Welding Technology Corporation
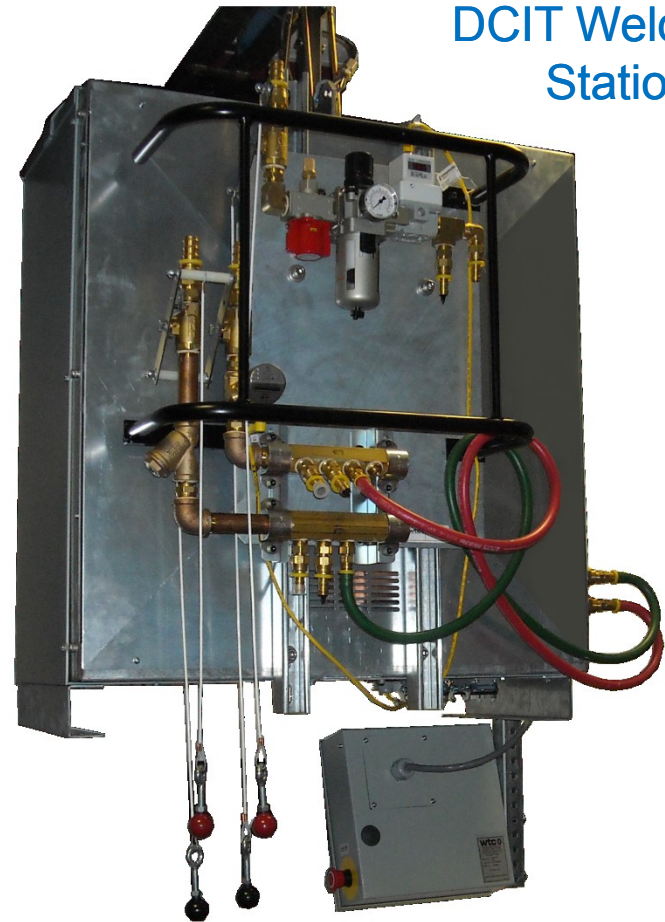
Pneumatic Controls
used for DCIT and AC Weld Gun Stations

Overview

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Pneumatic Panel

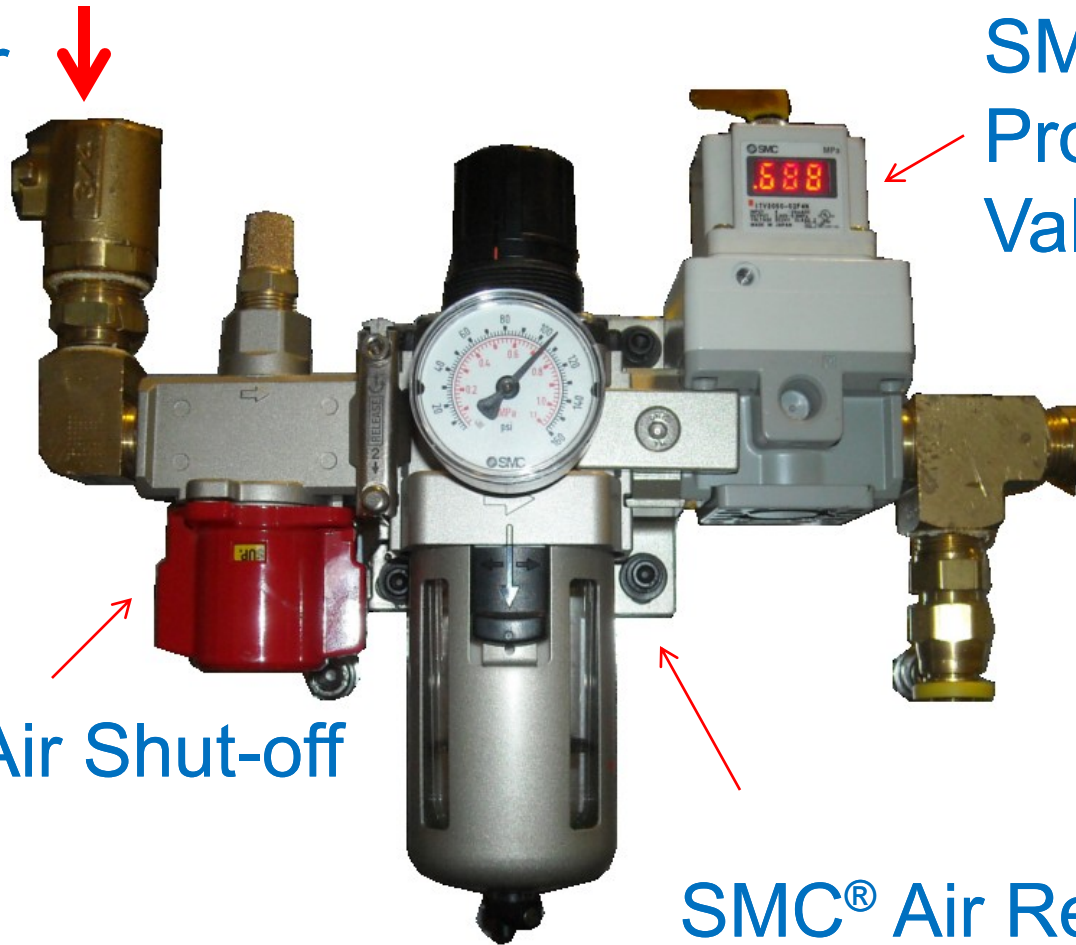AC Portable Weld Gun Station

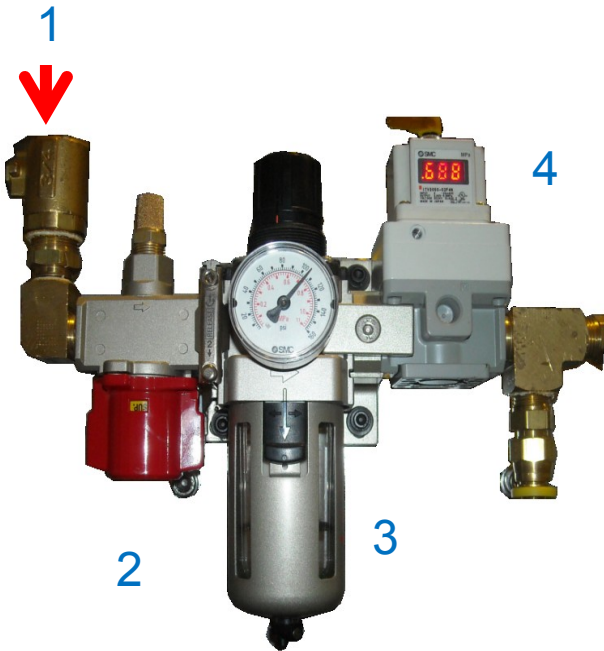DCIT Weld Gun Station

Pneumatic Controls

Input Air

SMC® Proportional Valve

Lockable Air Shut-off
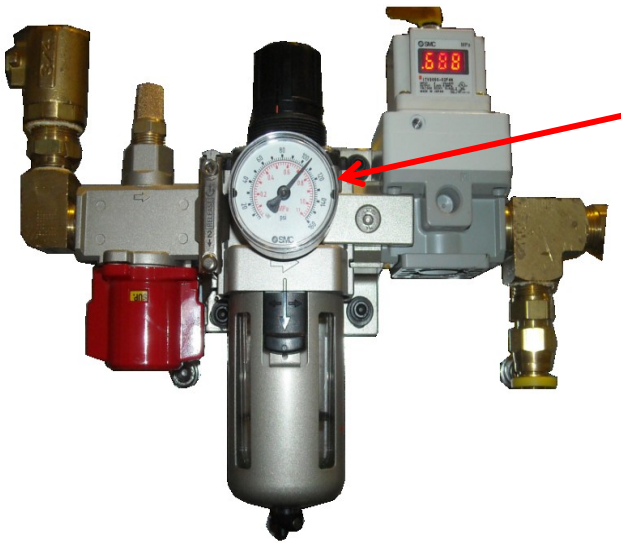
SMC® Air Regulator

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Pneumatic Controls

1. Understand the incoming air pressure requirements that are necessary for your welding applications. Ensure that the incoming air is a sufficient <u>margin</u> greater than the maximum air pressure required for advancing the weld gun and obtaining the necessary electrode forces.

2. Set the relieve valve to OPEN position so that the air presents itself to the SMC® regulator.

3. Adjust the SMC® regulator to provide maximum air pressure to the Proportional Valve.

4. Set the MAX and MIN pressure ranges for the Proportional Valve.
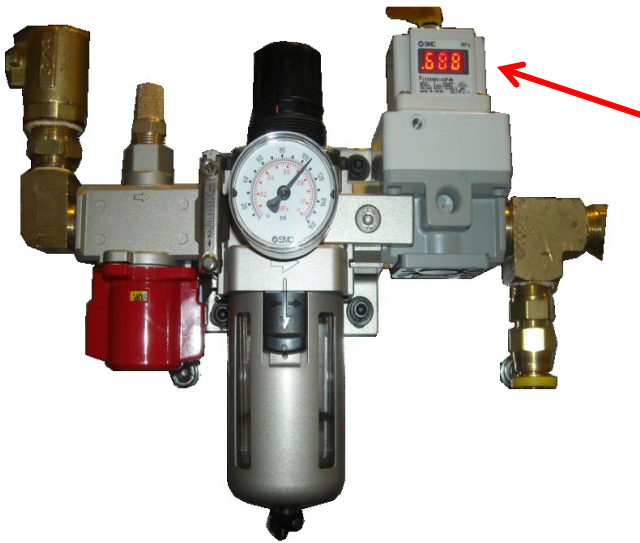
Pneumatic Controls

The full scale adjustment of the air regulator is 160PSI (1.1MPa).

Adjust the regulator output to be a slight margin over the maximum air pressure required by the maximum need of both welding guns attached to the PWS or DCIT weld guns.

Conversion Factor: 100PSI = 0.689MPa

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Pneumatic Controls

The Proportional Air Regulator needs to be programmed for use by the PWS or DCIT Station. Default values are set in the stations as they leave the factory.

The SMC document is available at:
http://www.smcworld.com/2002/instruction/e/ITV-E.pdf

This document requires the Japanese fonts for the Adobe reader to properly display the text.

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Adjust SMC® Proportional Valve

UNLOCK ▼

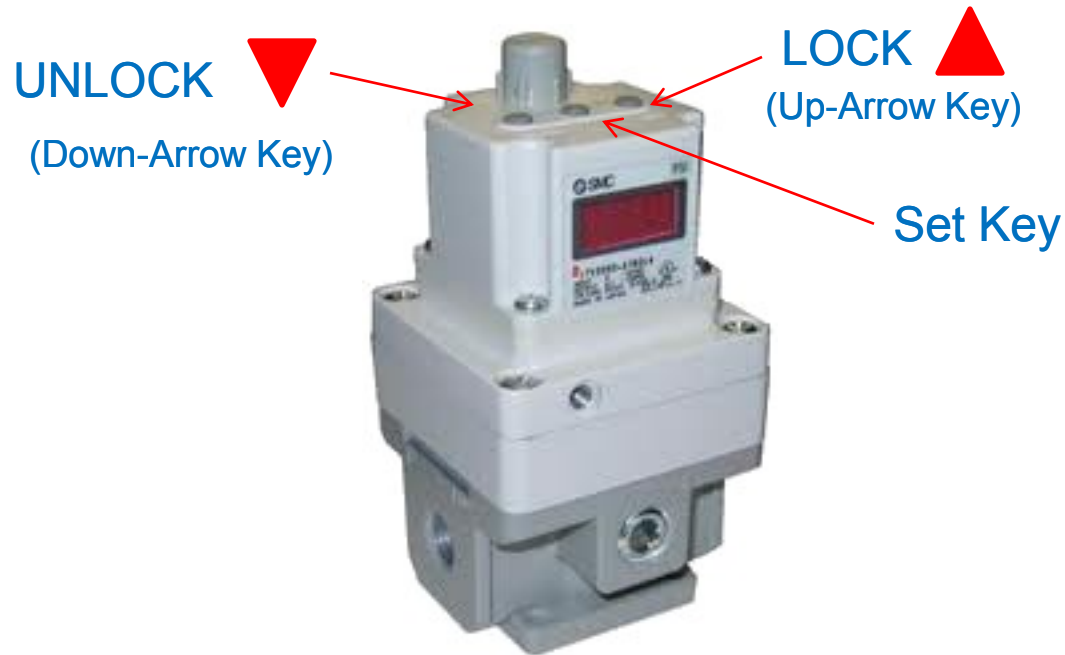(Down-Arrow Key)

LOCK ▲

(Up-Arrow Key)
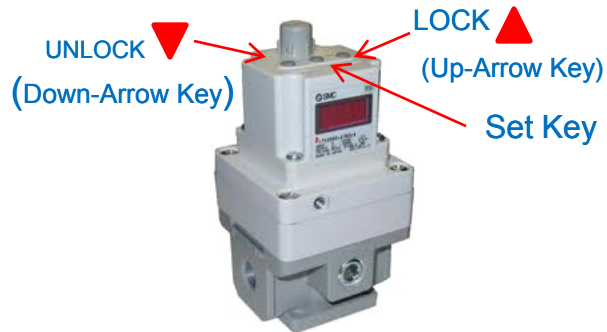
Set Key

The Proportional Air Regulator needs to be programmed for use by the PWS or DCIT Station. Default values are set in the stations as they leave the factory.

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Adjust SMC® Proportional Valve

UNLOCK ▼
(Down-Arrow Key)

LOCK ▲
(Up-Arrow Key)

Set Key

In order to reprogram the proportional valve, it will have to be unlocked.

Unlocking the Proportional Valve

Step No	KEY OPERATION	LED DISPLAY
1		Actual pressure is displayed in MPa
2	Press the UNLOCK key for 2 seconds	"Loc" is displayed and flashes on the screen
3	Press the SET key	"unL" is displayed for approximately 1 second
4		Actual pressure is displayed in MPa

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Adjust SMC® Proportional Valve

UNLOCK ▼
(Down-Arrow Key)

LOCK ▲
(Up-Arrow Key)
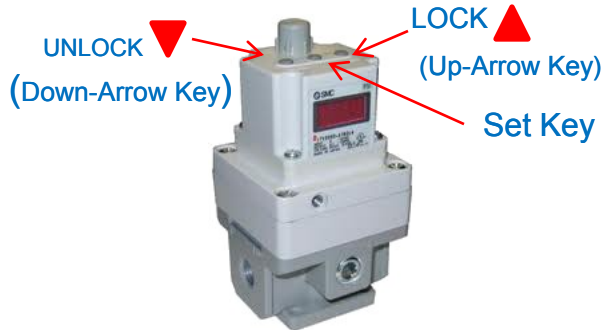
Set Key

Program the Minimum pressure (F1), Maximum Pressure (F2), and comparison window limits (P1, P2) into the PV.

Setting the values for F1, F2, P1, and P2

Step No	KEY OPERATION	LED DISPLAY
1	Make sure that PV is unlocked	
2	Press SET key	F1 (alternates with) x.xx values that is currently programmed
3	set minimum pressure by using the Up-Arrow or Down-Arrow	
4	Press SET key	F2 (alternates with) x.xx values that is currently programmed
5	set maximum pressure by using the Up-Arrow or Down-Arrow	
6	Press SET key	P1 (alternates with) x.xx values that is currently programmed
7	set the P1 value to 0.000 by using the Up-Arrow or Down-Arrow	
8	Press SET key	P2 (alternates with) x.xx values that is currently programmed
9	set the P2 value to 0.000 by using the Up-Arrow or Down-Arrow	
10	Make sure that PV is locked	

P1 = P2 = 0.00;
The switch output turns ON when set pressure achieved

Adjust SMC® Proportional Valve

UNLOCK ▼
(Down-Arrow Key)

LOCK ▲
(Up-Arrow Key)

Set Key
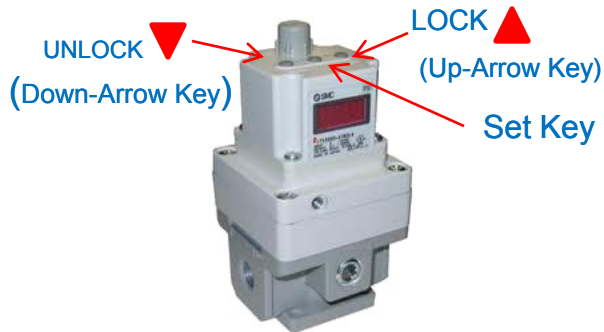
Resetting the Proportional valve to its factory defaults is accomplished by pressing the UNLOCK and LOCK keys simultaneously for 3 seconds or more.

The PWS and DCIT are shipped from WTC as follow:
F1 = 0.00; F2 = 0.80; P1 = 0.00; P2 = 0.00

WTC recommends that the user establish a norm for all their plant floor requirements.

Normally, the F1, P1, and P2 values are always set to 0.00
The F2 value must be a slight margin higher than the maximum value required by the maximum welding application and also must be slightly below the regulator pressure.

Some users want to equate the programming values in SETUP and Schedule as PSI so the value for F2 would be programmed as 0.689 MPa, that being equal to 100PSI.

P1 = P2 = 0.00;
The switch output turns ON when set pressure achieved

Adjust SMC® Proportional Valve

UNLOCK ▼
(Down-Arrow Key)

LOCK ▲
(Up-Arrow Key)

Set Key
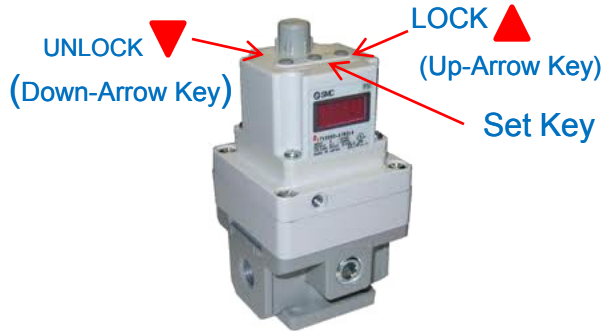
In order to run the valve, you will need to lock the unit.

Locking the Proportional Valve

Step No	KEY OPERATION	LED DISPLAY
1		Actual pressure is displayed in MPa
2	Press the LOCK key for 2 seconds	"unL" is displayed and flashes on the screen
3	Press the SET key	"Loc" is displayed for approximately 1 second
4		Actual pressure is displayed in MPa

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Programming Values in WTC Controls

There are two areas for programming the output air pressure.

First there is the VALVE INITIAL PRESSURE in the SETUP Parameters.

The value is programmable from 00 to 99 as percentage of F2 setting; hence if the F2 setting is 0.800 and VALVE INITIAL PRESSURE = 50, the Proportional Valve will output 0.400 MPa to the weld gun.

SETUP

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Programming Values in WTC Controls

There are two areas for programming the output air pressure.

Then there is the SET PRESSURE function in the schedules.

There are schedules for welding and schedules for tip dressing. Function Code 56 is the SET PRESSURE and is programmable from 00 to 99. These values are percentage from the maximum F2 setting. So if F2 = 0.800; a SET PRESSURE 50 would result in 0.400MPa output to the weld gun.

SCHEDULE

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