

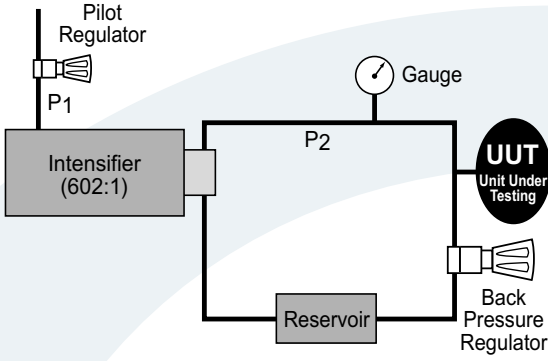
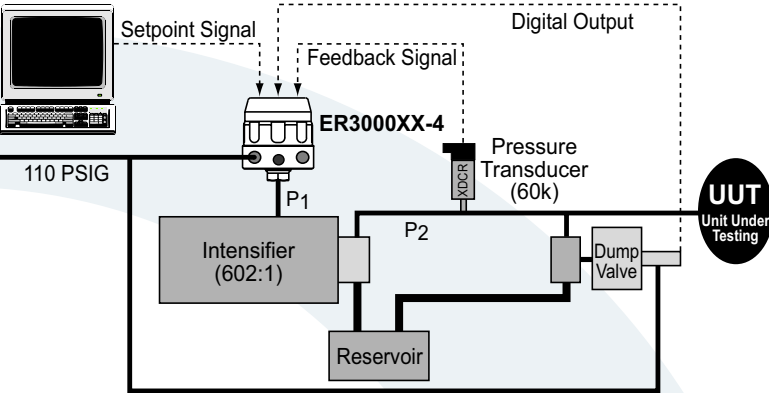
BULLETIN

ELECTRONIC CONTROLS DIVISION

Spring 2002

Application Note: Production Proof and Burst Test

Pneumatic driven ratio pumps are used for a variety of production related validation testing. The following table summarizes how to eliminate the inherent pressure fluctuations associated with the pump while fully automating the system. The standard ER3000XX-1 ($C_v=0.01$) may be used for smaller hydraulic pumps; however for most applications the ER3000XX-4 ($C_v=0.1$) is the best option to accommodate the flow requirements of the system.

MANUAL SYSTEM	ER3000 AUTOMATED SYSTEM
	
<p>Theory of Operation:</p> <ul style="list-style-type: none"> • The back pressure regulator is pre-set. • The UUT is pressurized by opening the pilot regulator slowly to ramp up process pressure. 	<p>Theory of Operation:</p> <ul style="list-style-type: none"> • The ER3000 receives a setpoint from an operator, a computer, or a pre-loaded pressure profile. • It pressurizes the system precisely by getting the process information from the transducer.
<p>Disadvantages:</p> <ul style="list-style-type: none"> • Manually ramping the P_2 pressure is difficult and slow and maintaining a constant ramp is nearly impossible. In addition to that if the pump stalls in mid-stroke there is a pressure spike that may be up to 5000 PSIG for a high ratio intensifier. If the burst happens during the spike, the actual burst pressure cannot be determined. • Visual Data Collection: The operator would have to visually inspect the unit until the burst takes place. At that point the pressure has to be recorded manually. 	<p>Advantages:</p> <ul style="list-style-type: none"> • The pressure P_2 is ramped at the desired rate. If there are changes in the condition, such as a piston stroke, the ER3000 compensates for the changes by changing the pneumatic pressure, virtually eliminating any overshoot. • Automatic data collection: Data can be collected throughout the process using ER3000 free user software or any other data acquisition package. This data may include P_1, P_2, the error between the setpoint and feedback to establish the exact pressure at which the UUT bursts. • The system may be easily setup so the controller stops pressurizing the unit under test once the burst takes place in the system.

A Digital Publication By

TESCOM
CORPORATION

The Engineered Solutions COMPANY

800-447-1204 • 763-241-3238 • fax: 800-447-1258 • www.tescom.com • ecd@tescom.com
12616 Industrial Boulevard • Elk River, MN 55330 USA