



SOFT TOUCH FOR WELDERS

RST100-115A, RST100-024D, RST101-115A, RST101-024D,
RST102-115A, RST102-024D, RST103-115A, RST103-024D,
RST200-115A, RST200-024D, RST201-115A, RST201-024D,
RST202-115A, RST202-024D, RST203-115A, RST203-024D



Distributed by:



5795 Logistics Parkway, Rockford, Illinois 61109 USA
Toll-Free: 1-800-922-7533 | Phone: 815-874-7891
www.rockfordsystems.com | sales@rockfordsystems.com

Thank you for purchasing this Unitrol SOFT TOUCH system. It is designed to protect your resistance welder operator from serious electrode pinch-point injury. Please let us know if there are any questions or problems with the installation or use of this product. You can contact us:

BY PHONE:

Monday - Friday 8:00 - 5:00 CT: 1-800-922-7533

BY EMAIL:

sales@rockfordsystems.com

BY REGULAR MAIL:

Rockford Systems, LLC
5795 Logistics Parkway
Rockford, IL 61109
USA

√	MODEL	WELDER TYPE & HARDWARE	RAM TYPE	VALVE VOLTAGE
	RST100-115A	1Ø AC INCLUDES A SNUBBER AND 2=MUFFLERS	Heavy Weight	115AC
	RST102-115A		Heavy Weight, 1" Valves	
	RST101-115A		Light Weight, Rocker Arm	
	RST100-024D		Heavy Weight	24VDC
	RST101-024D		Light Weight, Rocker Arm	
			Heavy Weight	24VAC
			Light Weight, Rocker Arm	
	RST200-115A	MFDC (INVERTER) INCLUDES 2=MUFFLERS	Heavy Weight	115VAC
	RST201-115A		Light Weight, Rocker Arm	
	RST200-024D		Heavy Weight	24VDC
	RST201-024D		Light Weight, Rocker Arm	
			Heavy Weight	24VAC
			Light Weight, Rocker Arm	
OPTIONS				
	RST-402	Timed bypass. Includes security lock selector switch, 2 = LED indicator lights, faceplate. Closes electrodes under low force, delays, and brings electrodes to welding force		
	RST-400	Retract Kit. Includes HEAD DOWN proximity switch and mounting bracket kit. May require additional field bracketry to match welder		
	RST-401	Retract option without proximity switch. For use with welders that have separate RETRACT and WELD INITIATION switches.		
	RST-403	Limit Switch. Allows use of ram position or continuity. Includes RAM POSITION proximity switch and mounting bracket kit. May require additional field bracketry to match welder. Includes security lock selector switch, 2 = LED indicator lights, faceplate		
	RST-404	Limit Switch. Allows use of a ram position or continuity. Includes security lock selector switch, 2 = LED indicator lights, faceplate. Does NOT include a proximity switch or mounting bracket kit. Use with customer-supplied PNP proximity switch		
	RST-405	Limit Switch used as a redundancy with continuity. Always in operation and not keylock selected. Includes RAM POSITION proximity switch and mounting bracket kit. May require additional field bracketry to match welder. Can be turned off by moving a jumper on the control board		
	RST-406	½" NPT Filter, regulator, lubricator with inter block for pilot line. With air gauge. Not needed if existing regulator is good		
	RST-407	¾" NPT Filter, regulator, lubricator with inter block for pilot line. With air gauge. Not needed if existing regulator is good		
	RST-409	Line voltage transformer and fuses for installation on TECNA welding controls		
	RST-410	Adds 50VA transformer for welders without 115VAC available		
	RST-413	System for operation on welders with FORGE DELAY		

WARRANTY

Unitrol Electronics provides a 5-year limited warranty to cover all of this SOFT TOUCH system. The warranty periods are determined using the date the new control was originally shipped from Unitrol Electronics. All warranty coverage is FOB Northbrook, Illinois.

This warranty, except for exclusions shown herein covers the following items:

DURING YEAR #1: All parts (exclusive of fuses) that fail due to manufacturing defects. Necessary labor to repair control that has failed due to manufacturing defects.

DURING YEAR #2: 80% cost of all parts (exclusive of fuses).

80% cost of necessary labor to repair control that has failed due to manufacturing defects.

DURING YEAR #3: 60% cost of all parts (exclusive of fuses).

60% cost of necessary labor to repair control that has failed due to manufacturing defects.

DURING YEAR #4: 40% cost of all parts (exclusive of fuses).

40% cost of necessary labor to repair control that has failed due to manufacturing defects.

DURING YEAR #5:

20% cost of all parts (exclusive of fuses).

20% cost of necessary labor to repair control that has failed due to manufacturing defects.

EXCLUSIONS TO WARRANTY

Any expense involved with repair of control by other than Unitrol Electronics personnel that has not been authorized in advance and in writing by an officer of Unitrol Electronics.

All costs for freight, to and from Unitrol Electronics, are excluded from this warranty

All field service labor, travel expense, and field living expenses associated with field service are excluded from this warranty.

No coverage, parts or labor, is offered for components that have failed on control not being used as specified in Unitrol Electronics published literature, technical sheets, and this direction book.

No warranty coverage will be made on controls that are being used contrary to specifications, that were mechanically or electronically altered by customer or installer, or that were physically damaged after shipment from Unitrol Electronics.

Damages to a control by lightning, flood, or mechanical damage are excluded from this warranty.

Unitrol Electronics assumes no liability for damage to other equipment or injury to personnel due to a failure in the Unitrol Electronics control.

Unitrol Electronics shall not be responsible for any consequential damages of whatever kind.

Expenses involving alteration or installation of a Unitrol Electronics control are not covered in this warranty.

NO OTHER UNITROL ELECTRONICS INC. WARRANTY, WRITTEN OR IMPLIED, COVERS THIS CONTROL UNLESS IN WRITING AND SIGNED BY AN OFFICER OF UNITROL ELECTRONICS, INC. PRIOR TO SHIPMENT OF PRODUCT.

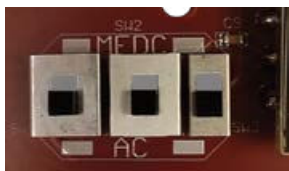
TABLE OF CONTENTS:

VERIFY YOUR SOFT TOUCH SENSOR BOARD IS CORRECT	6
HOW SYSTEM OPERATES	7
INSTALLATION, RST100/RST200 HEAVY WEIGHT SERIES	8
INSTALLATION, RST101/RST201 LIGHT WEIGHT SERIES	9
WIRING CONTROL: CONNECTING SIGNAL PICKUP WIRES	10
CONNECTING THE SNUBBER	11
CONNECTING CONTROL CABLE	11
CONTROL CABLE WIRING CHART	12
SPECIAL WIRING FOR OPTIONS RST-409 AND RST-410	13
ELECTRICAL HOOKUP, RST100-115A, RST101-115A.....	14
ELECTRICAL HOOKUP, RST100-024D, RST101-024D	15
ELECTRICAL HOOKUP, RST100-024D, RST101-024D	16
ELECTRICAL HOOKUP, RST200-115A, RST201-115A.....	17
ELECTRICAL HOOKUP, RST200-024D, RST201-024D	18
ELECTRICAL HOOKUP, RST200-024D, RST201-024D	19
RETRACT OPTION RST-400.....	20-21
RETRACT OPTION RST-401.....	22-23
TIMED DELAY OPTION RST-402.....	24
DEPTH SWITCH OPTION, RST-403, RST-404	25-26
PNEUMATIC HOOKUP, RST101/RST201 LIGHT WEIGHT	27
PNEUMATIC HOOKUP, RST100/RST200 HEAVY WEIGHT	28
ADJUSTING SOFT TOUCH VALVES.....	29
SETTING MAXIMUM DETECT TIME SWITCHES, BLANK TIME	30
SETTING AND TESTING ELECTRODE CLOSING FORCE	30
TESTING ELECTRODE FORCE	31
START-UP PROCEDURE.....	32
TROUBLE SHOOTING CHART	33
FORCE/BUCKING PRESSURE OPTION RST-413	34
LED INDICATOR LIGHTS	35

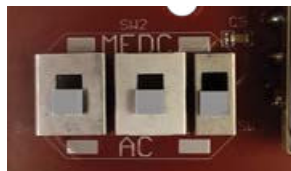
VERIFY YOUR SOFT TOUCH SENSOR BOARD IS CORRECT

The SOFT TOUCH sensor board can be configured in several ways. Before turning power on, check to be sure that the mode and valve voltage matches your welder.

1. TYPE OF WELDING CONTROL. This board can be set to operate either a 1ØAC welder or an MFDC (inverter) welder. This is done by pushing the three switches on the lower left corner to a position to match your welding control.

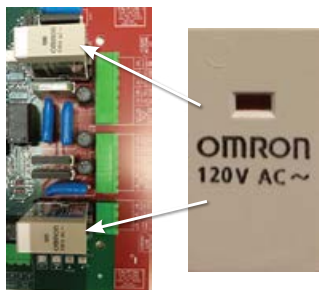


FOR 1ØAC WELDERS

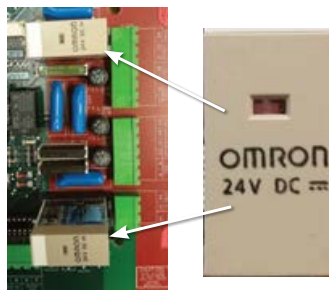


FOR MFDC (INVERTER) WELDERS

2. SOLENOID VALVE VOLTAGE. Be sure that the two tall relays, K2 and K3, show the same voltage on the top printing as the solenoid voltage of your welding control. If they are not correct, contact Unitrol to swap relays.



FOR 115VAC SOLENOID VALVES



FOR 24VDC SOLENOID VALVES

3. SPECIAL INITIATION SCHEMES. Some Tecna welders do not have a pressure switch input and use a normally CLOSED switch that **OPENS** when the second stage of the footswitch is pushed. For these welders, move Jumper JP6 (next to the transformer) to the NC position and connect output terminals in **parallel** to the second stage Normally-Closed footswitch contact.

For Tecna welders, connect output #6 on sensor board Tecna **START NO** terminal, and wire from #7 on sensor board to Tecna **AUX** terminal to put this in parallel to the footswitch second stage.



NORMAL POSITION



TECNA POSITION

SOFT TOUCH PINCH POINT PROTECTION SYSTEM FOR INSTALLATION ON NON-UNITROL 1Ø AC AND MFDC WELDING CONTROLS

HOW THE SYSTEM OPERATES

When the solenoid valve output from the welding control goes HIGH, this voltage goes to the 9280-TS6 SOFT TOUCH detection board, terminal #9.

The output terminal #11 (SVL) goes HIGH to turn on solenoid valve SVL.

For RST100 systems, this closes the welding electrodes under gravity force with low force bucking pressure (BALANCE) acting on the underside of the cylinder piston to counterbalance part of the ram dead weight.

For RST101 systems, this closes the welding electrodes under low force (CLOSE) using low air pressure on the forward port of the welder cylinder.

The 9280-TS6 board checks input at terminals #4 and #5 to see if the voltage signal drops a minimum value indicating that the electrodes have made contact on a conducting material (continuity detected).

If this contact is NOT sensed within the maximum time setting on the board's DIPswitches, the output terminal #11 (SVL) will go LOW and drop out solenoid valve SVL to open the electrodes.

If this contact IS sensed within the maximum time setting:

- Terminal #11 (SVL) will continue to be HIGH
- Terminal #13 (SVH) will go HIGH
- Solenoid valve SVH will be turned ON to start high electrode pressure, and relay K4 on this board will close to start the welding sequence
- The contact across terminals #6 and #7 on the TS2 board close to tell the welding control to start the welding sequence.

INSTALLATION

Note that this system REPLACES the existing weld solenoid valve.

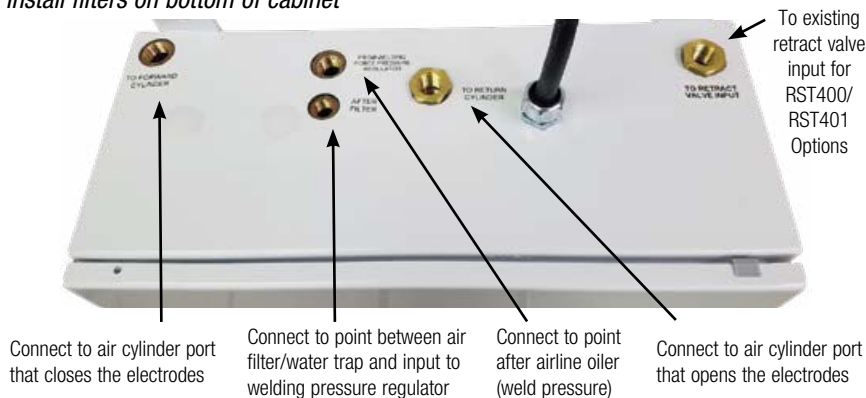
1. Mount the control in a convenient location using the four mounting tabs on the back of the box.
2. Remove hoses from the existing welding solenoid valve. This solenoid valve will not be used with this control.
3. Connect hoses from the control to the air cylinder as shown in the photos below and the next page. Choose the photo that matches your control model.

HOSE CONNECTION FOR RST100/RST200 SERIES CONTROL

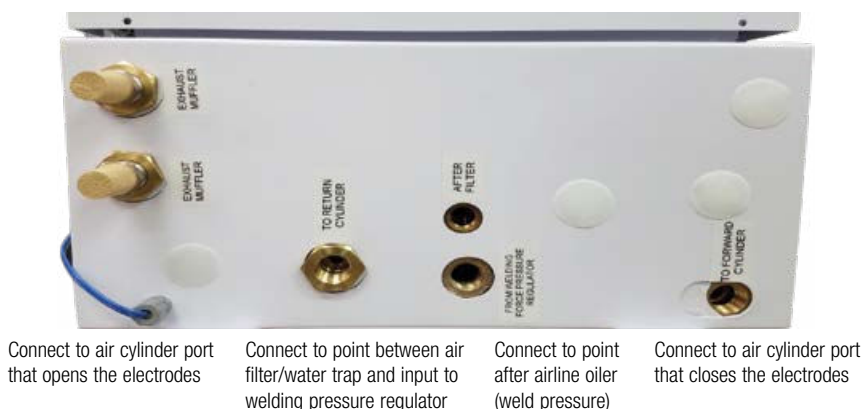
Note that this system REPLACES the existing weld solenoid valve.

TOP OF CABINET

Install filters on bottom of cabinet



BOTTOM OF CABINET

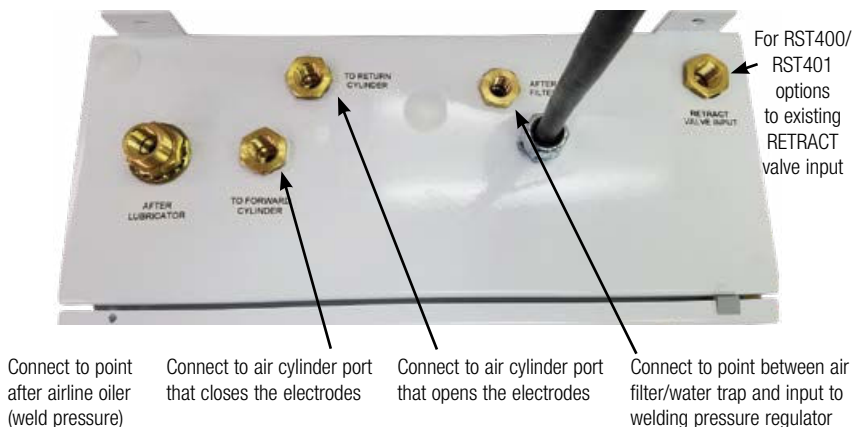


HOSE CONNECTION FOR RST101/RST201 SERIES CONTROLS

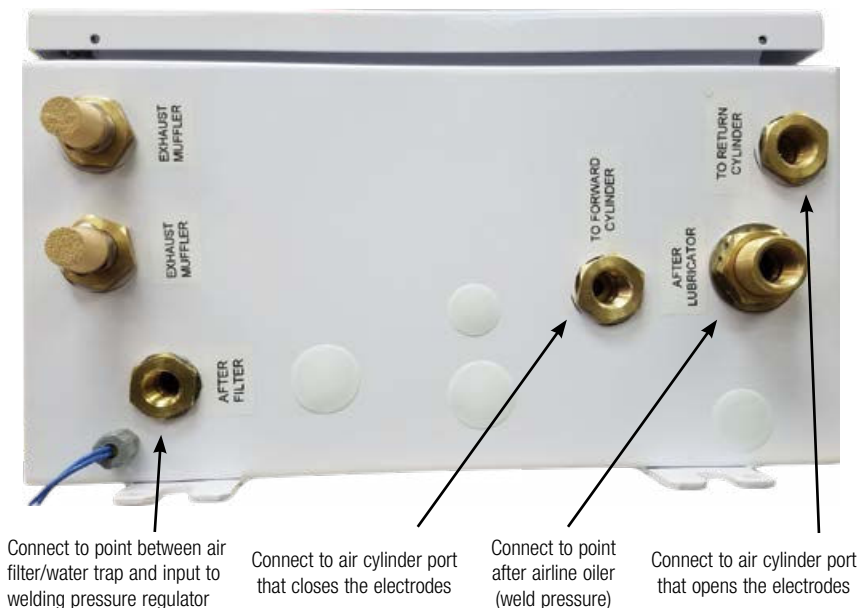
Note that this system REPLACES the existing weld solenoid valve.

TOP OF CABINET

Install filters on bottom of cabinet



BOTTOM OF CABINET



WIRING CONTROL CONNECTING SIGNAL PICKUP WIRES

Note that this system REPLACES the existing weld solenoid valve.

1. Connect the TWO BLUE WIRES from the bottom of the box to the upper and lower secondary pad on the welding transformer or any point close to the pad. See photos below for suggested areas for various types of welders.

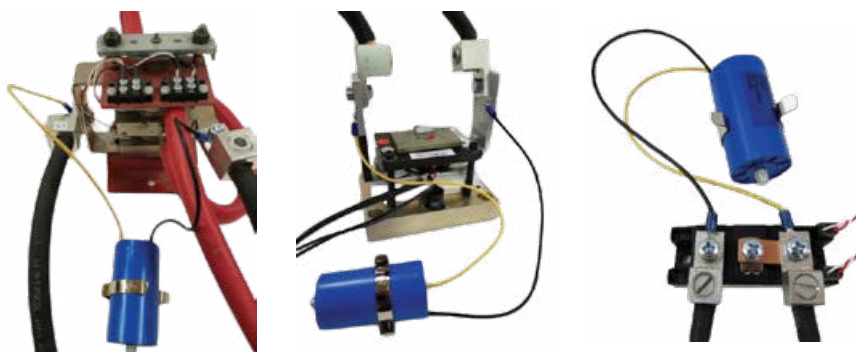
CRITICAL: BE SURE THAT THE SURFACE UNDER EACH TERMINAL IS CLEAN, AND THAT THE SCREWS ARE FULLY TIGHTENED. OPERATIONAL PROBLEMS WILL OCCUR IF THIS CONNECTION IS NOT GOOD.



WIRING CONTROL CONNECTING SNUBBER

2. FOR RST100 AND RST101 MODELS, Connect blue snubber cylinder in this kit across the SCR contactor per the HOOK-UP drawing and typical photos below. It does not matter which wire from the snubber connects to which side of the SCR contactor.

NOTE: If the welding control already has a snubber or a resistor in series with a capacitor wired across the SCR contactor, remove it. There should only be the new blue snubber installed across the SCR contactor.



CONNECTING CONTROL CABLE

3. Route the black multi-wire cable from the top of the SOFT TOUCH enclosure to the welding control.
4. Install the supplied strain relief fitting in a 7/8" diameter hole in the welding control and bring cable into the control.
5. Trim the cable to allow it to reach the terminals shown in the table on the next page. Wire as shown.

NOTE: Check the Unitrol web site www.unitrol-electronics.com SUPPORT tab for hookup charts for some popular welding controls.

WIRING CONTROL, CONTROL CABLE WIRING CHART

WIRE COLOR	TS7 TERM	CONNECT IN WELDING CONTROL FOR 24VDC MODELS RST100-024D, RST200-024D RST101-024D RST201-024D		CONNECT IN WELDING CONTROL FOR 115VAC MODELS RST100-115A, RST200-115A RST101-115A RST201-115A
BLACK	1	115VAC L		115VAC L
WHITE	2	115VAC N		115VAC N
RED/BLACK ST.	6	INIT. PERMISSION1		INIT. PERMISSION1
RED	7	INIT. PERMISSION1		INIT. PERMISSION1
		FOR CONTROLS SWITCHED WITH +24VDC ²	FOR CONTROLS SWITCHED WITH 0VDC ³	
BLUE	14	24VDC +	24VDC 0V	115VAC = NOT USED 24VAC = 24VAC L
WHITE/BLACK ST.	23	24VDC 0V	24VDC	115VAC = NOT USED 24VAC = 24V N
ORANGE	9*	WELD CONTROL SOLENOID VALVE OUTPUT ⁴		115VAC L SOLENOID VALVE DRIVER OUTPUT ²
GREEN	-	GROUND STUD		GROUND STUD
USED ONLY WITH RETRACT OPTIONS RST-400 OR RST-401				
GREEN/BLACK ST.	18	RETRACT IN SIGNAL ⁴		RETRACT IN SIGNAL4

1. INIT. PERMISSION is either a PRESSURE SWITCH input terminal or in series with FOOTSWITCH second stage. These wires connect to a dry contact relay.
2. Welding controls that use +24VDC to operate the welding (and RETRACT if applicable) solenoid valve.
3. Welding controls that use 0VDC to operate the welding (and RETRACT if applicable) solenoid valve.
4. The potential of this output should be the same as the voltage on terminal #14 (BLUE wire).

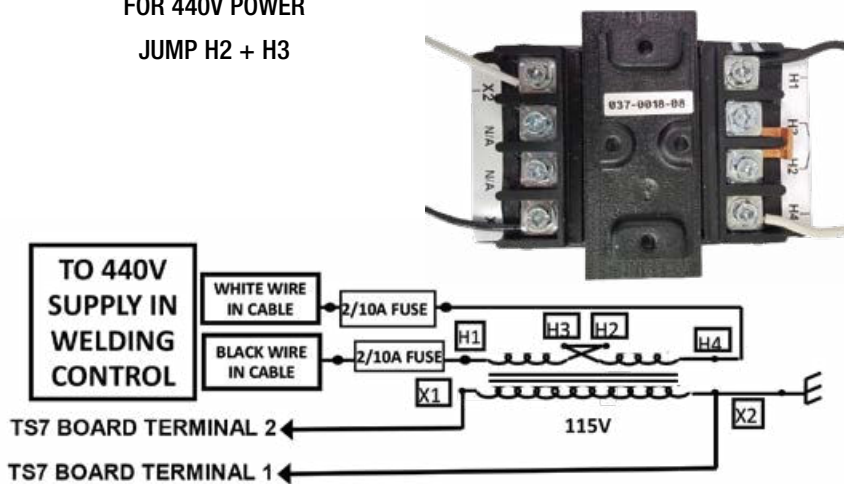
CAUTION: INCORRECT CONNECTION WILL CAUSE SEVERE DAMAGE.

FOR OPTIONS TECNA AND RST-410

Connect jumper on primary to match line voltage. Connect the white and black wires from the cable to THAT LINE VOLTAGE IN THE WELDING CONTROL

FOR 440V POWER

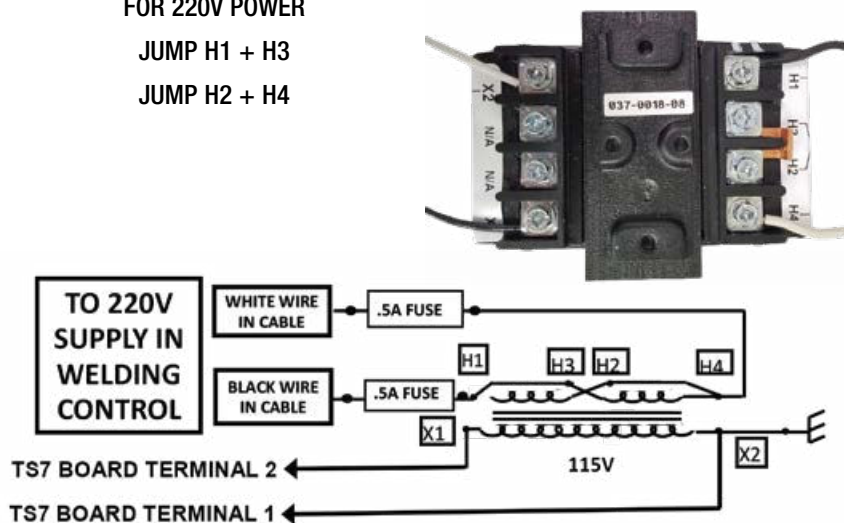
JUMP H2 + H3



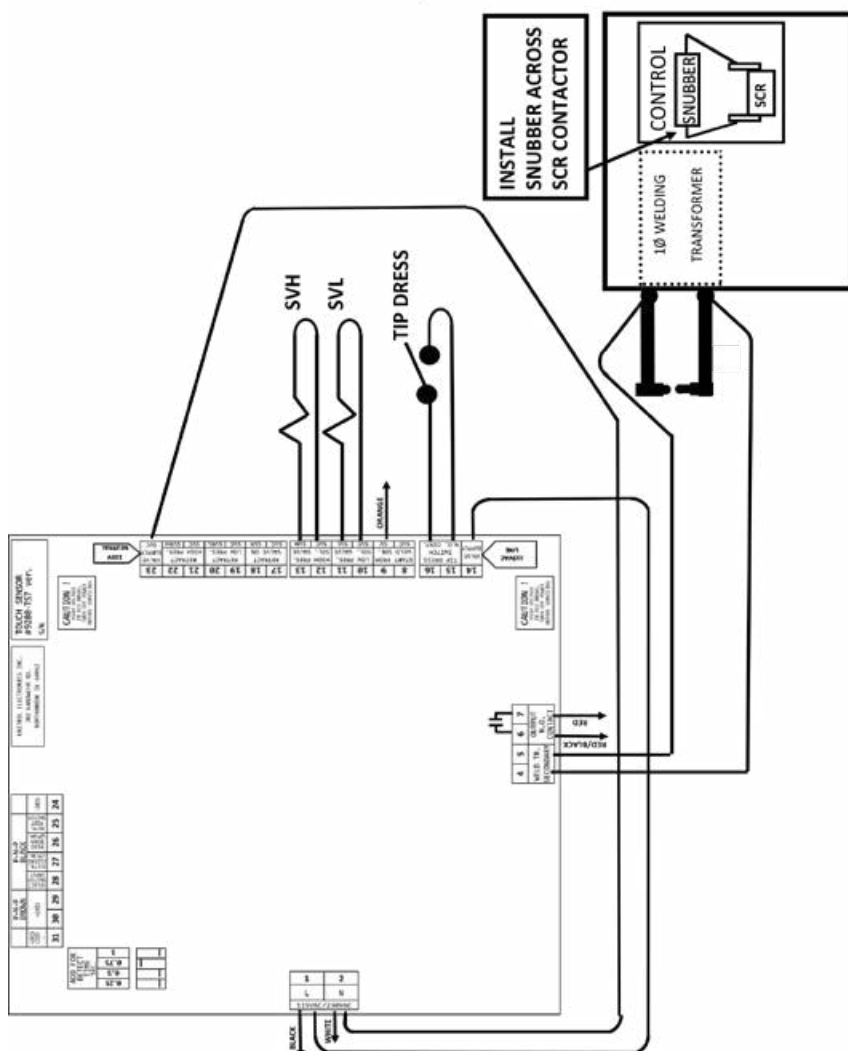
FOR 220V POWER

JUMP H1 + H3

JUMP H2 + H4

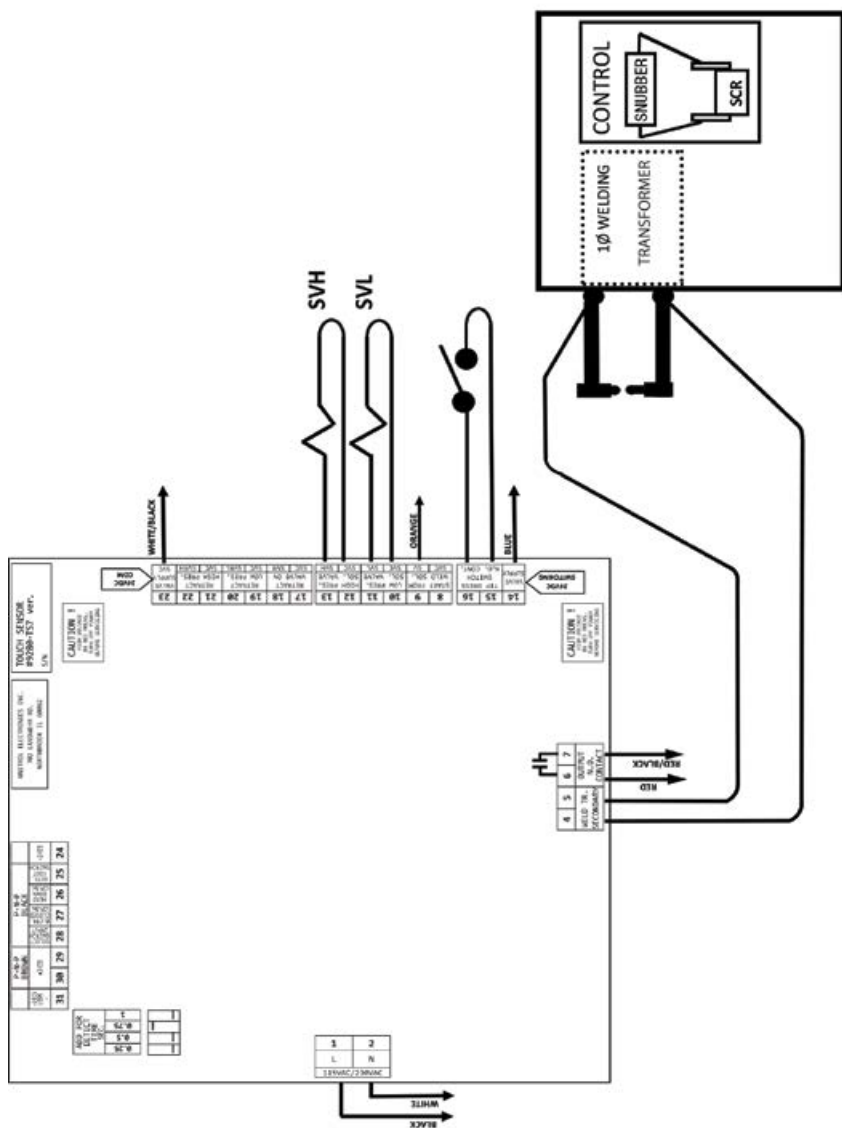


INSTALLATION HOOK-UP DRAWING RST100-115A, RST101-115A



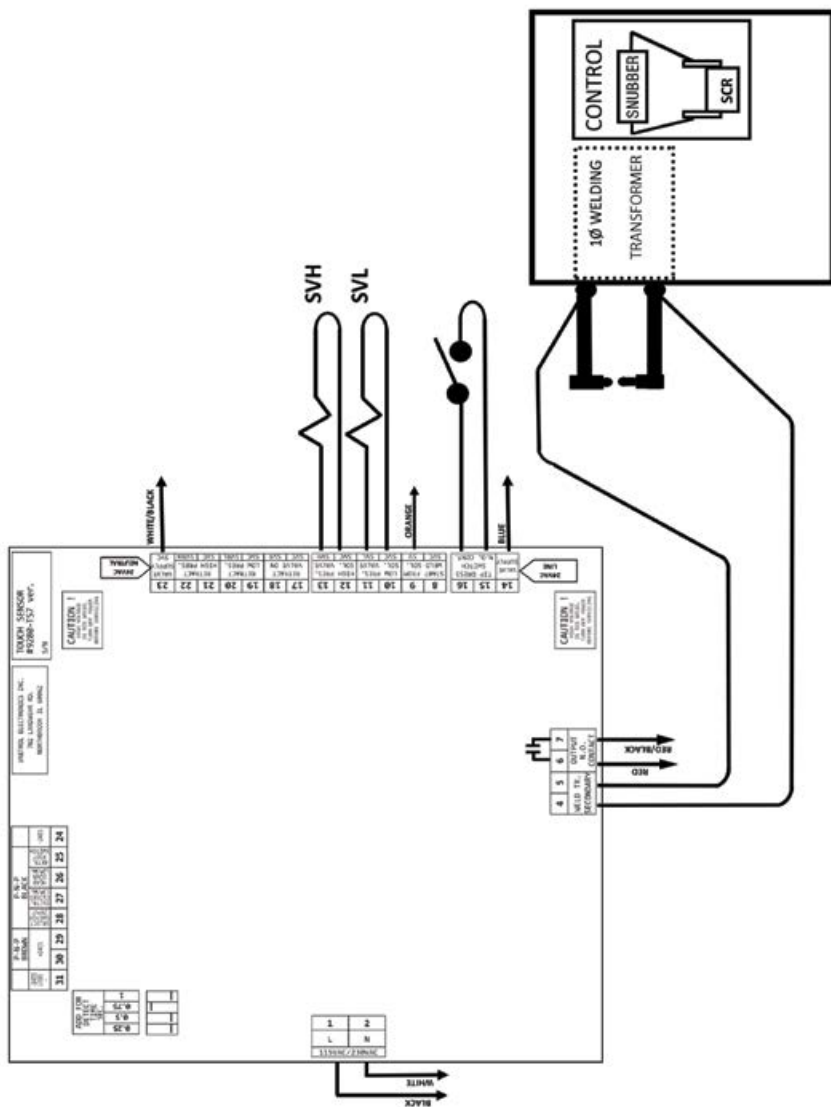
INSTALLATION HOOK-UP DRAWING

RST100-024D, RST101-024D

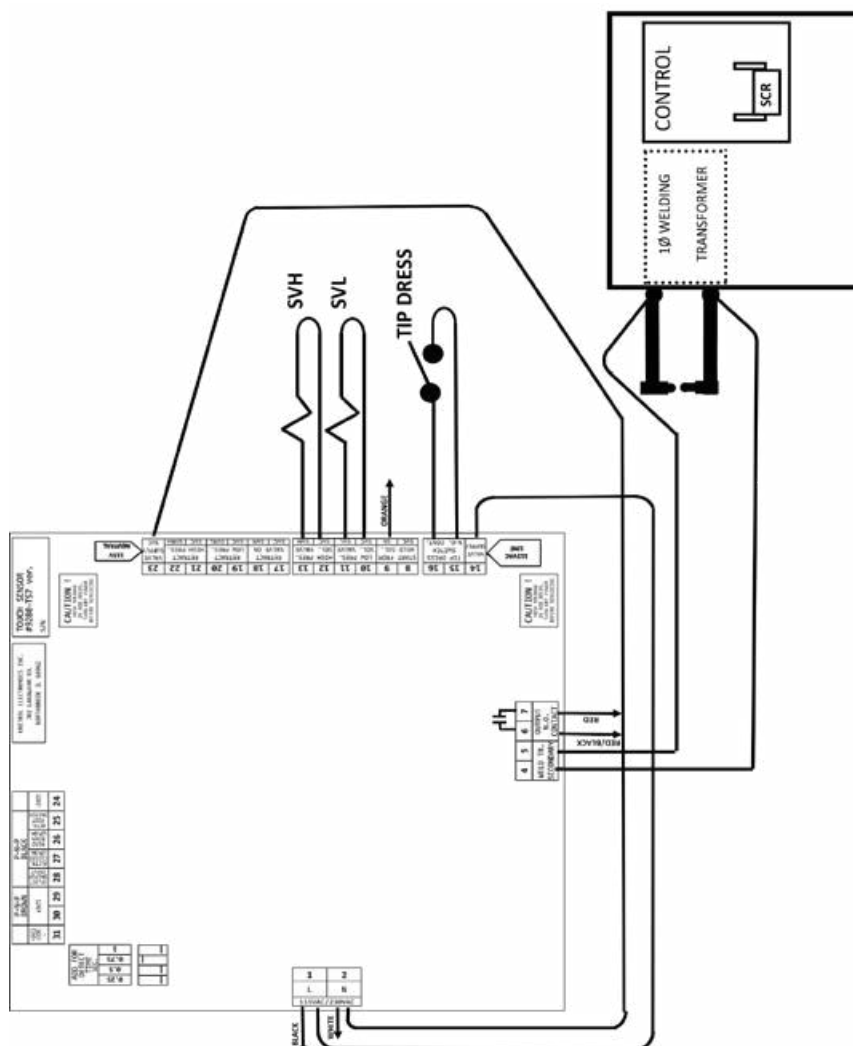


INSTALLATION HOOK-UP DRAWING

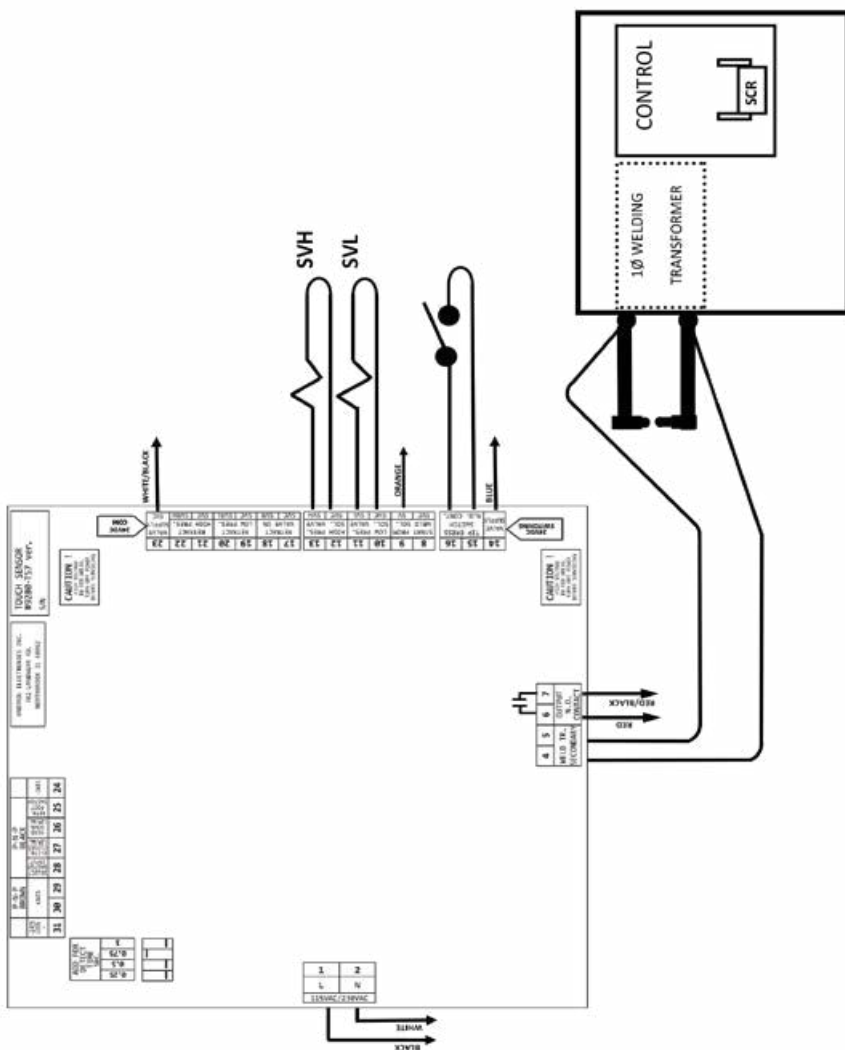
RST100-024D, RST101-024D



INSTALLATION HOOK-UP DRAWING RST200-115A, RST201-115A

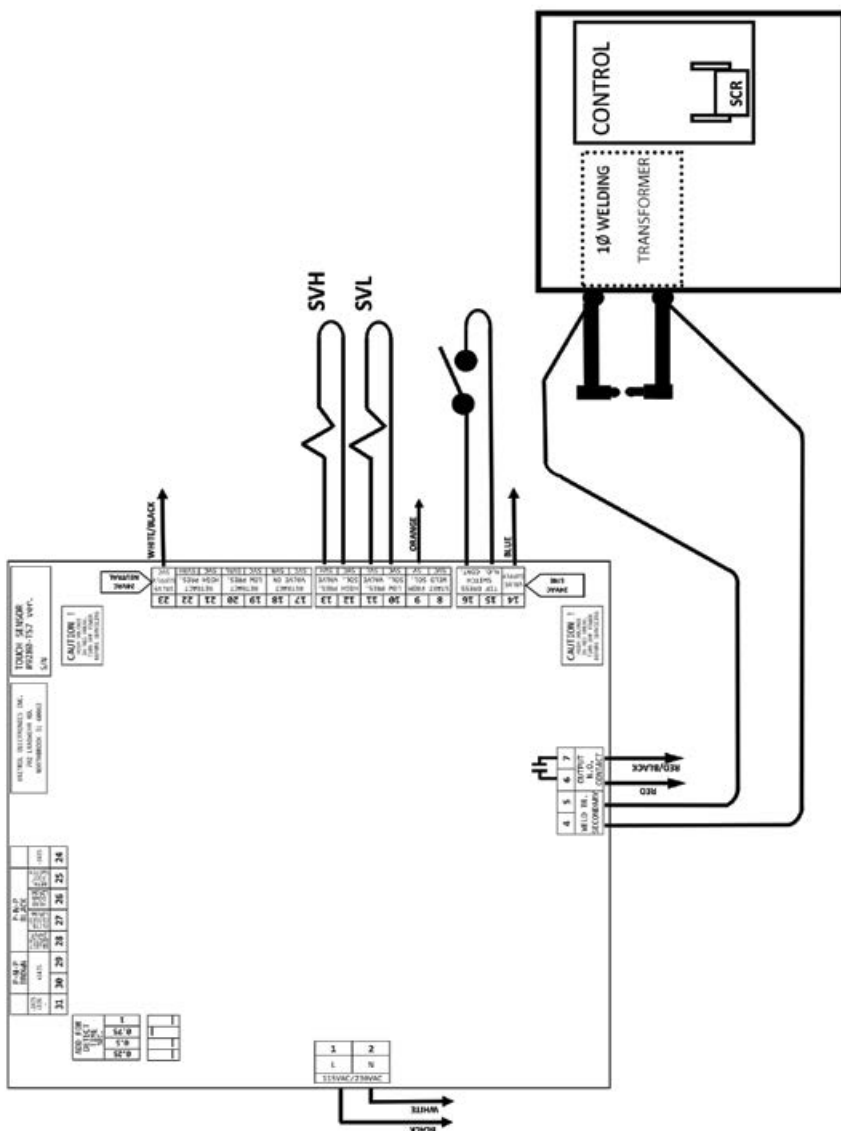


INSTALLATION HOOK-UP DRAWING RST200-024D, RST201-024D



INSTALLATION HOOK-UP DRAWING

RST200-024D, RST201-024D



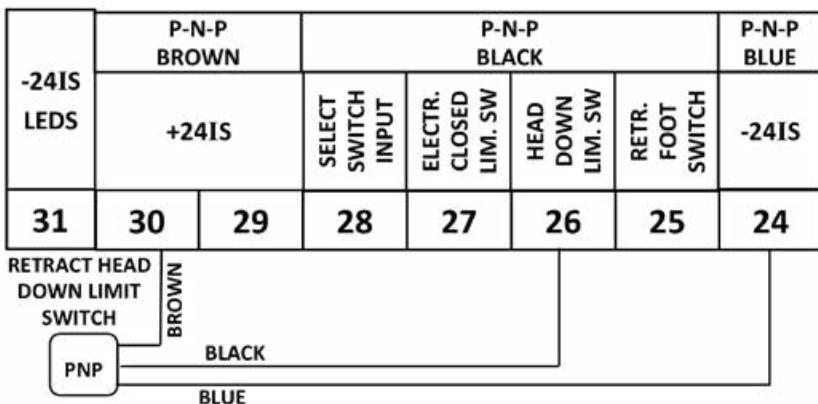
OPTIONAL RETRACT WITH SOFT TOUCH RST-400

FOR WELDERS WITH A RETRACT TYPE CYLINDER. OPERATED BY A 3-SECTION FOOT SWITCH

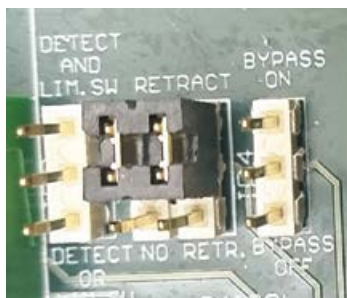
This type of foot switch has the RETRACT switch controlled as the first level and mechanically latched. The other two levels of this foot switch operate the welding sequence.

This option protects against pinch point injury when bringing the electrodes from fully open RETRACT position to the WORK position (small space between electrodes). The option includes a PNP proximity switch that is adjusted to go high when the retract cylinder is fully bottomed putting the electrodes in the (small opening) WORK position.

1. Install the PNP proximity switch using the starter bracket kit in this option. Modify as necessary to work with your welder. The proximity switch has to be blocked when the ram is down in the WORK (small opening) position. This will put 24VDC into terminal 26.
2. Wire the PNP proximity switch as shown below.

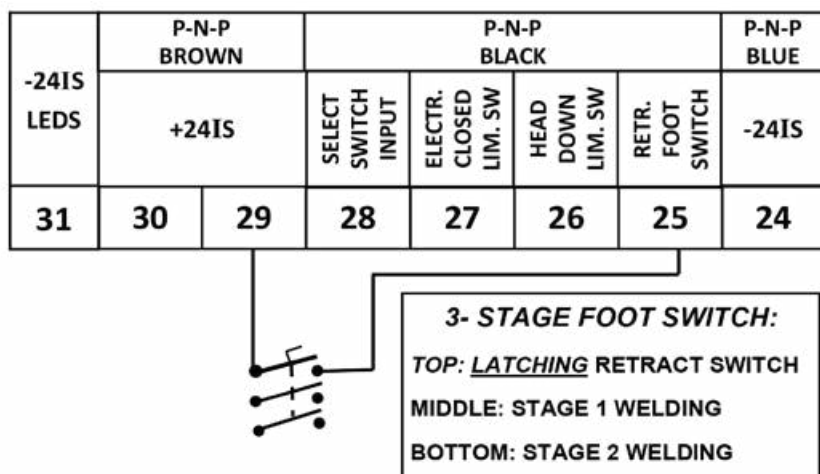


3. Move the double RETRACT jumper plug to the RETRACT (upper) position as shown. This is located on the upper left corner of the board



OPTIONAL RETRACT WITH SOFT TOUCH RST-400 (CONTINUED)

3. Connect the 3-stage foot switch as shown below.



See bottom of page 17 for pneumatic hookup for this option

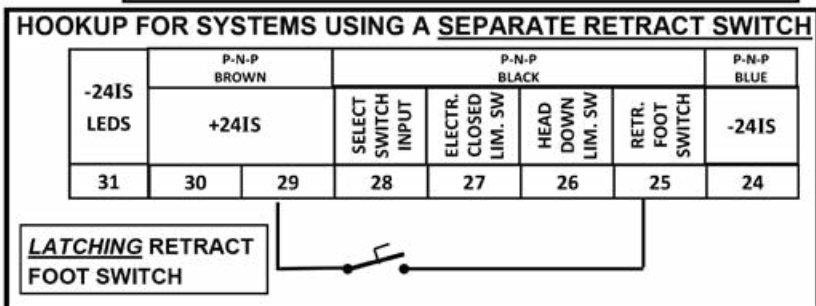
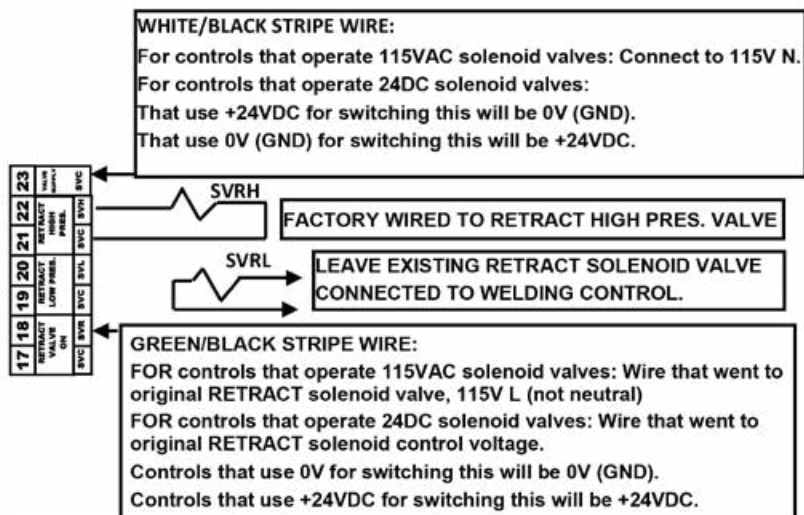
OPTIONAL RETRACT WITH SOFT TOUCH RST-401

This option RST-401 is for RETRACT that operates from either RETRACT VOLTAGE from the welding control or from a separate RETRACT foot switch.

DO NOT USE THIS OPTION FOR WELDERS THAT USE A COMMON WELD AND RETRACT FOOT SWITCH (use RST-400)

HOOKUP FOR SYSTEMS USING RETRACT VOLTAGE SIGNAL FROM THE WELDING CONTROL:

Remove the existing wire from the welding control RETRACT valve driver terminal and wire as shown below to terminal #18



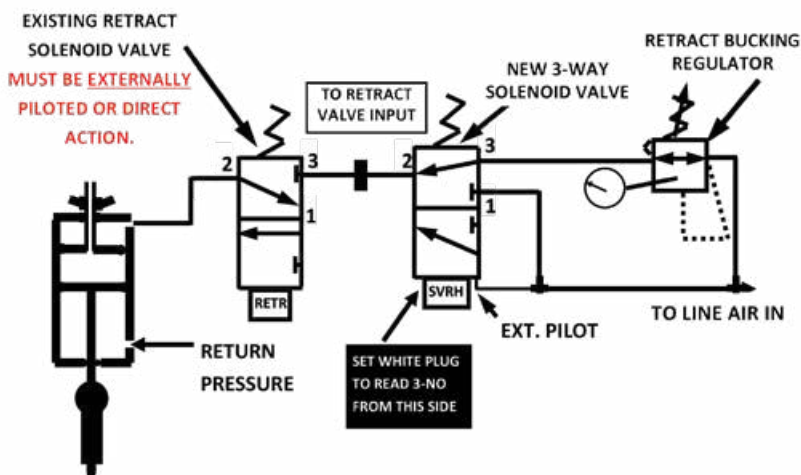
OPTIONAL RETRACT WITH SOFT TOUCH RST-401

Insert a jumper from terminal 26 to terminal 29. Note that the HEAD DOWN LIM. SW light on the annunciator panel will be on permanently when this jumper is in place.

-24IS LEDS	P-N-P BROWN		P-N-P BLACK				P-N-P BLUE
	+24IS		SELECT SWITCH INPUT	ELECTR. CLOSED LIM. SW	HEAD DOWN LIM. SW	RETR. FOOT SWITCH	-24IS
31	30	29	28	27	26	25	24

PLUMBING: Connect hoses from the input port on the existing RETRACT SOLENOID to the bulkhead on the SOFT TOUCH enclosure as shown below.

ADJUST the RETRACT BUCKING REGULATOR until the electrodes close with less than 50 pounds of force. If you change the RETURN pressure you will have to adjust the bucking regulator.



OPTIONAL TIMED DELAY RST-402

Some materials being welded have coatings or other conditions that prevent good continuity between electrodes. For these conditions option #RST-402 will allow the welder to be operated using TIMING rather than CONTINUITY to switch from low force to high welding force. In this case, the low force will be applied for the time set on the 4-position DETECT TIME DIPswitch, and then the high welding force will turn on. The time from initiation to high force is the SUM of the switches pushed down on top.



CAUTION: When the key switch is in the TIMED position, the HIGH WELDING FORCE will turn on after the selected delay (detect) time unless initiation is opened. This will happen *even if a non-conductive material or body part is between the electrodes.*

This option will be factory wired and supplied with the faceplate.



OPTIONAL DEPTH SWITCH RST-403, RST-404

This option allows use of either CONTINUITY DETECTION or closure of a DEPTH SWITCH to turn on the weld pressure and start the weld sequence. It is useful when parts being welded have a non-conductive coating.



INSTALLATION:

RST-403: Mount the PNP proximity switch that is supplied with this option on the body of the welder using the mounting bar. Modify and bend as needed

RST-404: Mount a customer-supplied mechanical limit switch or PNP proximity switch on the body of the welder.

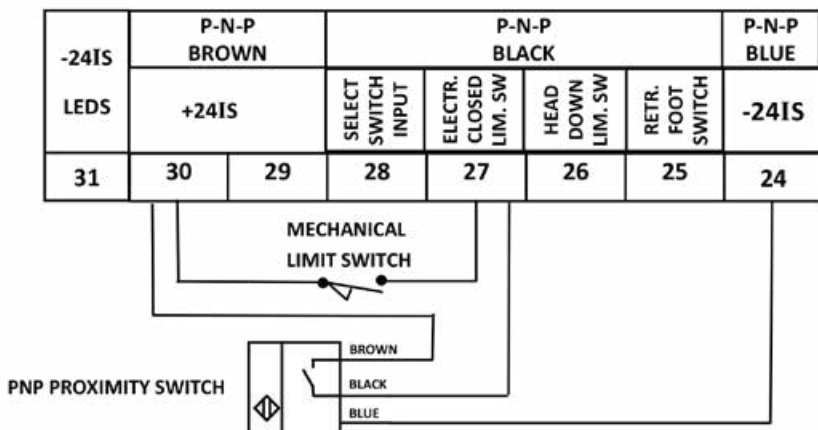
BOTH: Make and install an adjustable cam on the moving part of the welder that will go in front of this switch when the upper electrode are less than 1/4" from the lower electrode.

NOTE: If the parts being welded are very thick, setting the DEPTH SWITCH to close when there is a 1/4" gap between electrodes might not work when the part being welded is in place. In this case, set the DEPTH SWITCH to close when there is 1/4" gap from the TOP OF THE PART being welded to the underside of the upper electrode.

To protect from pinch point injury when a part is NOT between the electrodes, adjust the electrode holders so that the air cylinder will bottom out when the gap between electrodes is 1/4".

OPTIONAL DEPTH SWITCH RST-403 , RST-404 (CONTINUED)

Wire the switch to match the appropriate hookup below.



USE IN PRODUCTION:

Turn the key COUNTER-CLOCKWISE to the CONTINUITY position. The yellow panel indicator will glow. In this position, high welding pressure will only be applied when electrical continuity is detected between the upper and lower electrodes.

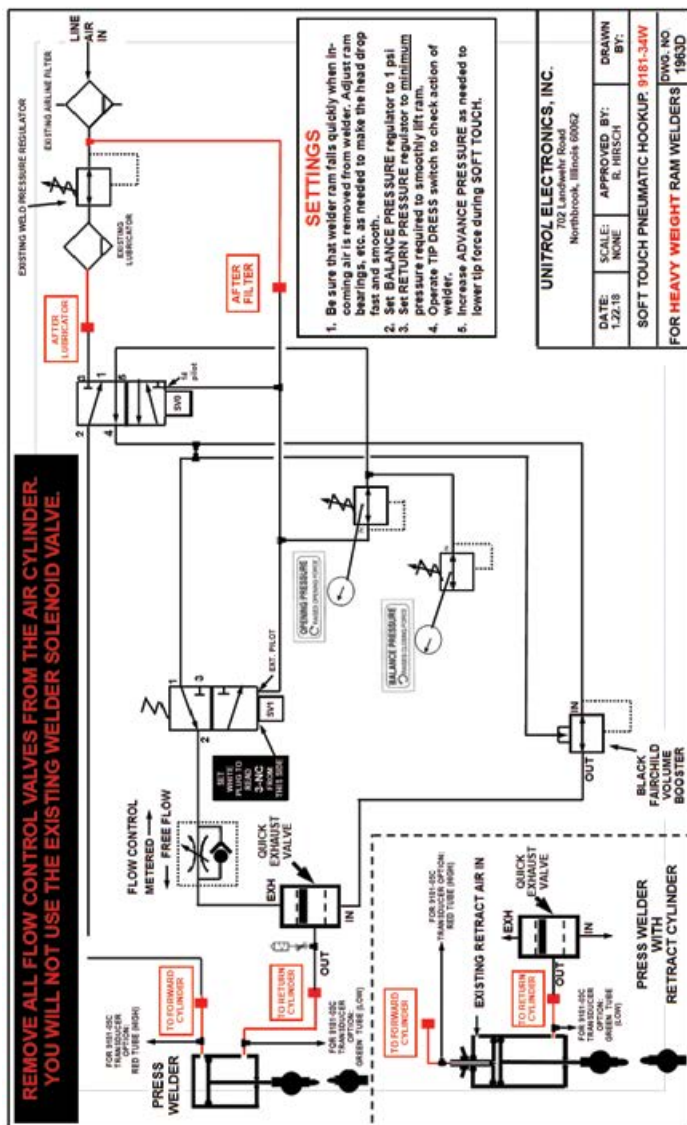
Turn the key CLOCKWISE to the DEPTH SWITCH position. The red panel indicator will glow. After initiation, the electrodes will close with low force. If the DEPTH SWITCH closes before the maximum DETECT TIME (as set on the DIPswitch) has been reached, the LIMIT SWITCH CLOSED light will glow on the annunciator panel, electrodes will go to welding force, and the output of the sensor board will close to start the welding control.



CAUTION: When the key switch is in the DEPTH SWITCH position, the HIGH WELDING FORCE will turn on after the DEPTH SWITCH is closed. This will happen *even if a non-conductive material or body part is between the electrodes.*

PNEUMATIC HOOKUP

RST100/RST200 HEAVY WEIGHT RAM WELDERS CONNECT HOSES TO PORTS SHOWN IN RED BELOW



ADJUSTING THE SOFT TOUCH VALVE SYSTEM

FOR RST100 SERIES CONTROLS - HEAVY WEIGHT RAMS

1. The ADVANCE PRESSURE puts air on the underside of the air cylinder piston to LIFT the welder ram. This is used to partially lower the force between the electrodes due to the dead (gravity) weight of the welder's ram. Increasing this ADVANCE PRESSURE value will decrease the force between the electrodes when closed under low force.
2. BE SURE THAT ALL FLOW CONTROL VALVES HAVE BEEN REMOVED FROM THE WELDER CYLINDER BEFORE DOING ANY ADJUSTMENT OF THIS SYSTEM.
3. Set the BALANCE pressure regulator inside the enclosure so that the BALANCE PRESSURE gauge on the door is at approximately 1psi.
4. Set the OPEN pressure regulator inside the enclosure so that the OPEN PRESSURE gauge on the door is at approximately 12 psi.
5. Turn the TIP DRESS switch ON. The electrodes should close. Check the force between the electrodes and INCREASE the BALANCE pressure slightly if the force is great enough to crush a wood pencil more than 1/16" in depth. If the electrodes do not close, DECREASE the BALANCE pressure to as low as 0 psi. Even though the pressure gauge shows 0psi, this pressure is actually 1/2psi.
6. Adjust the OPEN pressure regulator so that when the TIP DRESS switch is OFF, the electrodes open smoothly. Use the LOWEST setting on the OPEN pressure regulator that will smoothly open the electrodes. This will produce the fastest electrode closing time.

FOR RST101 SERIES CONTROLS - LIGHT WEIGHT RAMS AND ROCKER ARM WELDERS

1. Set the CLOSE pressure regulator inside the enclosure so that the CLOSE PRESSURE gauge on the door is at approximately 3psi.
2. Set the OPEN pressure regulator inside the enclosure so that the OPEN PRESSURE gauge on the door is at approximately 12 psi.
3. Turn the TIP DRESS switch ON. The electrodes should close. If they don't, INCREASE the CLOSE pressure regulator. Check the force between the electrodes and DECREASE this pressure slightly if the force is great enough to crush a wood pencil more than 1/16" in depth.
4. Adjust the OPEN pressure regulator so that when the TIP DRESS switch is OFF, the electrodes open smoothly. Use the LOWEST setting on this OPEN pressure regulator that will smoothly open the electrodes. This will produce the fastest electrode closing time.

SETTING SOFT TOUCH BOARD MAXIMUM DETECT TIME SWITCHES

Locate the four-section ADD FOR DETECT TIME DIPswitch on the left side of each SOFT TOUCH board. This switch is marked: 1, .75, .5, and .25 seconds. Set the switches to a value that is about 2 times how long it will take for the electrodes to close. The on-board computer adds the value of these switches. For example, pushing 1 and .5 down to the left side will produce a detection time of 1.5 seconds. This setting is not critical. A typical setting is 1 second. Longer times might be needed for very long stroke cylinders

For example, in the photo below the 0.25 and 1 switch is pushed down toward the top of the board for a total maximum detect time of 1.25 seconds.

DETECT BLANK TIME

After the SOFT TOUCH board is initiated, the system will not look for continuity until the DETECT BLANK TIME has been reached. This time is 50% of the time you set on the ADD FOR DETECT TIME DIPswitch.



TESTING THE BASIC PNEUMATIC SYSTEM

1. Clean electrodes on welder
2. With nothing between electrodes, close electrodes by turning ON the TIP DRESS switch at the bottom of the annunciator panel.
3. The electrodes should close.
4. Turn OFF the TIP DRESS switch and the electrodes will open.

SETTING AND TESTING ELECTRODE CLOSING FORCE

Turn power on to SOFT TOUCH system.

Adjust the pneumatic system to produce safe closing electrode closing force using the directions on page 22 or 23 to match the model number of this SOFT TOUCH system.

Use the TIP DRESS switch to close the electrodes each time you make a change in the pressure regulator settings. A successful pneumatic setting will provide a force under 50 pounds between the electrodes. There are two methods to check this force:

1. The most precise method is to use a tip force measuring instrument between the electrodes. This produces data that can be recorded on safety records and is less subjective to visual observation. Unfortunately most of these devices do not have any accuracy in the low force ranges. Do not use an instrument that has poor or unknown accuracy in the low force range. An excellent device that can read the low forces is Tuffaloy model 601-3000DLC. This unit can also be used to read welding forces up to 3,000 pounds.
2. Place a wood pencil between the electrodes and close using the TIP DRESS switch. The electrodes should not dent more than 1/16" into either side. A typical #2 wood office pencil works well. A carpenter's pencil works better since the flat area is much larger.

STARTUP PROCEDURE

1. Turn on power to welding control.
2. The SOFT TOUCH annunciator panel should go through a test procedure and then the READY LED should turn on solidly.
3. If the READY LED does flashes slowly or quickly see the trouble shooting section in this direction book.
4. The system should be ready for operation. There is no customer calibration needed now or ever.



SUCCESSFUL SEQUENCE WITHOUT LIMIT SWITCH

1. Weld control sends voltage to terminal 9 (SV).
2. START lights
3. Low Force solenoid valve (SVL) is energized, Low Force ON LED lights.
4. Electrodes close
5. Continuity is detected and CONTINUITY DETECTED LED lights.
6. High Force solenoid valve (SVH) is energized, HIGH FORCE ON LED lights.
7. Output relay at terminals 6 & 7 closes to start weld control sequence, and OK TO WELD LED lights.

UNSUCCESSFUL SEQUENCE

If continuity is not detected within the maximum time set on the DIPswitch, electrodes will not get to welding force, will open, and the Detect Time Exceeded, Dress Electrodes LED will light. Clean the electrodes and try the sequence again. Or check to see if the DIPswitch on the board is set to a long enough time to allow for the electrodes to close.

TROUBLE SHOOTING CHART

NOTE: This **SOFT TOUCH** system will not operate if any fault is detected.

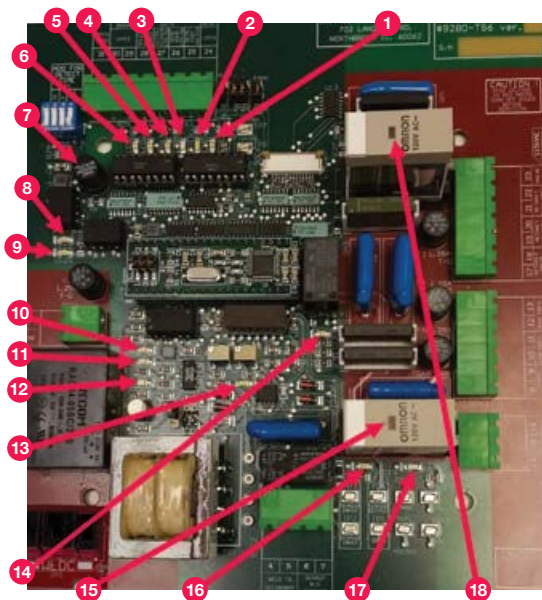
SYSTEM READY LED will glow solidly if all faults are cleared.

INDICATION	CAUSE	WHAT TO CHECK OR DO
READY LED not on	No power to control	Be sure that 115V is at terminals #1 and #2 Voltage from welding control valve driver output connected to terminals 8 and 9 on the sensor board is on when power is turned on to the soft touch system correct weld control
READY LED is on but is FLASHING Electrodes will not close when welding control is initiated	One fault shown below is detected The READY LED will not glow SOLIDLY until the system has cleared all faults	SEE ITEMS TO CHECK ON BOXES BELOW
READY LED flashing SLOWLY. Electrodes will not close when welding control is initiated. OR CONTINUITY DETECTED WITH NO START SIGNAL LED on when electrodes are not touching.	Voltage on blue sensor wires is too low Lowering of this voltage is used by the sensor board to detect when continuity is reached Insulator missing or some conducting component is connected between insulated side of welder secondary and welder frame.	Be sure that the two blue pickup wires coming from the cabinet are correctly connected to welder secondary. See page 5 FOR MFDC INVERTER WELDERS: Be sure that all three switches on lower left of board are set to the MFDC position. See page 1 FOR 1Ø AC WELDERS: 1.Be sure that all three switches on lower left of the sensor board are set to the AC position. See page 1. 2.Be sure that a snubber is installed correctly. See page 6. 3.Measure AC voltage at TP2 - TP3. It should be a minimum of 25mv (.025V). If it is above zero but below 25mv, a second snubber might have to be added across the SCR to bring this voltage up. 4.If it is 0mv, replace the snubber. See page 1. CHECK MECHANICAL SYSTEM. Disconnect flexible shunt that connects weld transformer secondary to moving arm, pull out plug on SOFT TOUCH board at SOC2 (terminals 4 to 7). Measure resistance between electrodes. If it is not 0, check for bad insulator or some other path between the insulated moving welder part and the welder frame. Repair or replace as needed.
READY LED flashing QUICKLY	Voltage on blue sensor wires is too high	Contact Unitrol service for instructions
DETECT TIME EXCEEDED. DRESS ELECTRODES LED flashing	Not enough time allowed to close electrodes Electrodes not making good contact. Electrodes do not touch when welder air cylinder is fully extended.	Increase DIPswitch time. Remember that this maximum time is the SUM of all switches pushed down towards the time numbers (.25sec, .5 sec, .75sec, 1 sec) Clean electrodes or check part being welded. Adjust electrode holders so that there is at least a 1/4" left in the air cylinder travel when the electrodes touch.
OUTPUT CLOSED FAULT LED is on	Output relay K4 is mechanically closed (welded contacts)	Replace KA relay

SOFT TOUCH SENSOR BOARD TS6 AND TS7

INDICATOR LIGHTS

NOTE: TS-5 BOARDS,
LED6,7,8,9,14, AND 15
ARE ALL GREEN



- 1 LED9 (ORANGE): is on when START FROM WELD SOL input is high
- 2 LED15 (WHITE): is on when HEAD DOWN LIM. SW. contact is closed
- 3 LED8 (BLUE): is on when RETRACT VALVE ON input is high or RETR. FOOT SWITCH contact is closed
- 4 LED14 (GREEN): is on when RETR. FOOT SWITCH contact is closed
- 5 LED6 (YELLOW): is on when ELECTR. CLOSED LIM. SW. contact is closed
- 6 LED7 (RED): is on when SELECT SWITCH INPUT contact is closed
- 7 100MA FUSE for 24VIS isolated voltage; used for outside switches
- 8 LED2 (ORANGE): 24VIS isolated voltage; used for outside switches
- 9 LED5 (ORANGE): 24VDC used for electronic circuitry on this board
- 10 LED3 (ORANGE): +15VDC
- 11 LED4 (ORANGE): -15VDC
- 12 LED1 (ORANGE): +5VDC
- 13 LED16 (WHITE): high gain amplifier is on
FOR AC UNITS: indicates that sensor input voltage is under 300mV
For MFDC UNITS: this is the normal condition
- 14 LED17 (RED): K1 spurious operation relay is energized
- 15 WINDOW TURNS RED when START FROM WELD SOL. input voltage is high
- 16 LED13 (RED): OUTPUT N.O. CONTACT is closed
Contact closure tells control to start weld sequence
JP5 IN "STD": LED will be off during standby and turn on at continuity
JP5 IN "S2": LED will be on during standby, off after SV input, and on when continuity is detected
- 17 LED512 (BLUE): OUTPUT N.O. CONTACT is open
JP5 IN "STD": this is the normal standby condition
JP5 IN "S2": this will be off until SV input, then will be on until continuity is detected
- 18 WINDOW TURNS RED when RETRACT VALVE ON input is high or RETR. FOOT SWITCH contact is closed

Manufactured By:



702 Landwehr Road, Northbrook, Illinois 60062 USA
techsupport@unitrol-electronics.com | 847-480-0115

Distributed By:



5795 Logistics Parkway, Rockford, Illinois 61109 USA
Toll-Free: 1-800-922-7533 | Phone: 815-874-7891
www.rockfordsystems.com | sales@rockfordsystems.com