



# INSTALLATION INSTRUCTIONS FOR DELUXE II TACHOMETERS AND DELUXE II SPEEDOMETERS

## 1.0 GENERAL SPECIFICATIONS

### DELUXE II TACHOMETERS

Programming Range: 0.5-299 pulses per engine revolution  
 Programming Resolution: 0.01 pulses per revolution  
 Signal Source: Datcon brand magnetic sensors & pulse generators; analog tach signal output from engine ECUs; ignition systems; alternators; TTL

### DELUXE II SPEEDOMETERS

Programming Range: 4,000-299,990 pulses per mile; 2,000-199,990 pulses per kilometer  
 Programming Resolution: 10 pulses per mile/kilometer  
 Signal Source: Datcon brand magnetic sensors & pulse generators; analog speed signal output from transmission ECUs; analog speed signal output from engine ECMs

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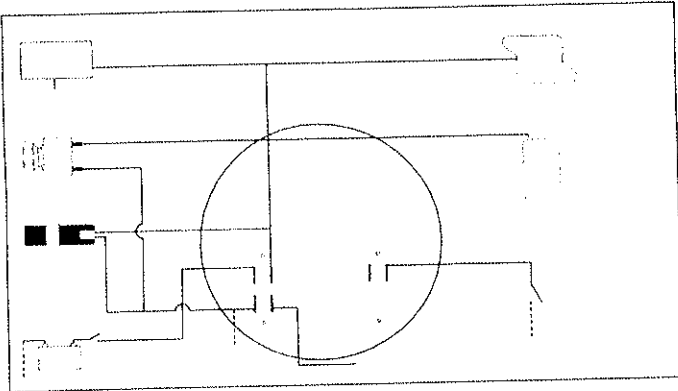


Fig. 1. Tachometer Wiring Diagram

## 3.0 PROGRAMMING THE TACHOMETER

Tachometer programming can be accomplished either by using the trip reset button on the front of the instrument or with a Field Programming Kit (reference FPK-2 P/N 106351).

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### 3.1.3.1 Method 1

VEHICLE ENGINE OFF: Press and release the reset button to increment the current digit selected. To select the next digit, press and hold the button for two (2) seconds and the next digit will start to flash. Once you have finished adjusting the last digit, press and hold the button for two (2) seconds. The meter will store the new calibration and exit calibration mode.

### 3.1.3.2 Method 2

VEHICLE ENGINE ON: Enter the current engine speed/RPM by pressing and releasing the reset button to increment the current digit selected. To select the next digit, press and hold the button for two (2) seconds and the next digit will start to flash. Once you have finished adjusting the last digit, press and hold the button for two (2) seconds. The meter will display the calculated calibration in pulses per revolution and store it. The meter will then exit calibration mode.

Selected digit will flash on/off!



Fig. 2 Calibration Display

## 2.0 CONNECTING TACHOMETER TO VEHICLE'S ELECTRICAL SYSTEM (FIGURE 1)

### 2.1 REQUIRED CONNECTIONS

- Connect the blade terminal marked (-) to the vehicle ground.
- Connect the blade terminal marked (+) to the positive side of the battery through the ignition switch. The meter will work in both 12V and 24V electrical systems.
- Connect the blade terminal marked (S) to the signal source.

### 2.2 OPTIONAL CONNECTIONS

#### 2.2.1 Illumination

Connect the blade terminal marked (L) to the positive side of the battery through the instrument panel dimmer switch. Lamp installed must match system voltage 12V or 24V.

#### 2.2.2 Calibration Select

Not applicable on tachometer (disregard).

#### 2.2.3 External Trip Hourmeter Reset Switch

Connect the blade terminal marked (B) to ground through a normally open momentary switch.

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## 3.1 PROGRAMMING THE TACHOMETER WITHOUT A FIELD PROGRAMMING KIT

### 3.1.1 Enter Programming Mode

Start with the power to the tachometer off. Press and hold the trip reset button. While depressing the reset button apply power to the meter. The meter will enter calibration mode and the LCD will display the current input configuration (see Figure 2).



Fig. 2. Input type display

### 3.1.2 Selecting the Signal Source for the Tachometer

Types of signal sources are as follows:

- Type 1:** Magnetic Sensor
- Type 2:** Pulse Generator
- Type 3:** Alternator
- Type 4:** TTL Level Signals
- Type 5:** Ignition Systems
- Type 6:** ECM (analog)

To select the signal type, press and release the reset button to increment the type number. Once the correct type is displayed, press and hold the reset button for two (2) seconds to select it. The LCD will then display the current calibration of the tachometer as shown in Figure 3 below.

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## 3.2 PROGRAMMING THE TACHOMETER OR SPEEDOMETER WITH A FIELD PROGRAMMING KIT\*

Tachometers and speedometers are programmable using the Field Programming Kit-2 (FPK-2), Software Version 3.1 or greater. FPK-2 software allows the user to set the calibration and modify both the "totalizing" and hourmeter. for the tachometers and both the "totalizing" and trip odometers for the speedometers

To program the tachometer or speedometer, follow the instructions included with the FPK-2.

**NOTE!** There is no longer a need to adjust the analog speed or tachometer indication potentiometer with a hex wrench.

Reference P/N 106351. Unit includes CD-ROM loaded with data and instructions, adapter cable that connects from a parallel type printer port on the back of a PC to the instrument, and a 12-volt transformer. Kit is PC-based, IBM-compatible and Windows-driven.

## ELECTRICAL SYSTEM (FIGURE 4)

### 4.1 REQUIRED CONNECTIONS

Connect the blade terminal marked (-) to the vehicle ground.  
Connect the blade terminal marked (+) to the positive side of the battery through the ignition switch. The meter will work in both 12V and 24V electrical systems.  
Connect the blade terminal marked (S) to the signal source.

### 4.2 OPTIONAL CONNECTIONS

#### 4.2.1 Illumination

Connect the blade terminal marked (L) to the positive side of the battery through the instrument panel dimmer switch. Lamp installed must match system voltage 12V or 24V.

#### 4.2.2 Two-Speed Rear Axle

Connect the blade terminal marked (A) to ground through the high / low gear selector switch. This switch will allow the meter to compensate for the change in calibration caused by the change in the rear axle ratio.

#### 4.2.3 External Trip Odometer Reset Switch

Connect the blade terminal marked (B) to ground through a normally open momentary switch.

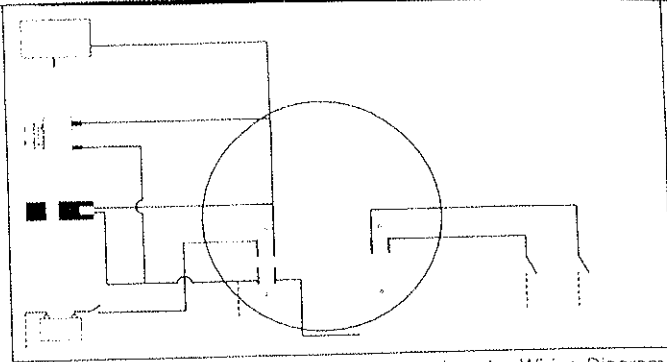


Fig. 4. Speedometer Wiring Diagram

## 5.0 PROGRAMMING THE SPEEDOMETER

Speedometer programming can be accomplished either by using the trip reset button on the front of the instrument or with a Field Programming Kit (reference FPK-2 P/N 106351).

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### 5.1 PROGRAMMING THE SPEEDOMETER WITHOUT A FIELD PROGRAMMING KIT

#### 5.1.1 Enter Programming Mode

Start with the power to the meter off. Press and hold the trip reset button. While depressing the reset button apply power to the meter. The meter will enter calibration mode and the LCD will display the current input configuration (see Figure 5).

#### 5.1.2 Selecting the Signal Source for the Speedometer

Types of signal sources are as follows:

**Type 1:** Magnetic Sensor  
**Type 2:** Pulse Generator

**Type 3:** ECM (Analog)  
**Type 4:** TTL Level Signals

To select the signal type, press and release the reset button to increment the type number. Once the correct type is displayed, press and hold the reset button for two (2) seconds to select it. The LCD will then display the current calibration of the speedometer as shown in Figure 5.

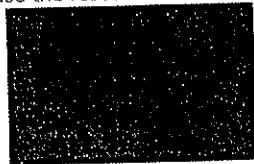


Fig. 5. Input type display

#### 5.1.3 Entering the Calibration:

There are two (2) ways to enter calibration data. The first method can be used if you know the calibration for the vehicle in pulses/mile or pulses/kilometer. The second method can be used if you do not know the calibration for the vehicle, but can drive the vehicle over a measurable distance such as a mile or kilometer.

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#### 5.1.3.2 Method 2

After selecting the signal type, simply start driving the vehicle. Once you have driven the vehicle one (1) mile or one (1) kilometer, press the reset button to lock the calibration in memory and exit the programming routine.

**NOTE!** For vehicles equipped with two-speed axles, the above process needs to be repeated TWICE--once with the gear selector switch in the high-ratio position (to program the primary calibration), then again with the gear selector switch in the low-ratio position, to program the alternate calibration. IT IS IMPORTANT THAT THE GEAR SELECTOR SWITCH REMAINS IN THE SAME POSITION DURING THE CALIBRATION PROCESS. THE SIGNAL SOURCE SHOULD BE SET THE SAME IN BOTH CASES.

### 5.2 PROGRAMMING THE SPEEDOMETER WITH A FIELD PROGRAMMING KIT\*

Same as the tachometer. Refer to section "3.2 PROGRAMMING THE TACHOMETER OR SPEEDOMETER WITH A FIELD PROGRAMMING KIT".

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#### 5.1.3.1 Method 1

Enter the known calibration into the speedometer. Press and release the reset button to increment the current digit selected. To select another digit press and hold the button for two (2) seconds and the next digit to the right will start to flash (see Figure 6). Once you have finished adjusting the last digit, press and hold the button for two (2) seconds. The speedometer will store the new calibration and exit calibration mode.

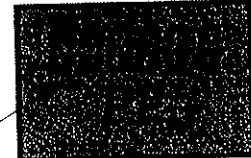


Fig. 6. Calibration display

Selected digit will flash on/off!

**NOTE!** The unit's digit is not adjustable. The programming resolution is 10 pulses/mile or kilometer.

To determine the number of pulses per unit (mile or kilometer), use the following equation:

$$\text{Pulses Per Unit} = [\text{Tire revolutions per unit}] \times [\text{Differential ratio}] \times [\text{Transmission's speedometer drive gear ratio}] \times [\text{Number of pulses generated by the sender per revolution}]$$

- 60-pole sender generates 30 pulses/rev
- 16-pole sender generates 8 pulses/rev
- Magnetic sensor produces the same number of pulses as the number of teeth on the gear used (e.g. 16-tooth gear = 16 pulses)

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## 6.0 APPLICATIONS GUIDELINES

### Tachometer and Speedometer

When appropriate, use specifications contained in Section 1.0--General Specifications--to verify system compatibility & performance requirements.

Be sure to refer to the wiring diagram in Figure 1 to assure proper installation.

Whenever possible, use MAXIMA (AST, Datcon or Stewart Warner brand) senders and sensors to assure systems compatibility.

Consult with Maxima engineering for questions regarding the set-up & use of FPK-2 kit.

### Speedometer Only

Be sure to drive EXACTLY one mile or kilometer when calibrating speedometer to measured distance.

## 7.0 TECHNICAL SUPPORT

For technical support, CONTACT YOUR DISTRIBUTOR or call 1-717-581-1000. Follow the prompt. Consult with customer service if technical support is not available at the time of your call.