

HOV 700

Heavy Oil Viscometer

Precision viscosity measurement for heavy crude, bitumen & live oils
up to 10,000 psi · 180°C · 10⁶ cP



PRODUCT OVERVIEW

What is the HOV 700?

The HOV 700 is a **vibrating-needle viscometer** designed for the precise measurement of dynamic viscosity of heavy crude oils, bitumens, and live oil samples under representative reservoir conditions.

Measurement Principle

**Vibrating needle
(electromagnetic excitation)**

Target Fluids

**Heavy oil, bitumen,
live reservoir fluids**

Wetted Materials

**Hastelloy &
Stainless Steel**

HOV 700 At a Glance

Viscosity Range	500 cp – 10 ⁶ cp
Pressure	Up to 10,000 psi
Temperature	Ambient to 180°C
Repeatability	± 0.2%
Cell Volume	15 cc
Dimensions	700×950×650 mm

MEASUREMENT PRINCIPLE

1

Electromagnetic Excitation

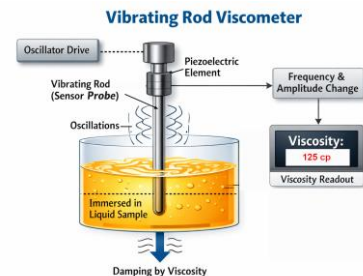
A stationary AC-powered drive coil inside the viscometer body electromagnetically excites the vibrating needle probe at its natural resonance frequency.

Feedback Loop Control

An electronic feedback loop continuously adjusts the AC current frequency to maintain resonance — regardless of viscosity changes in the surrounding fluid.

Amplitude → Viscosity

The amplitude of needle vibration depends directly on the viscous damping of the fluid. The equation of motion converts amplitude into dynamic viscosity, displayed digitally.



SCOPE OF SUPPLY

Viscosity Probe

Stainless steel vibrating needle — corrosion-resistant

Temperature Probe

PT100 or equivalent — for precise thermal monitoring

Measurement Cell

15 cc — easily removable for fast cleaning

Drain Valve

For safe gas release at saturation pressure

Electronic Panel

Digital display of measured viscosity in real time

Heating Airbath

Homogeneous temperature profile, ambient to 180°C

Pressure Transducer

Rated up to 10,000 psi

Sample Accumulator

300 ml floating-piston, titanium wetted parts

Documentation

Operation & maintenance manual included

TECHNICAL SPECIFICATIONS

Parameter	Specification	Notes
Viscosity Range A	10,000 – 1,000,000 cP	Extra-heavy / bitumen
Viscosity Range B	1,000 – 100,000 cP	Heavy oil
Viscosity Range C	500 – 20,000 cP	Medium-heavy oil
Pressure Range	Up to 10,000 psi	68.9 MPa
Temperature Range	Ambient to 180°C	Airbath controlled
Repeatability	± 0.2%	NIST calibration compatible
Wetted Parts	Hastelloy + Stainless Steel	Option: full Hastelloy
Power Supply	220 VAC	Single phase

⚠ Viscosity range (A, B or C) must be specified at time of order — ranges cannot be changed post-manufacture.

ACCESSORIES & KEY COMPONENTS

Measurement Cell

Volume	15 cc
Max Temperature	180°C
Max Pressure	10,000 psi
Material	Stainless Steel or Hastelloy
Drain Valve	1 included

Removable design allows fast cleaning and sample changeover.

Airbath Heater

Type	Forced air circulation
Temp Range	Ambient to 180°C
Function	Homogeneous thermal profile
Control	Electronic PID

Ensures isothermal conditions throughout the measurement cell.

Sample Accumulator

Type	Floating piston
Volume	300 ml
Temperature	Ambient to 180°C
Pressure	Up to 10,000 psi
Wetted Parts	Titanium

Stores live reservoir fluid samples at reservoir conditions.

OPERATION & CALIBRATION

01 Pre-Calibrated

Factory-calibrated at Vinci Technologies facilities before delivery.

02 NIST Re-calibration

Can be recalibrated on-site using certified NIST viscosity standards (silicone oil).

03 Sample Loading

Sensor probe is plunged into the sample at required P & T conditions.

04 Instant Reading

Electronic panel displays dynamic viscosity immediately — no wait time.

WHY VINCI TECHNOLOGIES

Patented Technology

Vibrating-needle measurement based on US Patent 4,558,588 — a proven design with 40+ years in service.

Broad Viscosity Range

Three selectable ranges cover everything from medium-heavy to ultra-heavy crude and bitumen up to 10^6 cP.

Reservoir Conditions

Operates at up to 10,000 psi and 180°C — enabling live-fluid PVT viscosity at true reservoir P&T.

Simple Maintenance

Removable measurement cell, NIST re-calibration on site, minimal moving parts — lowest TCO in class.

Material Flexibility

Standard SS + Hastelloy wetted parts. Optional full Hastelloy upgrade for H₂S / sour-service environments.

Full Service Package

Factory calibration, CIP shipping, on-site commissioning, and 1 day of operator training all included.