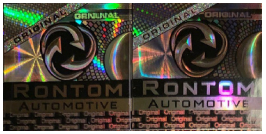
MTL01 Speed Limiter Device (SLD)

Installation and Operating Manual

Suitable for all Mechanical Throttle Linkage Vehicles



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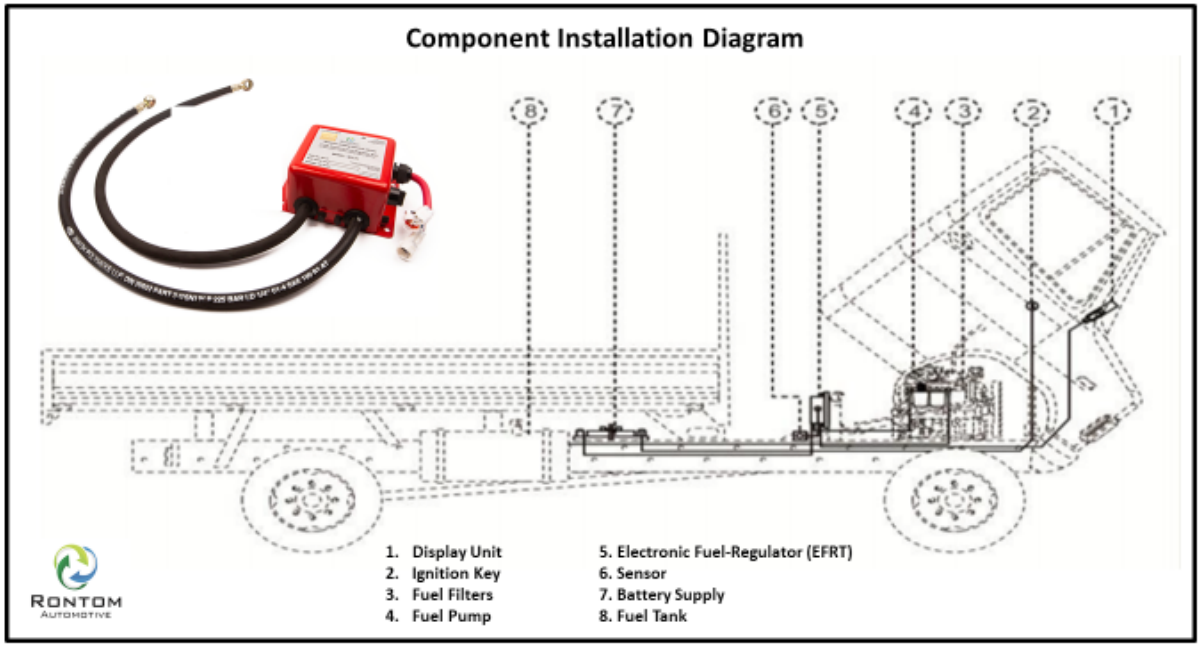
ELECTRONIC FUEL REGULATOR SPEED LIMITER DEVICE (SLD)

Speed Limiter Device (SLD)/Speed Governor: Speed Limiting Device (SLD): A device whose primary function is to control the fuel feed to the engine in order to limit the vehicle speed to the specified value. The purpose of the SLD is to limit the maximum road speed of vehicles to a specified value without affecting the other performance parameters of the vehicle.

Speed Limitation Function (SLF): A function to control the fuel feed of the vehicle or engine management in order to limit the vehicle speed to a fixed maximum value.



MTL01 EFRT DEVICE AND ACCESSORIES:

The Speed Limiter comprises of 2 Major components.

1) E-fuel regulator device. (EFRT)
2) Speed Sensor.

E-fuel regulator device: The device comprises of mechanical components - a Solenoid valve and a Fuel In-let and Fuel Out-Let pipes; and Electronic components - Integrated Circuits (IC's) programmed to sense the speed and control the fuel flow for regulating/Limiting the Vehicle's top speed.

Speed Sensor: A component designed to match the gear box output with a Hall Effect Sensor and 16-pole magnet to give an output of 8-Pulses, used for calculating the vehicle speed.

EFRT Technical Specifications:

S.No	Technical Description	Specification
1	Operating Voltage	9V – 32 V DC
2	Operating Current	60 mA – 700 mA
3	Operating temperature	-40°C to 85°C
4	TACO Signal Input	Speed Sensor with Hall Effect
5	No. of Pulses	8 Pulses per Revolution
6	Duty Cycle of Signal	42% to 50%

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INSTALLATION PROCEDURE:

Ensure the following for the Installation of the EFRT Device on the vehicle.

1) Engine Condition and Vehicle Fitness should be verified in good condition.

2) The diesel filter should be new or in good condition.

3) Fuel In-let (Fuel Filter) and Out-let (Fuel Injection Pump) banjos should not have any leakages.

The EFRT is installed on the vehicle by following stepwise process:

1) In-let Hose Pipe of the EFRT Device to the Fuel Filter of the vehicle.

2) Out-let Hose from the EFRT to the Fuel Injection Pump (FIP) of the vehicle.

3) After the fitment of hoses onto the Fuel Pump and FIP, remove the air block.

4) The Sensor is installed on the Gear Box out (Speedo meter cable installed location) and the cable (3 pin connector) is plugged into to the EFRT Device.

5) Power cable (2 Pin connector) is to be plugged with the EFRT and the other end needs to be installed on the Vehicle Ignition for power supply to the device.

6) After installation of the EFRT device, verify the engine RPM and adjust the solenoid valve screw. (Detail Procedure is explained in MTL01-DL Test & Calibration Data Logger Programmer Settings).

7) The MTL01-DL Test & Calibration Data Logger should be connected to the EFRT (4 Pin Shell Connector) on the Device for Programming the below parameters.

a) Set Speed (Speed defined by the Government agencies and regulations)

b) Start Speed (Speed from where the device starts controlling the fuel)

c) Gear Ratio.

d) No. of Pulses.

STEP WISE PROCEDURE FOR LOGGER FUNCTIONS AND SETTING
The MTL01-DL Test & Calibration Data Logger Unit

1) After installation of the device, make electronic connections.

2) After giving power, connect the MTL01-DL logger to the device, and then view display screen which indicates the current speed of the vehicle.

SETTING SPEED:

Step 1: Press middle button on the MTL01-DL logger and click until the display on the screen is showing “Set Speed”.

Step 2: Adjust the desired set speed by pressing the up and down arrows.

Step 3: Once the desired speed is set, click “OK” button.

Step 4: Once the writing of the program is complete, go to next step.

MTL01-DL
Test & Calibration Data Logger Unit

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START CONTROL:

Step 1: Press middle button on the logger and click till the display on the screen is showing “Start Set Speed” (Speed from where the device starts controlling the fuel)

Step 2: Set the Control Speed -5 to -10 KMPH to the Set Speed (E.g. If set speed is 50 kmph then start control speed should be 45, 40 kmph) by pressing up and down arrows.

Step 3: Once the desired speed is set, click “OK” button.

Step 4: Once the writing of the program is complete, go to next step.

VEHICLE/GEAR RATIO:

Step 1: Press middle button on the logger and click till the display on the screen is showing “Vehicle/Gear Ratio”.

Step 2: Set the vehicle ratio by pressing up and down arrows.

Note:

a) The desired vehicle/gear ratio of the vehicle is the one where the speed shown under display tab in the Logger is matching the Speedometer reading of vehicle.

b) The speed in the logger w.r.t vehicle can be seen through the display.

Step 3: Once the vehicle ratio is set, click “OK” button.

Step 4: Once the writing of the program is complete, go to next step.

NUMBER OF PULSE: (Sensor)

Step 1: Press middle button on the logger and click till the display on the screen is showing “No. of Pulses”.

Step 2: Ensure that the reading is showing 8-Pulse.

Step 3: Click “OK” button.

Step 4: Once the writing of the program is complete, click on middle button to check the settings.

WORKING METHOD OF EFRT:

When vehicle’s speed is below start speed there is no control over fuel flow, and subject to the accelerator being pressed, fuel is allowed to pass. Whenever the speed reaches start speed the device starts controlling the fuel flow using a solenoid.

The Solenoid Valve controls the fuel flow according to the pulses (on and off) given by microcontroller.

Provision is given to allow the minimum fuel to be passed when the vehicle speed reaches its maximum set speed. At this stage the Solenoid is in “off” condition. Again when vehicle speed is less than set speed, the solenoid starts limping that means the speed is maintained at the set speed. If the pedal is pressed completely, fuel is not allowed to pass completely, thus the vehicle’s top speed is controlled.

When the speed is below the start speed, again the controlling of fuel is stopped so that fuel is allowed to flow according to the accelerator being pressed.

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COLOR CODE FOR EFRT CONNECTORS:

SL. No	Cable Colour	Function	Voltage	Description
1	Red	Power	12V/24V	Input power to P.C.B
2	Black	GND	0V	Ground Signal
3	Yellow	Signal	5V	Signal from Speed Transducer
4	Blue	S+	5V	Input power to Sensor
5	White	S-	0V	Ground Signal
6	Orange	GND	0V	Power LED
8	Violet	VCC	5V	Ground
9	Green	TX	3V	Controlling LED

SOME TYPES OF SENSORS:

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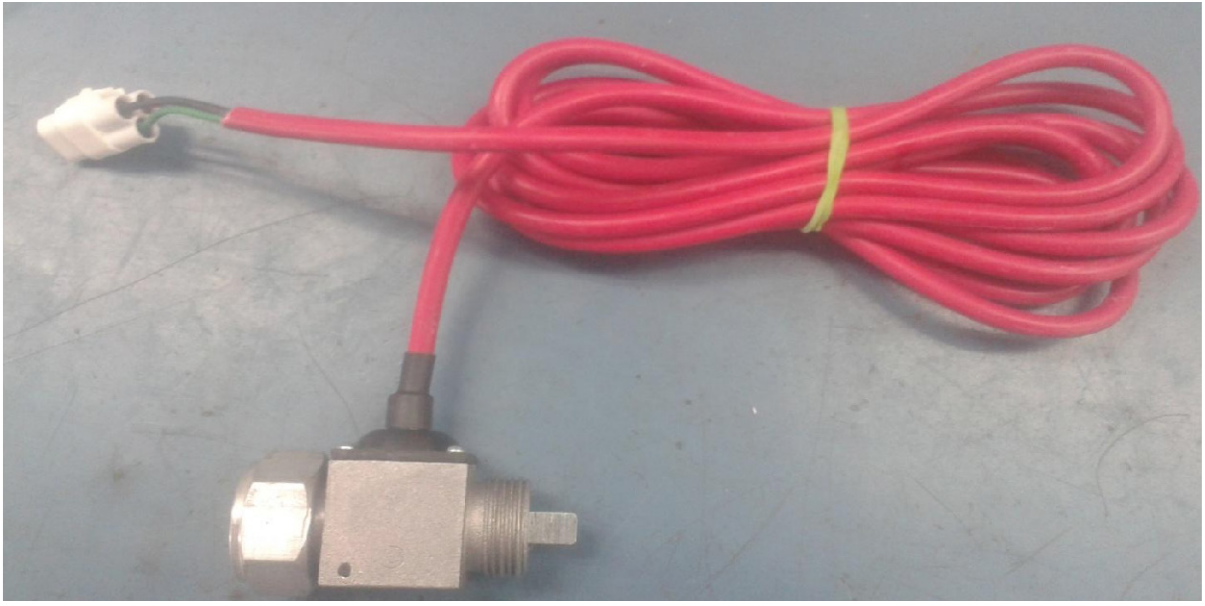
1. Z/F SENSOR



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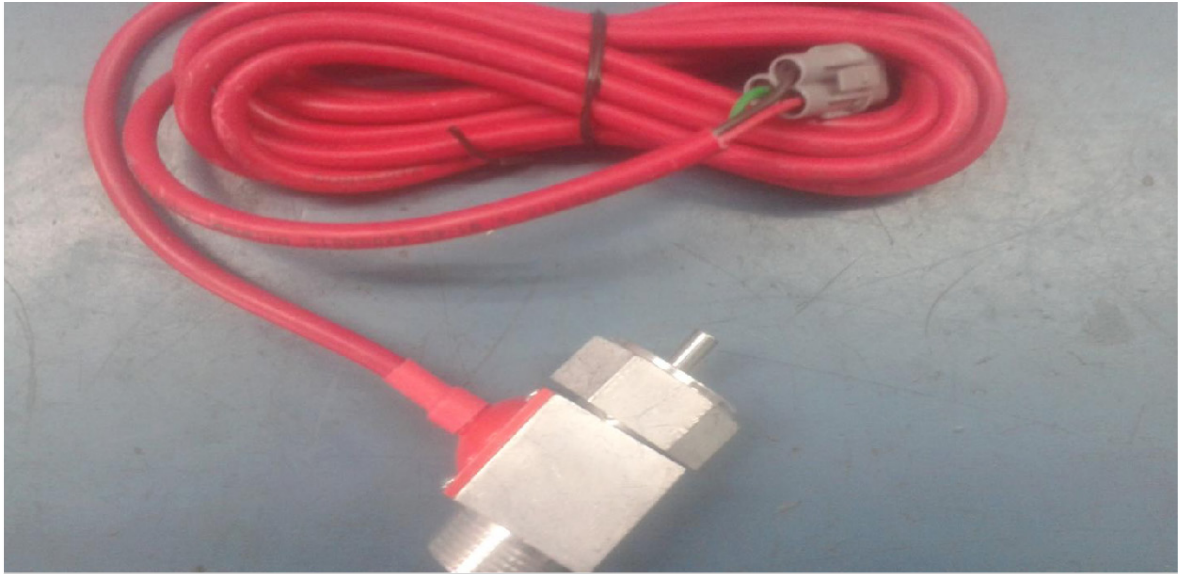
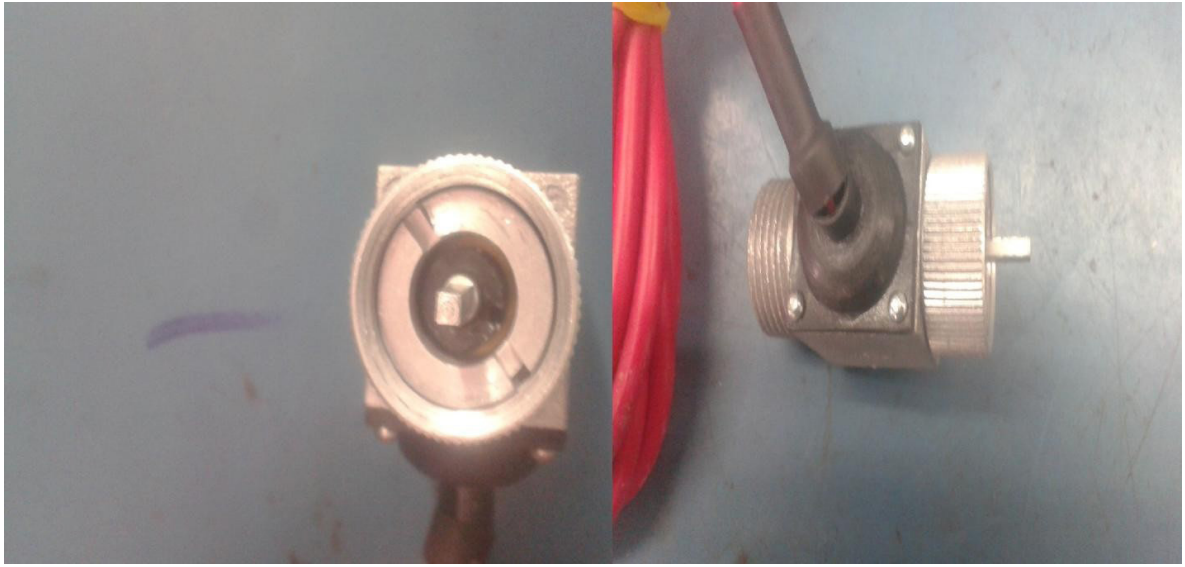
2. UNIVERSAL SENSOR



3. MAHINDRA & MAHINDRA (M&M) SENSOR



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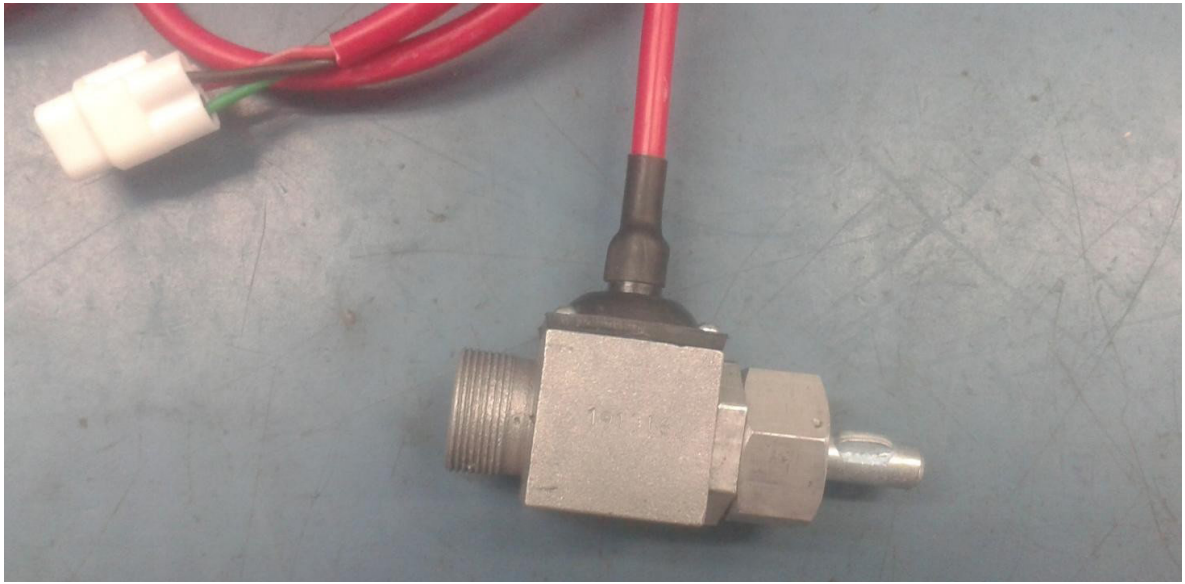
4. HINO SENSOR



S. No	Sensor Type	Part No	Suitable for	Pulse/Rev
1	DIN ZF	CD1002	Ashok Leyland	8
2	HINO	CH1003	Ashok Leyland (Old)	8
3	Universal	CJ1001	Tata, Force, Swaraj Mazda, Eicher	8
4	M&M	CM1004	Mahindra & Mahindra	8
5	Adaptor	CS1006	Swaraj Mazda	8

TOOL KIT:

1. 6 to 27 number flat and ring spanners set.
2. Cutting pliers.
3. Screwdriver.
4. Multi meter.
5. Wire cutter.
6. Hammer.

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