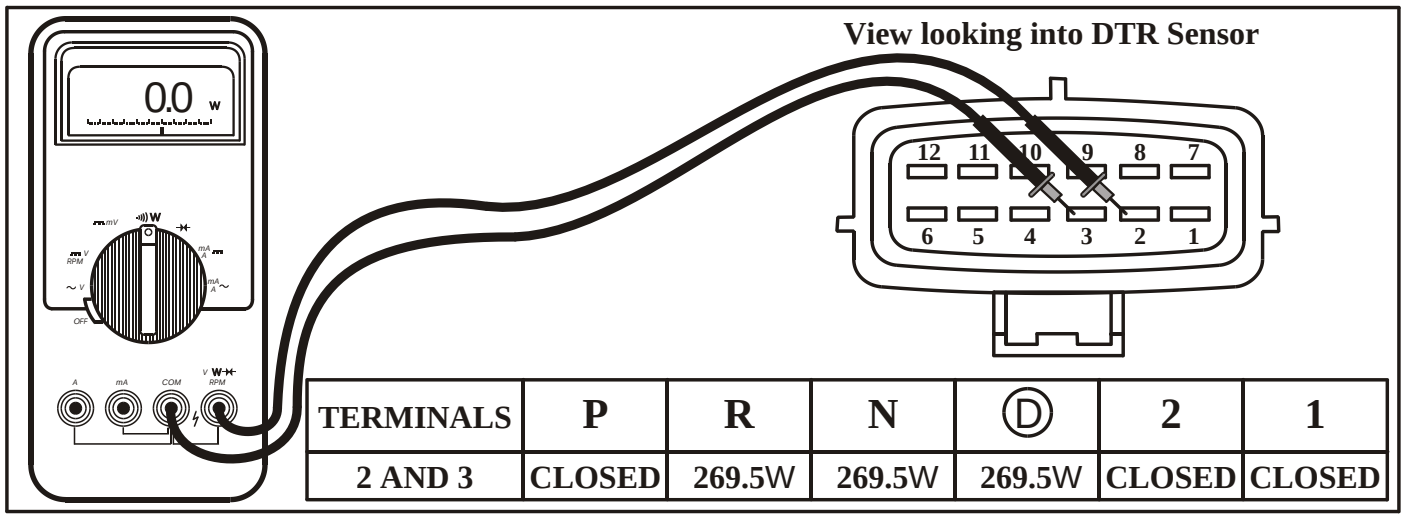
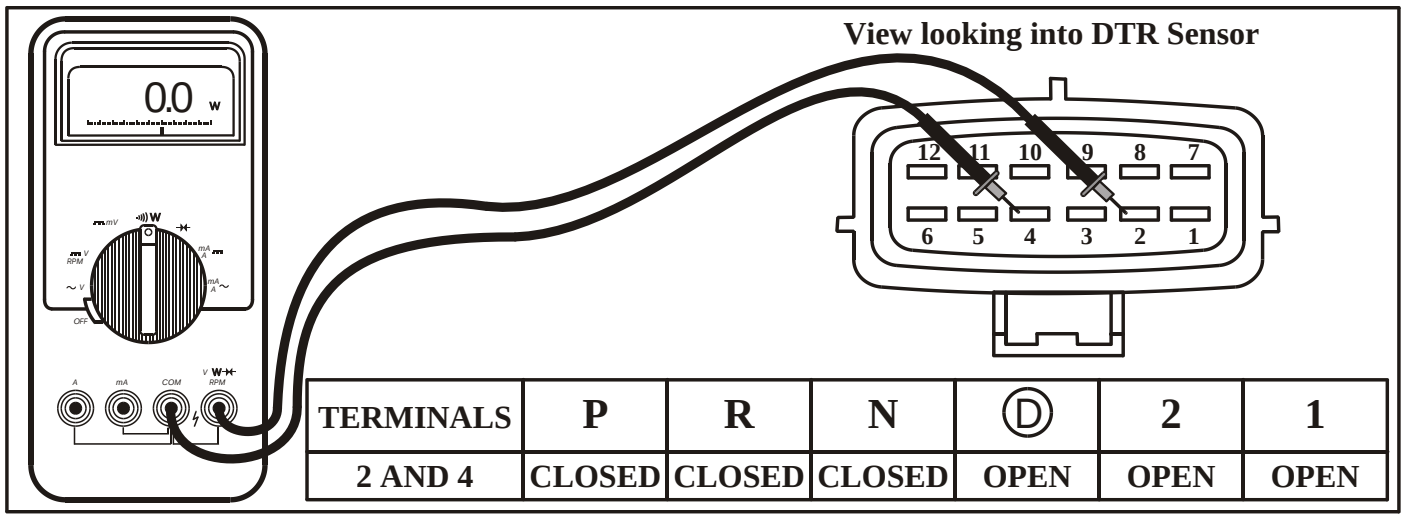

9 11 12 10 4 5 2 6 3
P R N D 1 2
270 W
PARK POSITION
REVERSE POSITION
NEUTRAL POSITION
OVERDRIVE POSITION
"2" POSITION
"1" POSITION

Figure 3



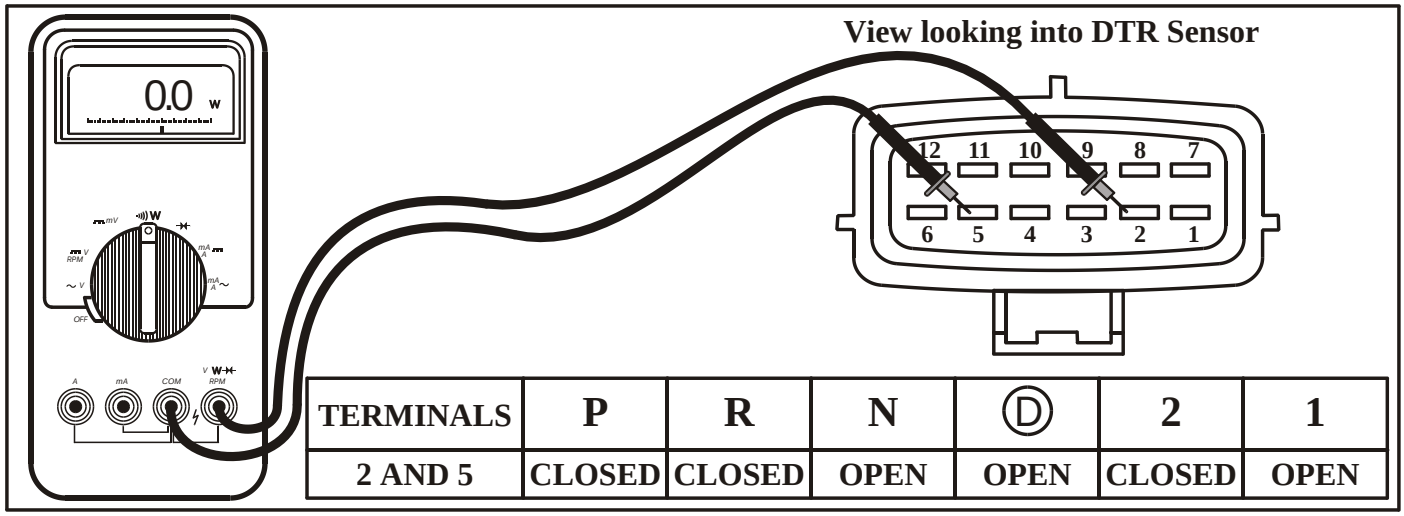
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 3	CLOSED	269.5W	269.5W	269.5W	CLOSED	CLOSED

Figure 4



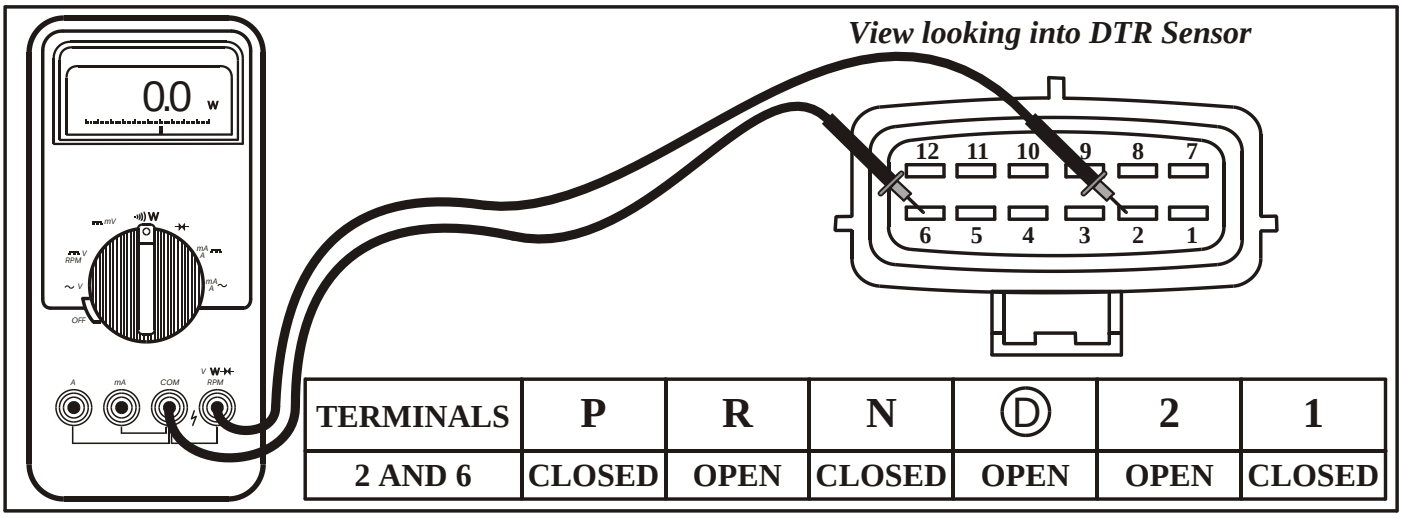
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 4	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN

Figure 5



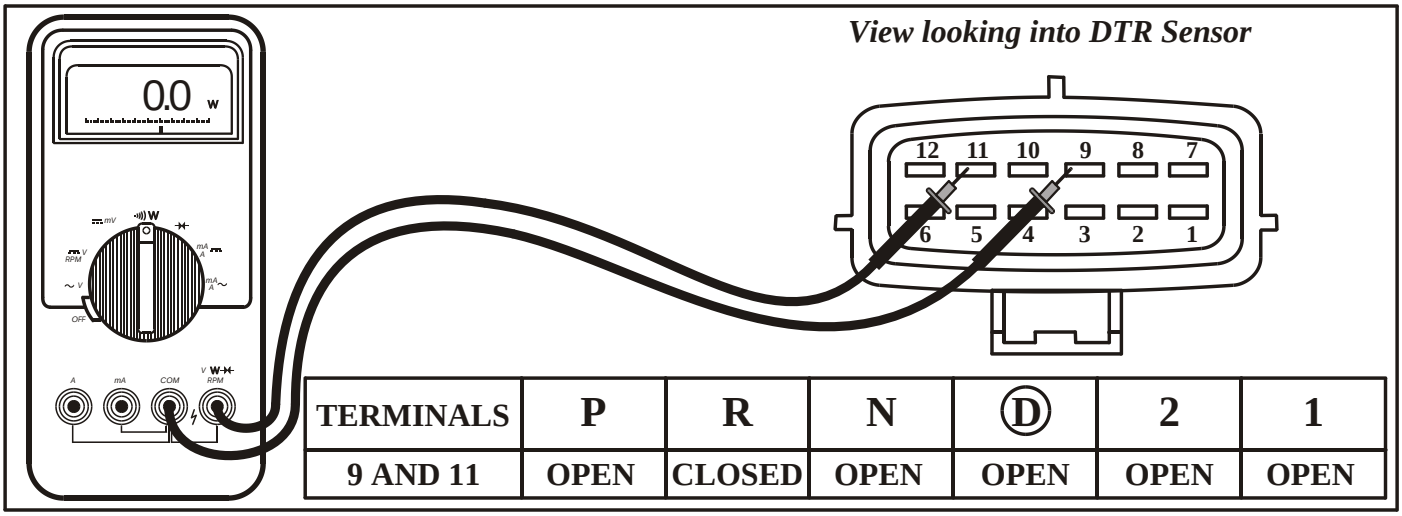
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 5	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN

Figure 6



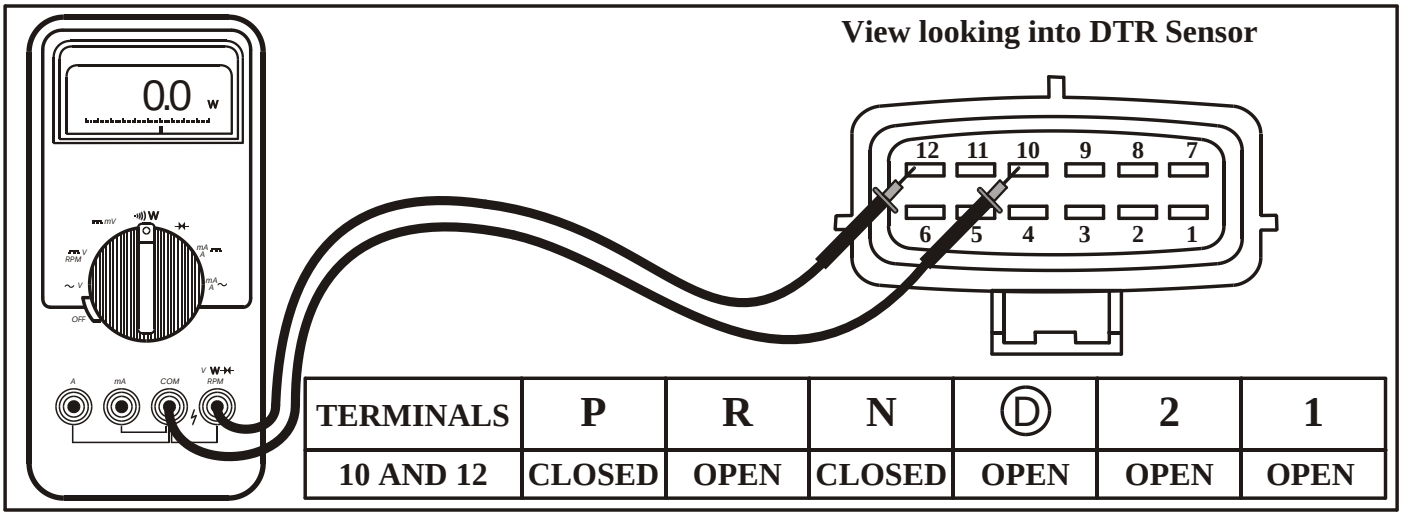
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 6	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED

Figure 7



TERMINALS	P	R	N	Ⓓ	2	1
9 AND 11	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN

Figure 8



TERMINALS	P	R	N	Ⓓ	2	1
10 AND 12	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN

Figure 9

DIGITAL TRANSMISSION RANGE (DTR) SENSOR DIAGNOSIS

SELECTOR POSITION	PID:TR	PID:TR_D (Snap-On Scanner Data)				PID:TR_V (Snap-On Scanner Data)
		TR4	TR3A	TR2	TR1	TR3A (175B pin 9 to sigrtn)
PARK	***P/N***	***0***	***0***	***0***	***0***	***0.0 Volts***
REVERSE	***REV***	***1***	***1***	***0***	***0***	***1.3 to 1.8 Volts***
NEUTRAL	***NTRL***	***0***	***1***	***1***	***0***	***1.3 to 1.8 Volts***
OVERDRIVE	***OD****	***1***	***1***	***1***	***1***	***1.3 to 1.8 Volts***
MANUAL 2	***MAN 2****	***1***	***0***	***0***	***1***	***0.0 Volts***
MANUAL 1	***MAN 1***	***0***	***0***	***1***	***1***	***0.0 Volts***

**** Will read "Drive" if OD is canceled.***
***** MAN 2 = Drive for applications without OD cancel feature.***

1. TR_V is the voltage at PCM connector 175B, pin 9 (TR3A Circuit) to Signal Return.
2. TR_D: 1 = Open DTR Switch
0 = Closed DTR Switch

4. Breakout Box readings are taken from PCM signal pins for TR1, TR2, TR3A, TR4 to Signal Return.
Voltages for TR1, TR2, TR4: 0 = 0.0 Volts (Shorted to Ground)
1 = 9.0 to 14.0 Volts (Open Circuit)
Voltages for TR3A: 0 = 0.0 Volts (Circuit Shorted to Ground)
1 = 1.3 to 5.0 Volts (Open Circuit)
1.8 to 5.0 Volts is an invalid reading and is usually an open in wires or bad resistor in DTR sensor.

NOTE: Example shown below is for 2000 Lincoln LS

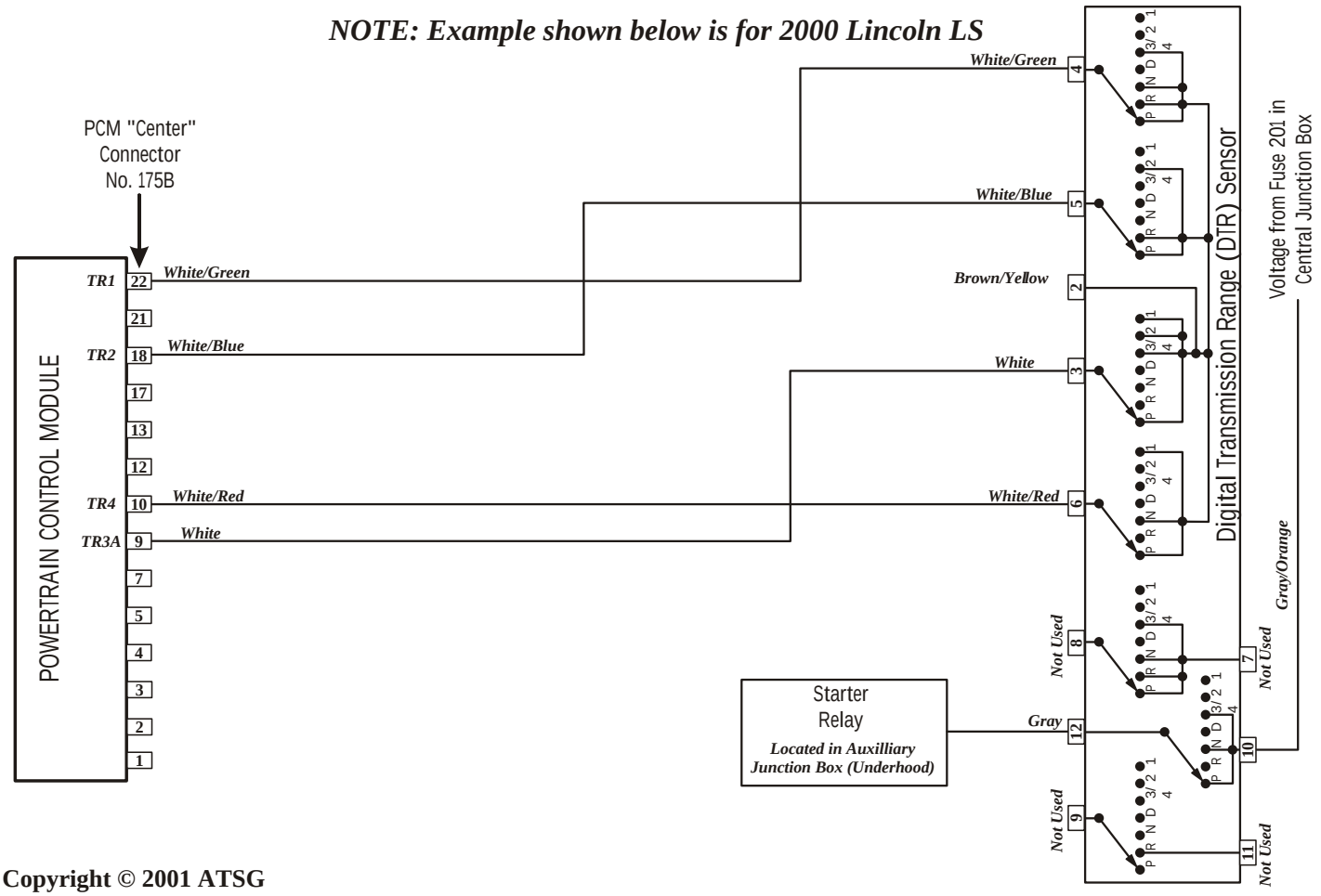


Figure 10

FORD MOTOR COMPANY

DIGITAL RANGE SENSOR (DTR) WIRING CHART

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Figure 11

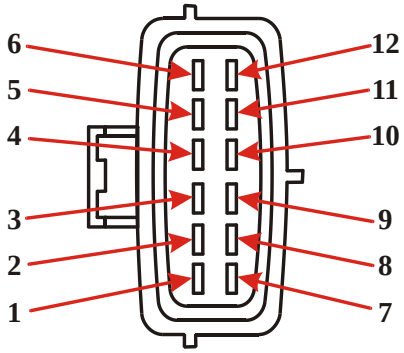
1997 Aerostar 3.0-4.0

TERM. NO.	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		From Ign. Switch-Hot in Start

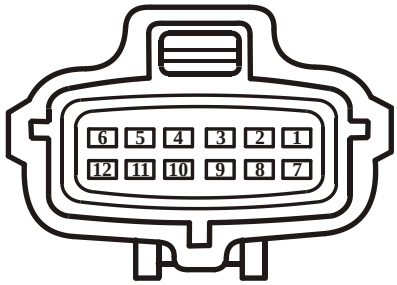
1997 Expedition 4.6-5.4 Pickup 5.4

TERM. NO.	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt. Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1997 Explorer 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 28 10a.Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 10a. Hot in Start

1997 Explorer-Mountaineer 5.0 Ranger 2.3-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 26 10a.Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 10a. Hot in Start

Figure 12

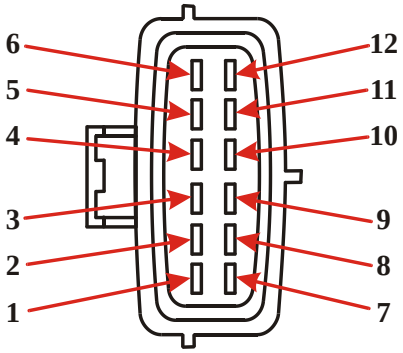
1997 Lincoln Mark Eight

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

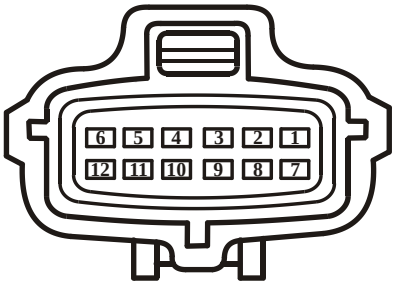
1997 F150-250 Light Duty
4.2 From 6-24-96
4.6 From 6-24-96

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Red-Black		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1997 Econoline Van Gas 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Grey-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

1997 Econoline Van Gas 5.4-6.8 and7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	17 or 34	TR1
5	White-Pink	49	TR2
6	Grey-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

Figure 13

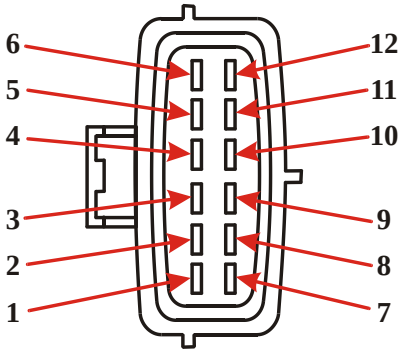
1998 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

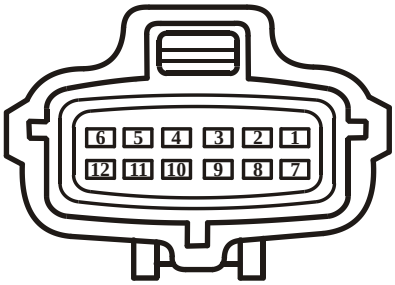
1998 Crown Victoria/Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Violet-Black		To Reverse Lights
12	White-Pink		From Ign. Swit, Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Expedition-Navigator F150-250 Light Duty 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Pink		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

1998 Explorer-Mountaineer Ranger 2.5-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

Figure 14

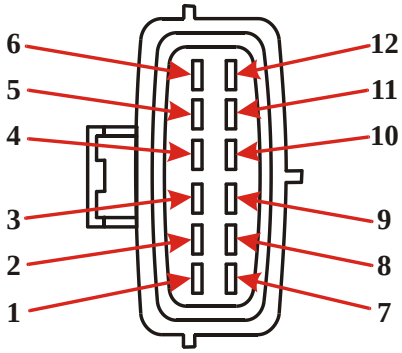
1998 Expedition 4.6
1998 F150-250 Light Duty 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

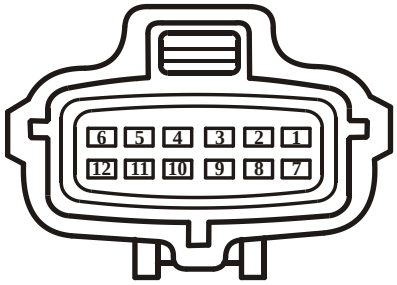
1998 Lincoln Mark Eight

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 1 15a. Hot in Run
10	Red-Lt.Blue		From Ign.Swit, Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

1998 Sable/Taurus 3.0 12Valve-3.0 Flex Fuel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 6 15a. Hot in Run
10	Red-LtBlue		Fuse 7 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

Figure 15

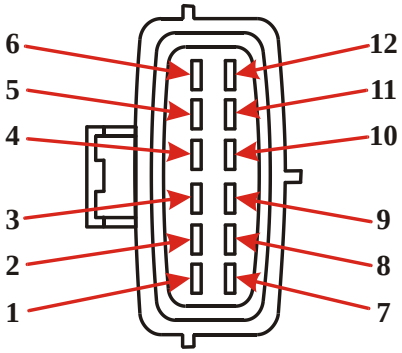
1998 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

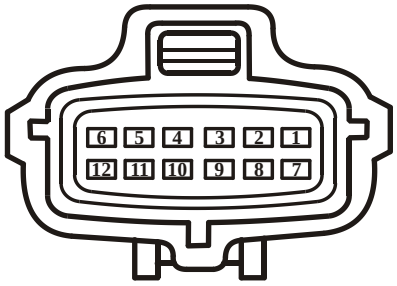
1998 Econoline Van Gas 4.2, 4.6, 5.4, 6.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	White-Yellow	3 or 34	TR1
5	Dk.Blue-White	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Econoline Van 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	White-Yellow	17	TR1
5	Dk.Blue-White	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

1999 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Black-White	49	TR2
6	Dk.Green-Orange	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 16

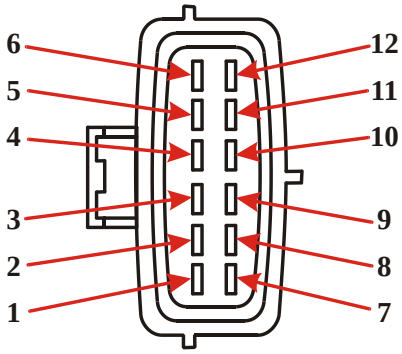
1999 Crown Victoria-Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 10 20a. Hot in Start

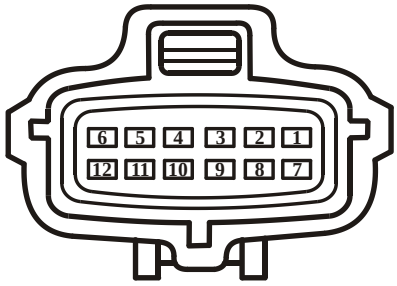
1999 Econoline Van Gas 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Green-Black	50	TR4
7			
8			
9	Ppl-Org orWht-Ppl		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Econoline Van 250-350 Super Duty 5.4, 6.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	*Grey-Red*	*91*	*Ground*
3	*Lt.Blue-Yellow*	*64*	*TR3A 5 volts to DTR*
4	*Yellow-Black*	*3 or 34*	*TR1*
5	*Lt.Blue-Black*	*49*	*TR2*
6	*DkGrn-Yel or LtGrn-Red*	*50*	*TR4*
7			
8			
9	*Wht-Ppl or Ppl-Org*		*Fuse 12 15a. Hot in Run*
10	*Red-Lt.Blue*		*To Starter Relay*
11	*Black-Pink*		*To Reverse Lights*
12	*Tan-Red*		*Fuse 34 10a. Hot in Start*

1999 Econoline Van 250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	*Grey-Red*	*91*	*Ground*
3	*Lt.Blue-Yellow*	*64*	*TR3A 5 volts to DTR*
4	*Yellow-Black*	*17*	*TR1*
5	*Lt.Blue-Black*	*49*	*TR2*
6	*Lt.Blue-Red*	*50*	*TR4*
7			
8			
9	*Wht-Ppl or Ppl-Org*		*Fuse 12 15a. Hot in Run*
10	*Red-Lt.Blue*		*To Starter Relay*
11	*Black-Pink*		*To Reverse Lights*
12	*Tan-Red*		*Fuse 34 10a. Hot in Start*

Figure 17

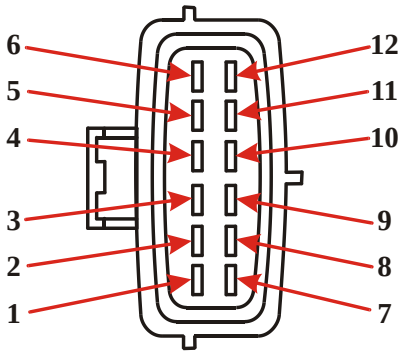
1999 Expedition 4.6-5.4
1999 Navigator 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a.Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

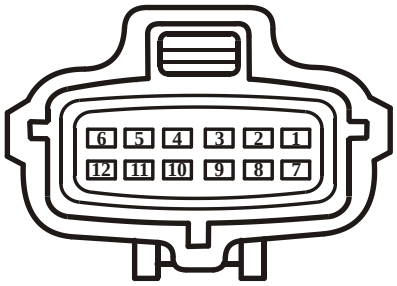
1999 Explorer 4.9 OHV
1999 Mountaineer 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Explorer/Mountaineer 5.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Yellow-Black	3	TR1
4	White-Black	50	TR4
5	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
6	Lt.Blue-Black	49	TR2
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

1999 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 11 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 20a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

Figure 18

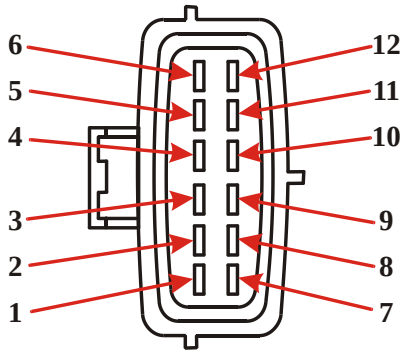
1999 F150-250 Light Duty 4.2, 4.6, 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

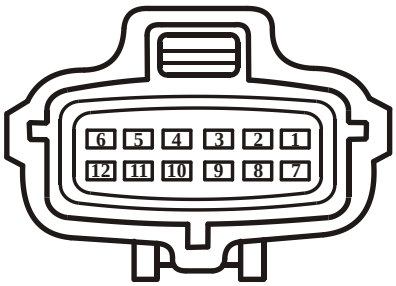
1999 F250-350 Super Duty 5.4-6.8 Gas
1999 F250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	White-Black	50	TR4
4	Yellow-Black	17 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
7	Pnk-Org or Ppl-Org		Ground
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 10a. Hot in Run
10	Dk.Blue-Orange		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Ranger 2.5-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black or Bare		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

1999 Sable-Taurus 3.0 12 Valve, 3.0 Flex Fuel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blu-Yel or Pnk-Blk	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 6 15a. Hot in Run
10	Brown-Pink		Fuse 7 10a. Hot in Start
11	Blk-Pnk or Pnk-Blk		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 19

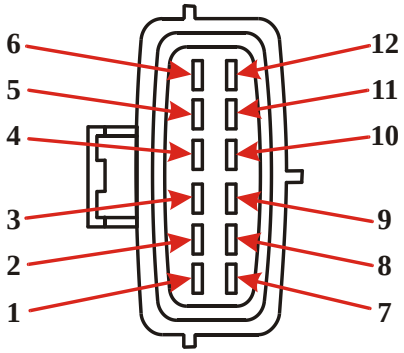
1999 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a.a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

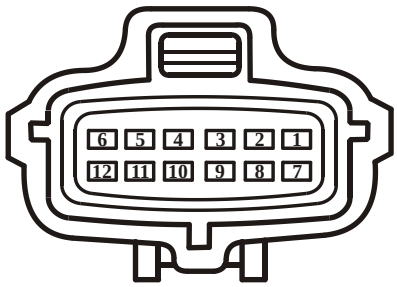
1999 Windstar 3.0-3.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9			
10	Red-Lt.Blue		Fuse 19 10a. Hot in Start
11			
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Black-White	49	TR2
6	Dk.Green-Orange	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

2000 Crown Victoria/Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Violet-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		From Ign.Swit, Hot in Start

Figure 20

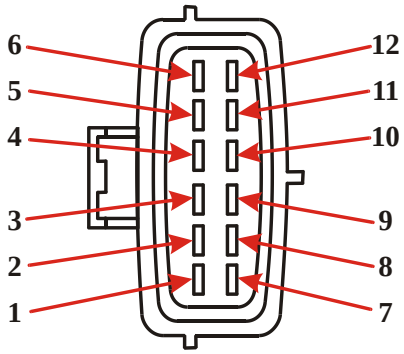
2000 Econoline Van 150-250 4.2, 4.6, 2000 Econoline Van 5.4 Super Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Green-Red	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

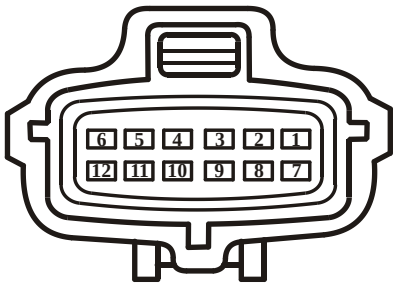
2000 Econoline 6.8 Super Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Econoline 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	17	TR1
5	Lt.Blu-Blk or Wht-Pnk	49	TR2
6	Lt.Blu-Red or Gry-Blk	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

2000 Excursion 5.4, 6.8 Gas 2000 F250-350 Super Duty Gas

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Violet-Yellow	GEM 4	and Transfer Case Pin 4
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 15a. Hot in Run
10	Dk.Blu-Org or Wht-Pnk		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 21

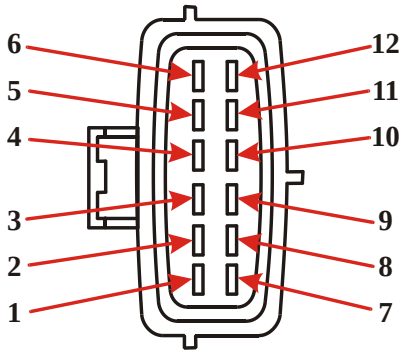
2000 F150-250 Light Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

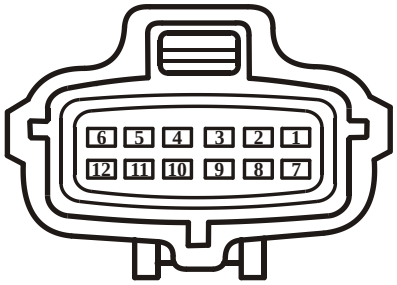
2000 Excursion 7.3 Diesel
2000 F250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	17	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Violet-Yellow	GEM 4	and Transfer Case Pin 4
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 15a. Hot in Run
10	Dk.Blu-Org or Wht-Pnk		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Expedition 4.6, 5.4
2000 Navigator 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

2000 Explorer 4.0, 4.0 SOHC, 5.0
2000 Mountaineer 4.0 SOHC, 5.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Violet-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 7.5a. Hot in Start

Figure 22

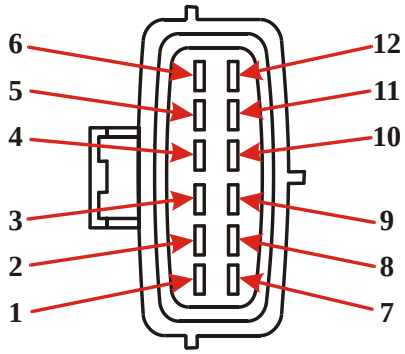
2000 Lincoln LS 3.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Brown-Yellow	17	Reverse Lights
3	White	9	TR3A 5 volts to DTR
4	White-Green	22	TR1
5	White-Blue	18	TR2
6	White-Red	10	TR4
7			
8			
9	Purple-Orange		Fuse 201 5a. Hot in Start
10			
11			
12	Grey		To Starter Relay

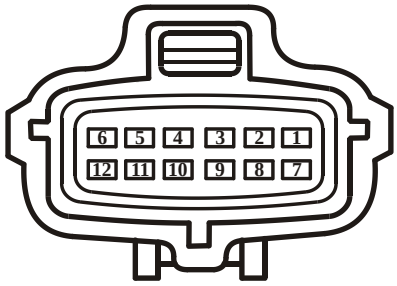
2000 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 11 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 20a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Ranger 2.5, 3.0, 4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Violet-Orange		Fuse 6 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Wht-Pnk or Wht-Vio		Fuse 24 7.5a. Hot in Start

2000 Sable/Taurus

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Red-Black	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Black-Yellow		Fuse 236 15a. Hot in Run
10	Brown-Pink		Fuse 237 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 23

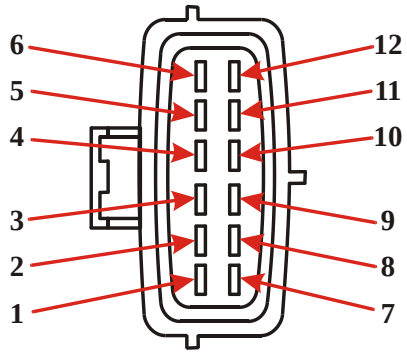
2000 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

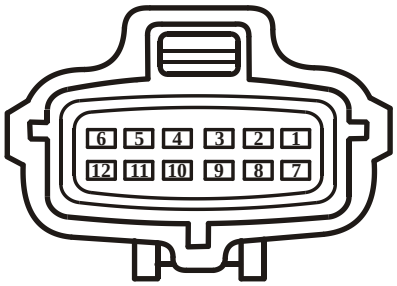
2000 Windstar

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9			
10	Red-Lt.Blue		Fuse 19 10a. Hot in Start
11			
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2001 Ranger 2.5, 3.0, 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White		To 4WD Control Module
9	Violet-Orange		Fuse 20 10a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 50 7.5a. Hot in Start

Figure 24