

**READ AND SAVE THESE INSTRUCTIONS**

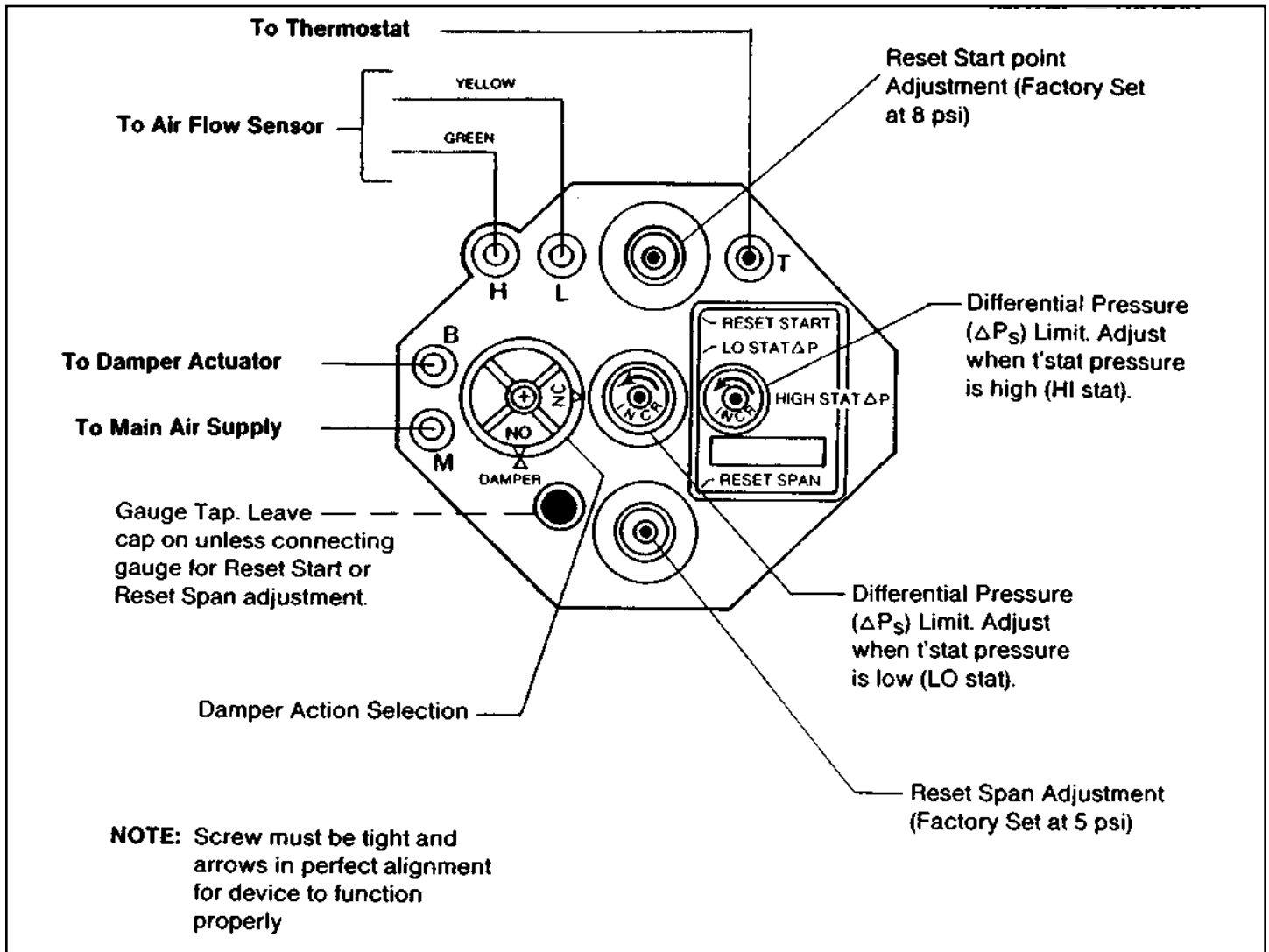
**CARNES®**

**INSTALLATION and OPERATION MANUAL**

CARNES COMPANY 448 S. Main St., P. O. Box 930040, Verona, WI 53593-0040 Phone: (608)845-6411 Fax: (608)845-6470 www.carnes.com

**MULTI-FUNCTION RESET VOLUME  
CONTROLLER (CSC-3011 NO/NC—DA/RA)**





**NOTE:** Screw must be tight and arrows in perfect alignment for device to function properly.

### SPECIFICATIONS

<i>Air Consumption:</i>	1.0 scfh @ 20 psig (28.8 scim @ 20 psig)
<i>Ambient Limits:</i>	+40°F to +120°F operating
<i>Damper Action:</i>	Normally Open or Normally Closed (Field Adjustable)
<i>Thermostat Action:</i>	Direct or Reverse Action for Heating or Cooling
<i>Differential Pressure Range:</i>	0.0 to 1.0" water gauge
<i>Main Air Pressure:</i>	15 to 30 psig
<i>Maximum Setpoint Range:</i>	Minimum to 1.0" water gauge
<i>Minimum Setpoint Range:</i>	0.0 to 1.0" water gauge
<i>Reset Pressure Span:</i>	0.0 to 10.0 psig (Field Adjustable)
<i>Reset Start Point:</i>	0.0 to 10.0 psig (Field Adjustable)
<i>Weight:</i>	11 Ounces (312 Grams)

## MULTI-FUNCTION CONTROLLER SET-UP:

1. *Verify Controller Piping* — Repair any loose or kinked tubing.
  - Port B: Damper Actuator
  - Port M: Clean, Dry Main Air
  - Port T: Thermostat
  - Port H: Total Pressure Air Flow Tap (Green Tube)
  - Port L: Static Pressure Air Flow Tap (Yellow Tube)
2. *Check Main Air pressure (M)* 20 psig clean, dry air required.
3. To field select/change damper action of the multi-function controller, loosen the damper selection switch screw and align desired “NO” or “NC” pointer with the damper pointer and tighten screw.

## CALIBRATION PROCEDURE:

1. Controller calibration may require readjustment if the controller orientation has been changed by either relocating the controller or changing the terminal unit mounting position from standard horizontal mounting.
2. Remove caps from the Inlet Sensor (*opposite side of tubing connections.*)
3. *Connect a different pressure gauge across the Inlet Sensor Tubes. **Green Tube** (or Black with Green Stripe) is the Total Pressure (“HI” Signal). **Yellow Tube** (or Black with Yellow Stripe) is the Static Pressure (“LO” Signal).*
4. Reference the Airflow Calibration Chart or on the unit for Delta P versus CFM values.
5. *Direct Acting Cooling or Reverse Acting Heating:*
  - A. Adjust **LO Stat**  $\Delta P$  to the desired **minimum** airflow limit with zero (0) psi at port **T**. (*Thermostat set to full heat*).
  - B. Adjust **HI Stat**  $\Delta P$  to the desired **maximum** airflow with twenty (20) psi at port **T**. (*Thermostat set to full cool*).
6. *Reverse Acting Cooling or Direct Acting Heating:*
  - A. Adjust **LO Stat**  $\Delta P$  to the desired **maximum** airflow limit with zero (0) psi at port **T**. (*Thermostat set to full cool*).
  - B. Adjust **HI Stat**  $\Delta P$  to the desired **minimum** airflow with twenty (20) psi at port **T**. (*Thermostat set to full heat*).
7. *When Calibration is complete, Set zone thermostat to desired room temperature.*
8. *Remove Differential Pressure Gauge from the Inlet Sensor.*
9. *Replace Inlet Sensor Caps.*
10. *To Field Adjust Reset Start Point (Factory Set at 8 psi).*
  - A. Connect a 0-30 psi gauge to port **G**.
  - B. Regulate thermostat pressure, to port **T**, to the desired start point pressure.
  - C. Adjust Reset Start to indicate zero (0) psi to port **G** gauge, then adjust Reset Start to indicate a pressure slightly higher than zero (0) psi., i.e. 0.1 psi.
11. *To Field Adjust Controller Reset Span (Factory Set at 5 psi):*
  - A. Connect a 0-30 psi gauge to port **G**.
  - B. Regulate thermostat pressure, to port **T**, to 20 psi.
  - C. Adjust Reset Span to indicate the desired span on the port **G** gauge.

- NOTES:**
1. Reset Span adjustments will affect the **HI STAT**  $\Delta P$  setting. The Reset Span adjustment must be adjusted first or the **HI STAT**  $\Delta P$  will require readjustment.
  2. **LO STAT**  $\Delta P$  adjustment will affect the **HI STAT**  $\Delta P$  setting. The **LO STAT**  $\Delta P$  adjustment must be adjusted first or the **HI**  $\Delta P$  will require readjustment.
  3. Allow 2-3 minutes between **HI** and **LO** limit adjustments for controller and damper to stabilize.
  4. Reset span effect range proportionally.

# TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	CORRECTION
<p><b>Damper actuator will not stroke.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Insufficient main air supply pressure.</i></li> <li>2. <i>Low inlet static pressure.</i></li>   <li>3. <i>Leak in the control line.</i></li> <li>4. <i>Leak in the actuator.</i></li>   <li>5. <i>Pneumatic control line connections reversed.</i></li> <li>6. <i>Incorrect reset controller calibration.</i></li> <li>7. <i>High and Low pressure sensor tubes are reversed to the controller.</i></li> <li>8. <i>Caps missing from sensor tubes.</i></li> <li>9. <i>Damper linkage jammed or binding.</i></li> <li>10. <i>Debris inside terminal unit.</i></li> <li>11. <i>Faulty controller.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. The controller must receive 15-30 psi compressed air from the main supply to port "M".</li> <li>2. Measure the CFM delivered by the unit with the damper in the full open position. If the CFM is low increase the system static.</li> <li>3. Replace tubing.</li> <li>4. Apply 13-20 psi air to the actuator with a squeeze bulb.</li> <li>4A. If the actuator does not stroke, manually move linkage. If it is jammed, see 9 or 10 below. If actuator still does not stroke, replace actuator.</li> <li>4B. If actuator strokes but does not remain fully stroked or bleeds faster than pressure can build replace actuator.</li> <li>5. Be sure all connections are shown in the pneumatic control piping diagram on the side of the unit.</li> <li>6. Refer to calibration procedure.</li> <li>7. Be sure all connections are as shown in the pneumatic control piping diagram on the side of the unit.</li> <li>8. Replace caps. (Part No. 999-6505).</li> <li>9. Adjust linkage for free operation.</li> <li>10. Disconnect duct and remove debris from inside.</li> <li>11. Replace controller.</li> </ol>
<p><b>Damper actuator remains full stroked at all times.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Low inlet static pressure.</i></li>   <li>2. <i>Pneumatic control line connections are reversed.</i></li> <li>3. <i>High and Low sensor tubes are reversed to the controller.</i></li> <li>4. <i>Caps missing from sensor tubes.</i></li> <li>5. <i>Incorrect reset controller calibration.</i></li> <li>6. <i>Debris inside terminal unit.</i></li> <li>7. <i>Faulty controller.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Measure the CFM delivered by the unit with the damper in the full open position. If the CFM is low, increase the system static.</li> <li>2. Be sure all connections are as shown in the pneumatic control piping diagram on the side of the unit.</li> <li>3. Be sure all connections are as shown in the pneumatic control piping diagram on the side of the unit.</li> <li>4. Replace caps. (Part No. 999-6505)</li> <li>5. Refer to calibration procedure.</li> <li>6. Disconnect duct and remove debris from inside.</li> <li>7. Replace controller.</li> </ol>
<p><b>Low air flow through box on a call for max. CFM.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Thermostat not set to call for maximum CFM.</i></li> <li>2. <i>Low inlet static pressure.</i></li>   <li>3. <i>Incorrect reset controller calibration.</i></li> <li>4. <i>Debris inside terminal unit.</i></li> <li>5. <i>Faulty controller.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust thermostat to call for full cooling.</li>   <li>2. Measure the CFM delivered by the unit with damper in the full open position. If the CFM is low, increase the system static.</li> <li>3. Refer to calibration procedure.</li> <li>4. Disconnect duct and remove debris from inside.</li> <li>5. Replace controller.</li> </ol>
<p><b>Low air flow through box on call for min CFM.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Low inlet static pressure.</i></li>   <li>2. <i>Incorrect reset controller calibration.</i></li> <li>3. <i>Debris inside terminal unit.</i></li> <li>4. <i>Faulty controller.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Measure the CFM delivered by the unit with damper in the full open position. If the CFM is low, increase the system static.</li> <li>2. Refer to calibration procedure.</li> <li>3. Disconnect duct and remove debris from inside.</li> <li>4. Replace controller.</li> </ol>
<p><b>Reset controls unit but delivers incorrect CFM.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Less than optimal unit installation.</i></li> <li>2. <i>Incorrect reset controller calibration.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to installation instructions.</li> <li>2. Refer to calibration procedures.</li> </ol>
<p><b>Unit does not respond to changes in thermostat setting.</b></p>	<ol style="list-style-type: none"> <li>1. <i>Low main air pressure.</i></li> <li>2. <i>Low inlet static pressure.</i></li>   <li>3. <i>Improper tubing hook-up.</i></li>   <li>4. <i>Incorrect reset controller calibration.</i></li> <li>5. <i>Faulty controller.</i></li> </ol>	<ol style="list-style-type: none"> <li>1. The controller must receive 15-30 psi compressed air from the main supply to port "M".</li> <li>2. Measure the CFM delivered by the unit with damper in the full open position. If the CFM is low, increase the system static.</li> <li>3. Be sure all connections are as shown in the pneumatic control piping diagram on the side of the unit.</li> <li>4. Refer to calibration procedure.</li> <li>5. Replace controller.</li> </ol>

	<p style="margin: 0;"><b>448 South Main Street</b>  <b>P. O. Box 930040</b>  <b>Verona, Wisconsin 53593-0040</b></p>	<p style="margin: 0;"><b>Phone: 608/845-6411</b>  <b>Fax: 608/845-6470</b>  <b>carnes@carnes.com</b>    <a href="http://www.carnes.com">http://www.carnes.com</a></p>
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