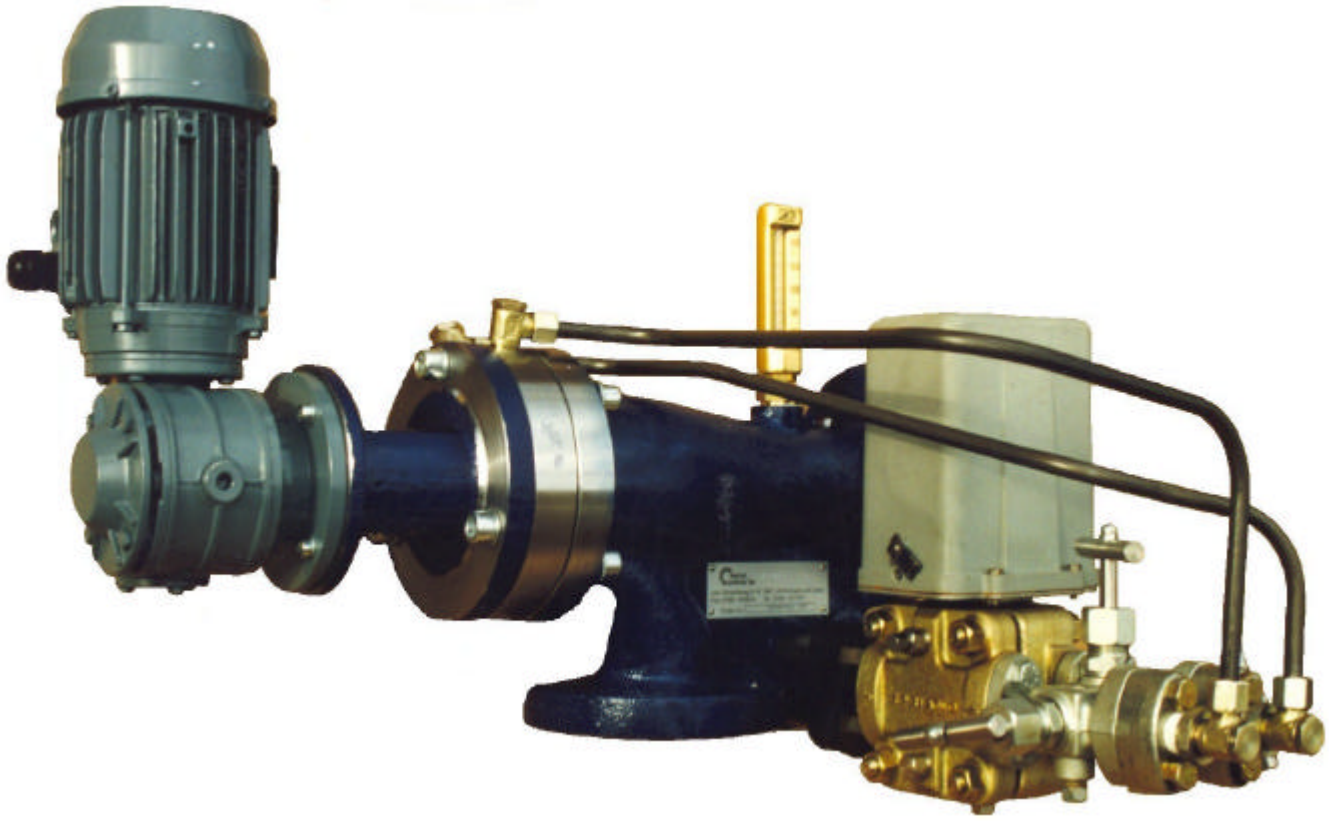
mar-in Controls b.v.



VISCOTROL ®

MAR-IN CONTROLS B.V. VAN UTRECHTWEG 8-10 KRIMPEN A/D IJSSEL THE NETHERLANDS
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MAR-IN CONTROLS VISCOTROL is a heavy duty on line viscosity meter designed to measure and control the viscosity of low-grade and intermediate heavy fuel oils with highest possible degree of precision and reliability. The measuring system is based on a gear-type metering pump which withdraws fuel samples from the main stream and propels it continuously through a capillary. In the capillary a laminar flow is obtained and the measured pressure drop across the capillary is proportional to the absolute viscosity in mPas.

FEATURES

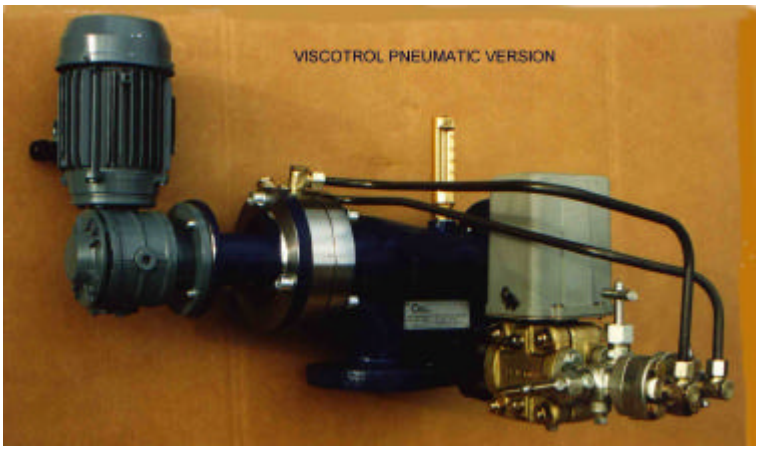
■ **Fast Response:** Backflow-pattern prevents poor heat transfer in measuring section.

■ **Trouble-free Operation:** The VISCOTROL body transmitter fixing arrangement assures proper installation and no malfunctioning of the viscosity measurement system after it has been put into operation.

■ **Free of oil sediment build-up:** The Fluonplastic (Teflon) coated steel, oil sediment repellent measuring capillary (**PATENTED**) prevents build-up of oil sediment deposits to the capillary wall. Poor heavy fuel oil will therefore have no effect on the viscosity measurement.

■ **Simple** to install, to operate and to maintain

■ **High** viscosity measurement precision and reliability.



WHY VISCOSITY CONTROL?

Viscosity control instead of temperature control has the following advantages:

■ **Improved combustion efficiency:**
The injected fuel has the proper degree of atomisation thus droplet size

■ **Less Maintenance:** Periods between overhauling pistons and valves increase.

■ **Reduced lubrication oil cost :** Less unburned combustibles will cut down the consumption of lubrication oil.

■ **Carbonisation prevention of the fuel valve nozzle:** A too low viscosity of the heavy fuel oil causes gasification with as result the formation of carbon at the nozzle outlet which causes poor atomisation of the fuel.

■ **Less corrosion in boilers:** Both the proper atomisation and the proper air/fuel ratio cut down the SO_2 and SO_3 contents.

SPECIFICATION

VISCOTROL TRANSMITTER

Housing material	:	steel
Capillary	:	Teflon coated (**PATENTED**)
Connections	:	flanged 2" according DIN PN40 (other on request)
Max. operating pressure	:	10 bar with standard mechanical seal and 40 bar with non-standard mechanical seal.
Max. operating temperature	:	200°C
Maximum flow	:	30 m^3 / h
Viscosity range	:	0 – 22 mPas (0 -25 cSt) 0 – 44 mPas (0 –50 cSt) other range on request
Electric motor		
Supply Voltage	:	220 / 380 V, 3Ph, 50/60 Hz 240 / 415 V, 3Ph, 50/60 Hz 260 / 440 V, 3Ph, 60 Hz 280 / 480 V, 3Ph, 60 Hz 220V , 1 Ph, 50 Hz 260V , 1 Ph, 60 Hz 110V , 1 Ph, 60 Hz
Max. Ambiant Temp.	:	60°C
Power Consumption	:	0.09kW
Manifold material	:	Steel

PNEUMATIC VERSION

Supply pressure	: 1,4 bar
Output signal	: 0,2 - 1 bar (3 – 15 psig)
Air consumption	: 0,5 Nm^3 / h
Accuracy	: within 1.0% of full scale at constant net frequency
Temperature effect	: less than 0,05% per °C
Controller control mode	: proportional + integral

ELECTRONIC VERSION

Power Supply dp. transmitter	: 13,5 - 30 Vdc
Power Supply controller	: 230 V ac, 115V ac, 24 Vac, 50/60Hz
Output signal	: 4 - 20 mA
Power consumption controller	: approx. 7 VA
Accuracy controller	: 0,1% of measuring range
Accuracy dp transmitter	: <± 0,2% at constant net frequency