



POWERTRAIN CONTROL SOLUTIONS
Engineering the future of driveline control.

PCS Transmission Diagnostic Device User Guide v3.1



Section 1: Transmission Diagnostic Device User Controls

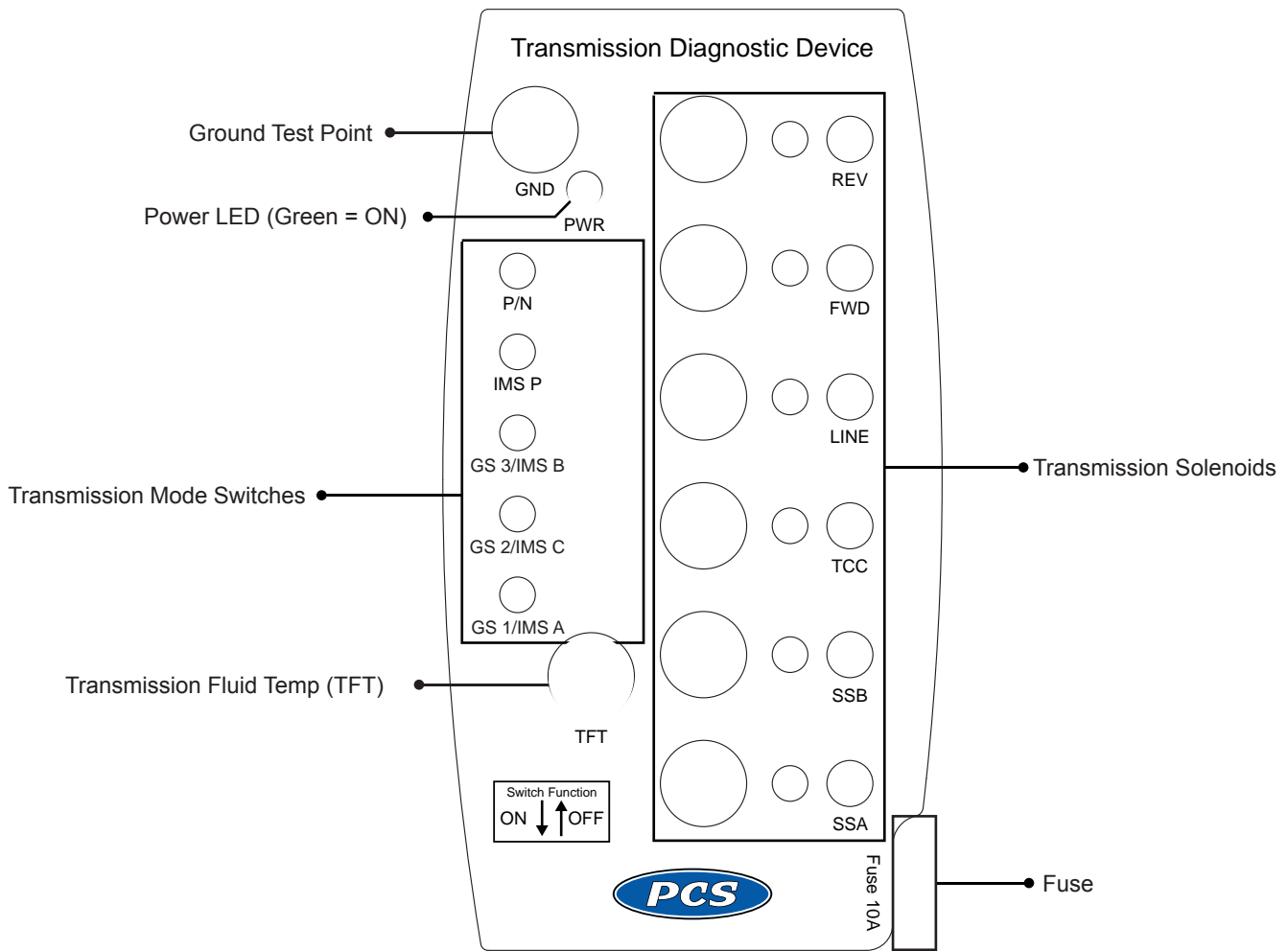


Figure 1

Connect to Vehicle

Step 1. Connect handheld to harness.

Step 2. Connect to transmission with arrow facing out. **Reference Figure 2.**

Step 3. Connect to battery.

Step 3.1 - Turn all toggle switches to the off position (↓).

Step 3.2 - Connect the red clamp to the battery's positive terminal.

Step 3.3 - Connect the black clamp to the battery's negative terminal.

Step 3.4 - Verify the power LED is on.

If it is not on, check the battery connections and the 10A fuse.

Step 4. With operator on seat and brakes fully pressed, start the engine. The vehicle will move suddenly when commanded by the TDD.



Figure 2

NOTE: Gen 3 valve body vehicles will move independent of shift lever position in all tests.

Section 2: Solenoid Tests

Reverse Clutch Solenoid (GEN II)

Description: Turning the solenoid ON prevents reverse (abuse protection reverse lockout)

Verify Operation:

ON: SSA, SSB

OFF: REV, FWD, LINE, TCC

Step 1. Move shift lever into Reverse with REV OFF. The vehicle should move in Reverse.

Step 2. Move shift lever into Neutral.

Step 3. Turn REV ON.

Step 4. Move shift lever into Reverse. Vehicle should not move.

Reverse Clutch Solenoid (GEN III)

Description: Turning the solenoid OFF prevents reverse (abuse protection reverse lockout)

Verify Operation:

ON: SSA, SSB

OFF: REV, FWD, LINE, TCC

Step 1. Move shift lever into Reverse with REV OFF. The vehicle should not move in Reverse.

Step 2. Move shift lever into Neutral.

Step 3. Turn REV ON.

Step 4. Move shift lever into Reverse. Vehicle should move.

Forward Clutch Solenoid

Description: Turning the solenoid ON enables forward (abuse protection forward lockout, when OFF)

Verify Operation:

ON: FWD, SSA, SSB

OFF: REV, LINE, TCC

Step 1. Move shift lever into Drive with FWD ON. Vehicle should move forward in 1st gear.

Step 2. Move shift lever into Neutral.

Step 3. Turn FWD OFF.

Step 4. Move shift lever into Drive. Vehicle should not move.

Line Pressure Solenoid

Description: Increasing current to this solenoid reduces transmission pressure (softer shifts). Turning the switch ON provides 1A to the solenoid (minimum pressure).

Verify Operation:

ON: FWD, SSA, SSB
OFF: REV, LINE, TCC

- Step 1. Move shift lever into Drive with LINE OFF. Move forward and turn OFF SSA to shift into 2nd gear. The vehicle should shift with maximum firmness.
- Step 2. Move the shift lever into Neutral.
- Step 3. Move the shift lever into Drive with LINE, SSA, and SSB ON. Move forward and turn OFF SSA to shift into 2nd gear. The vehicle should shift with minimum firmness.

TCC Solenoid

Description: Turning the solenoid ON locks the converter clutch.

Verify Operation:

ON: FWD, SSA, SSB
OFF: REV, LINE, TCC

- Step 1. Move the shift lever into Drive while firmly applying the brakes.
- Step 2. Turn the TCC ON. The engine should stall.

Shift Solenoid A & B

Description: The shift solenoids select the gear of the transmission.

Verify Operation:

ON: FWD
OFF: REV, LINE, TCC, SSA, SSB

- Step 1. Turn on SSA and SSB. Move shift lever into Drive. The vehicle should move in 1st gear.
- Step 2. At an appropriate speed, move the shift solenoids to switch gears. **Reference the table below.**

	SSA	SSB
Gear 1	ON	ON
Gear 2	OFF	ON
Gear 3	OFF	OFF
Gear 4	ON	OFF

Section 3.1: Mode Switch

	P	R	N	D	3	2	1
P/N	ON	OFF	ON	OFF	OFF	OFF	OFF
IMS P	ON	OFF	ON	OFF	ON	OFF	ON
G3	OFF	OFF	OFF	ON	ON	ON	ON
G2	OFF	ON	ON	ON	ON	OFF	OFF
G1	ON	ON	OFF	OFF	ON	ON	OFF

Section 3.2: Transmission Temperature

Connect an ohm meter between TFT and GND.

Resistance Chart

Temperature °F	Temperature °C	Minimum Resistance Ω	Nominal Resistance Ω	Maximum Resistance Ω
-40	-40	90636	100707	110778
-22	-30	47416	52684	57952
-4	-20	25809	28677	31545
14	-10	14558	16176	17794
32	0	8481	9423	10365
50	10	5104	5671	6238
68	20	3164	3515	3867
86	30	2013	2237	2461
104	40	1313	1459	1605
122	50	876	973	1070
140	60	600	667	734
158	70	420	467	514
176	80	299	332	365
194	90	217	241	265
212	100	159	177	195
230	110	119	132	145
248	120	89.9	99.9	109.9
266	130	69.1	76.8	84.5
284	140	53.8	59.8	65.8
302	150	42.5	47.2	51.9

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