

Electronic Engine Pressure Governor

The Class1 Pressure Governor is designed to maintain a selected pump pressure or engine speed setting.

Modes of Operation

Power On When the unit is first powered up, the display will show [MODE] and the engine will remain at idle until the mode switch is pressed to select the desired operating mode (**PRESSURE** or **RPM**).

There is an internal relay that should be used to turn on the remote throttle at the engine ECU. This relay will not energize until the MODE switch is pressed and a valid throttle ready input is present at Pin 2 of the 12 pin connector. If the pump is engaged and the OK to Pump LED is illuminated, **PRESSURE** will be the first mode selected otherwise Throttle will be the first mode.

RPM Mode When the unit is in RPM mode, the display will read "**THROTTLE**" and the green RPM LED will be illuminated. Engine speed is controlled by the **INC**rease and **DEC**rease switches, the display will indicate "**INCREASE**" or "**DECREASE**" as appropriate when these switches are depressed. The governor will maintain the last output signal attained with these switches. The engine will maintain an RPM appropriate for the throttle signal being sent.

NOTE: IF WHILE OPERATING IN RPM MODE THE PRESSURE INCREASES MORE THAN 50 PSI FROM THE PRESSURE LOGGED AT THE LAST SWITCH PRESS, THE GOVERNOR WILL LIMIT THE PRESSURE INCREASE TO NO MORE THAN A 50 PSI DIFFERENTIAL.

THE GOVERNOR MAY REDUCE ENGINE RPM TO ACHIEVE THIS AND THE MESSAGE PSI LIMIT WILL BE DISPLAYED IN THE MESSAGE CENTER.

NOTE: THE GOVERNOR WILL NOT ATTEMPT TO REGULATE PRESSURE IN THIS MODE, ONLY LIMIT THE DIFFERENTIAL PRESSURE TO 50 PSI FROM THE PRESSURE PRESENT WHEN THE LAST SWITCH WAS PRESSED.

Pressure Mode When the unit is operating in the Pressure mode, the display will show "**PRESSURE**" and the amber **PRESSURE** LED will be illuminated. Pump pressure is set by using the **INC**rease and **DEC**rease switches. The governor will attempt to maintain the last pressure achieved with these switches. The display will indicate "**INCREASE**" or "**DECREASE**" as appropriate.

The governor maintains pump pressure by controlling engine RPM in response to a signal from the pressure transducer mounted on the pump.

When controlling in this manner, the display will show **CTRL DEC** or **CTRL INC**.

Switching between modes Pressing the mode switch will change the governor from RPM to Pressure mode without a significant change in engine speed or pump pressure. The message center will indicate "**PRESSURE**" or "**THROTTLE**" as appropriate once the mode change has been made. When switching to **PRESSURE**, the pressure setpoint is whatever pressure is on the transducer at the change.

Preset Mode

Pressing the **PRESET** switch in either mode will control the engine to attain the preset RPM or pump pressure programmed in governor memory. If there is more than 10 PSI pressure on the pump, the RPM Preset is disabled. If the Preset Switch is pressed, **DISABLED** will be displayed momentarily.

High Idle Mode

An input is available to bring the engine speed to a PRESET RPM (High Idle) from a remotely mounted switch. While operating in this mode, the display will show “**HIGHIDLE**”. This function is inoperative when the pump engaged input is active, there is more than 10 PSI on the pressure transducer or if the MODE switch on the governor has been pressed. Pressing the **IDLE** switch causes the high idle to drop out and the high idle input must be toggled off and then on again to reinstate high idle. The **INC** and **DEC** switches are active in high idle mode and the engine speed can be adjusted, changing engine speed in this manner will not change the preset RPM that is set in memory.

Idle Mode Pressing the **IDLE** switch at any time returns the engine to idle speed.

NOTE: A FIRM, POSITIVE SWITCH DEPRESSION IS NECESSARY TO ACTIVATE THIS FEATURE AND A QUICK PRESS MIGHT BE IGNORED.

SENSOR



CAUTION

Whenever the transducer signal is below 0.3 VDC or above 4.8 VDC, a sensor fault will be logged and **SENSOR** will be displayed in the message center. (**SENSOR** will flash if the failure occurs while operating in PSI Mode) Once a failure is detected, the governor can no longer maintain a pressure setting. It will hold the current engine RPM and only operate as a throttle.

Once the **SENSOR** message is displayed, it will not clear until power to the governor is reset. It is extremely important that the cause for this message is investigated.

The governor **cannot** control discharge pressure properly unless the sensor signal is reliable and correct.

Switch Session Pressure

If the **INC** switch is held the governor will not allow a change greater than **80 PSI** without releasing the **INC** switch and pressing it again. This is only applicable when the pressure is above **90 PSI**.

This prevents high pressures from being introduced by a distracted operator.

Pressure / Water Loss

If the discharge pressure drops below **30 PSI** for any reason, engine speed will not be increased. The governor output voltage will reduce to the last known value (engine RPM) where the pressure setpoint was obtained. The display will flash **-INTAKE-** during this low pressure condition. If the pressure increases above 30 PSI, **OPERATOR** will flash and the governor will not increase output unless the operator presses the **INC** or **PRESET** switches. If pressure above **30 PSI** is not regained within **5 seconds**, the governor will return the engine to idle and display **LoSupply**. The operator must make certain that the water supply is adequate and then reinstate governing using the **MODE, INC** and/or **PRESET** switches.

Pressure Recovery / Cavitation (TRIM)

The governor has a trim adjustment, this can be set between 5% and 20% of maximum throttle. This parameter limits the governor's maximum increase in a pressure recovery attempt. The message center will flash **OPERATOR** when this limit is reached and the RPM will not increase further. The operator must take positive action to restore discharge pressure. If pressure is not restored within 4 seconds, the governor will reduce output to the last known output where pressure was maintained. The operator must input a new setpoint with the **INC/DEC** or **PRESET** switches. If the pressure rises above the original setpoint and the governor decreases the engine speed, the governor will resume normal governing operations.

Version Display

While the governor is at idle and **[MODE]** is being displayed, if the **IDLE** switch is depressed for 7 seconds, the message center will scroll through the version number, governor settings and I/O voltage. When the sequence is complete, the display will return to **[MODE]** and normal operation is available.

PSI Enable

The pressure governor will not control pressure until a discharge pressure of **70 PSI** is attained. It will act as a throttle until this pressure point is achieved.

RPM Preset Disable

If there is pressure on the pump transducer, RPM Preset is disabled and a **DISABLED** message will be displayed in the Message Center.

Pressure Preset

While the governor is attempting to reach the preset PSI, the increase is tested at intervals and if the pressure is not increasing, the governor will maintain the engine speed at the point the pressure stops increasing and uses that as the pressure setpoint.

High Idle

The High Idle feature is disabled if there is **> 10 PSI** at the pump transducer.

Switch Session Pressure

If the **INC** switch is held and the operating pressure is above **90 PSI**, the governor will not allow a change greater than **80 PSI** without releasing the **INC** switch and pressing it again. This is to prevent high pressures from being introduced by a distracted operator.

New Messages

OPERATOR will flash anytime the governor can't achieve a desired pressure.

This indicates that the governor will not increase engine speed until the pump operator intervenes.

-INTAKE- will be displayed anytime the governor is operating in pressure mode and the discharge pressure drops below **30 PSI**.

If pressure remains below **30 PSI**, the display will change to **LoSupply** and engine speed will be reduced to idle. At this point, the operator must correct the supply or discharge problem and reinstate governing

OPERATOR will be displayed anytime the governor can't achieve a function or pressure.

This indicates that the governor will not increase engine speed until the pump operator intervenes.

CTRL INC will be flash in the display if the governor cannot regain the set pressure. It will change to **OPERATOR** (flashing) if pressure cannot be regained within 4 seconds.

During these periods, the governor will not command an increase in engine speed and will return to the last known engine speed command where the setpoint was achieved.