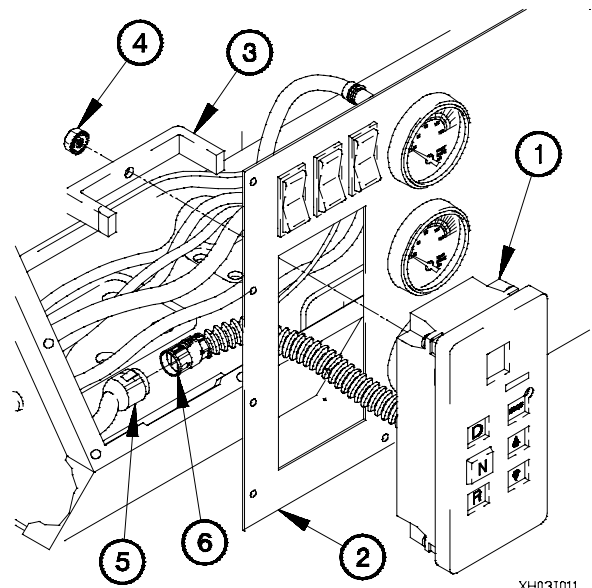


**b. Installation.**

- (1) Install WTEC III TPSS (1) in instrument panel assembly (2).
- (2) Position two brackets (3) and self-locking nuts (4) on WTEC III TPSS (1).
- (3) Tighten two self-locking nuts (4) to 11-13 lb-in. (1-2 N-m).
- (4) Connect connector PX33 (5) to WTEC III TPSS connector (6).



**c. Calibration.**

**NOTE**

WTEC III TPSS requires calibration after replacement. Calibration is accomplished in steps (1) through (4).

- (1) Position master power switch to on and wait for neutral (N) indication from WTEC III TPSS (TM 9-2320-365-10).
- (2) Position master power switch to off (TM 9-2320-365-10).
- (3) Perform steps (1) and (2) four more times.
- (4) Position master power switch to on (TM 9-2320-365-10).
- (5) Start engine (TM 9-2320-365-10).
- (6) Check VOLTS gage for charge indication (TM 9-2320-365-10).

**NOTE**

Transmission shifting may be rough until WTEC III TPSS determines proper shift points. Operating vehicle through each gear range several times will allow WTEC III TPSS to determine proper shift points.

- (7) Test drive vehicle and check operation through all gear ranges several times (TM 9-2320-365-10).
- (8) Shut down engine (TM 9-2320-365-10).

**End of Task.**

## 8-4. WTEC II CODE READING AND CODE CLEARING PROCEDURES

### This task covers:

- |                                       |  |
|---------------------------------------|--|
| a. Reading Diagnostic Codes           | d. Exiting the Diagnostic Display Mode |
| b. Clearing Active Diagnostic Codes   | e. Follow-On Maintenance               |
| c. Clearing Historic Diagnostic Codes |  |

### INITIAL SETUP

#### Equipment Conditions

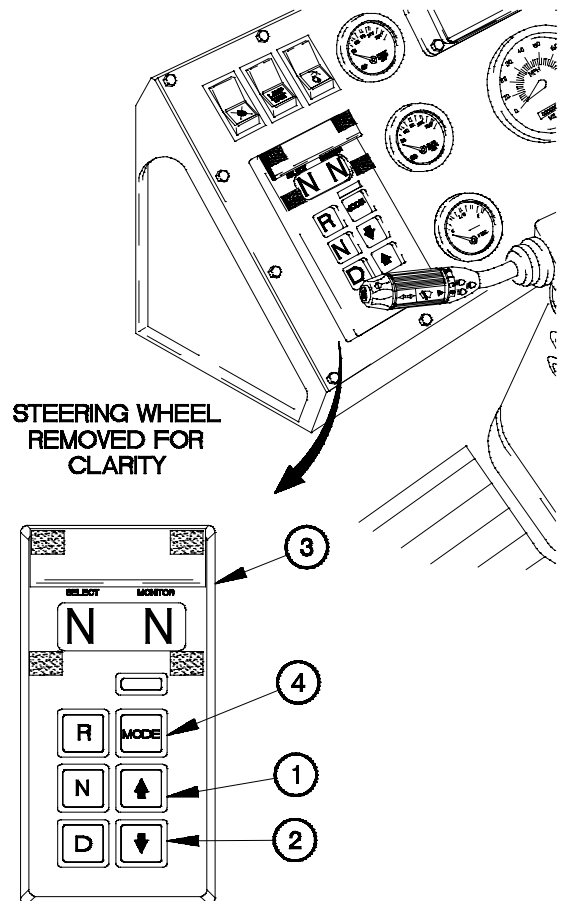
Master power switch positioned to on (TM 9-2320-365-10).

### a. Reading Diagnostic Codes.

#### NOTE

- Diagnostic codes may be viewed even while vehicle is moving.
- There are two types of diagnostic codes, active and historic, which may be displayed on WTEC II TEPSS. An active diagnostic code indicates a fault which is currently being detected by WTEC II TEPSS. An historic diagnostic code represents a fault which was detected prior to engine shutdown. All active diagnostic codes, except main code 69 sub code 34, will become historic codes when electrical power is removed from WTEC II TEPSS.
- When an active diagnostic code is displayed on WTEC II TEPSS, the MODE ON light will be illuminated.

- (1) Enter diagnostic display mode by pressing ↑ (1) and ↓ (2) (up arrow and down arrow) buttons on WTEC II TEPSS (3) at the same time.



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**NOTE**

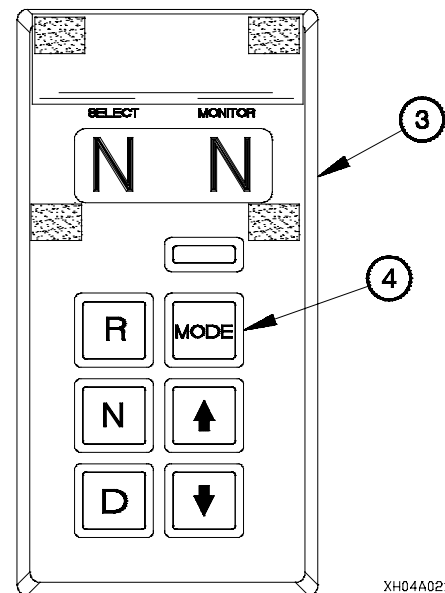
- WTEC II TEPSS is capable of storing (logging) up to five diagnostic codes in memory. The diagnostic code positions are identified as d1, d2, d3, d4, and d5. Diagnostic code position d1 represents the most recently logged diagnostic code.
- WTEC II TEPSS will display the four position diagnostic codes two characters at a time, beginning with the most recently logged diagnostic code (d1). The following example shows main code 24 sub code 12 logged in diagnostic code position d1:
  1. Code list position - d1
  2. Main code - 24
  3. Sub code - 12
  4. Code position repeats - d1,24,12
- Display of first diagnostic code (d1) will be repeated until MODE button is pressed to view remaining diagnostic codes (d2, d3, d4, and d5) or until diagnostic mode is exited.
- Any diagnostic code position which does not have a diagnostic code logged will display "--".

- (2) Record first diagnostic code (d1) displayed on WTEC II TEPSS (3).

**NOTE**

Pressing MODE button momentarily after fifth diagnostic code (d5) is displayed will cause code positions displayed to begin again with first diagnostic code (d1).

- (3) Press MODE button (4) momentarily to view next diagnostic code (d2).
- (4) Record diagnostic code, if any, displayed on WTEC II TEPSS (3).
- (5) Perform steps (3) and (4) for remaining diagnostic code positions (d3, d4, and d5).
- (6) Refer to **Table 8-1. WTEC II Diagnostic Code List and Description** for identification of diagnostic codes and to determine which troubleshooting task(s) to perform.



**8-4. WTEC II CODE READING AND CODE CLEARING PROCEDURES (CONT)**

**Table 8-1. WTEC II Diagnostic Code List and Description**

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
13	ANY	ECU input voltage, low/high	f19
21	ANY	Throttle position sensor, failed low/high	f12
22	14	Engine speed sensor reasonableness test	f2
	15	Turbine speed sensor reasonableness test	f3
	16	Output speed sensor reasonableness or rapid decel test	f4
23	ANY	Shift selector fault	Replace WTEC II TEPSS (para 8-2).
24	ANY	Sump oil temperature, cold/hot	f5
25	ANY	Output speed reasonableness test, detected at 0 speed	f14
32	ANY	C3 pressure switch open	f6
33	ANY	Sump oil temperature sensor failed low/high	f5
34	ANY	Calibration compatibility or check sum fault	Replace WTEC II TEPSS (para 8-2).
35	ANY	Power interruption	f7 and f19. If fault persists, replace WTEC II TEPSS (para 8-2).
36	ANY	Hardware/software not compatible	Replace WTEC II TEPSS (para 8-2).
41	ANY	Open or short to ground, solenoid circuit	f7
42	ANY	Short to battery, solenoid circuit	f7
43	ANY	Low side driver, solenoid circuit	f8
44	ANY	Short to ground, solenoid circuit	f7
45	ANY	Open circuit, solenoid circuit	f7
51	10	Offgoing ratio test (during shift), 1 to L	f13
	12	Offgoing ratio test (during shift), 1 to 2	f13
	21	Offgoing ratio test (during shift), 2 to 1	f13
	23	Offgoing ratio test (during shift), 2 to 3	f13
	43	Offgoing ratio test (during shift), 4 to 3	f13
	45	Offgoing ratio test (during shift), 4 to 5	f13
	65	Offgoing ratio test (during shift), 6 to 5	f13
52	ANY	Offgoing C3PS test (during shift)	f9

Table 8-1. Diagnostic Code List and Description (Cont)

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
53	ANY	Offgoing speed test (during shift)	f15
54	01	Oncoming ratio test (after shift), L to 1	f16
	07	Oncoming ratio test (after shift), L to R	f16
	10	Oncoming ratio test (after shift), 1 to L	f16
	12	Oncoming ratio test (after shift), 1 to 2	f16
	17	Oncoming ratio test (after shift), 1 to R	f16
	21	Oncoming ratio test (after shift), 2 to 1	f16
	23	Oncoming ratio test (after shift), 2 to 3	f16
	27	Oncoming ratio test (after shift), 2 to R	f16
	32	Oncoming ratio test (after shift), 3 to 2	f16
	34	Oncoming ratio test (after shift), 3 to 4	f16
	43	Oncoming ratio test (after shift), 4 to 3	f16
	45	Oncoming ratio test (after shift), 4 to 5	f16
	54	Oncoming ratio test (after shift), 5 to 4	f16
	56	Oncoming ratio test (after shift), 5 to 6	f16
	65	Oncoming ratio test (after shift), 6 to 5	f16
	70	Oncoming ratio test (after shift), R to L	f16
	71	Oncoming ratio test (after shift), R to 1	f16
	72	Oncoming ratio test (after shift), R to 2	f16
	80	Oncoming ratio test (after shift), N1 to L	f16
	81	Oncoming ratio test (after shift), N1 to 1	f16
	82	Oncoming ratio test (after shift), N1 to 2	f16
	83	Oncoming ratio test (after shift), N1 to 3	f16
	85	Oncoming ratio test (after shift), N1 to 5	f16
	86	Oncoming ratio test (after shift), N1 to 6	f16
	92	Oncoming ratio test (after shift), N2 to 2	f16
	93	Oncoming ratio test (after shift), N3 to 3	f16
	95	Oncoming ratio test (after shift), N3 to 5	f16
	96	Oncoming ratio test (after shift), N4 to 6	f16
	97	Oncoming ratio test (after shift), 2 to R (2 to NNC to R)	f16

**8-4. WTEC II CODE READING AND CODE CLEARING PROCEDURES (CONT)**

**Table 8-1. Diagnostic Code List and Description (Cont)**

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
55	ANY	Oncoming C3PS test (after shift)	f17
56	ANY	Range verification test	f18
57	ANY	Range verification C3PS test	f10
69	12	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	13	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	14	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	15	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	16	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	21	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	22	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	23	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	24	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	25	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	26	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	32	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	33	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	34	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	35	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).
69	36	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).

**Table 8-1. Diagnostic Code List and Description (Cont)**

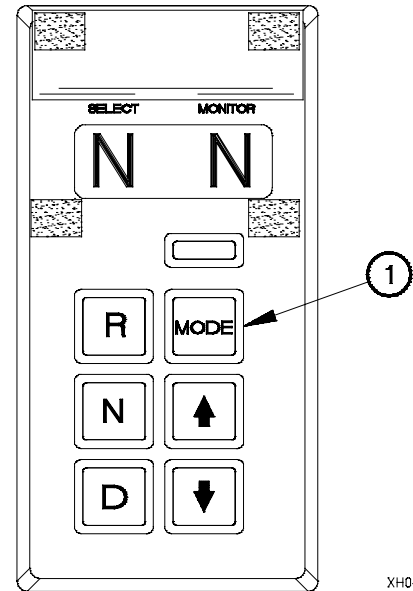
MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
69	41	ECU malfunction	f7. If fault persists, replace WTEC II TEPSS (para 8-2).

**b. Clearing Active Diagnostic Codes.**

**NOTE**

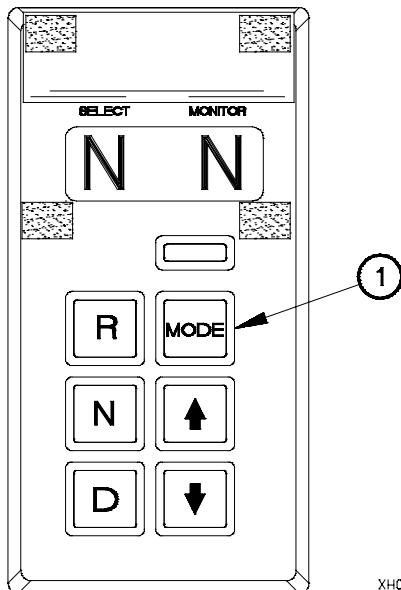
Active diagnostic codes can only be cleared when transmission output speed equals zero and no output speed sensor fault is active.

- (1) Press and hold MODE button (1), approximately three seconds, until WTEC II TEPSS tone sounds for 1/2 second.
- (2) Release MODE button (1).



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**c. Clearing Historic Diagnostic Codes.**



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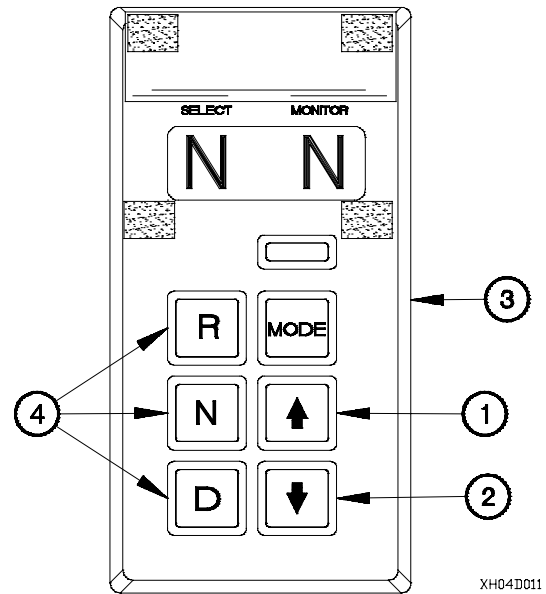
- (1) Press and hold MODE button (1), approximately 10 seconds, until tone sounds.
- (2) Release MODE button (1).





**c. Exiting the Diagnostic Display Mode.**

- (1) Exit the diagnostic display mode by any of the following methods.
  - (a) Press  $\uparrow$  (1) and  $\downarrow$  (2) (up arrow and down arrow) buttons on WTEC II TEPSS (3) at the same time.
  - (b) Press any range button (4), D, N, or R on WTEC II TEPSS (3) (the shift will be commanded if not inhibited by an active code).
  - (c) Wait until the calibrated time (approximately 10 minutes) has passed and system automatically returns to the normal operating mode.
  - (d) Position master power switch to off (TM 9-2320-365-10).



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**e. Follow-On Maintenance.**

Perform Transmission System Troubleshooting (para 2-17).

**End of Task.**

## 8-5. WTEC III CODE READING AND CODE CLEARING PROCEDURES

### This task covers:

- |                                       |  |
|---------------------------------------|--|
| a. Reading Diagnostic Codes           | d. Exiting the Diagnostic Display Mode |
| b. Clearing Active Diagnostic Codes   | e. Follow-On Maintenance               |
| c. Clearing Historic Diagnostic Codes |  |

### INITIAL SETUP

#### Equipment Conditions

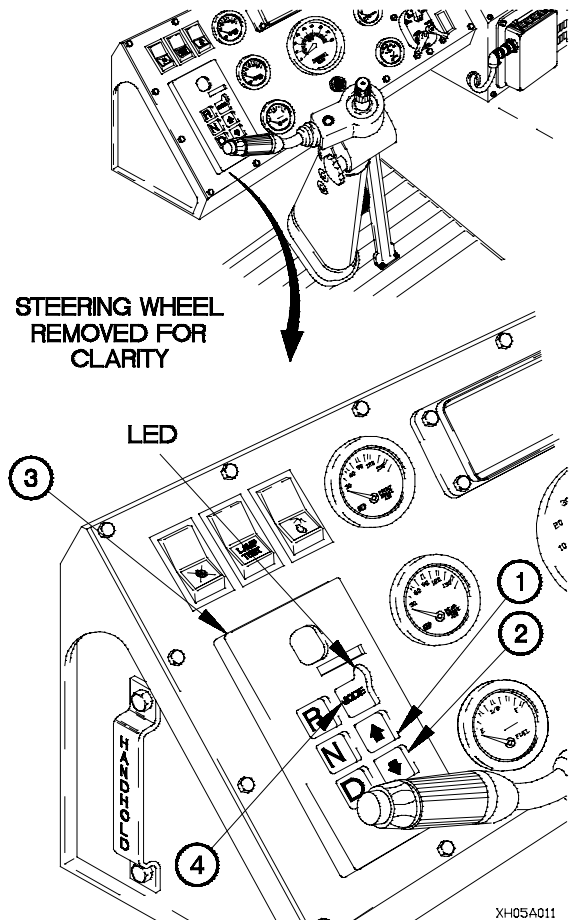
Master power switch positioned to on (TM 9-2320-365-10).

#### a. Reading Diagnostic Codes.

##### NOTE

- Diagnostic codes may be viewed even while vehicle is moving.
- There are two types of diagnostic codes, active and historic, which may be displayed on WTEC III TPSS. An active diagnostic code indicates a fault which is currently being detected by WTEC III TPSS. An historic diagnostic code represents a fault which was detected prior to engine shutdown. All active diagnostic codes, except main code 69 sub code 34, will become historic codes when electrical power is removed from WTEC III transmission ECU.
- When an active diagnostic code is displayed on WTEC III TPSS, the Light Emitting Diode (LED) at upper right corner of MODE button will be illuminated.

- (1) Enter diagnostic display mode by pressing ↑ (1) and ↓ (2) (up arrow and down arrow) buttons on WTEC III TPSS selector (3) at the same time.



**NOTE**

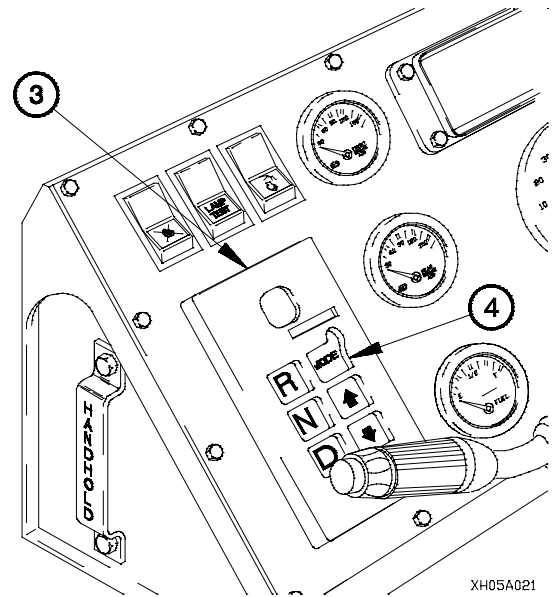
- WTEC III transmission ECU is capable of storing (logging) up to five diagnostic codes in memory. The diagnostic code positions are identified as d1, d2, d3, d4, and d5. Diagnostic code position d1 represents the most recently logged diagnostic code.
- WTEC III TPSS will display the four position diagnostic codes one character at a time, beginning with the most recently logged diagnostic code (d1). The following example shows main code 24 sub code 12 logged in diagnostic code position d1:
  1. Code list position - d,1
  2. Main code - 2,4
  3. Sub code - 1,2
  4. Code position repeats - d,1,2,4,1,2
- Display of first diagnostic code (d1) will be repeated until MODE button is pressed to view remaining diagnostic codes (d2, d3, d4, and d5) or until diagnostic mode is exited.
- Any diagnostic code position which does not have a diagnostic code logged will display "--".

- (2) Record first diagnostic code (d1) displayed on WTEC III TPSS (3).

**NOTE**

Pressing MODE button momentarily after fifth diagnostic code (d5) is displayed will cause code positions displayed to begin again with first diagnostic code (d1).

- (3) Press MODE button (4) momentarily to view next diagnostic code (d2).
- (4) Record diagnostic code, if any, displayed on WTEC III TPSS (3).
- (5) Perform steps (3) and (4) for remaining diagnostic code positions (d3, d4, and d5).
- (6) Refer to **Table 8-2. WTEC III Diagnostic Code List and Description** for identification of diagnostic codes and to determine which troubleshooting task(s) to perform.



**Table 8-2. WTEC III Diagnostic Code List and Description**

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
13	ANY	ECU input voltage, low/high	f37
21	ANY	Throttle position sensor, failed low/high	f30

**8-5. WTEC III CODE READING AND CODE CLEARING PROCEDURES (CONT)**

**Table 8-2. WTEC III Diagnostic Code List and Description (Cont)**

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
22	14	Engine speed sensor reasonableness test	f22
	15	Turbine speed sensor reasonableness test	f23
	16	Output speed sensor reasonableness test	f24
23	ANY	Shift selector fault	f39
24	ANY	Sump oil temperature, cold/hot	f25
25	ANY	Output speed reasonableness test, detected at 0 speed	f32
32	ANY	C3 pressure switch open	f26
33	ANY	Sump oil temperature sensor failed low/high	f25
34	ANY	Calibration compatibility or check sum fault	Replace WTEC III transmission ECU (para 8-7).
35	ANY	Power interruption	f27 and f37. If fault persists, replace WTEC III transmission ECU (para 8-7).
36	ANY	Hardware/software not compatible	Replace WTEC III transmission ECU (para 8-7).
42	ANY	Short to battery, solenoid circuit	f27
44	ANY	Short to ground, solenoid circuit	f27
45	ANY	Open circuit, solenoid circuit	f27
51	ANY	Offgoing ratio test (during shift)	f31
52	ANY	Offgoing C3PS test (during shift)	f28
53	ANY	Offgoing speed test (during shift)	f33
54	ANY	Oncoming ratio test (after shift)	f34
55	ANY	Oncoming C3PS test (after shift)	f35
56	ANY	Range verification test	f36
57	ANY	Range verification C3PS test	f29
69	27	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	28	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).

Table 8-2. WTEC III Diagnostic Code List and Description (Cont)

MAIN CODE	SUB CODE	DESCRIPTION	PERFORM TROUBLESHOOTING TASK
69	29	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	33	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	34	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	35	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	36	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	39	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	41	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	42	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).
69	43	ECU malfunction	f27. If fault persists, replace WTEC III transmission ECU (para 8-7).

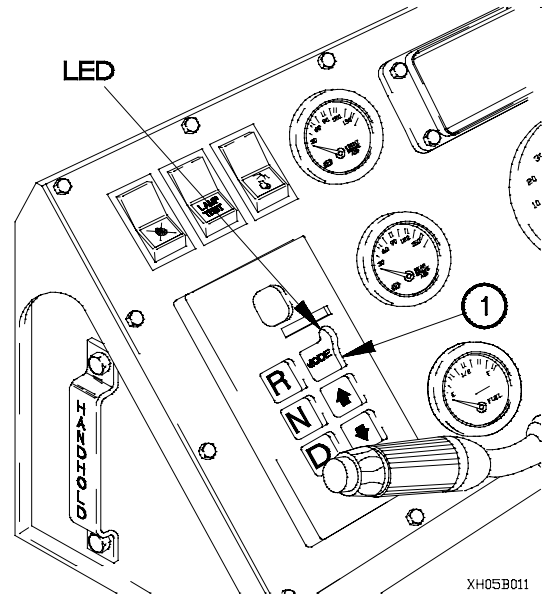


**b. Clearing Active Diagnostic Codes.**

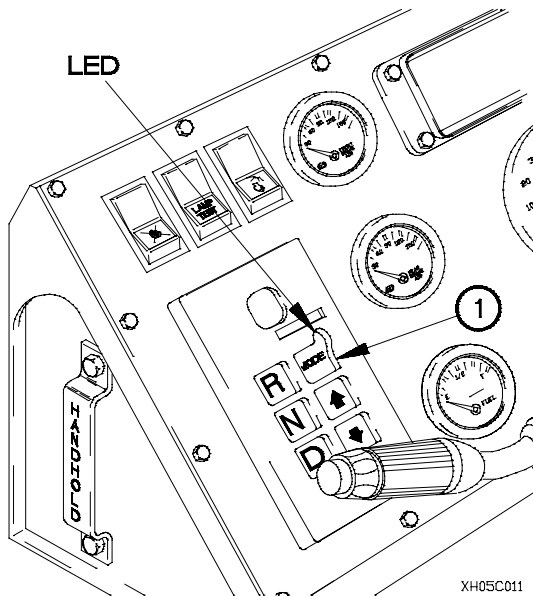
**NOTE**

Active diagnostic codes can only be cleared when transmission output speed equals zero and no output speed sensor fault is active.

- (1) Press and hold MODE button (1), approximately three seconds, until LED at upper right corner of MODE button flashes three times.
- (2) Release MODE button (1).



**c. Clearing Historic Diagnostic Codes.**

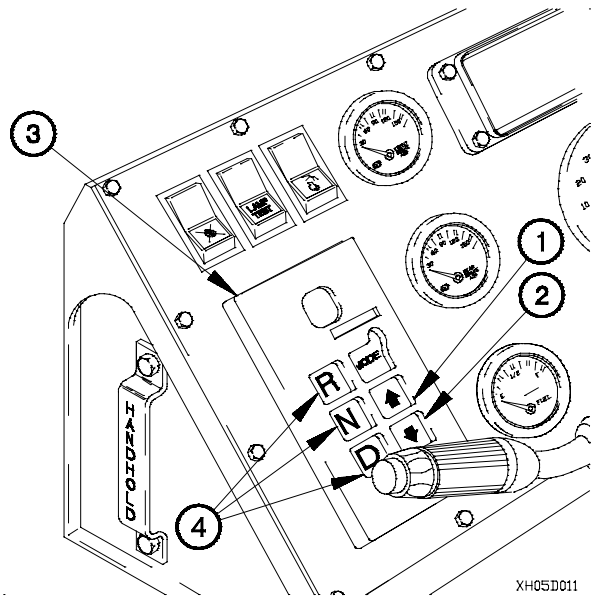


- (1) Press and hold MODE button (1), approximately 10 seconds, until LED at upper right corner of MODE button flashes three times.
- (2) Release MODE button (1).

**8-5. WTEC III CODE READING AND CODE CLEARING PROCEDURES (CONT)**

**d. Exiting the Diagnostic Display Mode.**

- (1) Exit the diagnostic display mode by any of the following methods:
  - (a) Press ↑ (1) and ↓ (2) (up arrow and down arrow) buttons on WTEC III TPSS (3) at the same time.
  - (b) Press any range button (4), D, N, or R on WTEC III TPSS (3) (shift will be commanded if not inhibited by an active diagnostic code).
  - (c) Wait until the calibrated time (approximately 10 minutes) has passed and system automatically returns to normal operating mode.
  - (d) Position master power switch to off (TM 9-2320-365-10).



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**e. Follow-On Maintenance.**

Perform Transmission System Troubleshooting (para 2-17).

**End of Task.**



## 8-6. WTEC II VEHICLE INTERFACE MODULE (VIM) REPLACEMENT/REPAIR

### This task covers:

- |                |                          |
|----------------|--------------------------|
| a. Removal     | d. Installation          |
| b. Disassembly | e. Follow-On Maintenance |
| c. Assembly    |                          |

### INITIAL SETUP

#### Equipment Conditions

- Batteries disconnected (para 7-48).
- Kick panel removed (para 16-3).

#### Tools and Special Tools

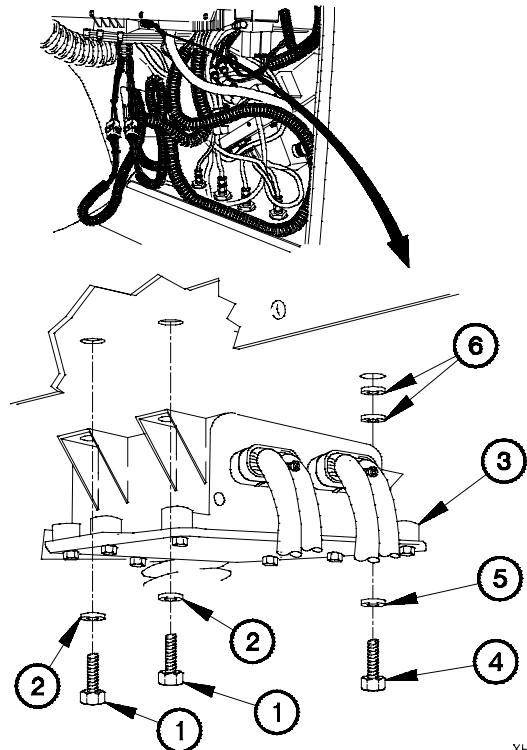
- Tool Kit, Genl Mech (Item 44, Appendix C)

#### Materials/Parts

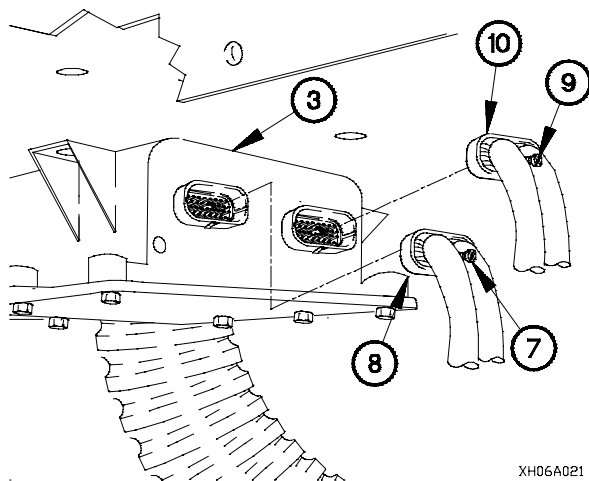
- Seal Ring, Metal (Item 251, Appendix G)

### a. Removal.

- (1) Remove two screws (1) and washers (2) from WTEC II VIM (3).
- (2) Remove screw (4), washer (5), and two washers (6) from WTEC II VIM (3).



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- (3) Loosen screw (7) in connector J116 (8).
- (4) Disconnect connector J116 (8) from WTEC II VIM (3).
- (5) Loosen screw (9) in connector PX33 (10).
- (6) Disconnect connector PX33 (10) from WTEC II VIM (3).
- (7) Remove WTEC II VIM (3) from vehicle.