

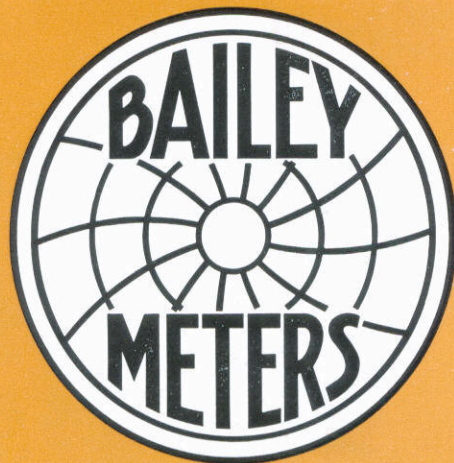
INSTRUCTIONS

SECTION AC 410

FOR ADJUSTMENT AND OPERATION OF

BAILEY RECORDER-CONTROLLER

FOR PRESSURE AND TEMPERATURE
TYPE K35



BAILEY METER COMPANY

CLEVELAND, OHIO

RECORDER-CONTROLLER

TYPE K35 CLASS 2-2AP FOR PRESSURE TYPE K35 CLASS 4-4AP FOR TEMPERATURE

The general assembly of the Bailey Type K35, Class 2-2AP Pressure Recorder-Controller, or Type K35, Class 4-4AP Temperature Recorder-Controller is shown by Figure 1.

The controller has two inter-connected multi-turn Bourdon tube helices, which have the movable ends connected through linkage so that the upper helix operates the recording pen and the lower helix operates the air pilot valve.

Space is provided for two additional helices which may be used to record additional pressures or temperatures on the same chart.

A change in pressure, if the controller is used for control of pressure, or a change in temperature when the controller is used for control of temperature, will produce simultaneous movement of the helices. The upper helix will record the pressure or temperature change on the chart. The motion of the lower helix will be transmitted to the pilot valve stem through the pilotrol linkage. Movement of the pilot valve stem establishes air loading pressures which actuate the control drive or valve to maintain the pressure or temperature at some predetermined control standard. This control standard is indicated on the chart by the position of the standard pointer.

The normal range of air loading pressure, which is required to move a control valve or drive through full travel, is 5 to 25 lb. The controller linkage is normally adjusted so that when the recording pen and standard pointer coincide, the air loading pressure will be indicated at 15 by the loading pressure gage. The air supply pressure to the controller is indicated by the supply pressure gage, and this pressure must be kept constant at 35. The air pressure gages indicate air pressure in pounds per square inch.

OPERATING ADJUSTMENTS

The controller is provided with two operating adjustments which are "control standard" and "regulating range".

Control Standard Adjustment — The standard adjustment is shown by Figure 1, and may be turned to change the control operating standard. This adjustment is connected through linkage to the standard indicator pointer so that any change in the standard adjustment will be indicated on the chart by the standard pointer.

Regulating Range Adjustment — The regulating range adjustment is shown by Figure 1 and consists of an adjustable pivot which may be moved to the

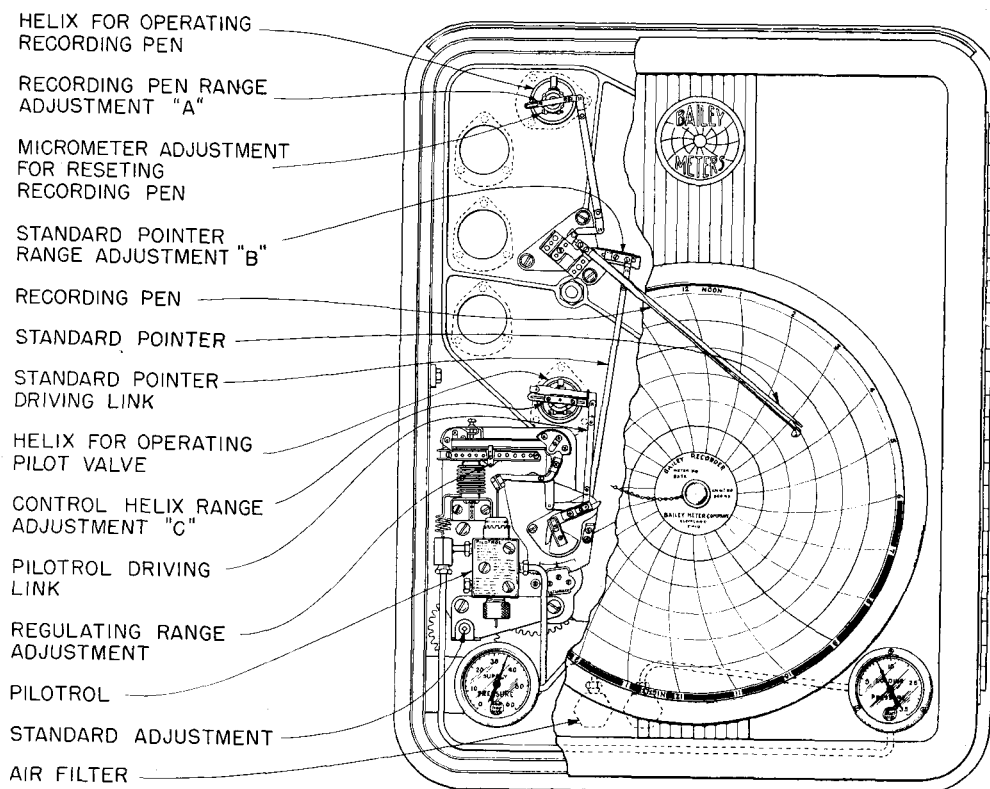


FIGURE 1

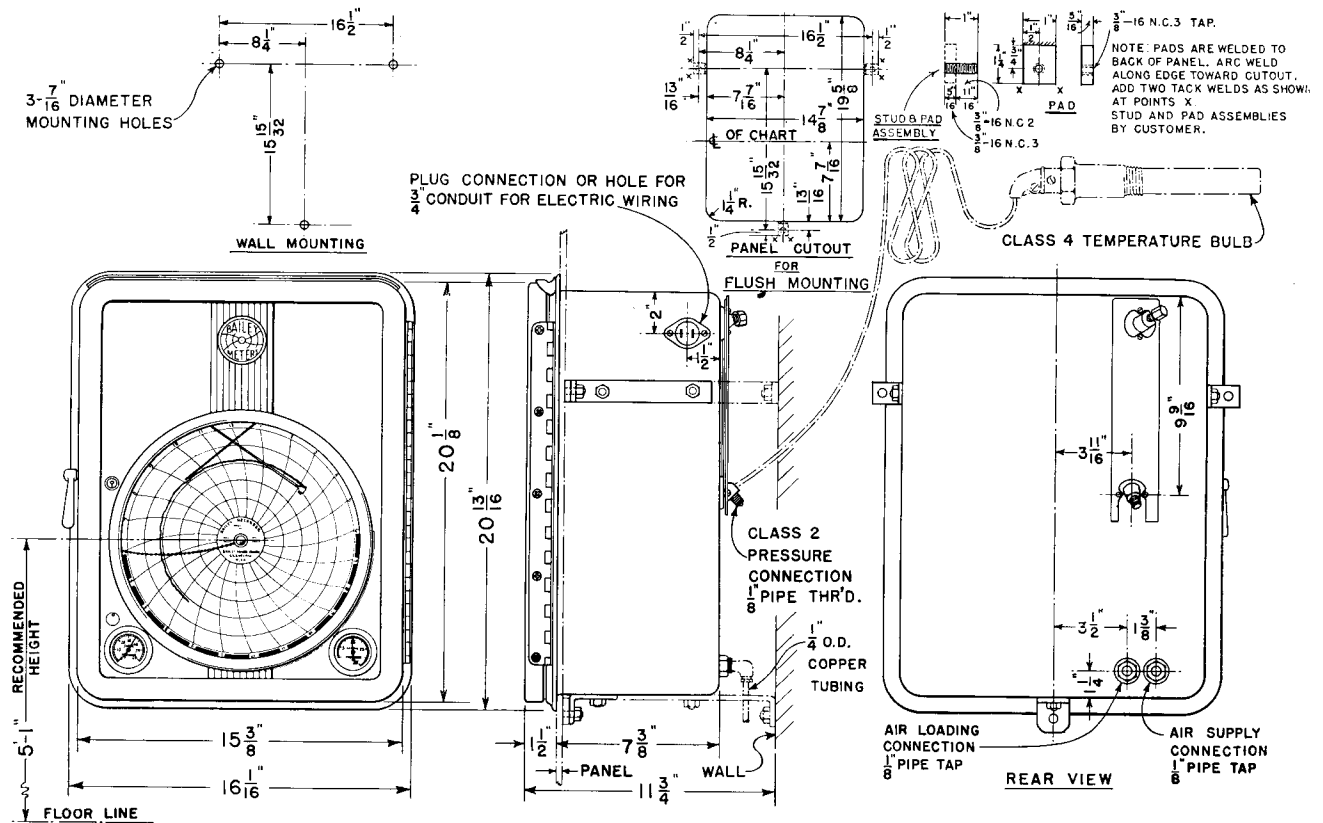


FIGURE 2

INSTALLATION

The mounting dimensions for both panel and wall mounting of the controller are shown by Figure 2.

A $\frac{1}{8}$ -inch IPS pressure connection to the Bourdon tube is provided on the back of Type K35 Class 2-2AP Pressure Controller case.

The Type K35 Class 4-4AP Temperature Controller is shipped with the Bourdon tube installed in the controller case and with the capillary which connects the Bourdon tube to the bulb, coiled and fastened to the back of the controller case. The capillary tubing must be carefully uncoiled after the controller has been mounted and run as directly as possible to the location where the bulb is to be installed. Since the bulb, capillary and Bourdon tube have been charged with gas at a definite pressure and temperature, their installation should be carefully made in order that injury to the system will be avoided. The loss of gas from the system or a restriction in the capillary would prevent the temperature unit from operating satisfactorily.

If additional temperature recorders are included with either a pressure or temperature controller, the additional recording helices are removed from the controller case for shipment.

Remove the bulb from the flanged bushing or separable socket before installing the flanged bushing or separable socket in the pipe.

right to increase the regulating range, or to the left to decrease the regulating range. It is recommended that the adjustable pivot be located over the eighth hole from the left in the beam when starting the control operation. Adjust the control by decreasing the regulating range to a point just short of that where unstable control operation is obtained. Reference should be made to Figure 3, Page 6 of the Pilotrol Instructions AC 100 for the regulating range characteristic curves.

If the controller loading pressure is applied to a standatrol relay, the throttling valve adjustment on the standatrol should be used to supplement the regulating range adjustment on the Pilotrol. Turning the standatrol throttling valve stem counter-clockwise will increase the rate of control pressure change to the control drive or valve for the same deviation in controller loading pressure. However, the throttling valve adjustment on the standatrol must not be made simultaneously with the regulating range adjustment in the controller since either adjustment may be used to regulate the rate of change in the control pressure to the control drive or valve. The regulating range adjustment in the controller determines the amount of loading pressure change for a given deviation of the pressure or temperature from the operating standard, whereas the throttling valve adjustment on the standatrol determines the rate of control pressure change for the same loading pressure change.

Copper tubing and suitable fittings are recommended for connecting to the air supply and air loading pressure connections on the back of the controller case. The air connections should be made in accordance with the control piping diagram which is furnished for each control system.

CALIBRATING ADJUSTMENTS

Reference to Figure 1 will show adjustments which have been indicated by letters A, B and C. These adjustments have been fixed during the calibration of the controller at the factory. It will not be necessary to alter these adjustments except on replacement of the Pilotrol assembly or Bourdon tube helices.

These adjustments have been made so that a reading of 15 is obtained on the loading pressure gage when the recording pen and standard pointer are coincident. Mid-scale position of the standard pointer should correspond to mid-scale position of the standard sector on the pilotrol.

The micrometer adjustments which are provided on the helices are used to reset the recording pen and pilotrol driving link. The standard pointer is

adjusted to indicate the correct pressure or temperature on the chart which will be maintained by the control.

The calibration of the Pilotrol linkage is included on Page 5 of the Pilotrol Instructions, Section AC 100.

MAINTENANCE

1. The adjustment and maintenance of the pilotrol is covered by Section AC 100.
2. The connecting linkage should operate freely without binding. If any parts are found to have undue friction, remove the affected parts and clean with a common solvent such as carbon tetrachloride.
3. The air pressure connections and piping must be kept air tight since very small leaks will cause considerable error in the loading pressure, and erratic control operation.
4. The Pressure Gages should give correct readings or be replaced.
5. Reference should be made to Figure 3 for replacement parts.

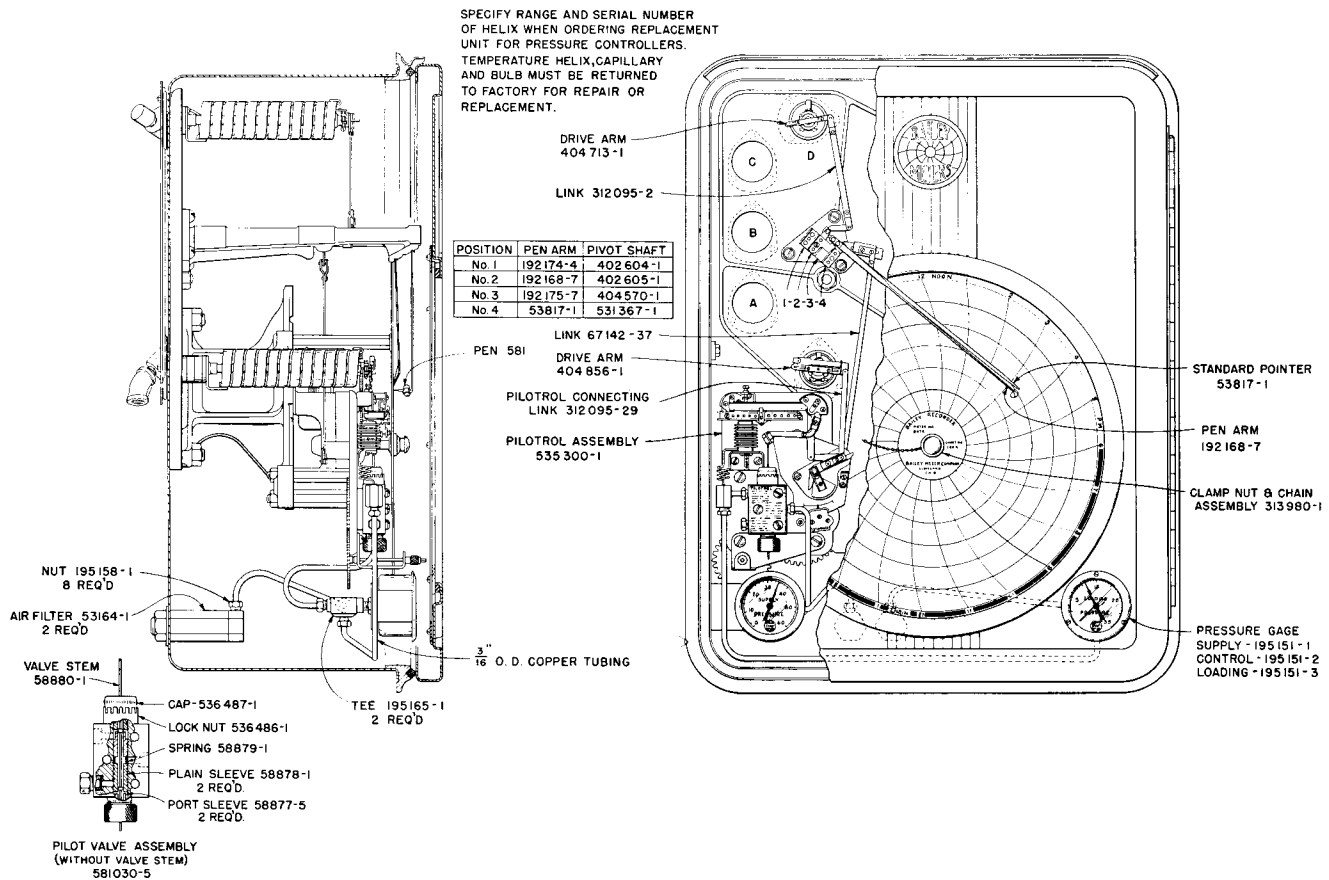


FIGURE 3

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