

Product sheet

MBT- 4500

Inline Viscosity Transmitter

FEATURES

- Inline measurement
- For all types of media with a viscosity of 10 – 100.000 cP
- Sturdy design, few movable parts
- Easy installation, setup, and calibration

BENEFITS

- Temperature compensation
- Easy maintenance
- The operating principle allows good sensitivity, even in the lower part of the viscosity range
- Low weight



GENERAL / BACKGROUND

The MBT-4500 is an in-line viscosity transmitter designed for use in demanding applications. The transmitter has a wide range of applications and can be used for measurement of glue, paint, slurries, sugar solutions, oil, coating mix, food, etc. It is also suitable for use in somewhat abrasive media.

The sensor electronic employs modern microprocessor technology with advanced signal analysis. It is operated using BTG's electronic platform, the CPM, which ensures capability with present and future communication interface requirements, from analogue output with HART® to field buses.

MEASURING PRINCIPLE / MEASUREMENT

The transmitter operates according to the shear stress principle. As the blade (8) moves in the measuring basket (7) the media is pressed out in the direction of movement while new media is sucked into the area between the measuring basket and the other side of the blade.

The blade is activated by a plunger coil system, consisting of a solenoid housing (4) and a plunger coil (3). When current is connected to the plunger coil, the blade makes a measuring stroke of constant force around the fulcrum (6). The blade travels the measuring distance in a specific time. The time is a function of the viscosity of the media. After that the current to the plunger coil is pole reversed, and the blade makes a new measuring stroke in the opposite direction. A new stroke starts every second.

The stroke in both directions is limited by two adjustable mechanical stops (5).



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www.btg.com/mybtg/en/instruments/mbt-4500

TIME MEASUREMENT

The time is measured by means of an optical sensor (1). During the measuring phase, the gate in the optical sensor is passed by a beam interrupter (2) that breaks the light beam between the two shanks on the optical sensor.

The measured value is presented as a viscosity value on the display of the CPM unit, and as an analog output signal. The values can also be shown temperature compensated, provided that function is used.

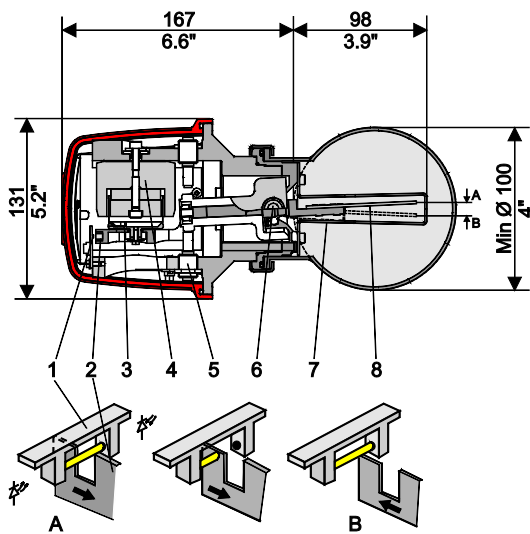


Figure 1: MBT-4500 Principle

APPLICATION EXAMPLE

GLUE PREPARATION FOR CORRUGATED BOARD

1. Addition of starch and other chemicals based on reading on recorder
2. Viscosity transmitter, MBT-4500
3. Steam

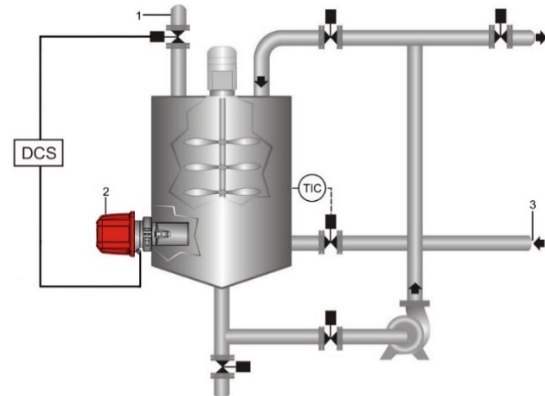


Figure 2: Glue preparation for corrugated board

TECHNICAL DATA / SPECIFICATIONS

GENERAL

Type	MBT-4500 In-line electric viscosity transmitter
Manufacturer	BTG Instruments AB, Säfte, Sweden
Measuring principle	Shear stress measurement / time measurement
Measuring range	10 – 100,000 cP
Min span	50 cP
Max span	100,000 cP
Particle size limits	Max Ø 1 – 6 mm [0.04 – 0.2"], depending on selected measuring basket
Repeatability	Better than 0.1 % (RSD) in the whole measuring range at constant operating conditions.

PROCESS SPECIFICATIONS

Process pressure	PN16 (16 bar at 20°C [230 psi at 68°F])
Max media temperature	Max. 100°C [212°F] when the ambient temperature is max 45°C [113°F]
Max. ambient temperature	Max 60°C [140°F] when the media temperature is max 80°C [176°F]
Flow velocity	0 – 2 m/s [0 – 6 fps]
Resonance frequency	310 – 450 Hz
Material:	
Wetted parts	Stainless steel, EN 1.4404, equiv. to ASTM 316L
Spindle seal	Silicon rubber as standard flour rubber as option

Flange seal	Flour rubber as standard EPDM as option
Weight	2.8 kg [6. lb]
Communication platform (CPM)	For information about the CPM, including input and output signals, see the CPM product sheet PS2026

Functions:

Output signal	Viscosity in cP, mPas, cSt, or mm ² /s
Calibration sets	Four separate calibration sets, individually programmable, and externally controllable
Alarm function	Provides alarm signal on high temperatures and stuck blade
User interface	See Communication platform RS485
Serial port	RS485

Mounting:

Min pipe diameter	100 mm [4"]
Electrical connection	100-240 ±10% VAC, 50/60 Hz. Connected in CPM
Power consumption	Max 50 VA, a 2A slow blow fuse must be used

SAFETY & DIRECTIVES

Safety and protection class

Product safety	CE, C-tick, ETL
Protective rating	Equivalent to IP65, NEMA 4x

EU-directives

Designed in accordance with relevant CE standards.

Quality Assurance

Quality-assured in accordance with ISO 9001.

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