Model 43A Controller, Styles A and B
Model 43AP Controller, Style A

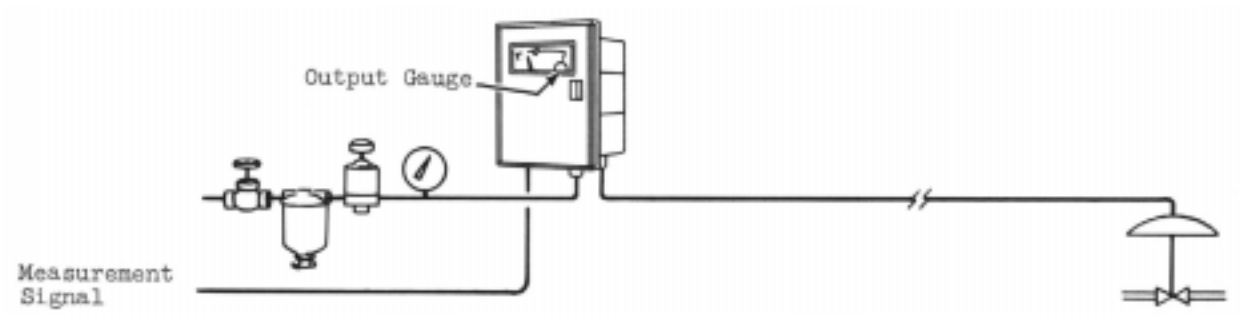
Maintenance and Alignment

Basic Troubleshooting

Difficulty

No reading (or very low reading) at output gauge.

1. Check that 20 psi (140 kPa) is supplied to controller.
2. Check for measurement reading.
3. Clean reducing tube (see page 4).
4. Disconnect output line and plug instrument output with finger.
5. Move setting index above and below measurement pointer. If normal control action results, there is a leak in output line or valve motor.
6. If output gauge still indicates no control action,
   a. Check instrument for damage or leaks.
   b. Replace relay (see page 5).
   c. Align instrument (see page 8).



Difficulty

Maximum pressure at all times at output gauge.

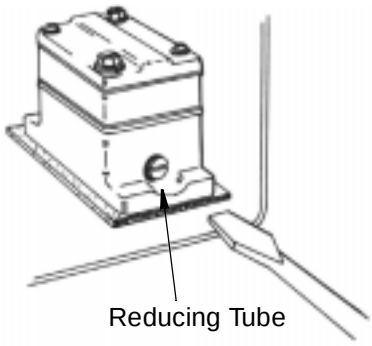
1. Check for mechanical damage resulting in nozzle always being covered by flapper.
2. Check for misalignment of relay gasket, resulting in plugging.
3. Replace relay (see page 5).
4. Clean nozzle (see page 5).
5. Check instrument alignment.

Supply Air Filter

Blow filter out at least once a day.

To Clean Reducing Tube

1. Unscrew reducing tube.



2. Clean with 0.005-inch wire or with Foxboro cleaning wire, Part 42527.

3. Before replacing, apply a thin film of Vaseline or similar lubricant to O-ring.

To Replace Relay

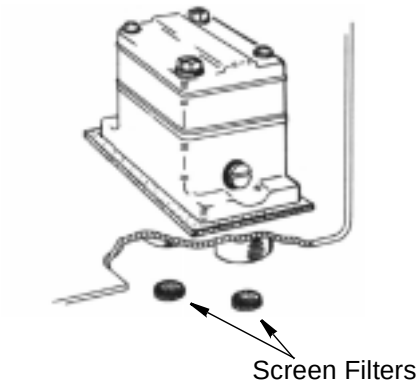
To remove relay, remove two large screws and pry off. A gasket is supplied with each replacement relay.

Do not remove plate between relay and base.

For servicing details, see Instruction MI 11-493.

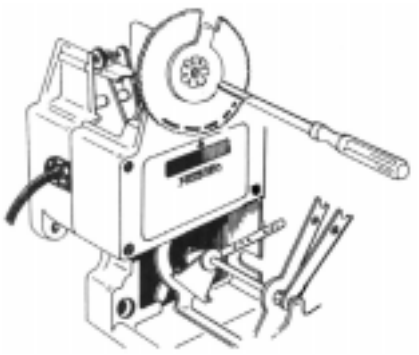
To Replace Screen Filters

If screen filters become clogged, remove with a pointed tool and replace.

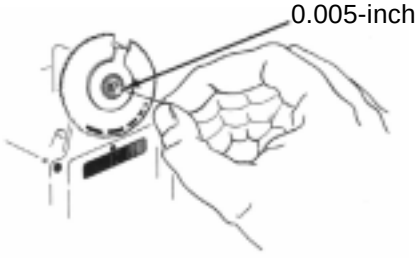


To Clean Nozzle

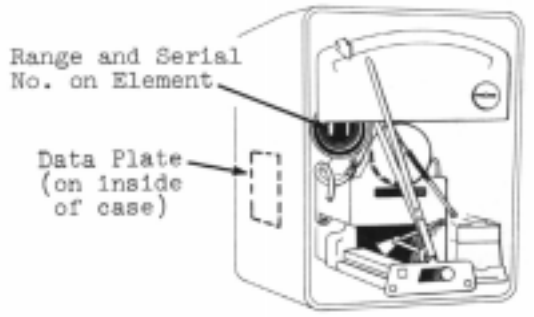
1. Remove screw and washer assembly.



2. Pass 0.005-inch wire (or Foxboro cleaning wire, Part 42527) through opening into nozzle.

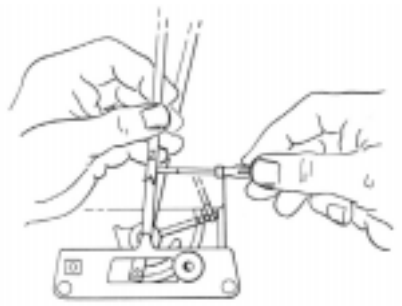


3. Replace parts tightening screw securely.



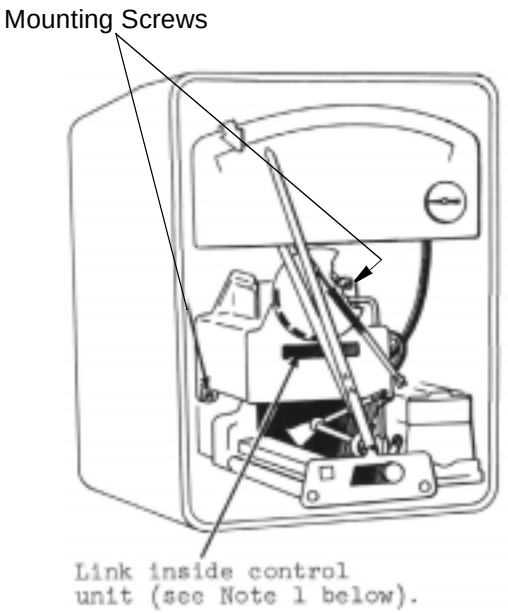
To Remove Measurement Pointer or Setting Index

Pry lower end of pointer over stud, and slide up. Replace in reverse order.

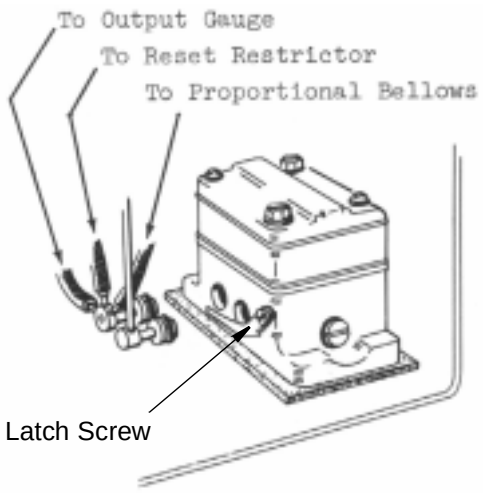


To Remove Control Unit

1. Remove setting index and measurement pointer.
2. Unscrew the two mounting screws.
3. Disconnect measurement link at control unit. Note hole link is in.



4. Loosen latch screw (use right angle screwdriver, Part F101AR, in Foxboro tool set, Part F101AA). Lower latch, and carefully pry out O-ring connections.
5. Disconnect tubing to gauge.



6. Replace parts in reverse order.

Notes

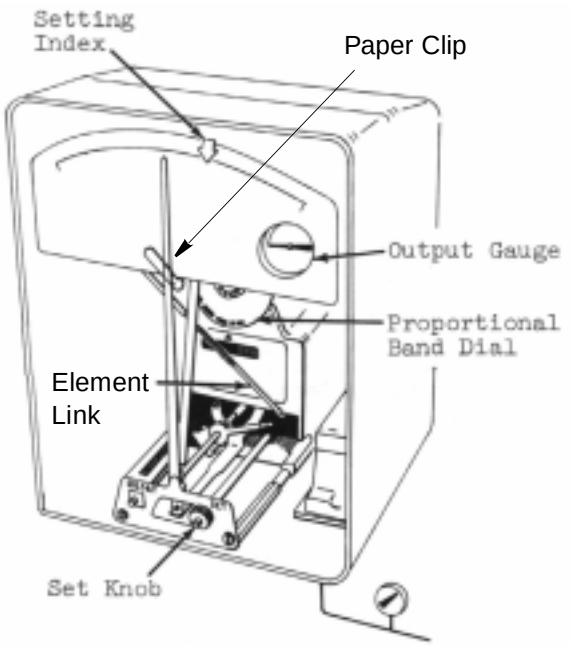
1. This link is set at the factory and does not require adjustment. If link must be replaced, adjust length (ball to ball) to approx. 2 15/16 in (75 mm), and install on control unit and element connections (use unpainted holes). If alignment on page 8 cannot be made, adjust length of link and repeat alignment procedure.
2. If controller has subpanel and external reset connection, O-ring connection in Step 5 above has only 2 tubing connections (to output gauge and proportional bellows). The connection between output and reset restrictor is made externally.

Control Unit Alignment

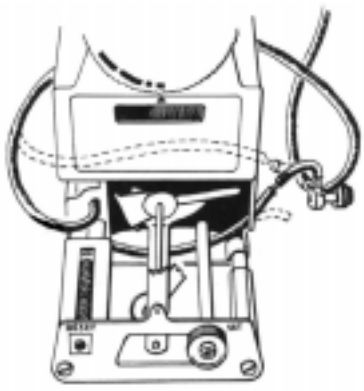
The alignment procedures for On-Off and Differential Gap Controllers are shown on page 11.

Alignment Check and Alignment for Proportional or Proportional Plus Reset Controller

1. Disconnect element link from link assembly on control unit. Note the hole the element link is in.

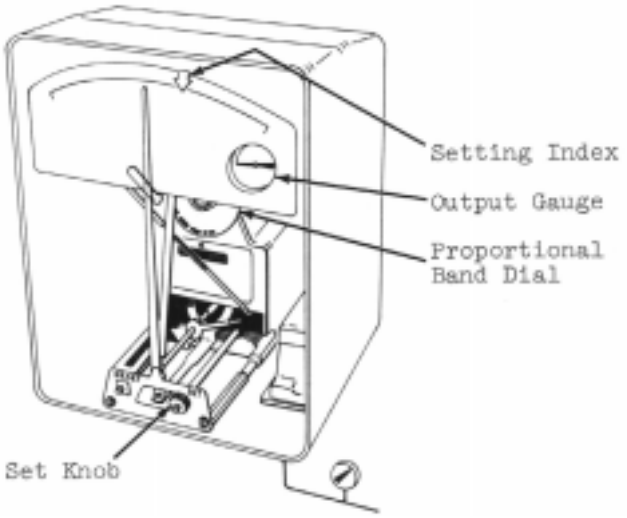


2. Fasten measurement pointer to dial at midscale with paper clip.
3. If controller has reset action, arrange tubing to bypass reset restrictor as indicated below:
   a. Disconnect tubing.
   b. Disconnect tubing at coupling, and connect tubing in Step (a) to coupling.



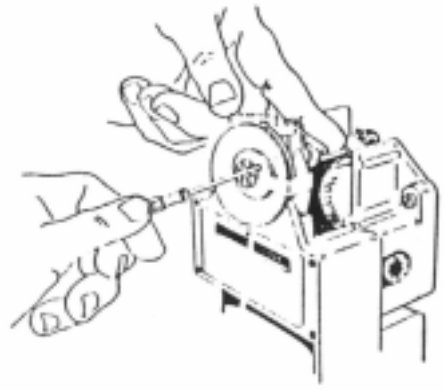
4. Apply 20 psi (140 kPa) air to controller.

5. Move proportional band dial to 10% in white sector. Adjust set knob so that output is 9 psi (60 kPa) for proportional controller, or 6 to 12 psi (40 to 80 kPa) for proportional plus reset controller. Note position of setting index.



6. Move proportional band dial to 10% in black sector, confirm that output is 9 psi (60 kPa) for proportional controller or 6 to 12 psi (40 to 80 kPa) for proportional plus reset controller, and note position of setting index.
7. If positions of index in Steps 5 and 6 differ by more than 2% of scale, alignment must be performed. Complete Steps 8 through 14. If less than 2%, alignment is not required. Proceed to Step 14.
8. Adjust set knob to move index midway between index readings found in Steps 5 and 6. Perform flapper adjustment as follows until output is 9 psi (60 kPa) for proportional controller, or 6 to 12 psi (40 to 80 kPa) for proportional plus reset controller.

Flapper Adjustment



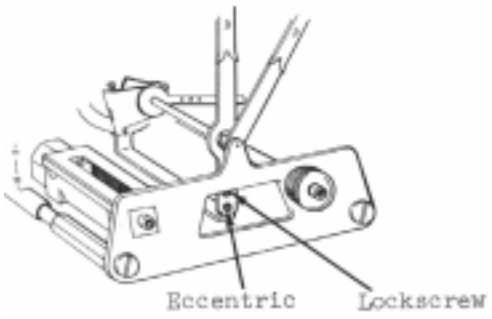
   a. Make adjustment in black sector of dial at zero setting.
   b. Support flapper assembly with finger during adjustment.
   c. Turn screw **clockwise** to **decrease** output.
   d. Make adjustments in small increments. Withdraw screwdriver and finger to observe result of adjustment.

e. Continue until output pressure is steady at 9 psi (60 kPa) for proportional controller, or 6 to 12 psi (40 to 80 kPa) for proportional plus reset controller.

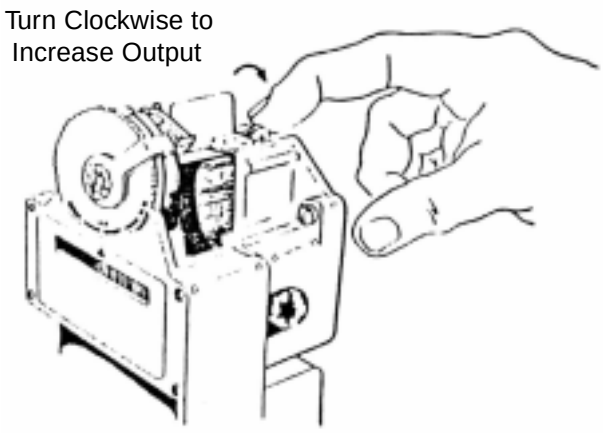
9. Repeat Steps 5 through 8 until the difference in index positions between sectors (black and white), at 15% proportional, is less than 2% of scale. Then continue at Step 10.

10. With dial in control sector to be used, set dial at 10%. Adjust set knob so that output is 9 psi (60 kPa) for proportional controller, or 6 to 12 psi (40 to 80 kPa) for proportional plus reset controller.

11. Loosen lockscrew and adjust nylon eccentric so that setting index is aligned with measurement pointer.



12. Move dial to 100% in sector to be used. Adjust thumb wheel so that output is 9 psi (60 kPa) for proportional controller, or so that output reverses direction and may go to end of scale when set point is moved a maximum of ±1% from pointer for proportional plus reset controller.

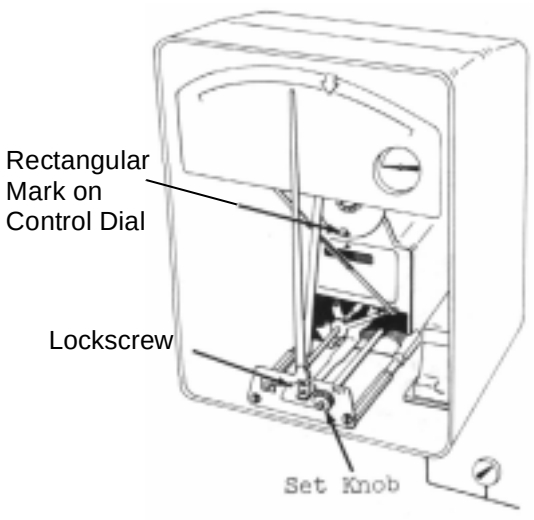


13. Repeat Steps 10, 11, and 12 until output is satisfactory without adjustments.

14. Reconnect element link and tubing, and set control dial at desired value.

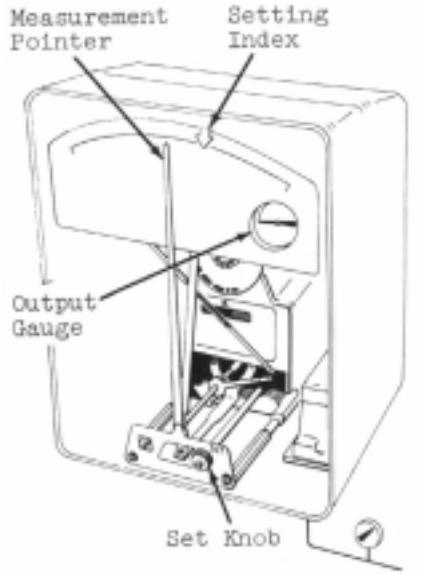
Alignment Procedure - On-Off Controller

1. With control dial set at rectangular mark in sector being used, adjust set knob so that output is between 6 and 12 psi (or 40 and 80 kPa).
2. Loosen lockscrew and adjust nylon eccentric so that setting index is aligned with measurement pointer.



Alignment Procedure - Differential Gap Controller

The graduations on the control dial indicate the approximate gap width. This alignment consists of adjusting the actual gap width and one control point to the desired values.



1. Set gap width dial at desired value and in sector to be used.
2. Disconnect measurement element link at control unit. Note hole link is in.
3. If dial is set in **black** sector, adjust setting index knob so that index is at desired **lower** control point; in **white** sector, set at desired **upper** control point.
4. Apply 20 psi (140 kPa) to controller.

5. Move measurement pointer slowly by hand from one end of scale to other end and then back again. Note scale readings at the two control points (where output changes abruptly); output is either 0 or 20 psi (0 or 140 kPa).

   The difference between these readings divided by span is actual gap width.

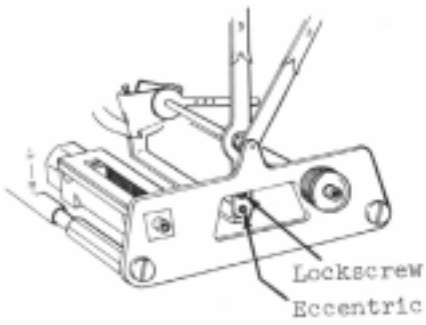
   EXAMPLE: Scale = 20 to 120

   Control points = 70 and 90

   $$\text{Gap width} = \frac{90 - 70}{120 - 20} = 20\%$$

   If gap width is not satisfactory, adjust control dial in correct direction and repeat Step 5 until gap width is satisfactory.

6. If control action does not occur at the setting index position, readjust the set knob until action occurs at the correct value of measurement.



7. The setting index should coincide with the measurement pointer when control action occurs. If necessary, loosen lockscrew and adjust nylon eccentric to align index with pointer at control point.

   Replace measurement element link.

When Writing to The Foxboro Company

When writing to The Foxboro Company, always include instrument serial number.

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