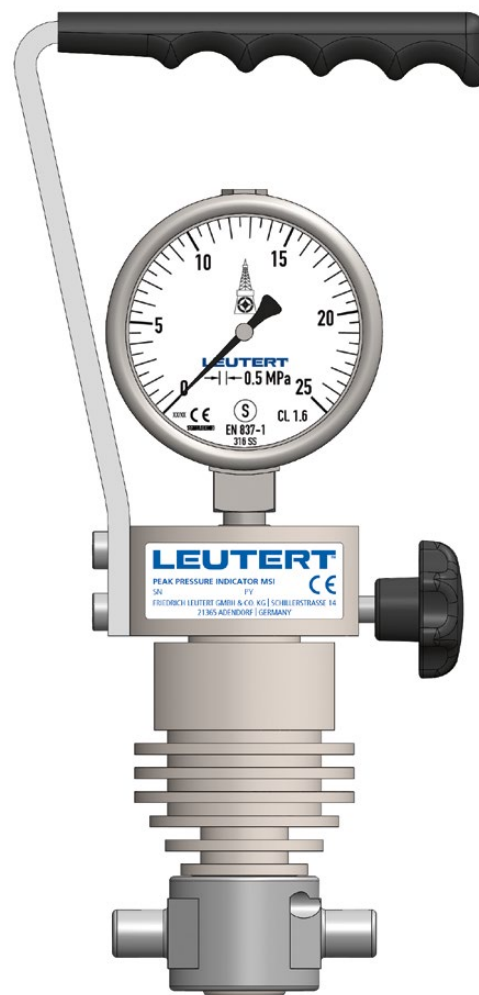


# Peak Pressure Indicator MSI-4

## Operating Instructions



### Engine Indicator

The MSI-4 peak pressure engine indicator is designed for displaying the maximum value of gas pressures which are subject to rapid variations. The device is particularly suitable to measure the peak pressure in Diesel engines.



## EC-Declaration of Conformity

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The Manufacturer

**Friedrich Leutert GmbH & Co. KG**  
**Schillerstrasse 14, 21365 Adendorf, Germany**

declares that the following product:

Product **Peak Pressure Indicator MSI-4**

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Serial No.

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Max. working pressure **25 MPa** Part-No. 102369

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Permissible temperature **ambient -20 to 60°C**

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meets the regulations of the following directives including their alterations being valid at the time of this declarations:

- Machinery Directive 2006/42/EG**
- Pressure Equipment Directive 2014/68/EU (PED), Modul A**

Adendorf,  
place,date

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Representative of executive management for declarations of conformity

## Introduction

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This operating manual provides instructions on how to use this product correctly, effectively and safely for the intended purpose. Please read all instructions, notes on danger and warning attentively. Please follow all safety instructions and precautionary notes in order to avoid damage to people or property during operation. LEUTERT can not be held responsible for damage or injury resulting from improper product use, incorrect operation or lack of maintenance.

This operating manual is directed to technically trained personnel. In case of doubt regarding safety or operational aspects, please do not hesitate to contact LEUTERT for assistance. Should you notice a faulty description or depiction or if you would like to suggest points for improvement, we are looking forward to hearing from you.

Please keep the operating manual near the product to have it available if needed. Make sure that the manual is protected from dirt and moisture.

Explanation of symbols:



### DANGER

indicates a hazardous situation which, if not avoided, will result in death or serious injury.



### WARNING

indicates a hazardous situation which, if not avoided, could result in death or serious injury.



### CAUTION

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



### NOTICE

is used to address practices not related to personal injury.

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– Original edition, manuals in other languages on request –

# 1 General Description

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The Leutert Peak Pressure Engine Indicator MSI-4 measures and displays the maximum gas pressure of each cylinder in large Diesel engines. This pressure is subject to rapid change while the engine is running.

The instrument is hallmarked by simple operation and a high degree of instrumental precision in all speed ranges and may be used to measure engines with a maximum combustion temperature of 350°C. Its sturdy design makes it immune to vibration, with extremely low maintenance requirements.

The MSI-4 consists of a sturdy grip section and a solid stainless steel bottom part with connecting nut and venting screw. A stainless steel pressure gauge, is mounted on top end of the bottom part.

The bottom part also houses a shock absorber and a shutoff system (valve assembly). The shock absorber regulates and stabilizes the buildup of pressure for the display unit. The shutoff system closes as soon as the peak pressure is reached and, thus, enables a correct pressure reading.

The connecting nut enables the MSI-4 unit to be mounted on any indicator valve or cock with a standard W27 x 1/10" thread.

The venting screw may be actuated to reset the device to its zero position after the measuring procedure has been completed.

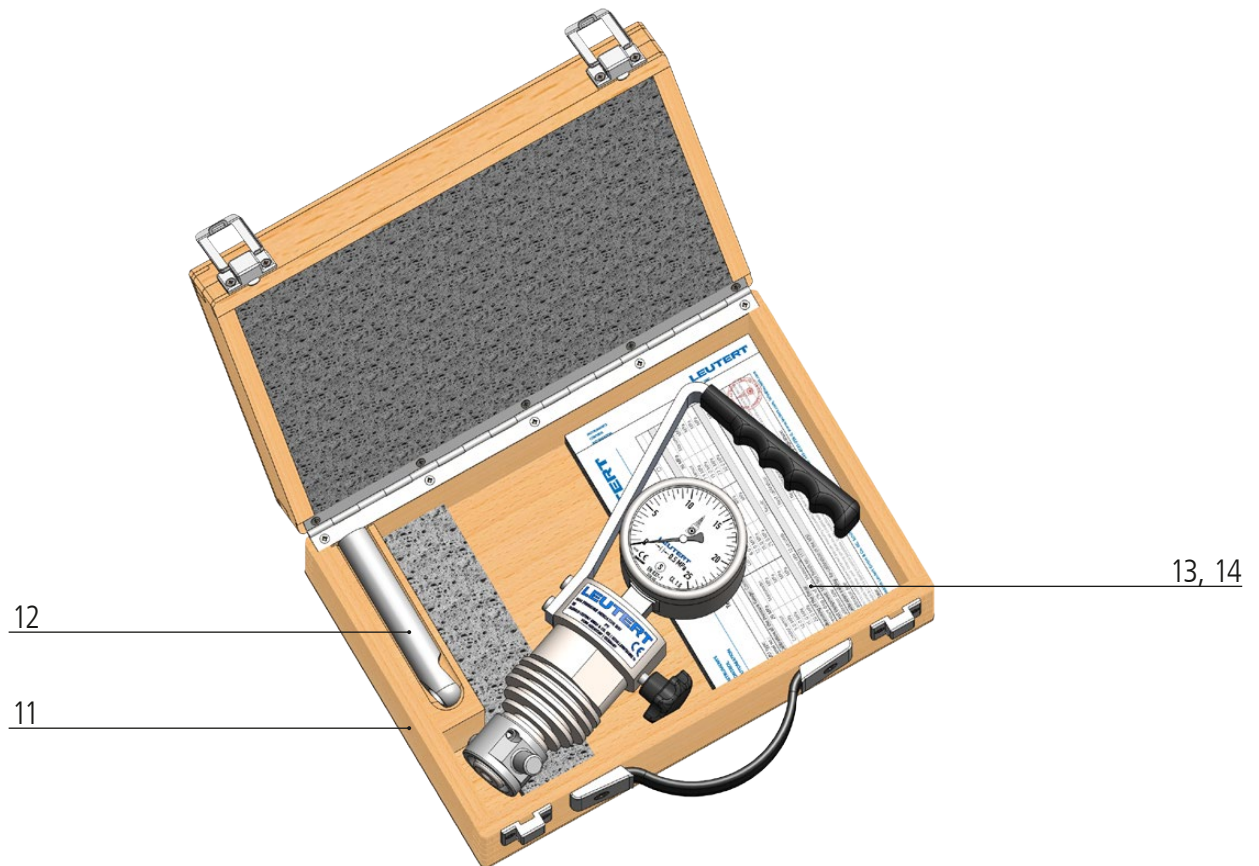
Every single device is being tested and calibrated according to our ISO 9001 quality standards and will be supplied with a calibration certificate proving the accuracy of the device.

## Technical Specifications

Measuring ranges	0 to 160 bar, 0 to 250 bar, 0 to 300 bar, 0 to 25 MPa
Engine range	up to 2,500 rpm
Permissible temperature	ambient -20 to 60°C
Error margin	± 1.6 %
Dimensions	225 mm x 108 mm x 57 mm
Weight	1.8 kg without wooden box, 3.0 kg with wooden box
Standard connection	W 27 x 1/10"

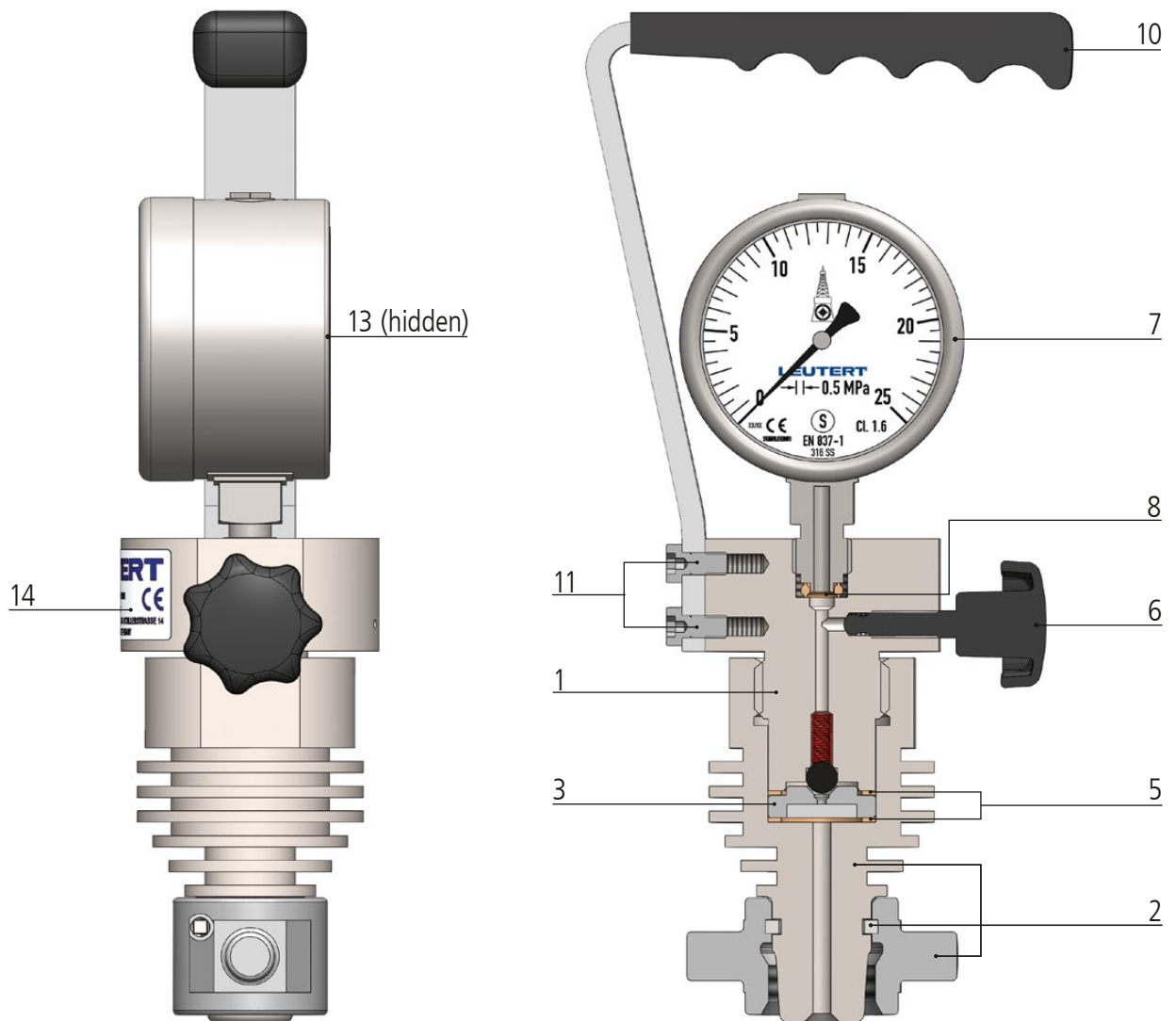
## 2 Assembly Drawing and Inventory

Item	Description	Part-No.
<b>Peak Pressure Indicator MSI-4</b>		
	MSI-4, 25 MPa	102370



Item	Description	Part-No.
<b>Tools and Accessories</b>		
11	Wooden box	4645.11.00013
12	Hollow spanner	4651.98.00002
13	Test protocol	102384
14	Operating instructions	102383

Item	Description	Part-No.
<b>Components</b>		
1	Upper part	102371
2	Bottom part assembly	4645.11.00018
3	Valve assembly	102380
5	Copper seal	9000.00.8912300
6	Venting screw	4645.11.00008
7	Pressure gauge 0 – 25 MPa	102376
8	Pressure gauge seal	9000.00.8912200
10	Handle	102379
11	Hexagonal screw	ISCHRBM05.05500
13	Company label	9000.00.3010700
14	Nameplate	4645.11.00012



### 3 Operating Procedure

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#### WARNING

Check the maximum pressure of the indicator.



#### WARNING

Put on gloves as the instrument will get very hot during operation. The use of safety glasses is required when operating the indicator as hot gas and particles may be ejected from the engine.

Blow out the indicator valve before mounting the indicator to remove possible condensed water, oil or soot deposits which could result in wrong indication of engine pressure.



#### DANGER

The valve ejects hot gas under high pressure. Danger of sparks and burns!

Close the indicator valve.

Mount the indicator onto the indicator valve.



#### WARNING

Exclusively use hollow spanner provided to attach or remove indicator from indicator valve. Hammering on the extensions of the connecting nut will damage the nut. As a result the nut might break apart and detach itself and owing to the presence of high pressure severe injury or death may result.

The indicator should be mounted close to the engine cylinder to be tested. If necessary the indicator connections may be placed at the side of the engine cylinder leaving the indicator in a horizontal position. This will not affect the correct function of the indicator. In some cases extension tubes are required to attach the indicator.

Close the venting screw on the indicator.



#### CAUTION

Whenever the indicator valve is open, the venting screw must remain in closed position and must not be opened.

Open the indicator valve fully.

After a measuring period of approximately 5 seconds, peak pressure readings may be taken.

Please note, that the MSI-4 is designed to measure engines with a maximum combustion temperature of 350°C. The instrument itself must not get hotter than 60 °C.



#### WARNING

Do not exceed the maximum working temperature of 60°C. Detach the indicator immediately from the indicator valve to prevent any unnecessary buildup of heat in the instrument. After approximately 20 measurements allow the indicator to cool down for 10 to 15 minutes.

Close the indicator valve.

Note the readings.

Open the venting screw to reset the device to zero.

Now the next cylinder may be measured.



#### NOTICE

Store the indicator when not in use with the venting screw open in order to allow condensation to escape, which may take a couple of hours.

## 4 Maintenance

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The MSI-4 was designed to be used without virtually any need for intensive maintenance. The pressurized parts are manufactured from corrosion-resistant material and require no further care.

When using the MSI-4, take care that no particles of soot enter the instrument. After every period of use, the tapered connection on the bottom part should be cleaned.

After years of operation the shock absorber valve system might show signs of wear. Spare valves (part no. 102380) may be ordered.

If the upper part is disconnected from the bottom part, the copper seals (part no. 9000.00.8912300) need to be replaced. The same applies if the pressure gauge has been disconnected.

It must be ensured that even after prolonged periods of use correct measurement data can be obtained. The instrument should therefore be returned to the LEUTERT factory or authorized service center for testing and re-calibration every two years.