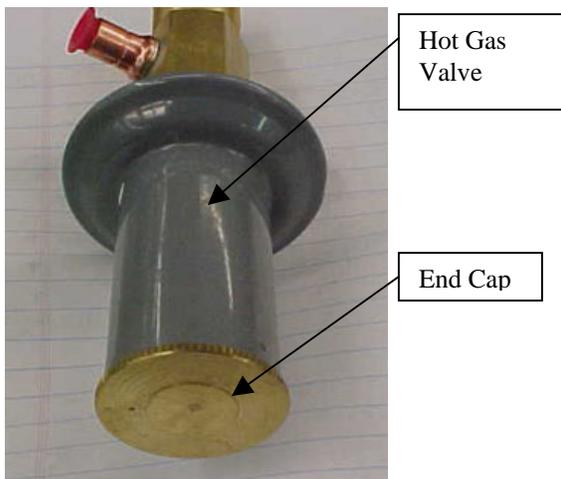
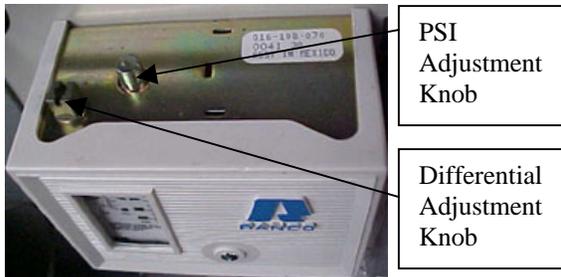
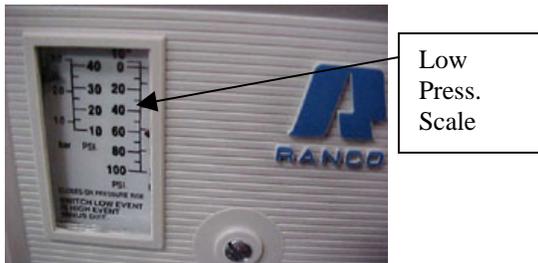
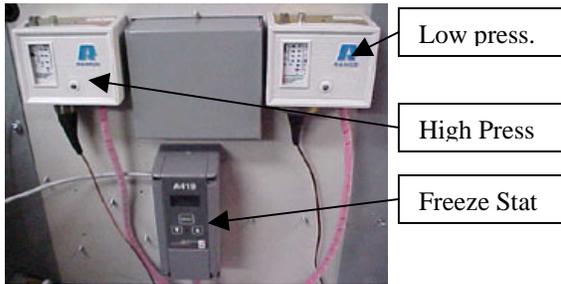


## Operation of Chiller below 50°F

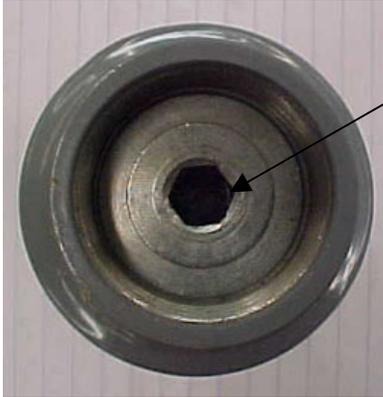


**WARNING: USE A PURE ETHYLENE GLYCOL/WATER MIXTURE IN THE ICEMAN CHILLER SYSTEM. DO NOT USE AUTOMOTIVE ANTIFREEZE! AUTOMOTIVE ANTIFREEZE WILL CAUSE DAMAGE TO THE SYSTEM, VOIDING YOUR WARRANTY AND RESULT IN REDUCED EFFICIENCY.**

- 1) Contact Mokon Customer Service Department for assistance on setting the controller.
- 2) Add Ethylene Glycol to the system according to chart below.

Fluid Temperature from System	% Glycol	% Water
44°F – 32°F (7°C to 0°C)	10	90
31°F – 25°F (-6°C to -4°C)	15	85
24°F – 20°F (-4°C to -7°C)	20	80

- 3) It will be necessary to adjust the Freeze stat to 5°F below the operating temperature. Contact Mokon Customer Service Department for procedures and approval.
- 4) On some models it may be necessary to adjust the Low Pressure safety switch and the Hot Gas Bypass Valve. Locations will vary. See pictures to the left.
- 5) The scale on the face of the switch will identify the Low-pressure switch. One scale ranges from 10 – 40 psi and the other ranges from 0 – 100 psi. **Do not adjust the High-pressure switch. This will cause a dangerous environment. Adjust the psi adjustment knob to the scale reads 45 psi and adjust the Differential knob to read 25 psi.**



**Hot Gas  
Valve  
Adjustment**



**Adjusting  
the Hot  
Gas Valve**

- 6) To adjust the hot gas bypass valve it will be necessary to have the chiller running under no load. Remove the brass end cap and use a 5/16 hex wrench to turn the adjusting screw (**counterclockwise decrease setting/clockwise to increase setting**)  $\frac{1}{4}$  turn and let unit run for a minimum of 15 minutes. (**Each complete revolution of the adj. screw will result in a 13.5-psi change on  $\frac{1}{2}$  and 1-ton systems and a 7.5-psi change on 2-20 ton systems.**) Repeat this procedure until the valve **maintains 30 psi** or the unit shuts down on low pressure. If the unit shuts down on low pressure the valve was adjusted to far. Back off  $\frac{1}{4}$  turn.

# Eurotherm 2200 Series Procedure to Set High/Low Temperature Range

Press "Page" button...until "ALCS" appears in the upper display.

Press "scroll" button...until "codE" appears in the upper display.

Enter "2150"... "PASS" will appear in the lower display.

Press "scroll" button...until "GoTo" appears in the upper display.

Press "up" button...until "FuLL" appears in the lower display.

Press "Page" button...until "SP" appears in the upper display.

Press "scroll" button...until "SP LL" appears in the upper display.

Press "up" or "down" buttons to achieve the desired "set point low limit".

Press "scroll" button...until "SP IH" appears in the upper display.

Press "up" or "down" button to achieve the desired "set point high limit".

Press "page" button...until "ALCS" appears in the upper display.

Press "scroll" button...until "codE" appears in the upper display.

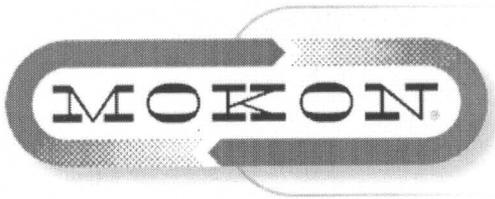
Press "up" button...until "0" appears in the lower display.

Pressing the "page" and "scroll" simultaneously, returns the controller to the normal display.



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9/10/2004



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## CHANGE SETPOINT ON FREEZESTAT CONTROL (Johnson Controls Thermostat)

- 1) Tool required, ¼" flat screwdriver.
- 2) Shut all power off to unit.
- 3) Remove cover (Johnson control).
- 4) Remove jumper on P5 off of one terminal (located upper left side).
- 5) Attach jumper on both of the terminal pins P5.
- 6) Install cover and turn power on unit.
- 7) Press the "MENU" button twice
- 8) Press the up or down arrow to adjust setpoint.
- 9) Press the "MENU" button once
- 10) Shut all power off to unit.
- 11) Remove cover and remove jumper off of P5 and re-attach jumper on P5 on only one terminal pin. **NOTE: only one pin will be showing.** Install cover and tighten securely.
- 12) Setpoint will be locked to new setpoint.

# A djustments

This section provides instructions for adjusting the A419 control using jumpers and keypad.

**CAUTION:** Verify that the Cooling/Heating jumper is positioned properly before powering the A419 control. If not, the device may activate the relay in response to the opposite signal.

## Positioning the Jumpers

Jumpers P4 labeled Heat, P4 labeled Cut-out, and P5 labeled Unlock configure the A419 for either the Cooling or Heating mode of operation, Cut-in or Cut-out at setpoint, and to lock or unlock the keypad.

To remove any jumper, reposition the jumper so it is connected to just one pin on the control board. To install a jumper, connect the jumper to both pins. See Figure 9.

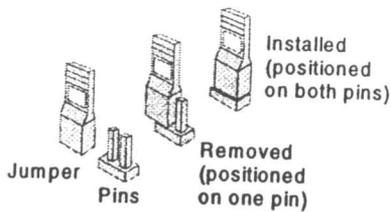


Figure 9: Jumper Placement

Set the jumpers as follows, using Figures 9 and 10 as guides.

1. Remove the A419 cover by loosening the four captive cover screws.
2. Position the jumpers to set Cooling/Heating, Setpoint, and Keypad Lock functions.
3. Replace the cover and fasten in place with the four screws.

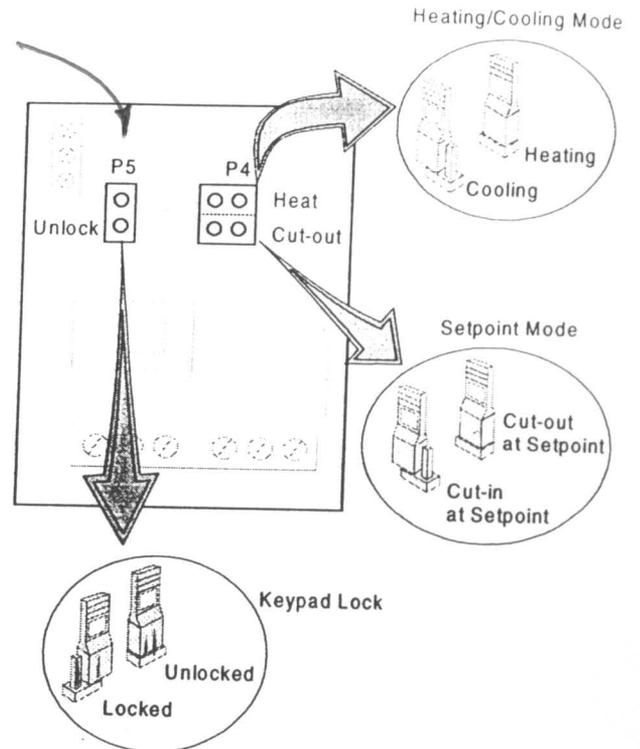


Figure 10: Jumper Positions

Table 3: Jumper Settings

Function	Jumper Label	Setting	Jumper Position*	Factory Setting
Cooling/Heating	P4-Heat	Cooling	Removed	Cooling
		Heating	Installed	
Setpoint	P4-Cut-out	Cut-in	Removed	Cut-in
		Cut-out	Installed	
Keypad Lock	P5-Unlock	Locked	Removed	Unlock
		Unlocked	Installed	

\* Do not discard a removed jumper in case you need to restore the jumper to its installed position in the future. This is especially important in the Keypad Lock function because, without the jumper, you cannot unlock the keypad.

## CHILLER DERATING

The operating temperature or the fluid temperature leaving the chiller, as well as the ambient air temperature may be a factor when sizing or selecting a chiller. If operation temperature (fluid temperature) is to be below 50°F, the chiller must be derated or oversized to meet the processing cooling requirements. A *Rule of Thumb* for derating chiller is as follows:

For every 10°F below 50°F operation, capacity will be reduced by 20%. Therefore, at 40°F operation, the output will be 80% and at 30°F operation, the output will be 60% of the charted tonnage. Thus, a 5 ton chiller operating at 40°F will have a capacity of only 4 tons of chilling.

If ambient air temperature is above 90°F, a water-cooled condenser should be considered. If air-cooled is required, efficiency will decrease. A *Rule of Thumb* is for ambient air over 90°F, every 5°F reduces the efficiency of the chiller by 10% - Consult factory for proper sizing!

**Automotive glycols are not recommended for use in chiller systems due to the waxy deposits that will form on the internal components at lower temperatures, which reduce efficiency and hampers the systems operation.** Pure ethylene glycol should only be used and it is recommended that a food coloring be added to distinguish that glycol is present in the system.

**Please note** - should an automotive glycol be used in a system, warranty will be **VOID!!!**

## Water Glycol Mixtures

Percent Glycol (%)	Capacity Loss (%)
0	0.0
5	2.1
10	4.2
15	6.3
20	8.5
25	10.6
30	12.7
35	14.8
40	16.9
45	19.0
50	21.1
55	23.2
60	25.4
65	27.5
70	29.6
75	31.7
80	33.8
85	35.9
90	38.0
95	40.2
100	42.3