

## Product sheet

### MBT-2500

#### Active Blade Consistency Transmitter

#### FEATURES

- Suitable for less demanding applications. Better result than for static blade transmitters
- High measuring accuracy and reproducibility
- Minimal flow sensitivity within very large flow range
- Small, light, and easy to install

#### BENEFITS

- Reliable operation since the sensing element is fully protected by a deflector
- Easy straightforward calibration for accurate result
- Sturdy design for high durability and a minimum of maintenance. Simple construction, can be repaired at site.
- Patented measuring principle



#### GENERAL / BACKGROUND

The MBT-2500 is an active type of in-line blade transmitter for measuring consistency of pulp suspensions in the range 1.5-8%. It is based upon the well-known MBT concept which has been delivered in over 12 000 units. MBT-2500 is improved and refined to perfection to bring even better measuring result and less maintenance demand.

The MBT-2500 uses the shear force principle to measure fiber consistency with a reciprocating, active sensor. This gives the transmitter virtually no sensitivity to normal variations in fiber composition, freeness, fillers, black liquor content, air content, pressure, etc.

The active sensor measuring method makes it less sensitive to varying flow velocity compared to static blade type transmitters.

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.



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[www.btg.com/mybtg/en/instruments/mbt-2500](http://www.btg.com/mybtg/en/instruments/mbt-2500)

## MEASURING PRINCIPLE / MEASUREMENT

The MBT-2500 operates according to the shear force principle.

The main difference between this transmitter and traditional static transmitters is that the sensing element (11) is active and operates with a forward and backward motion, using its own force to shear through the fiber suspension.

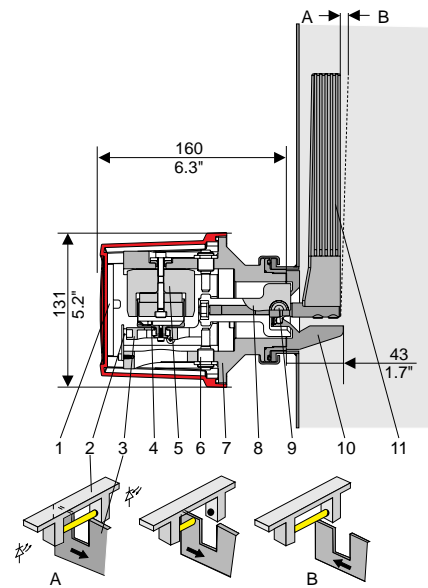
Depending on the consistency of the pulp, the measured (A -B) stroke time will vary (a higher consistency will result in a longer stroke time).

The sensor moves every other second. A number of strokes form the basis for a mean time value. The mean time value is converted electronically into an output signal of 4-20 mA. This output signal is calibrated and linearized automatically against laboratory test values. Calculations and conversions are done in the unit's microprocessor.

As the entire front edge of the sensor is protected by a deflector (10), this measuring technique has low sensitivity to flow variations while retaining maximum sensitivity to consistency. It also implies a high resistance against debris in the pulp.

This is a major advantage compare to static blade transmitters. Few sensing elements (blades) are needed because the stroke force (current) is adjustable.

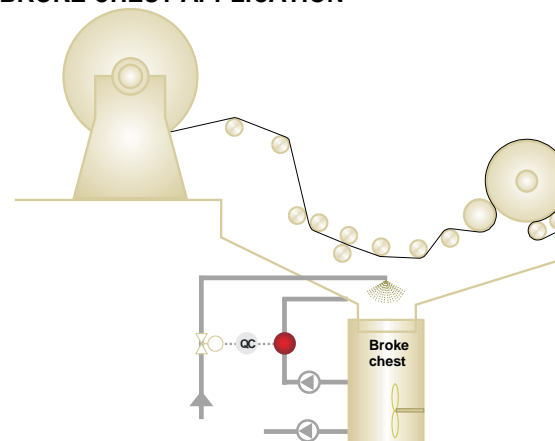
This new model, MBT-2500, brings a more stable and reliable output signal compared to the older models due to a more sturdy build-up. That also simplifies any repair work on the unit.



1. Circuit card
2. Optical sensor
3. Beam interrupter
4. Plunger coil
5. Magnet housing
6. Mechanical stop
7. Frame
8. Spindle
9. Fulcrum
10. Deflector
11. Sensing element

MBT-2500 Sensing element type	Min. pipe diameter	Consistency range
L	125 mm/5 inches	1.5 - 5%
LM	100 mm/4 inches	1.5 - 5%
S	100 mm/4 inches	3 - 8%
SM	80 mm/3 inches	3 - 8%
LC	125 mm/5 inches	1.5 - 5%

## APPLICATION EXAMPLE BROKE CHEST APPLICATION



## TECHNICAL DATA / SPECIFICATIONS

### GENERAL

<b>Type</b>	MBT-2500 in-line consistency transmitter for pulp suspensions
<b>Manufacturer</b>	BTG Instruments AB, Säffle, Sweden
<b>Measuring principle</b>	Shear force measuring. Time measurement by a reciprocating sensing element
<b>Consistency limits</b>	Approx. 1.5-8% consistency, depending on pulp type and sensing element (see also pipe dimensions).
<b>Repeatability</b>	$\sigma = 0.008 \% Cs$
<b>Flow limits</b>	0.1-5 m/s [0.3-16.1 fps]
<b>Process pressure</b>	DIN PN 25 [360 psi at 68°F]
<b>Media temperature</b>	Min. 1°C / 10°C [34°F / 50°F] depending on selected spindle seal Max. 100°C [212°F]
<b>Ambient temperature</b>	Min. -20°C [-4°F] Max. 60°C [140°F]
<b>Protective rating</b>	Equivalent to IP65, NEMA 4x
<b>Weight</b>	2.8 kg [6.2 lb]

**Material wetted parts** Stainless steel, equiv. to EN 1.4404/ASTM 316L (std) or Nickel alloy, Hastelloy C-276

### Functions:

**Calibration sets** Four separate calibration sets, individually programmable, and externally connectable using a binary-coded switch.

**Alarm function** Provides alarm signal on low and high stroke time

**Diagnostics** Config changes, runtime, and program starts

**User interface** For information about the Communication Platform, including input and output signals, see the CPM-1300 product sheet PS2026

**Damping** Programmable between 2 and 99 seconds

**Step response** Time constant without electrical damping: 2 seconds

### SAFETY & DIRECTIVES

#### EU-directives

Designed in accordance with relevant CE standards.

#### Quality Assurance

Quality-assured in accordance with ISO 9001.

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