

# **Engine Indicator Type 50**



#### **Cylinder Pressure Monitoring**

The mechanical pressure indicator type 50 measures dynamic pressures. It is especially designed to analyze large two stroke Diesel engines.

### Description

The LEUTERT engine indicators are used to draw a single graph of the dynamic pressures in a combustion engine cylinder against the cylinder volume. This so called a P-V curve or indicator diagram can be used to diagnose problems such as leaking valves or incorrect timing. The LEUTERT indicators can be used for any reciprocating engine.

To operate the indicator a sheet of paper is wrapped around the drum. The indicator is mounted to the cylinder head of the engine to be measured. The engine needs to be equipped with an indicator valve to do so. The indicator cord may be pulled manually to rotate the indicator drum. The drum is returned by an incorporated spring. Alternatively the cord may be connected to the cam shaft of the engine so that the drum rotates backwards and forwards with the motion of the piston. If connected to the cam shaft, the circumference of the graph indicates the power of the cylinder. A pen arm is linked to a spring bellow that is connected through a pipe to a valve in the cylinder head. The pressure in the cylinder head moves the pen along the axis of the drum to complete the pressure volume graph.

The sectional drawing of the indicator shows that the bottom part is mounted in the drum support by means of a slotted nut. Depending on the expected maximum pressure, two types of bottom parts are available: One bottom part for the piston rod 1/5 and one for the piston rod 1/10. The upper part consists of the recording mechanism, the piston rod and the ring nut. The recording pencil of the indicator type 50 is interchangeable. To be able to measure higher pressure, the LEUTERT Indicators can be equipped with a smaller piston size. Corresponding to smaller piston size, higher pressure ranges can be indicated with the same spring.

The spring is a double-coiled, easily interchangeable tension spring. All springs are precisely calibrated and marked with the spring number corresponding to the max. pressure rating. When selecting springs, note that the highest frequency of natural vibration can be obtained by using the largest piston possible with appropriately strong spring.

# Features

- Individually calibrated high accuracy heat treated springs
- Rugged and proven design
- Easy and simple operation by unskilled operator
- Cheapest way to analyze your engine
- Ready-to-use equipment

## **Technical specifications**

Measuring ranges	up to 300 bar	
Engine range	up to n = 300 rpm or max. dp/dt = $9 \times 10^3$ bar/sec	
Diagram	max. H 50 mm / L 80 mm	
Drum diameter	50 mm	
Paper size	180 mm x 65 mm	
Dimensions	165 mm x 130 mm x 90 mm	
Weight	1.5 kg without wooden box 4.4 kg with wooden box	
Standard connection	W 27 x 1/10"	

## **Table of Indicator Springs**

Scale	Max. Pressure	Spring-No.	Part-No.
0.35 mm/bar	140 bar	50 / 14 bar	4651.71.14000
0.30 mm/bar	160 bar	50 / 16 bar	4651.71.15000
0.25 mm/bar	200 bar	50 / 20 bar	4651.71.16000
0.20 mm/bar	250 bar	50 / 25 bar	4651.71.17000
0.15 mm/bar	300 bar	50 / 30 bar	4651.71.18000

Piston 1/10, Diameter 6.41 mm

## Standard accessories

1 wooden box, 1 stand for instrument, 1 cord tightening hook, 1 hollow spanner, 1 operating instructions, 1 tube incl. 5 recording pencils, 1 cylinder cleaner, 1 block indicator paper each 40 sheets, 1 spring, 1 measuring scale

Every single device is being tested and calibrated according to our ISO 9001 quality standards and will be supplied with a calibration certificate proving the accuracy of the device.