Calibration of #9181-05 transducer

APPLICATION: The standard #9181-05 differential pressure transducer is calibrated to operate on a standard length cable. If field calibration is required, do the following steps:

CALIBRATION METHOD USING AIR PRESSURE

1. Disconnect all air from the welder and be sure all air is bled from the system. The welder head should fall by gravity (unless it is a package cylinder).

2. Open the main white power cabinet. **BE CAREFUL! FULL LINE VOLTAGE IS IN THIS BOX.**

3. Turn power on the control. If a circuit breaker is in this control, rotate the breaker shaft with an adjustable wrench.

4. After the control completes diagnostics, press: PROGRAM, 96, ENTER. The display should show:

TRANSDUCER IS ON

5. Press the STEP button until the display shows:

CHECK INPUT?	OR	CHECK PSI?

CHANGE1=YES,0=NO

6. Press **1** and the display will show:

PLEASE INITIATE

7. Close the foot or hand switch. The display will show:

AIR PRES.=## PSI

8. With no air on the welder, this value should be between 00 and 01. Locate two multi-turn pots on the pressure transducer board inside the white enclosure. They will have a red or white potting material. With a small flat blade screwdriver, rotate the **ZERO** pot clockwise until the value goes above 00. Now rotate counterclockwise until the values goes between 00 and 01 (will go back and forth). You have now set the zero point.

9. Now put air on the welder. **CAUTION: The electrodes will close.** Adjust the weld force regulator until the air pressure gage reads 80 psi. This should be done using an accurate air gauge on the regulator.

10. Rotate the **SPAN** pot so that the display shows the pressure to go between 81 and 82 psi. It is always preferable to have the reading 1 psi above reality to prevent the system from "hanging" while waiting for the last "drop" of air to enter the welding cylinder.

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11 Remove all air and be sure the regulator's gauge shows pressure at zero. If necessary, make minor adjustment to the **ZERO** pot until the reading is between 00 and 01 as before.

12. Repeat steps 9 - 11 until the values are correct at both ends.

CALIBRATION METHOD USING MEASURED TIP FORCE

If an **accurate electronic** tip force measuring device is available, the following procedure can be followed:

1 Place the force measuring device between the electrodes and remove all air from the welder. The electrodes should close on the measuring device. The reading will be the HEAD WEIGHT for this welder. Make a note of this value.

2. Turn power on control and after diagnostic have been completed, press: PROGRAM, 79, ENTER (see NOTE at the bottom of page 3). The display will show:

LB\PSI= ##.#

Be sure that the proper number is entered to represent your welder's mechanical system. See the TIP FORCE CALIBRATION section in the DIRECTIONS FOR USE section of the book that came with the SOLUTION control. **If this number is not correct, all readings will be in error!**

3. After the proper number has been entered, press STEP, and the display will show: HEAD WEIGHT = ###. Enter the number measured in step 1 above. A reasonable range would be between 50 and 250lb. Press STEP to exit.

4. Now press: PROGRAM, 96, ENTER. The display should show:

TRANSDUCER IS ON

5. Press the STEP button until the display shows:

CHECK TIP FORCE?

CHANGE1=YES,0=NO

6. Press **1**, and the display will show:

TIP FORCE=####LB

5. With no air on the welder, this value should be the HEAD WEIGHT **plus** between 1/2 and 1 times the value of LB/PSI entered in step 3 above. Locate two multi-turn pots on the pressure transducer board inside the white enclosure. They will have a red or white potting material. With a small flat blade screwdriver, rotate the **ZERO** pot clockwise until the value goes above the TIP FORCE value entered in step 3 above. Now rotate counterclockwise until the values goes between 00 and HEAD WEIGHT + 01 (will go back and forth). You have now set the zero point.

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6. Now put air on the welder. **CAUTION: The electrodes will close.** Adjust the regulator until the pressure is about 80 psi. In this case, the precision is not critical.

7. Rotate the **SPAN** pot so that the display shows the TIP FORCE value slightly **above** that read on the hand held precision electronic tip force measuring device.

8. Repeat steps 5 through 7 until the values are correct.

If any problems are found in this procedure, contact the Unitrol service department at 847-480-0115 for assistance.

NOTE:
These directions cover the S1 software group. On some SOLUTION controls, the LB\PSI value is on the second line of PROGRAM 96, and there is no place to enter HEAD WEIGHT. In this case, subtract the measured HEAD WEIGHT of step 1 from the reading of the test instrument and use this as the target for calibration.

For example, if the head weight (with all air removed from the welder) is 50lb., and the test instrument shows 1250 lb., the calibration should be against 1,250 - 50 = 1,200 lb.