

brabender  
Messtechnik



Measure Process Viscosity Reliable

# CONVIMETER

Brabender Messtechnik  
GmbH & Co. KG

## CONVIMETER

### Why use a CONVIMETER?

The **CONVIMETER** records viscosity efficiently in process of fluids and pastes and can be used for adjustment control, also. Therefore it is a necessary auxiliary system for quality control.

The substances can be of low and high viscosities but also newtonian and non-newtonian. Special for non-newtonian fluids it is necessary to record the behaviour of the whole structure of the medium. This is the advantage of **CONVIMETER**.

## Advantages

The measurement is achieved with a macroscopic shear and low shear rates guaranteeing accurate determination of rheological characteristics.

No bearings or moving seals in contact with substance.

The circular motion of the sensor gives a pumping effect that provides a quick exchange of substance.

Disturbances by granular particles are suppressed, no influence of magnetic particles.

## Measuring Principle

A sensing device (1), moved by a drive shaft (2), moves on a circular route (3) within the substance being monitored. Because of the inclined position of the device it may be called a gyratory motion.

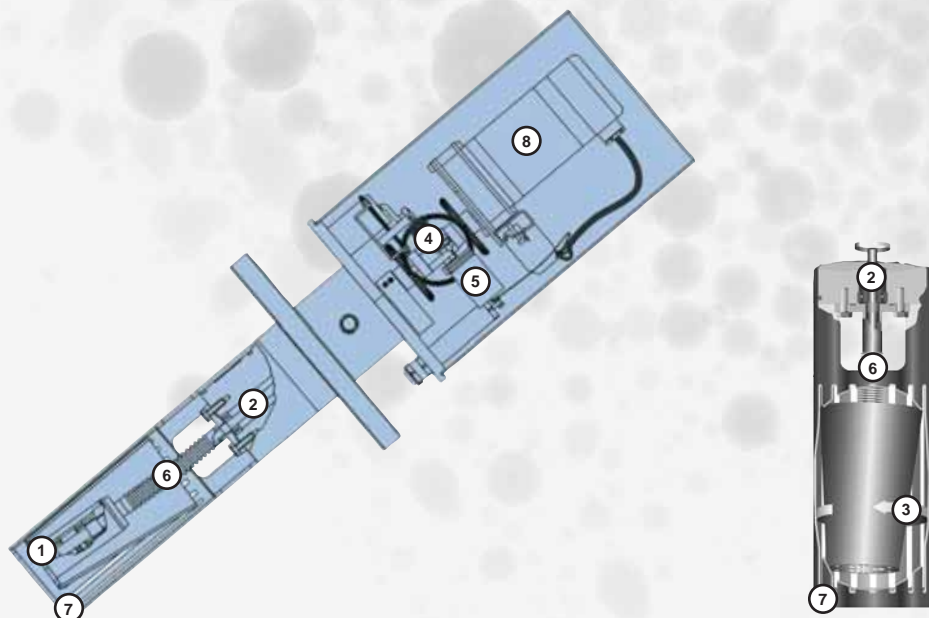
The torque transmitted by the drive shaft is proportional to the viscosity of the substance. A differential gear with a metering spring (4) and an inductive transducer (5) detects the torque.

A flexible metal bellow (6) surrounding the drive shaft forms a seal which is not only frictionless but also temperature - and pressure resistant.

The torque is developed in the small gap between the conical mantle of the sensing device and the protection sheath (7).

The protection sheath also eliminates the influence of flow within the substance.

The maintenance-free motor (8) is enclosed within the removable head.



The design of the film-pad and the program enable operation of the **CONVIMETER** with its basic functions without knowledge of the program or the user's manual.

The display is lit to enable good visibility.

Viscosity is shown in mPas or Pas. Temperature is shown simultaneously if a thermometer PT 100 is installed near the sensor head. Also different auxiliary units are shown.

Advantages of the digital version:

- Automatic adaptation of the number of resolutions to the viscosity
- Automatic calibration of the zero point with an Auto-Zero-function, which corrects the influence of temperature on the zero point
- Temperature compensation of the viscosity according to procedures



Special Versions

**CONVIMETER type L for low viscosities**

Lowest range:  
0 - approx. 35 mPas

**CONVIMETER type H for high viscosities**

Highest range:  
0 - approx. 10<sup>7</sup> mPas

**CONVIMETER type P for high pressure**

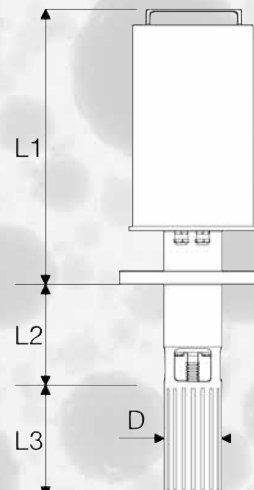
Type P is suitable in a pressure range of 10 to 150 bar. The sensor is encapsulated in a pressure resistant membrane which is filled with silicone oil and thus pressure compensated.

Applications

The **CONVIMETER** is used in very different industrial processes - for measurement of viscosity to determine quality and for control of process. The success of the **CONVIMETER** becomes evident in more than 1400 applications in industries as chemical, petrochemical and refining, food and beverages, paper, body care, and many others.

Measures

Typ	D	L1	L2	L3
NW 50 / NW 80	48 / 69	344 / 354	95 / 120	175 / 180
NW 50 Ex / NW 80 Ex	48 / 69	545	95 / 120	175 / 180
NW 50 P / 80 P	48 / 69	569 / 545	160 / 187	200
NW 80 L	79	354	120	230
NW 80PL	79	545	187	245



All Dimensions in mm

The standard measuring head of the **CONVIMETER** can be mounted in any position. Only in case of high temperatures above approx. 130°C a minimum angle of 10° with the horizontal (3) shall be kept.

In pipe lines mounting is simply done in an elbow pipe (2). In case of small diameters or on-line applications a measuring pot (4) should be installed.

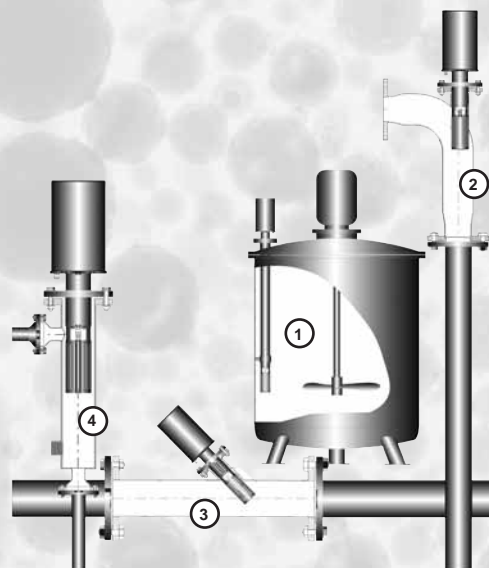
In open tanks and batch mixers the head can be provided with an extension tube (1), if mounting into the wall of the container is not possible.

The detecting zone of the head shall be submerged into the medium up to 180 mm. Flow rate should not exceed 0,5 m/s.

The measuring head is supplied with a flange DN 50 (**CONVIMETER NW 50**) or DN 80 (**CONVIMETER NW 80**) or for food industry it can also be provided with screw cap according DIN 11851.

**Technical Data**

Measurable Viscosities	approx. 5 - 10 <sup>7</sup> mPas newtonian and non-newtonian fluids
Measuring Range	standard type approx. 50 - 2 * 10 <sup>5</sup> mPas within several sub-ranges special versions for low and high viscosities
Accuracy	+/- 1% of full scale, +/- 1mPas abs.
Indication	viscosity in mPas torque in % optional temperature in °C
Range of Pressure	vacuum to 10 bar optional up to 150 bar
Range of Temperature	max. 300 °C
Material	parts in contact with fluid stainless steel DIN 1.4571 other materials optional
Output Signal	0 - 20 mA, 4 - 20 mA RS 422/485
Power Supply	110 V, 230 V +/- 10% 50 and 60 Hz, 50 W
Protection	measuring head: IP 54 optional: II ½ G EEX de IIC T4 (zone 0) optional: NEPSI Control unit: IP 31
Dimensions	measuring head: see tabulation inside control unit: 144 x 144 x 250 mm
Cable bushing	PG 9 / Ex-proof versions PG11



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