SOFT TOUCH for NON-UNITROL FREQUENCY CONVERTER CONTROLS Installed on Sciaky PMCO welders

9381-34RP/PMCO/115, 9381-34RP/PMCO/24DC

UNI*TROL* ELECTRONICS, INC.
702 LANDWEHR ROAD
NORTHBROOK, IL 60062
847-480-0115
techsupport@unitrol-electronics.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.

Having trouble or need answers to your questions? Unitrol supplies free phone support for the life of this and all our products.

You can contact us:

By Phone:

Monday - Friday 9:00 - 5:00 CT: 847-480-0115.

By Email:

techsupport@unitrol-electronics.com

By Regular Mail:

Unitrol Electronics, Inc.

Technical Support

702 Landwehr Road

Northbrook, Illinois 60062

MODEL NUMBER AND OPTIONS AS CHECKED BELOW

SERIAL NUMBER:

✓	MODEL	TYPE	VALVE VOLTAGE
	9381-34RP/115/PMCO	CYLINDER OR DIAPHRAGM HEAVY WEIGHT RAM	115AC
	9381-34RP/24DC/PMCO	CYLINDER OR DIAPHRAGM HEAVY WEIGHT RAM	24DC
		OPTIONS	
	9181-34BPA	Timed bypass. Includes security lock selector switch, 2 = LED indicator lights, faceplate. Closes electrodes under low force, delays, and brings electrodes to welding force.	
	9381-34JAPMCO	SOFT TOUCH protection for the RETRACT stroke. Supplied to operate PMCO welders with “lift” cylinders. Includes RAM POSITION proximity switch and mounting bracket kit. Requires additional field bracketry to match welder	
	9381-34JA	SOFT TOUCH protection for RETRACT stroke on standard cylinders that use forward pressure to go out of RETRACT. Includes proximity switch and mounting bracket kit. Requires additional field bracketry to match welder	
	9181-34LSB	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.	
	9181-34LSC	Limit Switch used as a redundancy with continuity. Always in operation and not keylock selected. Includes RAM POSITON 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 .	
	9181-34LSC	Limit Switch used as a redundancy with continuity. Always in operation and not keylock selected. Includes RAM POSITON 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 .	
	9381-34F2	FORGE DELAY FUNCTION	

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.

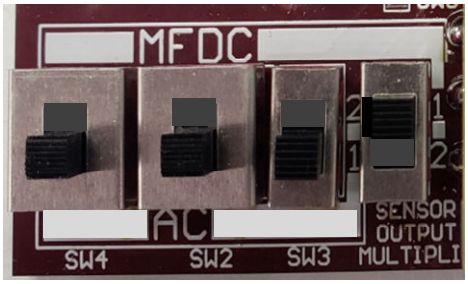
NO OTHER UNITROL ELECTRONICS INC. WARRANTY, WRITTEN OR IMPLIED, COVERS THIS CONTROL UNLESS IN WRITING AND SIGNED BY AN OFFICER OF UNITROL ELECTRONICS, INC. PRIOR TO SHIPMENT OF PRODUCT.

TABLE OF CONTENTS

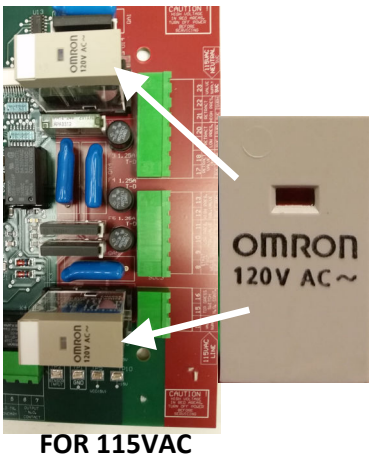
VERIFY YOUR SOFT TOUCH SENSOR BOARD IS CORRECT

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.

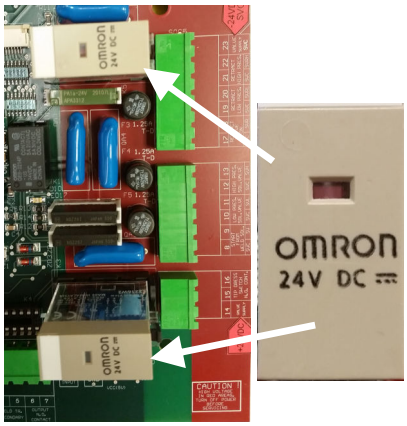
1. TYPE OF WELDING CONTROL. This board can be set to operate various types of welders. For a Frequency Converter welder, set the four side switches to the positions shown below.



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

SOFT TOUCH PINCH POINT PROTECTION SYSTEM FOR INSTALLATION ON NON-UNITROL 3Ø FREQUENCY CONVERTER CONTROLS

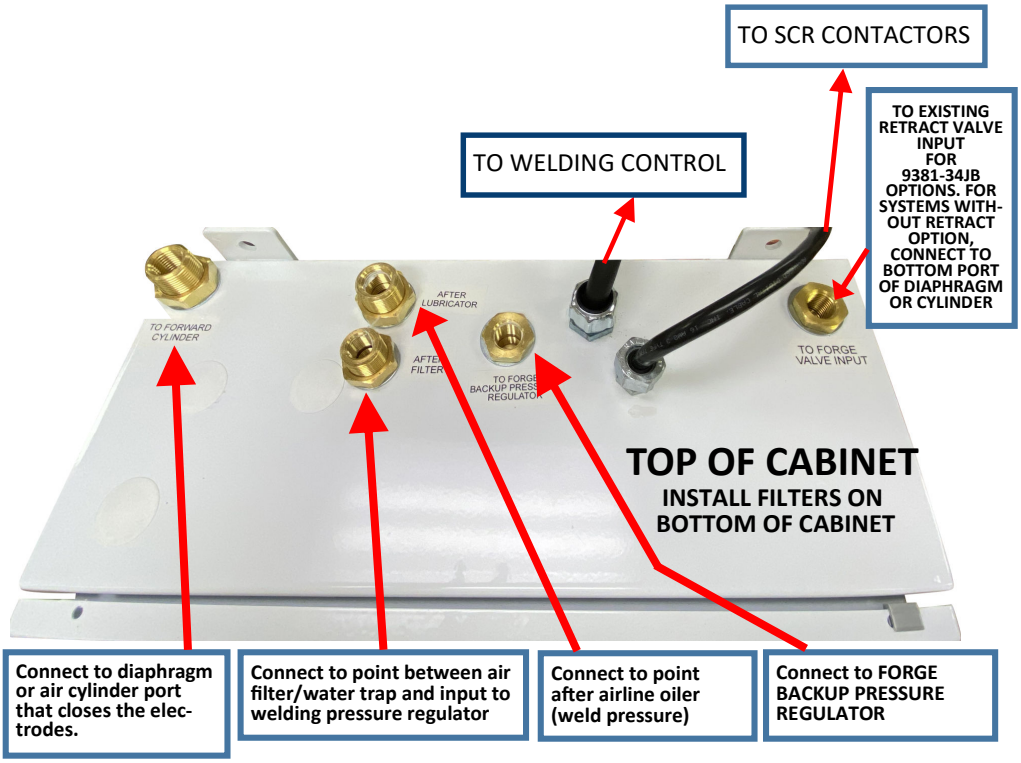
HOW THE SYSTEM OPERATES

1. When the solenoid valve SV2 output from the welding control goes HIGH, this voltage goes to the 9280-TS7 SOFT TOUCH detection board, terminal #9.
2. The output terminal #11 (SVL) goes HIGH to turn on solenoid valve SVL . This closes the electrodes under low force.
3. The signal injection circuit puts a low voltage into one coil of the transformer primary.
4. This voltage is stepped down by the welding transformer at the secondary side to place very low voltage across the open welding electrodes.
5. When electrodes touch the metal being welded, this voltage will be dropped across the gold power resister in the voltage injection circuit. The 9280-TS7 board will see this drop as confirmation that continuity has been established and will turn on SVH to put welding pressure air on the top of the welder's diaphragm or cylinder. At the same time, this voltage from SVH turns on the signal injection circuit relays to disconnect the signal injection voltage from the welder secondary.
6. The 9280-TS7 board will close an output relay to close the welding control's 2nd stage footswitch input or other input to tell the welding control to start the weld heating sequence.

CABINET AND HOSE INSTALLATION

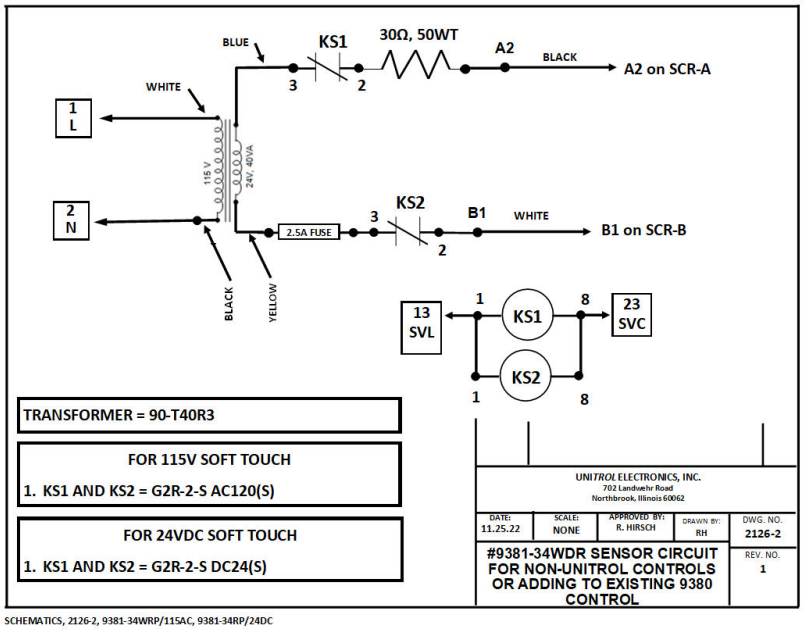
Note that this system REPLACES the two existing welding solenoid valves.

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 valves. The forward (top port) solenoid valve will not be used with this this control.
3. Connect hoses from the control to the air cylinder as shown in the photo below.



CONNECTING SIGNAL INJECTOR WIRES

1. Connect the black wire from signal injector wire cable to terminal A2 on SCR-A in the welding control.
2. Connect the black wire from signal injector wire cable to B1 on SCR-B in the welding control.



SCHEMATICS, 2126-2, 9381-34WRP/115AC, 9381-34RP/24DC

TIP ARC RELAY CAUTION

IMPORTANT: The two signal injector wires have to be connected to a place in the primary transformer wiring that does NOT have the existing TIP ARC RELAY connected. The injected signal will be shorted out if the TIP ARC RELAY is connected to the same terminals with the signal injector wires, and SOFT TOUCH will not work.

If the contacts of the TIP ARC RELAY are already connected to A2 - B1, connect the signal injector wires to B2 - C1 or C2 - A1.

CONNECTING CONTROL CABLES

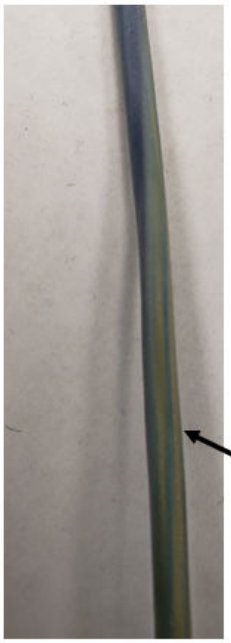
1. Drill or punch a 7/8” hole (1/2” electrical knockout) in the top panel of the welding control cabinet and install the supplied strain relief fitting.
2. Route the 10-wire cable from the top of the SOFT TOUCH enclosure to the welding control and run it through the strain relief fitting.
3. Trim the cable to allow it to reach the terminals shown in the table on the next page. Wire as shown on page 5.

NOTE: Check the Unitrol web site **www.unitrol-electronics.com** SUPPORT tab for hookup charts for many popular welding controls. If you do not see your brand and model welding control listed and cannot figure out how to find the point in the welding control that are shown on the next page, contact Unitrol for assistance at::

techsupport@unitrol-electronics.com .

WIRING TO WELDING CONTROL
10-WIRE CONTROL CABLE CHART

The BLUE/GREEN wire is not really clear. The photo below shows what it looks like.



SPECIAL 10 WIRE CABLE COLOR CHART	TS7 TERM	CONNECT IN WELDING CONTROL FOR 24VDC MODELS 9181-34WPB/24DC, 9181-34WPM/24DC 9181-34YB/24DC 9181-34YM/24DC		CONNECT IN WELDING CONTROL FOR 115VAC MODELS 9181-34WPB/115 9181-34WPM/115 9181-34YB/115 9181-34YM/115
BLACK	1	115VAC L		115VAC L
BLACK/WHITE	2	115VAC N		115VAC N
RED/BLACK ST.	6	INIT. PERMISSION[1]		INIT. PERMISSION[1]
BROWN	7	INIT. PERMISSION[1]		INIT. PERMISSION[1]
		FOR CONTROLS SWITCHED WITH +24VDC [2]	FOR CONTROLS SWITCHED WITH 0VDC [3]	
BLUE	14	+24VDC	0VDC	115VAC = NOT USED 24VAC = 24VAC L
BLUE/GREEN	23	0VDC	+24VDC	115VAC = NOT USED 24VAC = 24V N
ORANGE	9	WELD CONTROL SOLENOID VALVE OUTPUT[4]		115VAC L SOLENOID VALVE DRIVER OUTPUT[4]
GREEN	-	GROUND STUD		GROUND STUD
GREEN/BLACK ST.	18	RETRACT IN SIGNAL [4]		RETRACT IN SIGNAL[4]
ORANGE/BLACK	33	SINGLE TERMINAL FOR FRG FORGE SOLENOID VALVE CONNECTION. SEE HOOKUP DRAWING FOR NOTES ON THIS WIRE CONNECTION		

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 on the TS7 sensor board.
2. Welding controls that use **+**24VDC to operate the welding (and RETRACT if applicable) solenoid valve.
3. Welding controls that use **0**VDC to operate the welding (and RETRACT if applicable) solenoid valve.
4. When the RETRACT valve is turned on by the welding control, terminal 18 to terminal #23 voltage should be same as the voltage between terminals #14 - #23.

CAUTION: INCORRECT CONNECTION WILL CAUSE SEVERE DAMAGE.

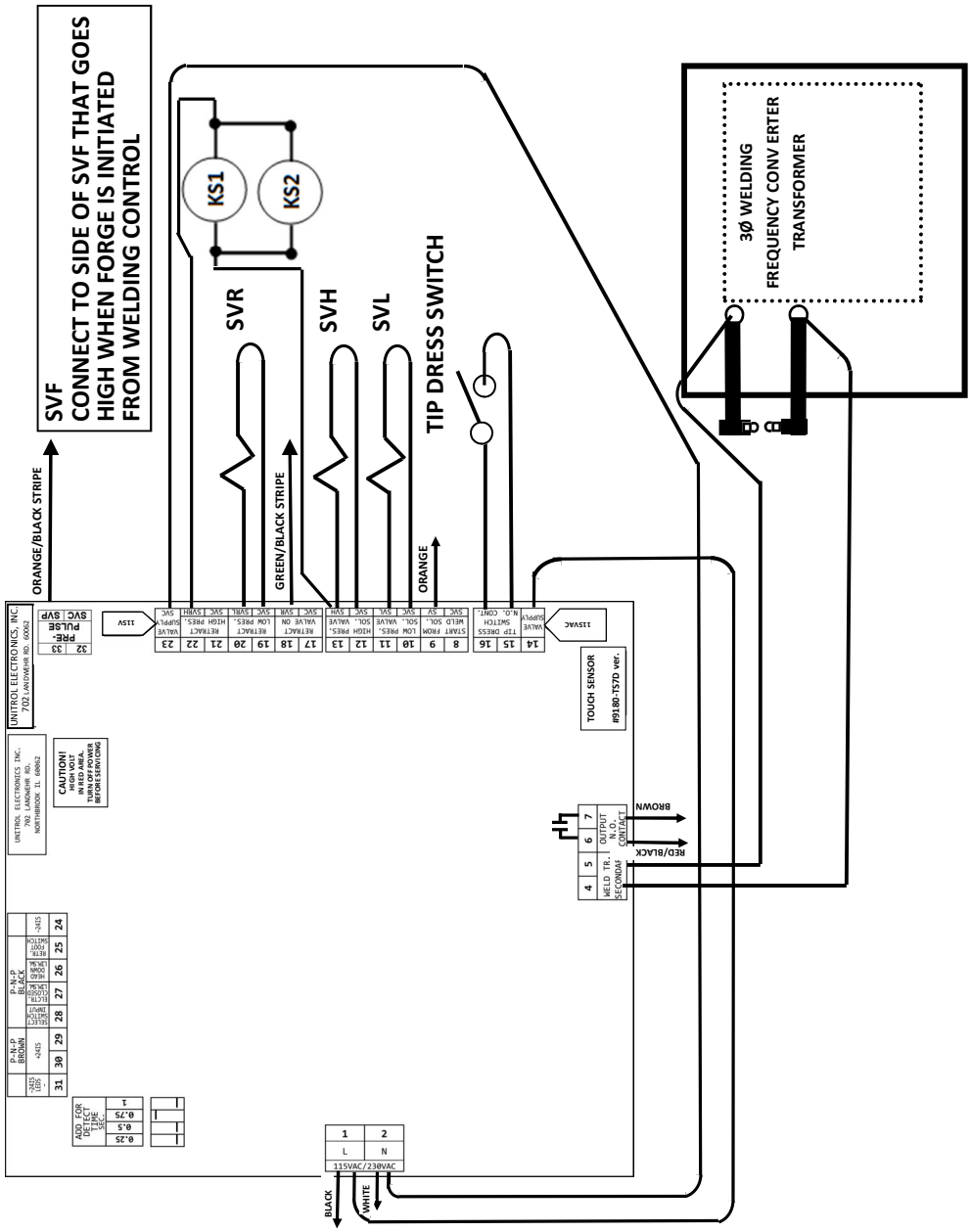
WIRING CONTROL

CONNECTING SIGNAL PICKUP WIRES

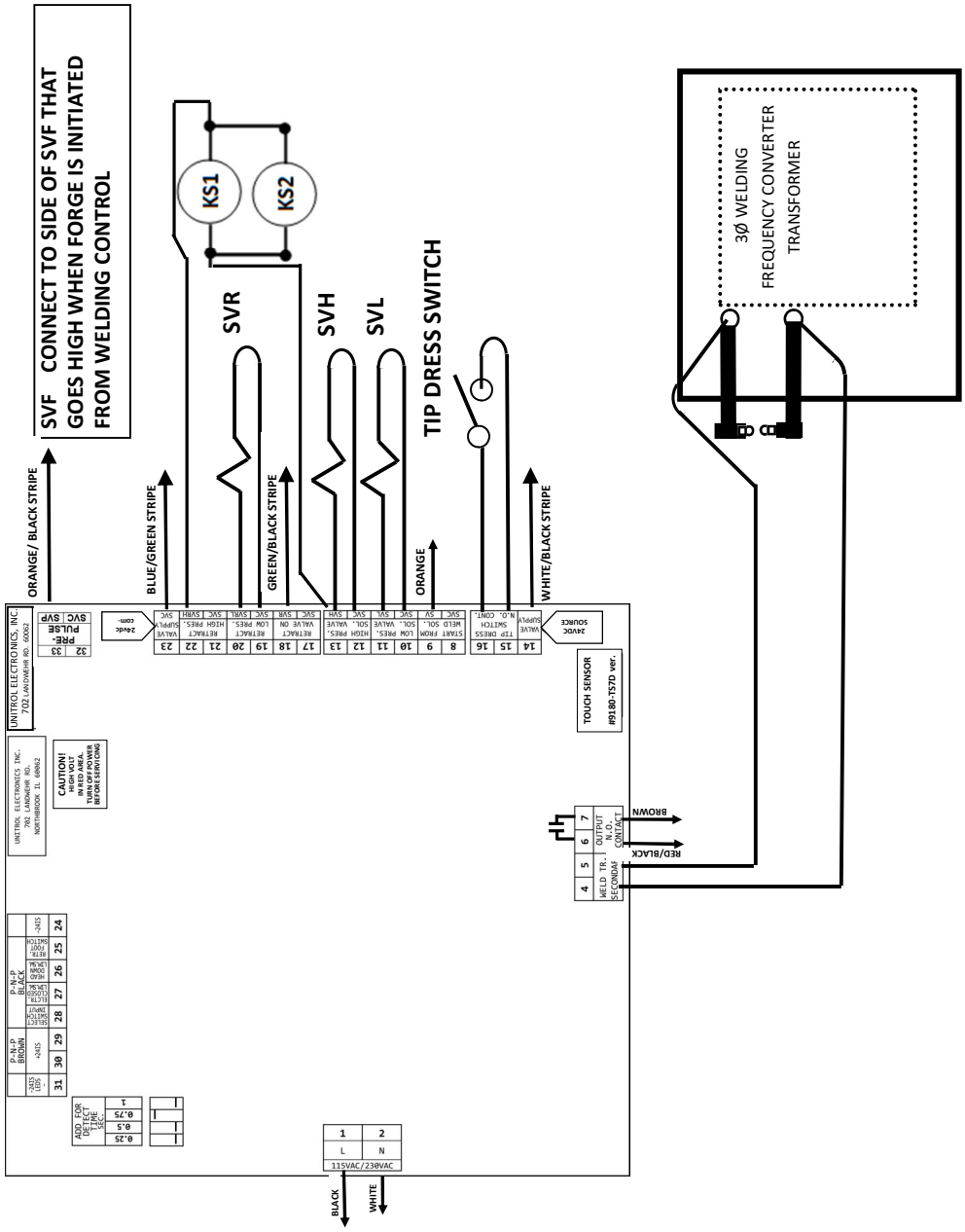
1. Connect the **two blue wires** from the bottom of the box to the upper and lower secondary pad on the welding transformer or any point close to the pad. See photos below for suggested areas for various types of welders.

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.**

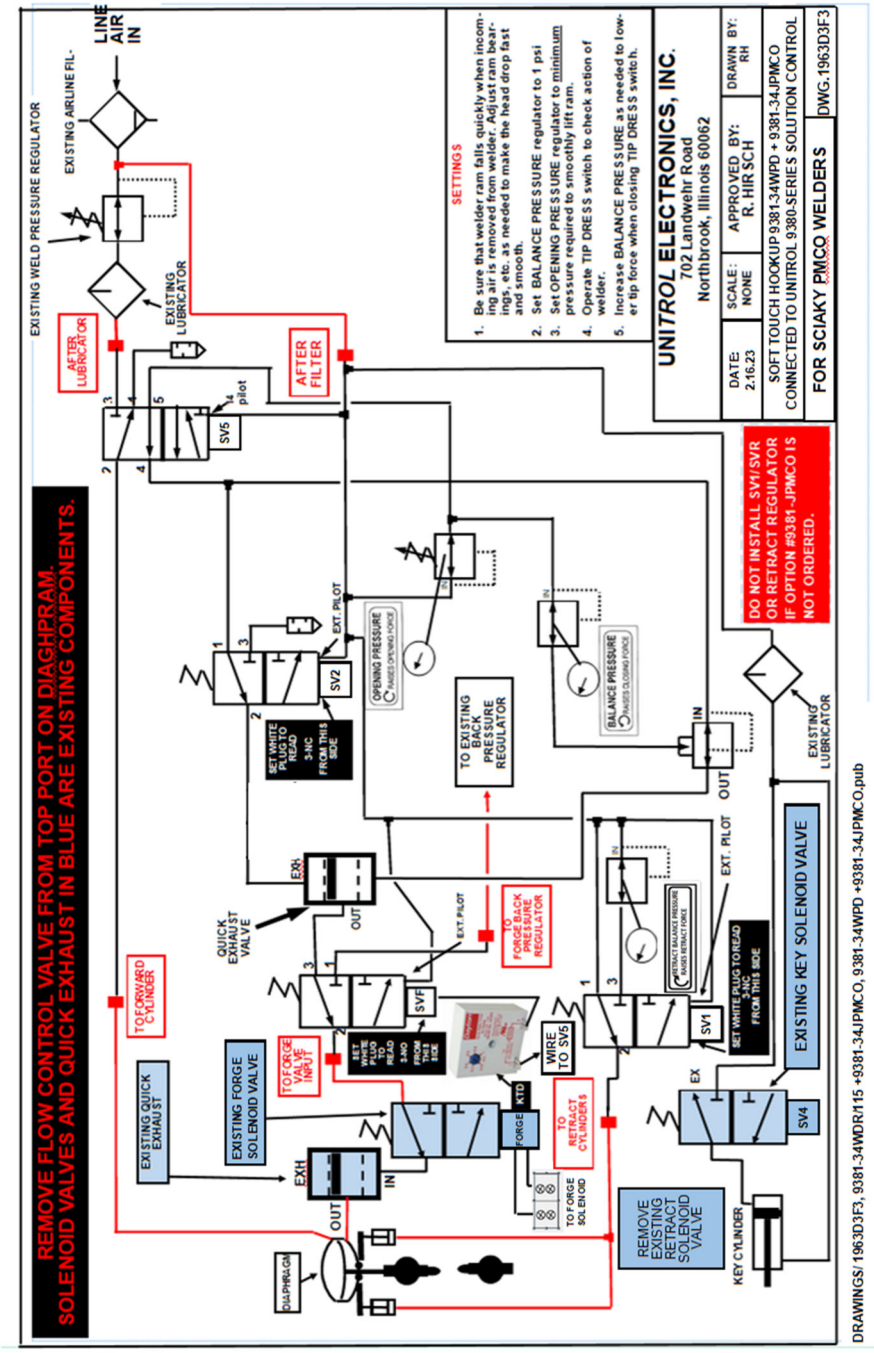
INSTALLATION
ELECTRICAL HOOK-UP DRAWING FOR
9381-RP/PMCO/115



INSTALLATION
ELECTRICAL HOOK-UP DRAWING FOR
9381-34RP/PMCO/24DC

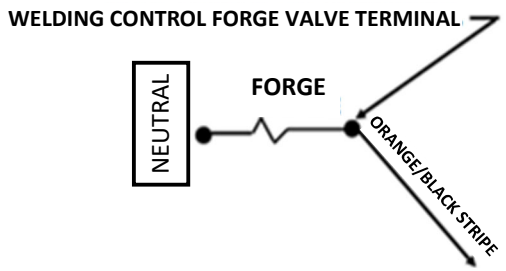


INSTALLATION

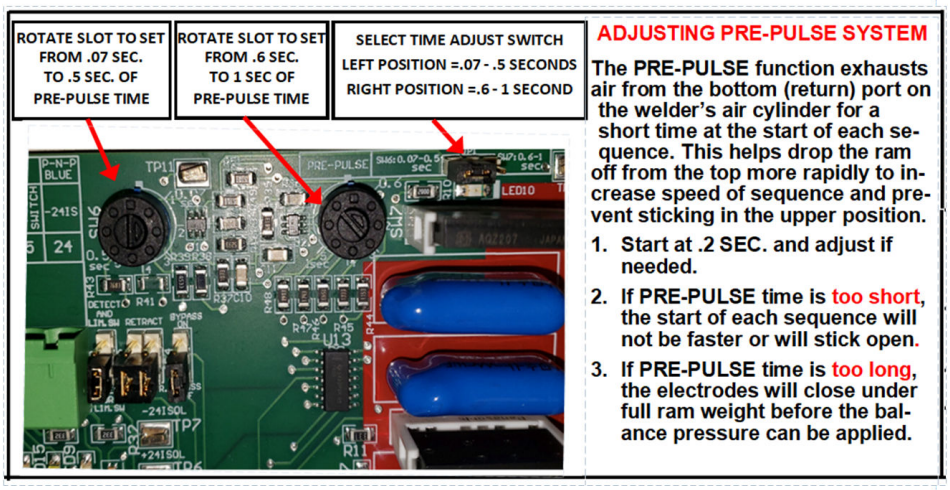


PRE-PULSE SYSTEM

The PRE-PULSE system will increase speed of each weld sequence. Wire the ORANGE/BLACK STRIPE wire to the welding control terminal that operates the FORGE solenoid valve. This will be the hot side (115V or 24VDC+) terminal.



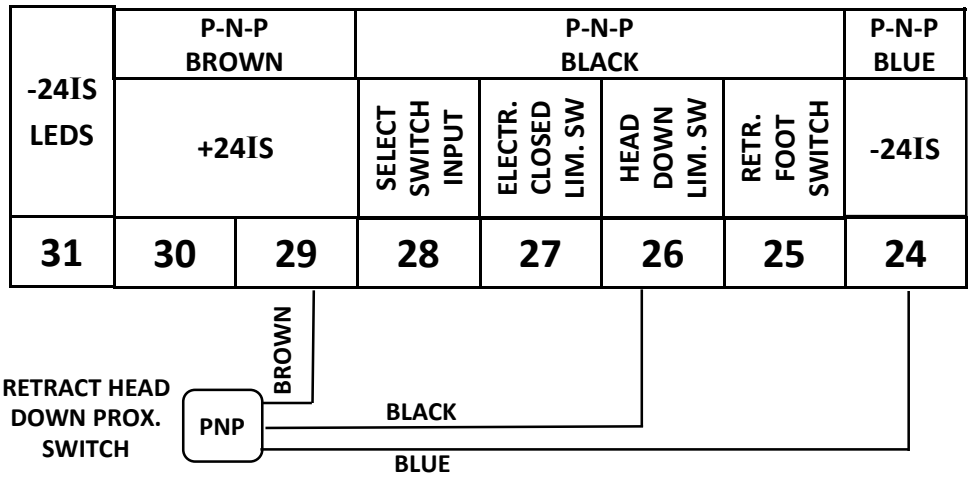
Do not wire to the common (neutral) terminal as this will cause major damage not covered by warranty.



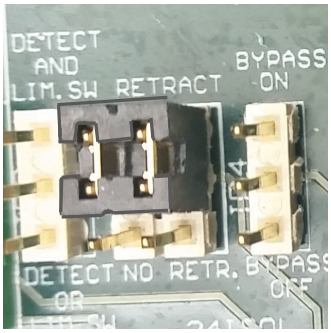
OPTIONAL RETRACT WITH SOFT TOUCH
9381-34JAPMCO

The RETRACT function starts when the RETRACT switch is closed and latched. This can be either the first stage of a 3-stage footswitch, or a separate footswitch. 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.



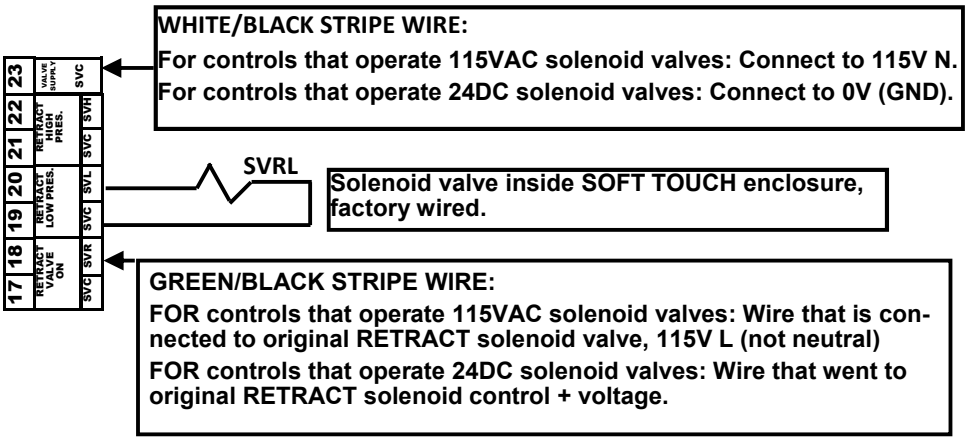
3. Move the double **RETRACT** jumper plug to the **RETRACT** (upper) position as shown. This is located near the top center of the board.



OPTIONAL RETRACT WITH SOFT TOUCH

9381-34JAPMCO (continued)

Remove the existing RETRACT solenoid valve and connect wire that originally powered the RETRACT solenoid valve as shown below.



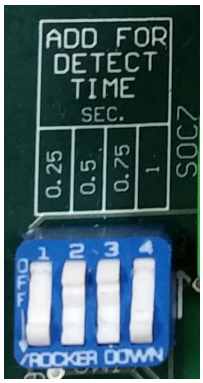
SCIAKY PMCO RETRACT SEQUENCE

9381-34JAPMCO

1. RETRACT latching footswitch is closed
2. Welding control sends voltage on green/black stripe wire to terminal 18.
3. New SVRL solenoid valve is energized to put low-pressure air on underside of two lifting RETRACT air cylinders to counterbalance part of head weight.
4. Electrodes lower to small gap opening with low force.
5. New HEAD DOWN proximity switch closes.
   a. Note that if this proximity switch does NOT close, the weld solenoid valves will not operate when the weld sequence is started.

1. Existing welder HEAD DOWN limit switch closes
2. Horizontal head key moves forward to lock head, and close KEY FORWARD limit switch.
3. Welding control releases RETRACT solenoid valve voltage.
4. Head assembly pushes upward to lock on the underside of the key lock.
5. System stays in this condition until the RETRACT footswitch is released.

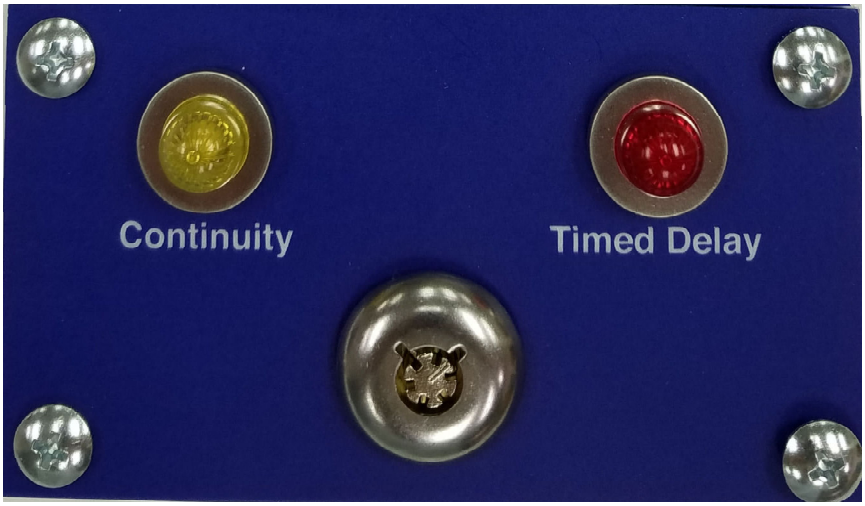
TIMED DELAY OPTION
9181-34BP



Some materials being welded have coatings or other conditions that prevent good continuity between electrodes. For these conditions option #9181-34BPA 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



DEPTH SWITCH OPTION 9181-34LSA, 9181-34LSB

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 low-conductivity coating.

INSTALLATION:

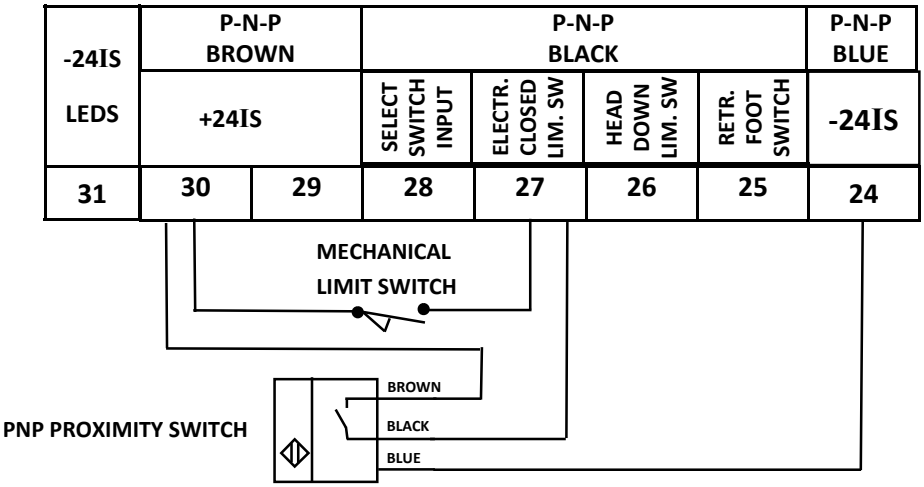
9181-34LSA: Mount the PNP proximity switch that is supplied with this option on the body of the welder using the mounting bar. Modify and bend as needed.

9181-34LSB: 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.

OPTIONAL DEPTH SWITCH 9181-34LSA, 9181-34LSB 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.*

OPTIONAL DEPTH SWITCH 9181-34LSC

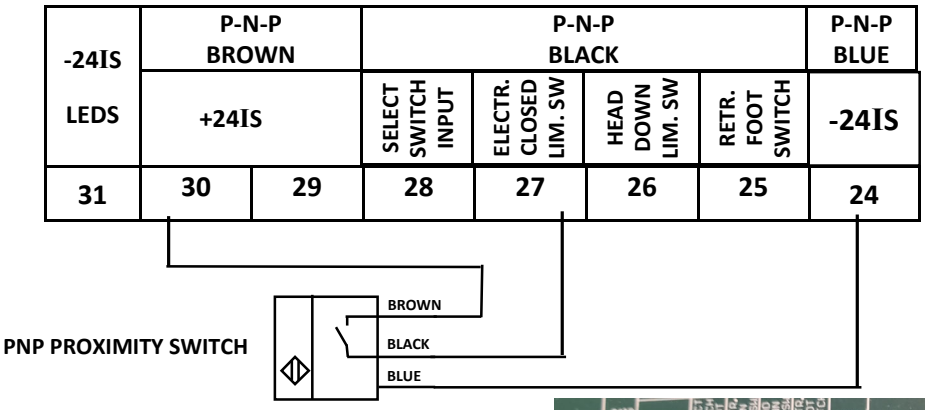
This option is a **redundant function** that allows the start of full welding force only after both electrode continuity **AND** depth switch closure. It does not include a remote selection switch and is always in place.

This option is supplied with a PNP proximity switch mounted so that it turns ON when the electrode spacing is at or less than 1/4". The PNP proximity switch and flat mounting bar is supplied with this option.

INSTALLATION:

1. Mount the flat mounting bar supplied with this kit in a location on the welder body that does not move and can be seen by a moving part of the electrode holder assembly. If necessary, fabricate another bar with slotted holes to bolt to the moving electrode holder. Adjust the bar on the moving electrode holder so that it just turns on the proximity switch when the electrodes are spaced at or less than 1/4".

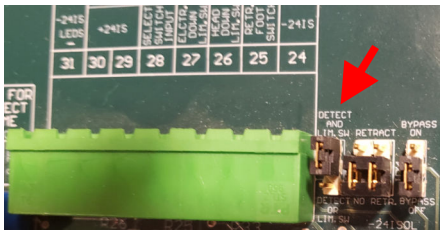
2. Wire the proximity switch as shown below.



3. Be sure that the selector jumper plug to the right of the top green terminal plug is set to the upper

DETECT AND LIM. SW.

position as shown in the this photo.



9381-34F2 FORGE DELAY FUNCTION

This option allows use of FORGE DELAY function in the welding control. It supplies three air pressures to the bottom port of the welding diaphragm or cylinder: OPENING PRESSURE, BUCKING PRESSURE for SOFT TOUCH, and BACKUP PRESSURE during variable-pressure welding. No special settings are needed to use this function.

ADJUSTING THE SOFT TOUCH VALVE SYSTEM

1. The ADVANCE PRESSURE puts air on the underside of the air diaphragm 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 1-psi.
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.

SETTING SOFT TOUCH BOARD MAXIMUM DETECT TIME SWITCHES

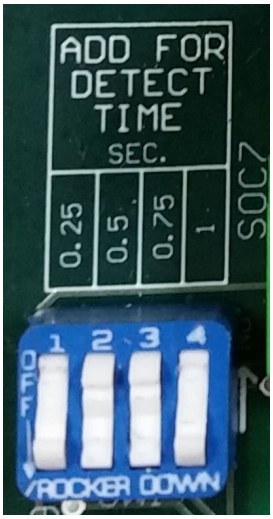
Locate the four-section **ADD FOR DETECT TIME** DIPswitch on the left side of each SOFT TOUCH board. This switch is marked: 1, .75, .5, and .25 seconds. Set the switches to a value that is about 2 times how long it will take for the electrodes to close. The on-board computer adds the value of these switches. 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.

SETTING MUST BE AT LEAST 1-1/2 TIMES SETTING OF TRACE DELAY SHOWN ON PAGE 26. MULTIPLY TOTAL DETECT TIME BY 60 TO GET TIME IN CYCLES.



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 SETTING the directions on page 9.

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.

SETTING SYSTEM READING SENSITIVITY

The continuity sensing system monitors the conditioned voltage from the flexible secondary current coil. The sensor board starts to monitor this voltage when the welding control sends the solenoid valve voltage to the sensor board to start a weld cycle. At that time, the signal injector circuit is sending a very low voltage into the welding transformer primary to generate a low voltage on the welder transformer secondary. When the electrodes close and make conductive path between them, the secondary voltage is reduced to almost zero.

This voltage is amplified and conditioned by the sensor board. If it drops below the selected minimum voltage, the sensor board will close the dry contact output terminal 6-7 to turn on the full welding force and signal the welding control to start the welding sequence.

This minimum voltage drop value can be set to make the system more or less sensitive.

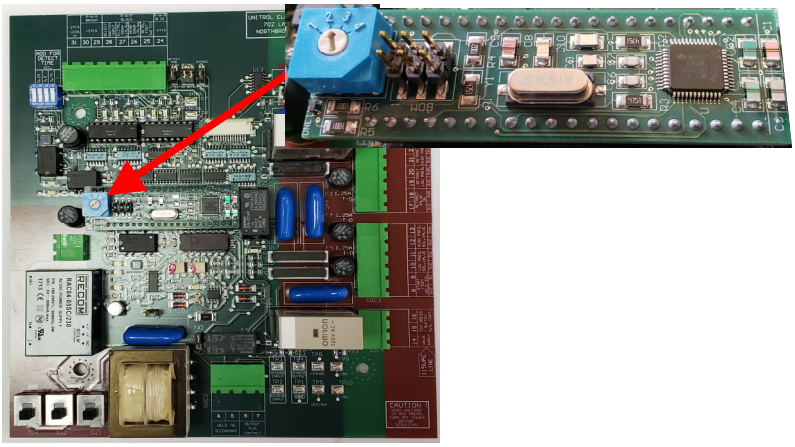
The setting positions are:

1 = 1/4volt 2 = 1/2volt 3 = 3/4volt 4 = 1volt

This switch is normally set on position 2 for 1/2 volt minimum rise.

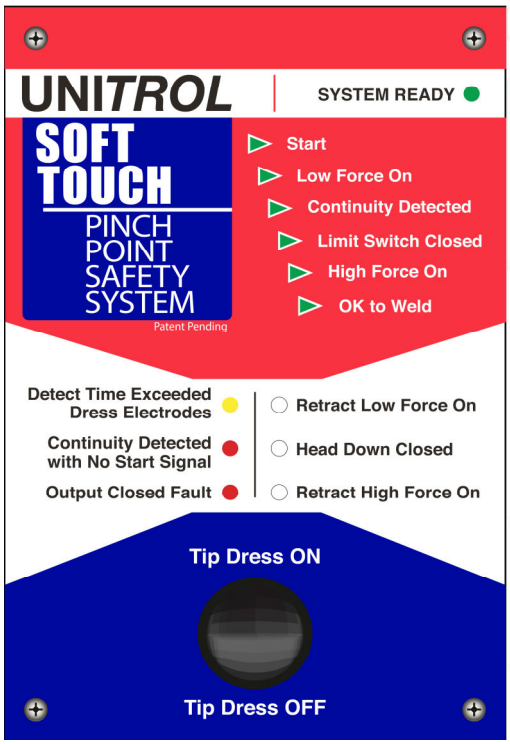
MAKE MORE SENSITIVE: If you are working with cross wire or high resistance metals and keep getting Detect Time Exceeded, try lowering this switch to 1.

MAKE LESS SENSITIVE: If you are experiencing random higher-speed closing, raise the switch position 3 or position 4.



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.



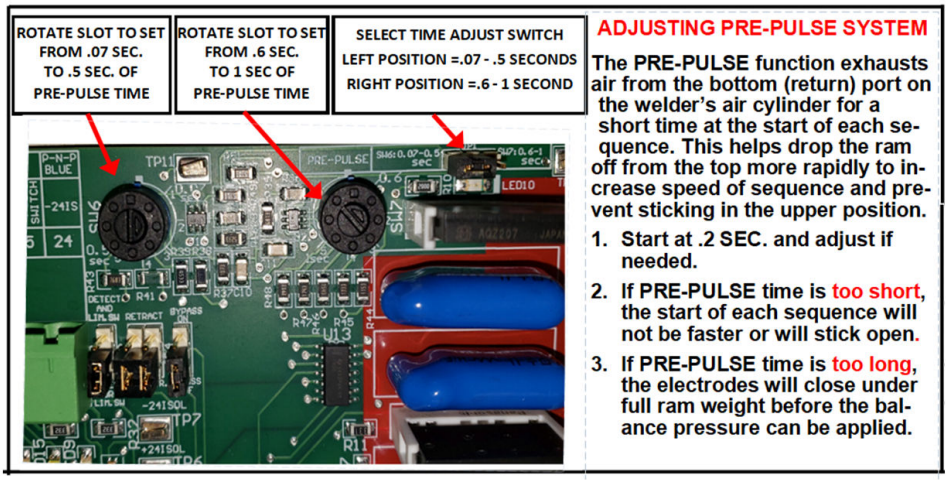
SUCCESSFUL SEQUENCE WITHOUT LIMIT SWITCH

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.

ADJUSTING PREPULSE SYSTEM



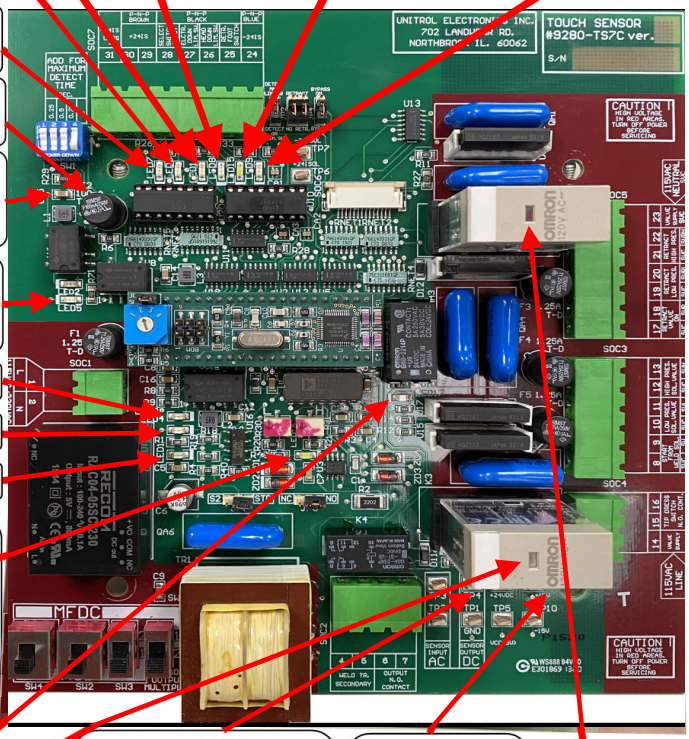
TROUBLE SHOOTING CHART

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 after initial LED flashing sequence (3 seconds)	No power to control.	Be sure that 115V is at terminals #1 and #2.
READY LED is on but is **flashing.** Slowly. Electrodes will not close when welding control is initiated.	SV input terminal has voltage	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. In this case, red light CONTINUITY DETECTED WITH NO START SIGNAL will glow. Turn of welder control valve output voltage..
Detect Time Exceeded. Dress Electrodes LED flashing	Not enough time allowed to close electrodes Poor electrode contact Low TRACE signal 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. Increase TRACE% pushwheels by 1% 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 K4 relay.

SOFT TOUCH SENSOR BOARD TS7

INDICATOR LIGHTS



LED14 (GREEN): IS ON WHEN RETR. FOOT SWITCH CONTACT IS CLOSED

LED8 (BLUE): IS ON WHEN RETRACT VALVE ON INPUT IS HIGH OR RETR. FOOT SWITCH CONTACT IS CLOSED

LED15 (WHITE): IS ON WHEN HEAD DOWN LIM. SW. CONTACT IS CLOSED

LED9 (ORANGE): IS ON WHEN START FROM WELD SOL. INPUT IS HIGH

LED6 (YELLOW): IS ON WHEN ELECTR. CLOSED LIM. SW. CONTACT IS CLOSED

LED7 (RED): IS ON WHEN SELECT SWITCH INPUT CONTACT IS CLOSED

100mA fuse for 24VIS ISOLATED VOLTAGE. USED FOR OUTSIDE SWITCHES

LED2: (ORANGE): 24VIS ISOLATED VOLTAGE. USED FOR OUTSIDE SWITCHES

LED5 (ORANGE): 24VDC USED FOR ELECTRONIC CIRCUITRY ON THIS BOARD

LED3 (ORANGE): +15VDC

LED4 (ORANGE): -15VDC

LED1 (ORANGE): +5VDC

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.

LED17 (RED): K1 SPURIOUS OPERATION RELAY IS ENERGIZED

WINDOW TURNS RED WHEN START FROM WELD SOL. INPUT VOLTAGE IS HIGH

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.

JP 5 IN "S2": LED WILL BE ON DURING STANDBY, OFF AFTER SV INPUT, AND ON WHEN CONTINUITY IS DETECTED.

LED512 (BLUE): OUTPUT N.O. CONTACT IS OPEN.

JP5 IN "STD": THIS IS THE NORMAL STAND-BY CONDITION.

JP5 IN "S2": THIS WILL BE OFF UNTIL SV INPUT. THEN WILL BE ON UNTIL CONTINUITY IS DETECTED.

WINDOW TURNS RED WHEN RETRACT VALVE ON INPUT IS HIGH OR RETR. FOOT SWITCH CONTACT IS CLOSED

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