

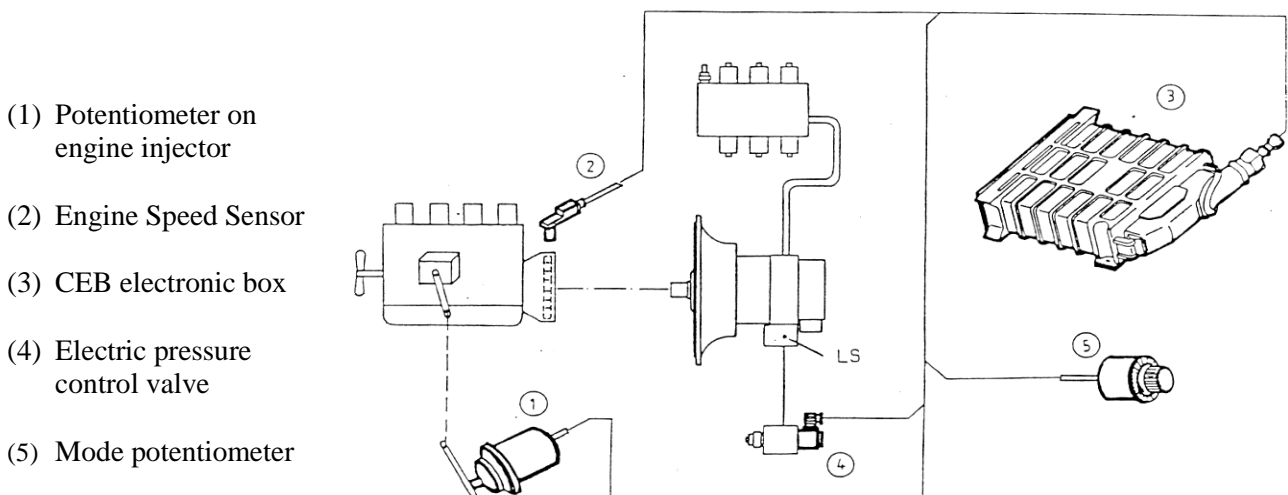


**ELECTRONIC UNDER SPEED CONTROL
ON HPR-02 PUMPS
(a.k.a. Horsepower Limiting)**

**Bulletin No.
HPR-02 000
03.99/002/03**

Commonly called Electronic Under Speed control, or simply EUS, horsepower limiting on HPR-02 pumps can be accomplished by using an electronic box called a CEB to monitor engine RPM. The CEB is programmed with RPM data points for various operating conditions of the engine. Input data for a specific operating condition of engine RPM is called a "set point". If engine RPM, monitored by the CEB, droops below the "set point", the CEB sends an electrical output current to the proportional solenoid on the electric pressure control valve on the HPR-02 pump's load sensing control regulator. This electrical current causes the electric pressure control valve to produce a hydraulic pilot signal that hydraulically reduces the HPR-02's load sensing differential pressure. As the load sensing differential pressure reduces, the HPR-02's output flow also reduces allowing engine RPM to recover back up to the "set point".

The CEB can be programmed for a single set point, i.e., the engine operating at full RPM only, or multiple set points. With multiple set points, a potentiometer is connected to the lever on the engine injector and the engine RPM characteristic vs injector level position is programmed into the CEB for "set point" comparison.



Finally, the CEB can be programmed for "modes". With an additional potentiometer, the CEB can be programmed to apply a constant fixed output current to the proportional solenoid on the electric pressure control valve forcing the pump to operate with a reduced load sensing differential pressure right from onset of operation. Depending on the setting of this potentiometer, different load sensing differential pressures can be artificially set on the pump's load sensing control, each one achieving different machine operating characteristics or modes. Thus the term, "modes" means different modes of machine operation. And even though a mode may be set, the CEB will still monitor engine RPM and protect the engine from lug down.

For more information about HPR-02 pumps and the description of the load sensing regulator and electric pressure regulating valve, see Document No. HPR-02 32553 E, or Document No. HPR105D-02 12551 E.