

2002 XLH MODELS

SERVICE MANUAL

Part Number 99484-02A

Section 1: Product

Section 2: Chassis

Section 3: Engine

Section 4: Fuel System

Section 5: Starter

Section 6: Drive/Transmission

Section 7: Electrical

ELECTRICAL DIAGNOSTICS

Part Number 99495-02

Section 1: Starting & Charging

Section 2: Instruments

Section 3: Turn Signals

Section 4: Engine Management

Section 5: Wiring

GENERAL

See [Figure 3-1](#). Both the directional (turn signals) and 4-way flashers are controlled by an electronic module (self-canceller).

The module is secured to the rear fender, under the seat.

The canceller contains circuitry to generate pulses for “flashing” the appropriate directional lamps, thereby eliminating the previously used directional and hazard flashers. Steps 1 and 2 below explain canceller operation when a rider signals for a left turn; step 3 explains canceller operation when a right turn is signalled.

1. Pressing and releasing the left turn signal switch causes a momentary 12 vdc to be applied to Pin 8. The module sends a series of 12 vdc pulses (Pin 4) to flash the left directional lamps (front and rear).
2. The module monitors the number of vehicle speed sensor pulses from the speedometer at Pin 5. The switch closures indicate vehicle distance traveled. When the number of switch closure pulses equals a quantity preset in the self-cancelling module, the left turn signal is automatically canceled.
3. Pressing and releasing the right turn signal switch causes a momentary 12 vdc to be applied to Pin 7 and an output at Pin 3 identical to that just described for a left turn signal.

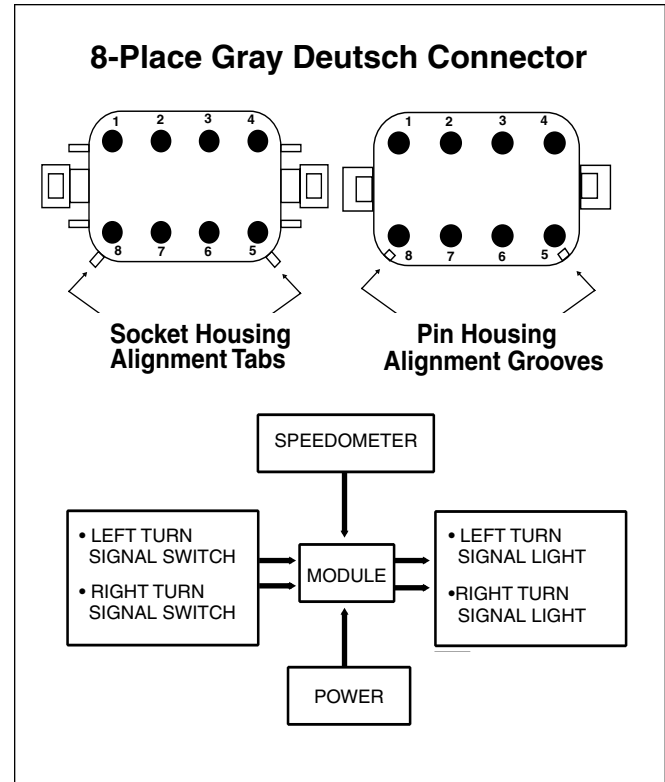


Figure 3-1. Turn Signal Module Pinout

MANUAL OR RIDER CONTROL

Directionals may be cancelled by pressing the turn signal switch a second time. Pressing the left turn signal switch while the right turn signal lamps are flashing will cancel the right turn lamps and activate the left turn lamps (and vice versa).

HAZARD FLASHER (4-WAY)

To activate the hazard flashers, simultaneously press and hold both right and left turn signal switches for 1-1/2 seconds. To cancel hazard flashers, momentarily press and release right and left turn signal switches simultaneously.

Table 3-1. Module Wiring

PIN NO.	WIRE COLOR	DESCRIPTION
1	BK	module ground to motorcycle
2	O/W	12 vdc input from accessory circuit breaker
3	BN	pulsed 12 vdc for flashing right turn signals
4	V	pulsed 12 vdc for flashing left turn signals
5	W/GN	vehicle speed sensor input
6	N/A	not used
7	W/BN	12 vdc from right turn signal switch (when pressed)
8	W/V	12 vdc from left turn signal switch (when pressed)

DISTANCE TEST

Directionals cancel after rear wheel travels a certain distance at a specific speed. Turn signal module begins measuring the distance traveled immediately upon release of the turn signal switch button.

Directionals will remain flashing for the following distances within the speed ranges specified in [Table 3-2](#).

NOTE

Distance test and time test can also be performed using the speedometer tester (HD-41354) as an input device.

To check module operation, proceed as follows:

1. Operate the motorcycle at 15 mph (24 km/h), which is the midpoint of speed range #1.
2. Press and release right turn switch button. Closely monitor vehicle speed and odometer reading. Measure the distance traveled from the time the button is released to the time the directional cancels.
3. Repeat steps 1 and 2 for left turn.
4. Repeat steps 2 and 3 for right and left turns at midpoint of speed ranges 2 through 4.
5. If the distances observed in Steps 1 through 4 are not correct, check the following:
 - a. Turn signal module ground and module pin connections.
 - b. Vehicle speed sensor operation, connections and grounds.
 - c. Replace module with one known to be good and repeat DISTANCE TEST.

NOTE

Turn signal module and turn signal lamps must have the same ground potential; grounds for both module and lamps must have good continuity to one another.

ALTERNATE TIME TEST

Another way of checking the self-cancelling turn signal module is to measure the length of time the directional operates at a constant vehicle speed. From the instant the turn signal switch button is released, measure the number of seconds that elapse before the directional cancels.

The approximate elapsed times at four constant speeds are shown in [Table 3-3](#).

RIDER PREFERENCE AND CONTROL

To extend the distance/time that directionals flash, simply press and hold the turn signal switch button. Since the module does not begin to measure distance traveled and time elapsed until the switch button is released, the flashing sequence is prolonged.

To shorten the distance/time that directionals flash, press the turn signal switch button a second time while the directionals are still flashing. This procedure immediately cancels the turn signal.

Table 3-2. Distance Test

RANGE	SPEED		DISTANCE	
	MPH	KM/H	FEET	METERS
1	10-34	0-48	221 (0.04 mi)	67
2	35-44	56-71	339 (0.06 mi)	103
3	45-60	74-97	680 (0.13 mi)	207
4	61+	98+	1051 (0.20 mi)	320

Table 3-3. Time Test

SPEED		TURN SIGNAL ELAPSED TIME IN SECONDS
MPH	KM/H	
25	40	5-7
38	61	5-7
52	84	8-10
65	105	10-12

GENERAL

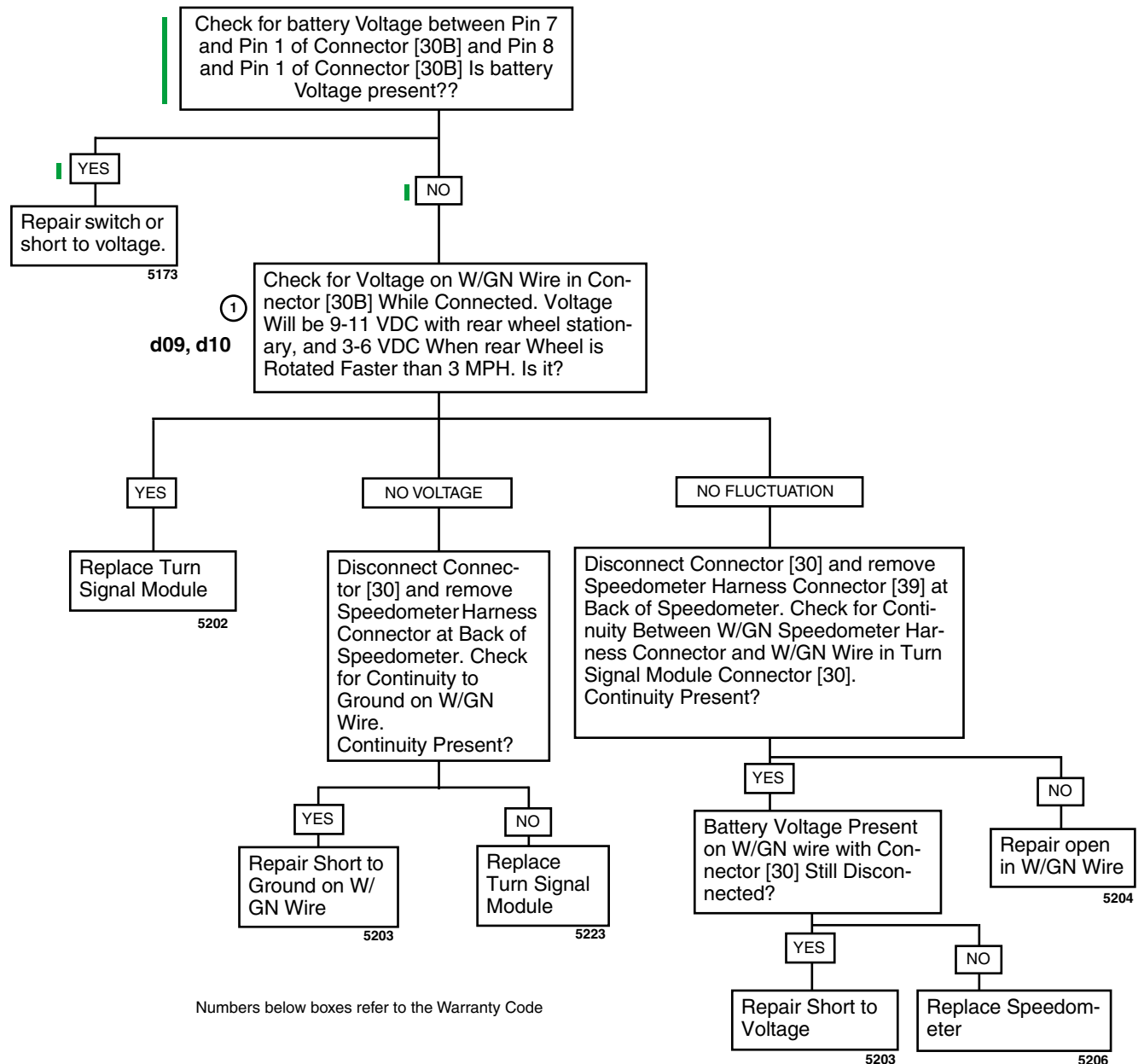
See the following charts for troubleshooting procedures. Use [Turn Signal Error 1](#) for speedometer trouble codes **d09** (speed output shorted high) and **d10** (speed output shorted low or open).

CAUTION

Do not apply 12 vdc to self-cancelling module without pin 1 connected to ground or module will be damaged.

Turn Signal Error 1

FLASH WILL NOT CANCEL



Numbers below boxes refer to the Warranty Code

DIAGNOSTICS

Diagnostic Notes

The reference numbers below correlate with those on the diagnostic flow charts.

- Use Speedometer tool HD-41354 to input a signal which duplicates 3 MPH. Enter 70 into tester and watch for voltage to drop on W/GN wire. If tester is not available, elevate rear wheel and spin briskly while looking for voltage to drop on W/GN wire.

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