

4. Three Pen Flow Recorder with pressure and temperature record:
- (i) Model 222X31-C30 Class III System (Bronze element)
 - (ii) Model 222X31-C31 Class III System (Mild steel element)
 - (iii) Model 222X31-C32 Class III System (Stainless steel element)
 - (iv) Model 222X31-C33 Class IV System (Bronze element)
 - (v) Model 222X31-C34 Class IV System (Mild steel element)
 - (vi) Model 222X31-C35 Class IV System (Stainless steel element).

All the above Flow Recorders may be associated with an Electronic Integrator and in such a case the letter "X" is replaced by the letter "E" in the model designation, thus: Model 222E1-C2 for a Single Pen Recorder and Integrator.

The meter body, Model 292D15, uses seamless stainless steel bellows with provision for static pressure and ambient temperature compensation. Pulsation damping can be adjusted from outside on the back with the instrument in operation. The range of the differential pressure can be altered by changing the range-spring assembly. Pressure connections provide two sets of high and low pressure taps, one set for 1/4-inch NPT vertical connections and one set for 1/2-inch NPT horizontal connections.

The static pressure recorder is of conventional type using spiral elements.

The temperature recorder may use either Class III nitrogen-filled system or Class IV mercury-filled system. With Class III systems, case compensation for ambient temperature variations is always provided. For Class IV thermal systems, case compensation is sufficient when the bulb used has a short extension neck, and when ambient temperature along the capillary does not vary widely. Bulbs with long extension necks, or widely varying ambient temperatures along the capillary must have both case and capillary compensation. Two spirals and two capillary tubes are then used for this purpose.

The electronic integrator incorporated on some models of the flow recorders provides the totalization of the differential pressure or flow record.

The chart drive motor rotates the cam which in turn imparts a scanning motion 12 times per minute to the arm with two sensing coils located at its end. The flow pen, through a linkage system, positions the aluminum vane which has the same centre of rotation as the scanning arm. The sensing coils on the arm are part of the feed-back coupling in the oscillator circuit. When the aluminum vane is interposed between the coils, the oscillations cease, a relay closes, and the supply voltage is connected to the motor driving the integrator counter. When the sensing coils move away from the vane, the oscillations begin again, the relay opens cutting off supply to the counter motor, and counting ceases. The duration of the drive of the integrator counter depends therefore on the position of the aluminum vane or the flow pen, thus effecting the integration.

The integrator counter is supplied with a number of change gears enabling direct reading of the counter in units of flow per second, minute,

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(hour