

# FINALLY...

## A System to Make Spot Welders Safe:

# SOFT TOUCH



- 👉 Protects against **PINCH POINT INJURIES** with a fully **PASSIVE** system
- 👉 Installs on any type of spot welder
- 👉 **CANNOT BE BYPASSED** or defeated
- 👉 Protects even during **ELECTRODE DRESSING** and **REPLACEMENT**

*Manufacturers have searched for years to find a system that would protect their spot welder operators from serious pinch point injury...*

**UNITROL** is proud to present:  
**SOFT TOUCH**

The revolutionary system that will passively protect your spot welder operators without affecting production.



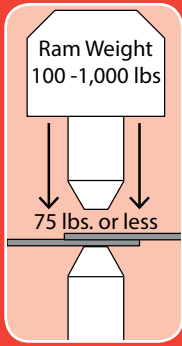
**Protect Your Operators**  
with this Revolutionary Safety System

**UNITROL**

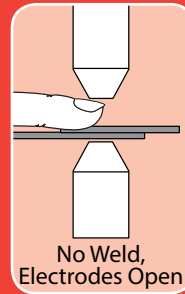
**RWMA**

# HOW SOFT TOUCH WORKS

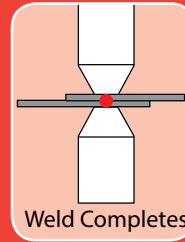
**SEQUENCE:** When the foot or hand switch is closed to start a weld:



**1.** The welding electrodes close under **low force**. The unique pneumatic systems designed by UNITROL for this process can counter-balance the weight of the ram on large press welders. Even where the dead-weight of the welder ram is hundreds of pounds, the electrode force produced will be 75 pounds or less.



**3.** If metal is **not** detected, the electrodes open automatically and do not go to welding force. A display tells the operator the problem.



**4.** If metal **is** detected, full welding force is applied and the weld proceeds normally



...Checking for metal

**2.** The welding control checks to see if metal has been detected between the electrodes within a customer set maximum time limit.

## SOFT TOUCH is a Fully Passive Fail-Safe System

**FULLY PASSIVE:** There are no operator adjustments. Even if electrode height or travel is changed, the **SOFT TOUCH** system continues to function without any operator changes. In fact, there is nothing for the operator to adjust. All settings are in a locked enclosure.

**FAIL SAFE OPERATION:** If any of the system sensor wires become shorted or disconnected, the **SOFT TOUCH** system will lock out and not let the electrodes close or the welding sequence to proceed. If the **SOFT TOUCH** sensor board detects electrode continuity before the foot switch or hand switches are closed, the system will lock out and not allow any electrode movement.

**REDUNDANT SYSTEM:** If desired, a limit switch can be added to the welder and adjusted to close when the space between the electrodes is less than  $\frac{1}{4}$ ". In this case, two actions are required before the

electrode force increases and the weld sequence starts. This is also useful when welding a C-shaped part that is not fully closed and requires electrode force to push the parts together.

**TYPES OF WELDERS:** **SOFT TOUCH** systems are available for **spot welders, projection welders, seam welders, and transgun welders.**

**SOFT TOUCH** operates with all types of resistance welders: **1Ø AC, 1Ø DC secondary, 3Ø frequency converters, 3Ø DC rectified secondary, and MFDC inverters.**

**SEE THE MOVIE:** You can see a short video of **SOFT TOUCH** on UNITROL's web site: [www.unitrol-electronics.com](http://www.unitrol-electronics.com).

**GETTING STARTED:** Contact Your UNITROL authorized distributor or call the UNITROL sales department to discuss adding **SOFT TOUCH** to your spot welders.



**SOFT TOUCH** Installed on a UNITROL SOLUTION Welding Control

# The History Behind **SOFT TOUCH**

Several years ago, UNITROL received a panic call from a company that used a large number of our SOLUTION resistance welding controls. After two serious accidents within a six-month time period, OSHA gave them 45 days to either implement a system that would prevent pinch-point accidents on their spot welders or shut that department down. Since every part produced went through the spot welding department, this would effectively close their company.

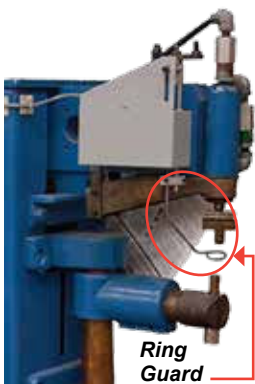


**THE PROBLEM:** Welding their parts required that the operators' fingers had to be close to the moving electrodes. Because of the part design and large number of different models being welded, there was no way they could use drop-in fixtures and anti-tiedown hand buttons.



**FIRST IDEA:** The first attempt at finding a solution was to use a **light curtain** to protect the area between the electrodes. However this idea was quickly abandoned when they realized that the operator had to hold and position parts near the electrode and would be working in the light curtain sensing zone. Also fine tuning of the light curtain safety zone would be required when new parts were welded.

**SECOND IDEA:** They then found a ring guard system that mounted on the spot welder. With this type of guard, the moving electrode goes through the center of a wire loop. The loop is connected to a rod that trips a limit switch when it moves downward a certain distance. At the start of each weld, the loop is sent downward before movement of the upper electrode. If the ring is stopped by a finger or other object before reaching the top of the part being welded, the limit switch does not trip and the electrode won't close.



On presentation to the OSHA compliance officer, he pointed out that the "safety" of this ring guard system could easily be bypassed by just loosening the adjustment screw and raising the loop upward. It was therefore not passive. Mechanically there was no way to have the ring clear most of their parts since

the areas being welded were not flat, open surfaces. And then it was pointed out that the ring guard did not protect the operator when electrodes were being dressed or replaced. Therefore this idea was rejected.

**THE SOLUTION:** With less than 20 days left before shut-down, the company contacted UNITROL to find a solution and keep their company operating. UNITROL took up the challenge and developed **SOFT TOUCH**, a fully passive system that would not interfere with their production process.

The **SOFT TOUCH** system closed the electrodes under low force and only increased to full welding force after contacting the metal part being welded. The sensing system was fully electronic, could not be bypassed, and did not depend on an adjustable mechanical probe.

**SOFT TOUCH** therefore satisfied the passive test required by OSHA.

As a plus, a TIP DRESS switch was included in the system to bring the electrodes together under low force during electrode dressing, replacement, or alignment procedures. This solved the problem of operator protection during electrode maintenance.



**THE RESULT:** The company installed **SOFT TOUCH** on one welder and it cleared the OSHA compliance officer's inspection. They installed **SOFT TOUCH** on the remaining 22 welders to bring their company back to operating on a 3-shift schedule.

*Since that time, thousands of **SOFT TOUCH** systems have been installed around the world with a 100% safety record. In the United States, all installations presented to OSHA compliance officers have been accepted.*

# OSHA RESEARCH FOR SOFT TOUCH CONCEPT

UNITROL contacted an OSHA representative and discussed the requirements for pinch point guarding of resistance welders. The operation of the **SOFT TOUCH** system was also discussed. The OSHA representative recommended the following regulations to cover requirements for this device:

**1910.212(a)**  
(general machinery)

Machine guarding

**1910.212(a)(1)**

Types of guarding. One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by **point of operation**, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are barrier guards, two-hand tripping devices, **electronic safety devices**, etc.

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*UNITROL note: The **SOFT TOUCH** sensor board is an “electronic safety device” in that it closes an electro-mechanical relay when it electronically senses that the electrodes are closed on the metal part in the work area prior to application of high force.*

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**1910.255(b)(4)**  
(resistance welding machines)

Guarding. All press welding machine operations, where there is a possibility of the operator’s fingers being under the point of operation, shall be effectively guarded by the use of a device such as an electronic eye safety circuit, two hand controls or protection similar to that prescribed for punch press operation, 1910.217.

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*UNITROL note: The following sections are all that were recommended for this application:*

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**1910.217(c)(3)(iii)**

A presence sensing point of operation device shall protect the operator as provided in paragraph (c)(3)(i)(a) of this section, and shall be interlocked into the control circuit to prevent or stop slide motion if the operator’s hand or other part of his body is within the sensing field of the device during the downstroke of the press slide.

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*UNITROL note: The electrode on the low-force ram becomes the “sensor” in this system. The “downstroke” of the welder, with the **SOFT TOUCH** system installed, starts when high pressure is applied to the welder ram.*

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**1910.217(c)(3)(iii)(b)**

The device may not be used as a tripping means to initiate slide motion.

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*UNITROL note: This **SOFT TOUCH** circuitry does not initiate any valves. It is only an input into the weld control to indicate part (finger) sensed in between the electrodes.*

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**1910.217(c)(3)(iii)(c)**

The device shall be constructed so that a failure within the system does not prevent the normal stopping action from being applied to the press when required, but does prevent the initiation of a successive stroke until the failure is corrected. The failure shall be indicated by the system.

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*UNITROL note: At the start of each stroke, we check to see if the sensing system is closed. If it is, the sensor stroke is never started, and the control’s display shows the fault. The sensor must be opened before any other action is possible on the welder.*

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The logo for UNITROL features the word "UNITROL" in a large, bold, black, sans-serif font. The text is centered between a solid red horizontal bar above and a solid blue horizontal bar below.

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Videos and OSHA information online at

**[www.unitrol-electronics.com](http://www.unitrol-electronics.com)**

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