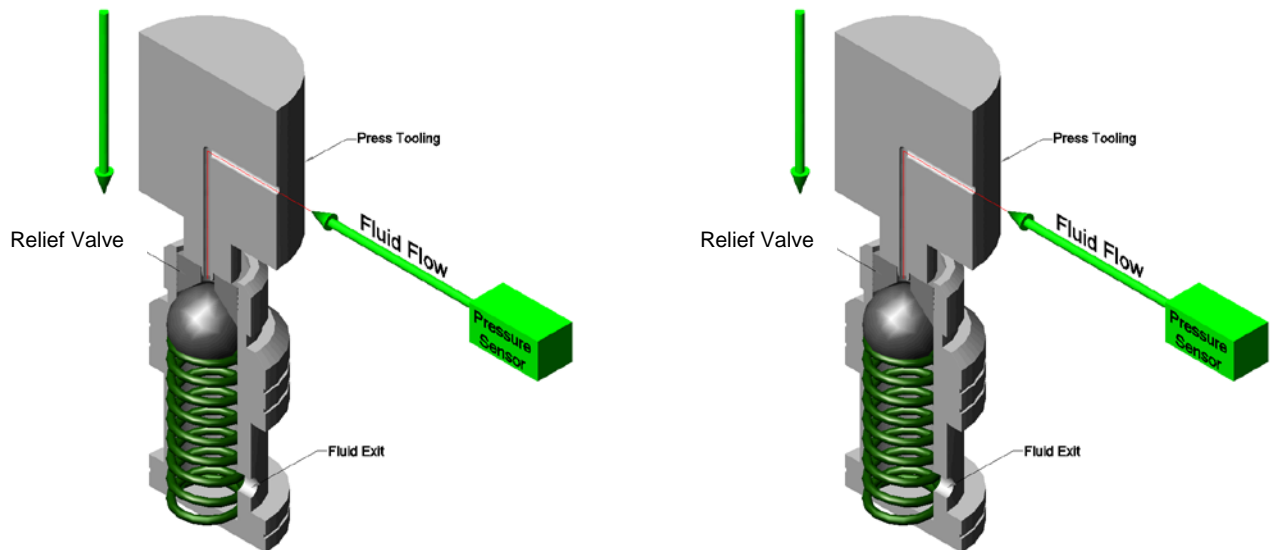




## HYDRAULIC PRESSURE RELIEF VALVE IS ASSEMBLED AND TESTED VIA ELECTRO-MECHANICAL ASSEMBLY PRESS



Valve manufacturers today are able to inspect parts during assembly rather than after to produce near-perfect fluid pressure relief valves. The Promess Electro- Mechanical Assembly Press (EMAP) uses no pneumatics or hydraulics; instead, press motion is initiated by a servomotor and ball screw. A computer monitors the press ram's position and pressing force, and accepts data from additional external sensors. To make the pressure relief valve, the EMAP is fitted with an attachment that pumps fluid through the valve at 1.2 liters/min while it is in the press.

Sensors provide information on fluid flow and pressure to the EMAP's controller. While the valve is assembled, the system monitors the valve release pressure. The EMAP compensates for variations in the valve components that affect release pressure by compressing the spring inside the valve to increase its resistance. The EMAP presses the valve seat into the valve body until the target release pressure of 1,000 psi is reached.

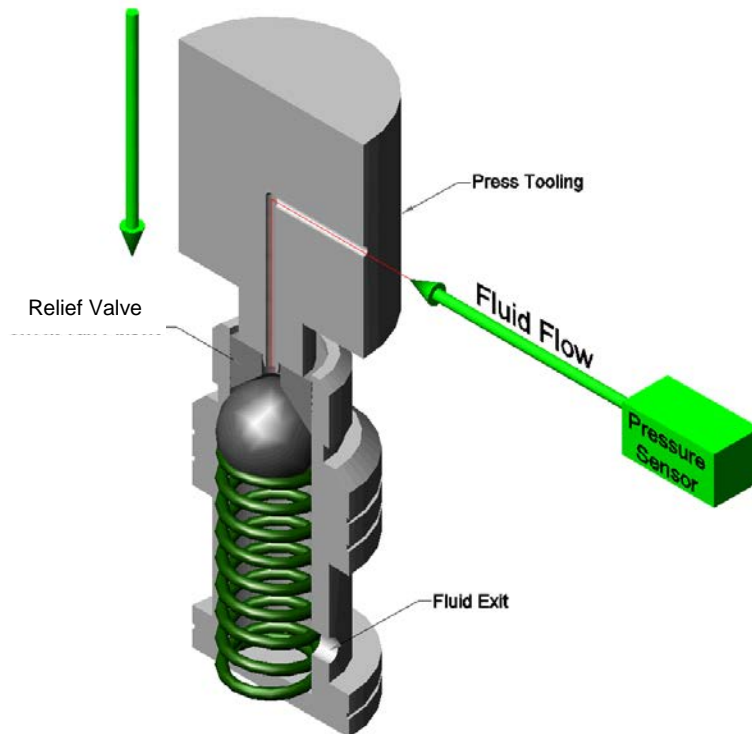
The new process lets the pressure relief valve company make valves with a plus/minus 2 psi tolerance.



## INSTALLATION REPORT

(EMAP) Electro-Mechanical Assembly Press

**Application:** Pressure Relief Valve Assembly and Test  
**Customer:** Value Added Screw Machine Shop  
**Part:** Fluid Relief Valve



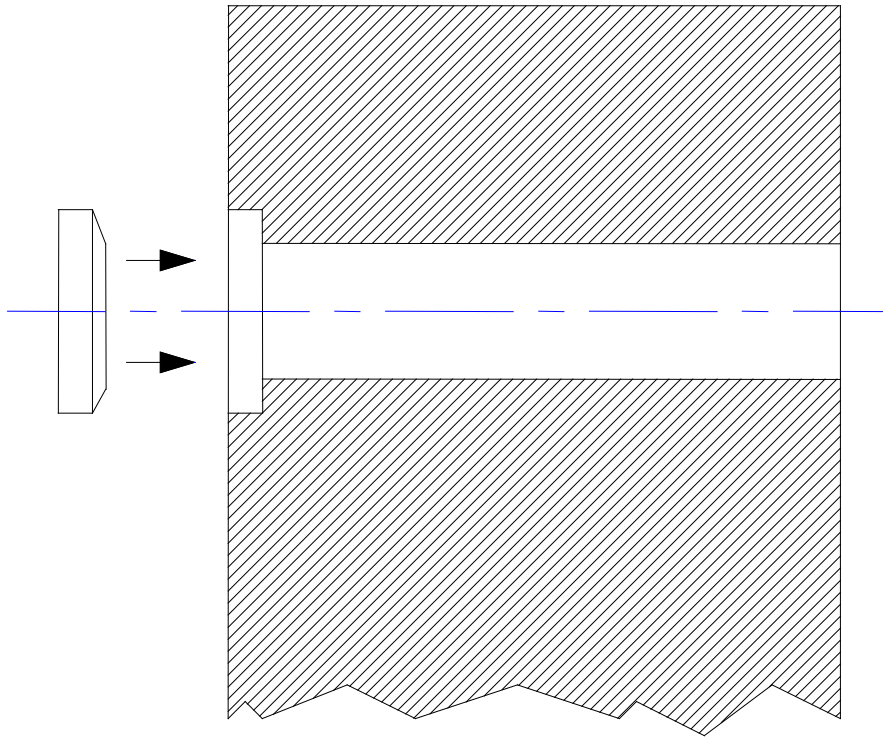
### Reason for Purchase:

1. Reduce pressure tolerance from 1000psi +/- 200psi to +70psi -50psi
2. Monitor press force of valve insertion
3. Test while assembling to eliminate expensive test station
4. Instant change over to new part

### Results:

1. Repeatedly pressed to 1000psi +/- 2psi
2. Monitored force of valve insertion with signature printout of each valve
3. Eliminated secondary test station and labor
4. Increased throughput and quality at a reduced cost

## Press to a Shoulder (Press to a force)



### Advantages:

- Control over speed
- Constant speed
- Control of shoulder force
- Control of deceleration

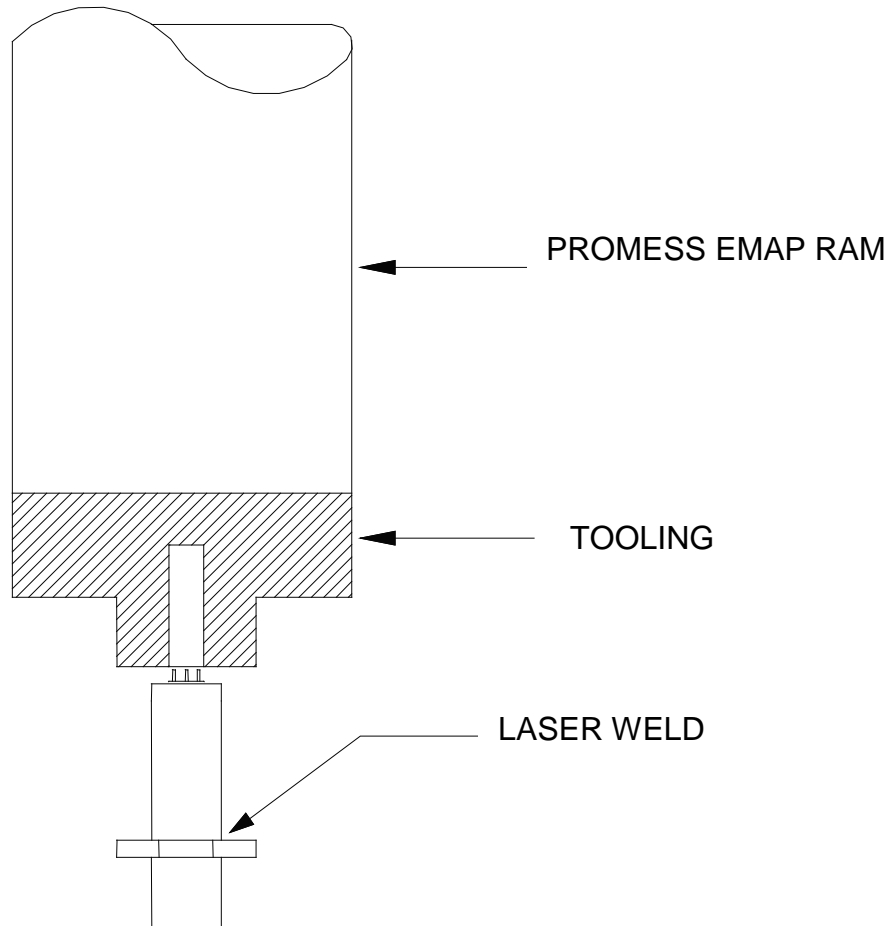


## Press to Force Apply Pre-Load for Laser Weld of Part

Press to  
force  
1200lbs.  
Hold force  
during laser  
weld  
process.

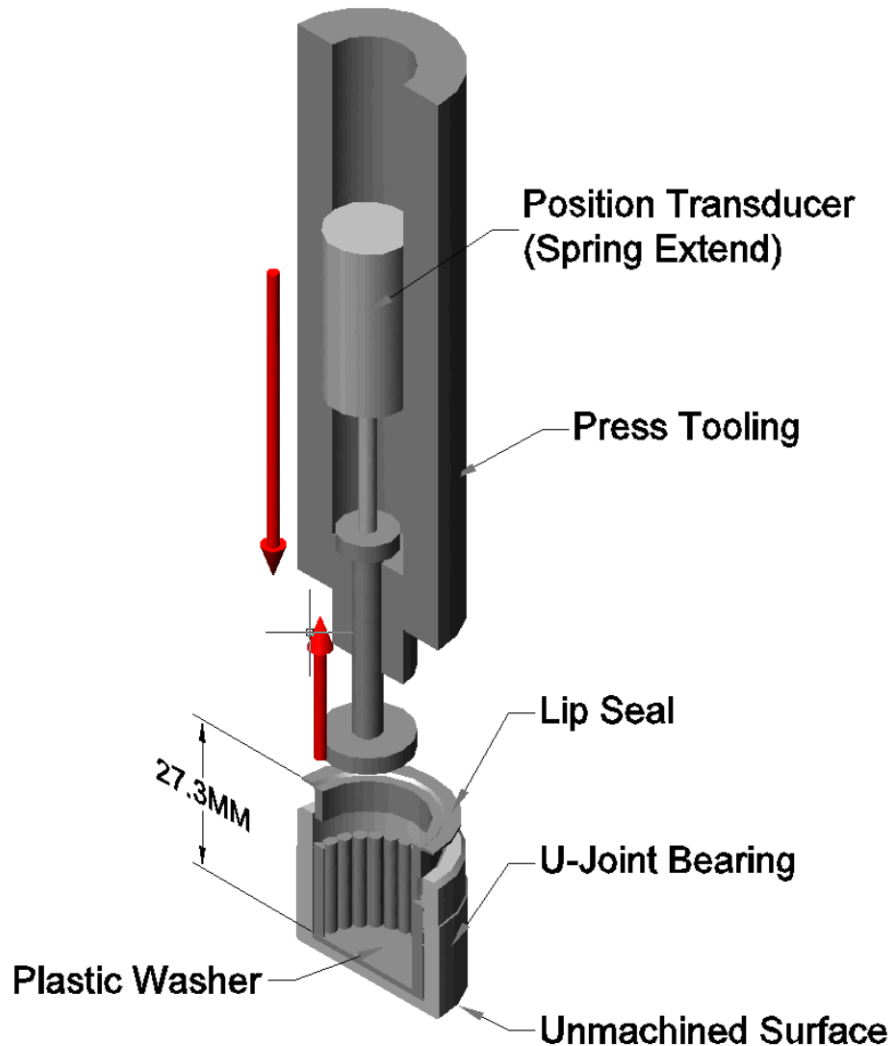
Retract

Total Cycle:  
1.5sec.





## Precision Placement of a Lip Seal using a Promess Electro-Mechanical Assembly Press (EMAP) System



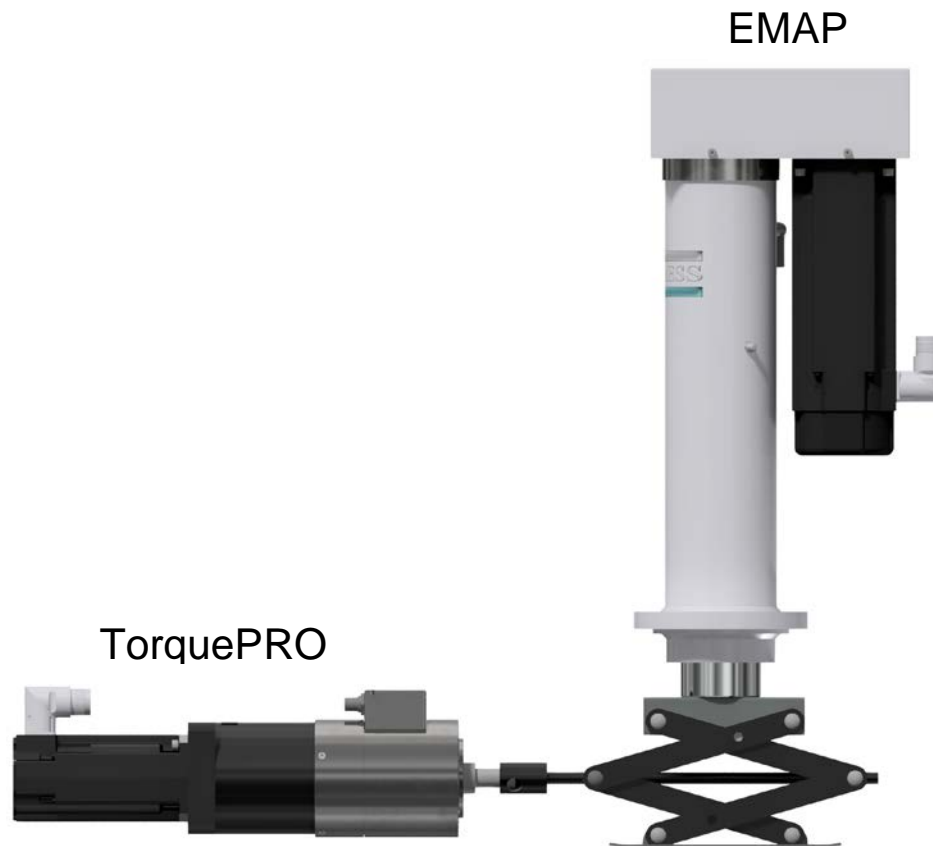
Lip Seal Press – Dimension must be held  $\pm .003$  of an inch.

A gauge probe (LVDT) built into the press tooling measures the height of the plastic washer while the Lip Seal is being pressed into place, allowing the press to compensate.



## Scissor Jack Test Application

Electro-Mechanical Assembly Press to simulate varying weights as automobile is being lifted.



The servomotor actuates the scissor jack while the press applies a load simulating the variable weight of a vehicle being lifted.

The torque required to lift the vehicle (press simulated) is charted throughout the process and an alarm is given if the measured values do not fall within acceptable levels.

100% of the motion control, data acquisition, data analysis, and documentation can be accomplished by the Promess EMAP Motion Controller. Completely standardized hardware and software eliminate the need for elaborate hardware and custom software for thrust and torque test applications.



## Pallet Height Compensation

**Problem** – Inconsistent pallet-to-pallet height on a pallet transfer line.

### #1

**Touch point** – Find the part / pallet height using the force “Touch Point” feature on the Promess press, then press using a relative move from that location.

### #2

**Measure** – Design an LVDT into the press tooling to measure the height of the part / pallet as the part is being assembled. The Promess EMAP will read this information and make the appropriate correction for each part.

### #3

**Serial Offset** – Pre-measure each pallet and serially send this data to the Promess EMAP. The EMAP will then use this information as a position offset. This information could be stored on the pallet on a read / write chip, and read by the Promess system directly.