Hallikainen

IN-LINE VISCOMETER

The Hallikainen IN-LINE VISCOMETER provides continuous monitoring of the absolute viscosity of a flowing fluid in a process line. Measurement is made at the process flowing temperature. Primarily used with Newtonian fluids, the Viscometer may also be used to test non-Newtonian products if the viscosity at a single shear rate is sufficient. A choice of outputs is available, including 3-15 psig pneumatic, 4-20 ma dc or 10-50 ma dc electrical signals.

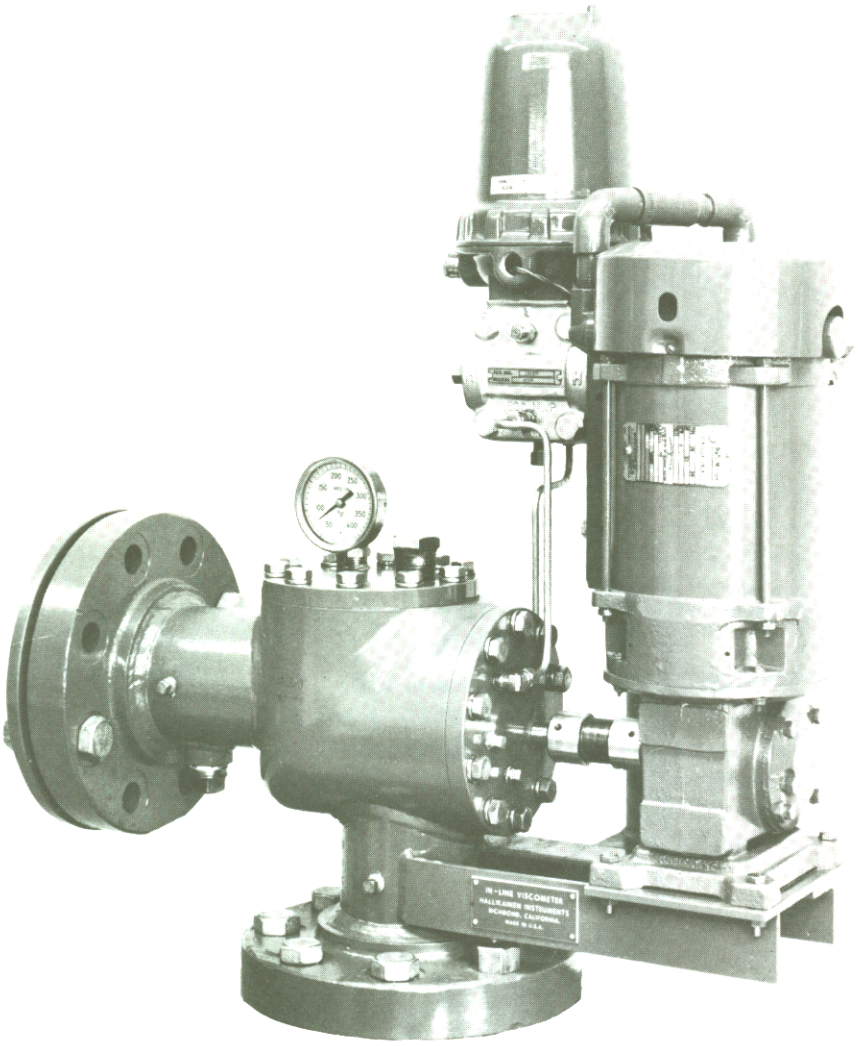
APPLICATIONS

Time-consuming laboratory sampling can now be replaced by actual on-stream continuous analysis. Fluids with lubricating properties and viscosities up to 15,000 poise can be easily handled with the IN-LINE VISCOMETER. A few commonly encountered applications are:

Oil Refineries:
Measurement of column bottoms and pitch streams.

Synthetic Rubber and Polymer Manufacture:
Polymer solution viscosity: Control reactor processing of synthetic rubber compound.

Fuel Oil Viscosity:
Control of fuel oil fluidity as supplied to the nozzles of a burner for boilers and reactors.



Model 1477

ADVANTAGES

Continuous: On-stream analysis obviates the need for regularly scheduled laboratory tests and frees the operator for other duties.

Fast: Response to a change in product viscosity is nearly instantaneous (actually, less than 10 seconds). No wasted product due to off-specification operation. Immediate detection of viscosity variations makes prompt corrective action a reality.

Accurate: Measures the actual viscosity to ± 1% of span with a repeatability of ± 1% of the span.

Convenient: No need to provide a sample stream to the analyzer. The complete unit is installed in the line and forms a part of the process line. All components including filter, metering pump and capillary are housed in a modified ell with flanges for connection to the process line. Capillary is accessible by removing the top cover plate.

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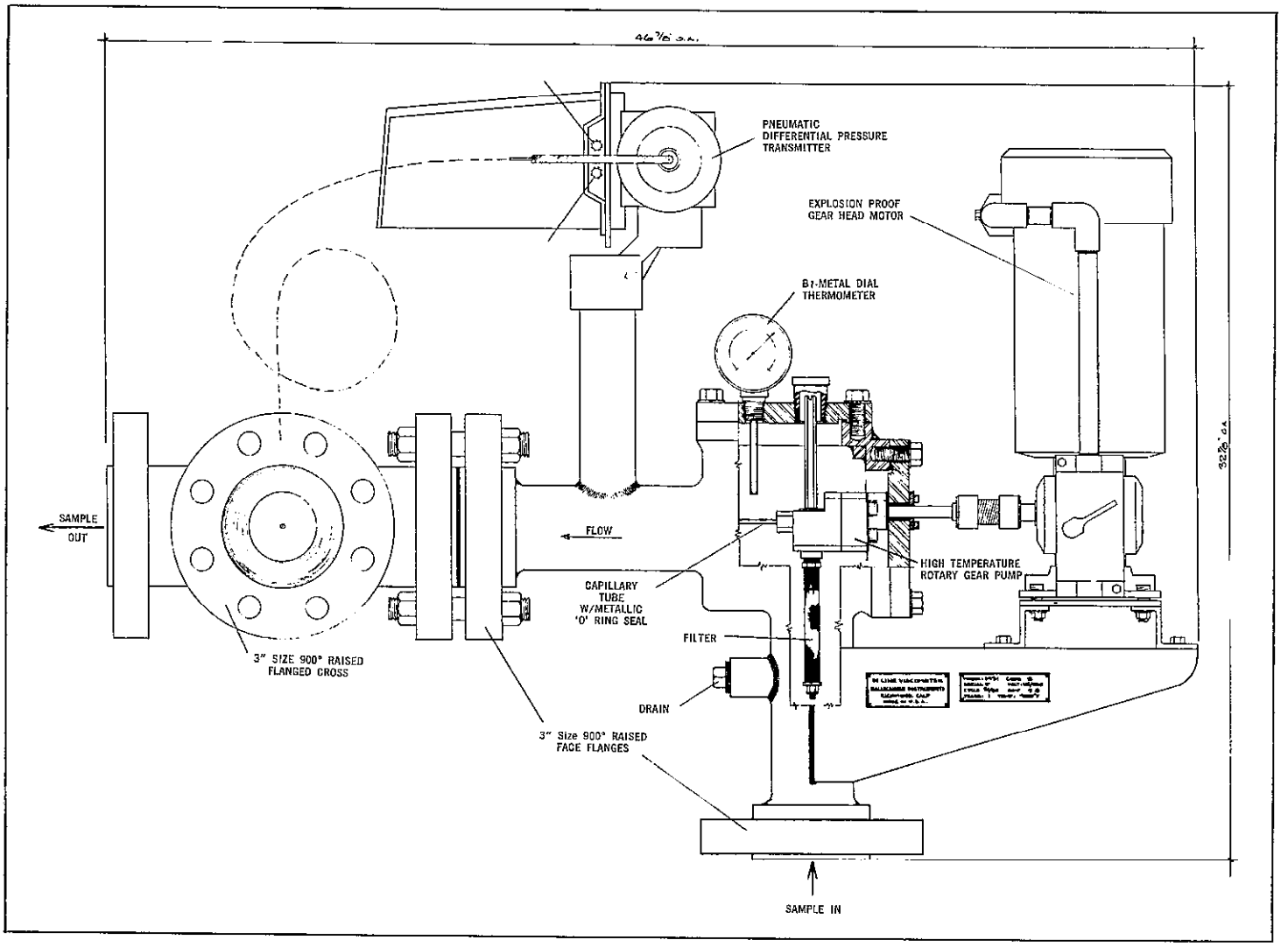


Model 1431

PRINCIPLE OF OPERATION

Sample for the metering pump is drawn through a self-cleaning 100-mesh strainer. A constant flow rate is achieved with a precision metering pump driven by a synchronous motor. The sample fluid at the flowing temperature is forced through a capillary tube at a constant rate. The pressure drop across the capillary tube is converted to a pneumatic or electrical signal that is a linear function of the absolute viscosity.

Model 1431

COMPONENTS

Housing: 3 inch pipe ell, flanged connections

Filter: Same as the Model 1477 100-mesh stainless steel screen

Metering Pump: Similar type to that used in model 1477 except with higher temperature limitation.

Transmitter: A differential pressure transmitter with chemical seals is used as the standard for this model—pneumatic output only. Code A uses Taylor Instruments type 206 transmitter—Code B Taylor type 226.

Model 1477

COMPONENTS

Housing: Consists of a modified steel ell with 4" pipe, 600 psig flanges for connection to the process line. All components (except the pump motor and transmitter) are mounted inside the ell. An access plate permits servicing of the internal parts of the viscometer.

Filter: 100-mesh stainless steel screen, 11/16" diameter by 4 3/4" long, provides protection for the pump and capillary. The filter can be removed for cleaning purposes through the top cover plate.

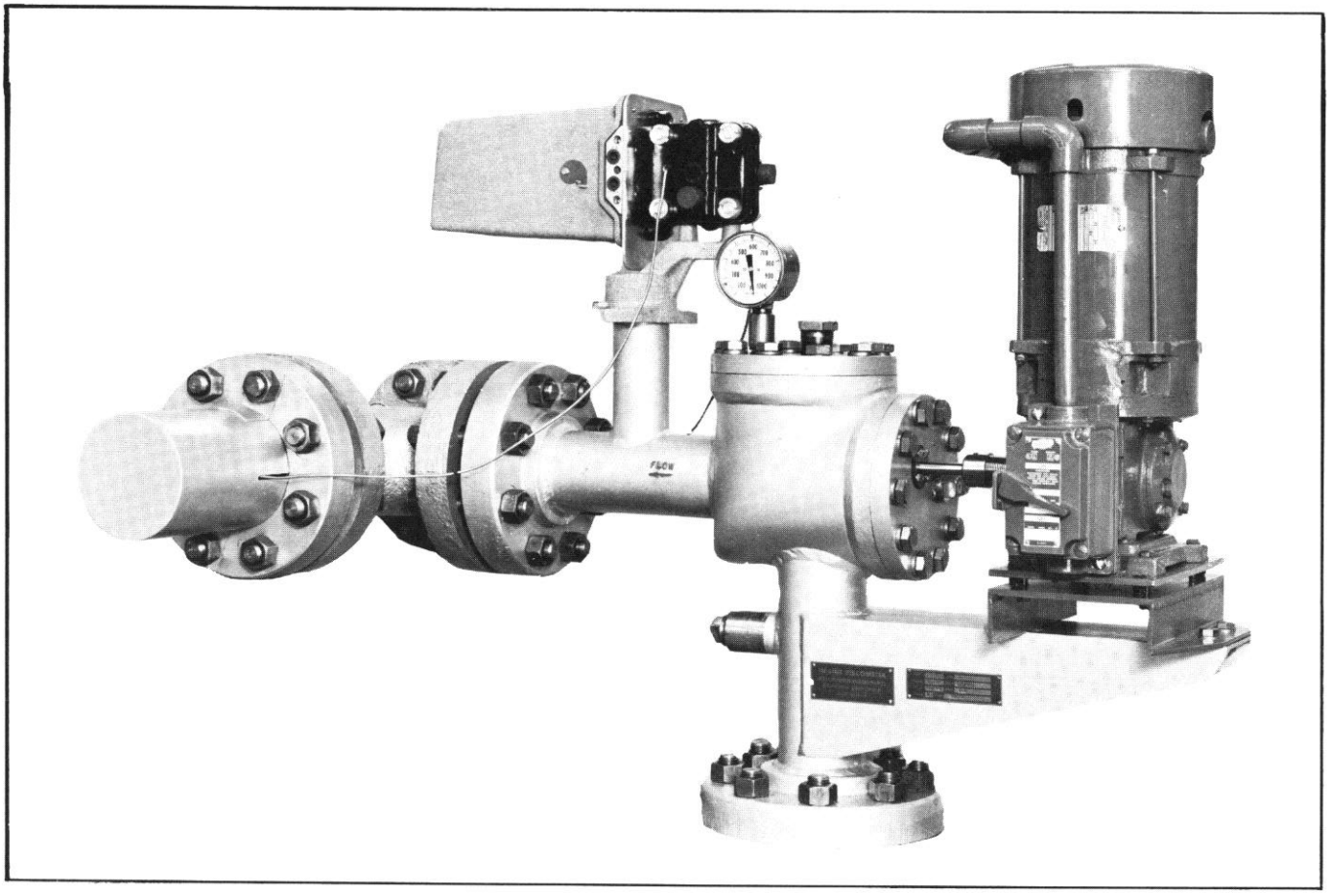
Metering Pump: Precision gear pump with critical parts machined to a tolerance of 25 micro-inches. Provides constant flow rate of 35.6 ml/min through the capillary when operating at 60 hz.

Pump Motor: The gear pump is driven by a 1/4 horsepower right-angle gear head motor at 120 RPM.

Transmitter: Differential pressure with either pneumatic or electrical output as specified.

Temperature Indication: A bimetallic dial thermometer is mounted in the top cover to indicate line temperature. A plugged hole is provided for adding a temperature compensation sensor if required.

Capillary Materials: Stainless steel is standard with alternate materials available on special order.



Model 1431

SPECIFICATIONS

	Model 1477	Model 1431
Maximum Range (poise)	15,000	15,000
Maximum Temp.	400°F	Code A 300°F Code B 900°F
Maximum Pressure (psig)	1,000	670
Output	3-15 psi 4-20 ma dc 10-50 ma dc	3-15 psi
Instrument Connections	4"—flange	3"—flange
Utilities:		
Electrical	115/230 volts 60 hz 6 amps 700 watts max.	115/230 volts 60 hz 6 amps 700 watts max.
Pneumatic	20 psig supply	20 psig supply
Outline Dimensions:	15" x 26" x 35"	22" x 47" x 33"
Weight:		
Approximate Net	250 lbs.	450 lbs.
Estimated Gross	340 lbs.	600 lbs.