



RESISTANCE WELDING. SOLVED.



## ADVANCED WELDING with SMART DETECTION™

Consistent Quality + Increased Output = Lower Production Costs

The pneumatic servo driven cylinder combines the best of both electric servo and pneumatic cylinders, in a simple design that lowers costs and improves quality on the production floor.



Tuffaloy Products, Inc., a company dedicated to welding technology and its applications in the manufacturing environment for over 75 years, is proud to introduce the SD cylinder incorporating Smart Detection™ technology. The cylinder is fully integrated with the ENTRON iPAK MFDC and 602X-Series AC weld controls.

Smart Detection™ brings a range of features to the welding environment that improve productivity, reduce costs and reduce operational risks at a cost far below that of equivalent technologies. Equivalent technologies are also purchased separately and require integration.

### Key Benefits of the SD System:

**Secondary Contact Monitoring:** Electrodes come together under low force and automatically retract if an obstruction is met. Full welding force is not applied until contact with the work piece is sensed. Contact is sensed via two independent means: measurement of the force in the servo system, and ENTRON's electrical secondary contact detector unit (SCM2), providing dual-redundancy for your operation.

**Redundant Communication:** SD System's servo and weld controller are linked by both discrete signals and a communication channel. With risk reduction in mind, the system employs a dual-threaded architecture to drive these links independently. Correct correlation of the two is required before any motion can be initiated.

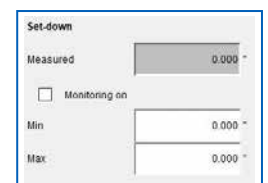


### Production Speed with Low-Force Approach:

With other systems, "low-force" is synonymous with "slow-speed" which negatively impacts productivity and encourages risk reduction options to be defeated. The SD System's low-force approach does not require compromise.

### Set-Down Monitoring with Programmable High / Low Limits:

Ideal for Projection Welding, this feature allows for monitoring set-down of welds, and alerting the operator if set-down is out of range.



**Stack Up Height Confirmation, Obstruction Detection, Programmable Retract, Mid & Weld Positions:** The SD system can be programmed to, and can detect changes of one mil (0.001 inches) or less.

**Programmable Weld Force & Cylinder Speed:** SD System's closed loop control ensures constant weld force throughout the entire weld regardless of work piece deformation.

**Missing Component Detection:** The SD System uses the same intelligence to detect a missing component (such as a missing nut during projection welding) as it uses for obstruction detection and stack up height confirmation.



## An Intelligent Pneumatic Servo Valve at the core of the SD System controls all motion of the cylinder.



Calibrated during production, the valve never needs further adjustment. If anything happens to the electrical or mechanical components of the servo valve, end user maintenance staff simply disconnect three cables, loosen four bolts, remove the damaged servo valve and attach a pre-calibrated replacement valve, in stock at all times.

Optionally, the SD cylinder's servo valve can also be equipped with a fail-safe valve which can be used to mechanically override the entire electrical system, forcing the electrodes apart when an unexpected dangerous condition is detected.

The SD System is programmed using ENTRON's proprietary NetFlash Windows based software. The most current version of NetFlash is provided along with the system at time of purchase. Future upgrades are free, and are easily performed in the field at customer facilities. While the SD System can be operated using a traditional pendant, when connected to an HMI, the programability and end user experience are greatly enhanced during the operation of the welder.

Time	Program	I1	I2	Force	Pre weld	Post weld
20:40:45	0	0.000 kA	15.3 kA	898 lbf	3.941 *	3.871 *
20:40:28	0	0.000 kA	11.5 kA	897 lbf	3.942 *	3.566 *
20:40:08	0	0.000 kA	9.58 kA	898 lbf	3.941 *	3.559 *
20:39:51	0	0.000 kA	7.67 kA	897 lbf	3.942 *	3.552 *
20:39:28	0	0.000 kA	5.75 kA	898 lbf	3.943 *	3.246 *
20:37:52	0	0.000 kA	15.3 kA	3.99 kN	90.9 mm	90.7 mm
20:37:30	0	0.000 kA	12.4 kA	3.99 kN	90.0 mm	90.6 mm
20:36:58	0	0.000 kA	9.58 kA	3.99 kN	90.0 mm	90.5 mm
20:36:36	0	0.000 kA	7.67 kA	3.99 kN	90.0 mm	90.3 mm
20:36:07	0	0.000 kA	5.75 kA	3.99 kN	90.0 mm	90.1 mm



Weld Systems Integrators, Inc. is proud to include the Tuffaloy SD System in its Welding Lab, located at its USA headquarters in Northeast Ohio. This commercial SD System has a 5" bore, 5" stroke SD cylinder which can deliver weld forces from 200 to 2,000 pounds of force and is controlled by an ENTRON iPAK MFDC inverter control.

To schedule time on this SD system at our Warrensville Heights, Ohio, US facility, or on the SD System located at our UK partner facility in Kingswinford, West Midlands, please contact a member of the Weld Systems Integrators team.



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10002-E-02-18-05

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