

# 8185

## Calibrators

User Manual



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## 1. General

### 1.1 Warranty

During the design and manufacturing of this instrument the at most attention has been given to quality and durability.

**This manual contains information needed for the safe and effective use of the capabilities of the instrument.**

**Please read the manual carefully before operating the instrument. By doing so possible damage to the instrument or damage caused by the incorrect use of the instrument can be avoided.**

TRADINCO INSTRUMENTS warrants the instrument in accordance with the Standard Terms and Conditions of the Instrument Trade as issued by the Association bearing the name "Federation Het Instrument" (The Instrument Federation, (filed with the Clerk of Utrecht District Court on 13 January 1993 under number 16/93 and with the Chamber of Commerce and Industry in Amersfoort on 18 January 1993. A copy is available on request.

TRADINCO INSTRUMENTS warrants that this product will be free from defects in materials and workmanship for a period of 5 years from the date of shipment. If any such product proves defective during this warranty period, TRADINCO INSTRUMENTS, at its option, will either repair the defective product without charge for parts or labour, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify TRADINCO INSTRUMENTS of the defect before the expiration of the warranty period and make suitable arrangements for the performance of the service.

Customer shall be responsible for packaging and shipping of the defective product to the service centre designated by TRADINCO INSTRUMENTS, with shipping charges prepaid.

If no defect can be found Customer may be charged for costs of the investigation.

This warranty does not apply to any defect, failure or damage caused by:

- a. Improper use of the instrument.
- b. Battery leakage.
- c. Normal wear of the product.
- d. Modification or repair carried out by or on behalf of the owner or by a third party.
- e. Implementation of modifications to the product that are not supplied or implemented by TRADINCO INSTRUMENTS.

TRADINCO INSTRUMENTS and its vendors will not be liable for any indirect, special, incidental or consequential damages irrespective of whether TRADINCO INSTRUMENTS or the vendor has advance notice of the possibility of such damages.

The type number of the product, as listed on the instrument tag plate, should always be mentioned in any correspondence concerning the product.

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## 1.2 8185 Description

The Tradinco High Pressure Calibrator, 8185 is a universal pressure calibrator, ranging from 0 to 250 bar.

The 8185 is designed for testing and calibrating of low and high pressure pneumatic measurement equipment, regulators, pressure gauges, pressure converters, pressure switches, recorders, etc.

Because of the built-in high pressure gauge and gas bottles it possible to use this test unit at location, independent of any external pressure source or mains power supply.

The 8185 calibrator can be used in hazardous areas without any restrictions.



The 8185 consists of 3 main parts:

- A high precision analogue pressure gauge.
- One pneumatic regulating system.
- Two high pressure gas bottles.

With the 8185 it is possible to measure test pressures generated by the built-in gas bottles as well with test pressures which are generated by an external pressure source.

The aluminum case of the 8185 is provided with a lid which has a handle for carrying the calibrator.

The test and filling hoses are stored in a case in the lid of the carrying case.

Dimensions are (LxWxH) 405x295x255 mm and the weight is approximately 14 kg.

### 1.2.1 CE Pressure Equipment Directive 97/23/EC

The 8185 meets the safety regulations as mentioned in appendix 1 of the European guideline 97/23/EG .

The 8185 is a combination of different pressure component as mentioned in article 1 paragraph 2.1.5.

The maximum volume of the biggest pressure bearing housing is 1 liter with a maximum pressure of 200 bar.

Following table two the 8185 is manufactured in accordance with article 3 paragraph 3 "sound engineering practice" and CE marking based on the PED does not apply.

## 1.3 Symbols Used



Warning for conditions or practices that could result in personal injury, loss of life and/or in damage to the product or other property.



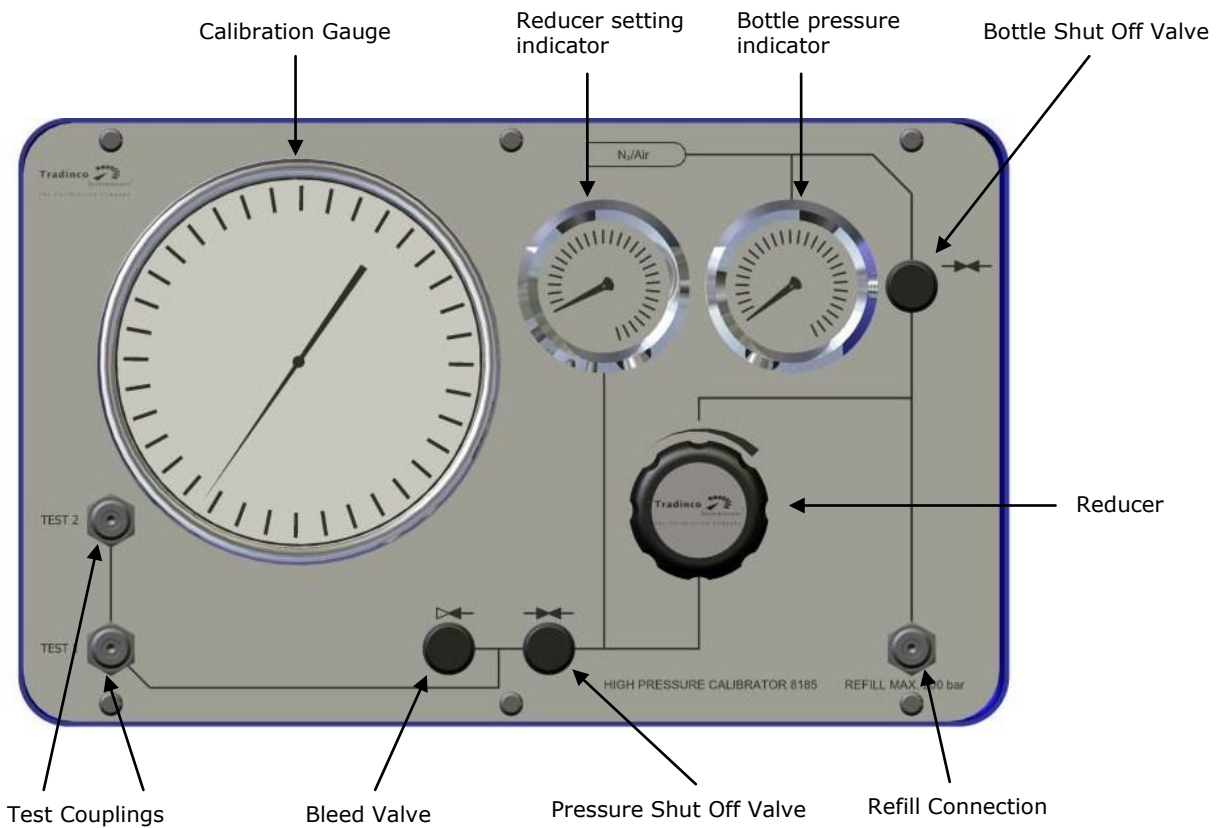
Attention signal or remark

### 1.4 Scope of this manual

This manual contains information for instruments built after January 2011. This manual is a user manual on how to operate the instrument; it is not a calibration instruction manual.

As Tradinco Instruments continuously strives to improve its products, specifications of instruments may be altered without further notice

### 1.5 Calibrator Interface



## 2. Operating Instructions

### 2.1 Set up

Place the unit on a stable table.

- Open the 4 (four) locks and take the lid of the case.
- Check the calibrator for damages.

### 2.2 Operating Instructions

The 8185 is a pressure calibrator with a maximum of 200 bar and is suitable for a so-called "dead end" system. The calibrator includes a high pressure reducer which has to be fed by an external pressure source of maximal 250 bar or by the internal gas bottles. Depending on the range of the calibration manometer positioned in the front of the 8185 calibrator, the range of the reducer is selected. On the outlet of the reducer are a pressure shut off valve and a bleed valve for fine adjustment of the test pressure.

- Close the "bottle shut off valve" by turning it fully clockwise.
- Decrease the "reducer" by turning it fully counterclockwise.
- Close the "pressure shut off valve" by turning it fully clockwise.
- Open the "bleed valve" by turning it fully counterclockwise.
- Connect the "test" coupling to the unit to be calibrated.
- Close the "bleed valve" and open both the "pressure shut off valve" and "bottle shut off valve".
- Slowly increase the pressure with the "reducer" until the maximum admissible pressure for the unit under test is reached.
- Close the "pressure shut off valve", close the "bottle shut off valve" and decrease the "reducer" to minimum.
- Check with the large manometer if there is any leakage; this becomes apparent by an extreme change of the test pressure.
- Remove the pressure from the system by opening the "bleed valve"(1).
- Eliminate any leaks and repeat the test as described above until all leaks are eliminated.
  
- Close the "bleed valve".
- Open both the "bottle shut off valve" and "pressure shut off valve".
- Increase the "reducer" to circa 110% of the desired test pressure. Then close the "pressure shut off valve".
- For regulating the test pressure:
  - Slowly opening and closing the "pressure shut off valve" will result in a pressure increase.
  - Slowly opening and closing the "bleed valve" will result in a pressure decrease.
- A measurement can be performed when the "bottle shut of valve", "pressure shut off valve", the "bleed valve" are all closed.
- Repeat the procedure as often as a new test pressure is desired. When all test pressures have been generated repeat the following sequence for getting the system back to atmospheric pressure:
  - Close the "bottle shut off valve"
  - Open the "bleed valve"
  - Decrease the "reducer" to the minimum.
  - Open the "pressure shut off valve".
  - Disconnect the test hoses



The valves have a soft seat and a tight shut-off. It is not necessary to close them with excess force.

### 2.2.1 Measurement of external test pressures

It is also possible to measure pressures generated by external systems. In this case the reducer and the gas bottle will not be used. All control valves will have to be closed.

## 2.3 Instructions for the refilling of the gas bottles

The refilling of the gas bottles can be done by using either another bottle or a high pressure compressor. The maximal refilling pressure is 200 and the capacity is 2 liters.

When the refilling is done from another bottle, the included RU 3 connector can be used.

The refilling by a high pressure compressor can be made by a direct connection.

- Close both the "bottle shut off valve" and the "pressure shut off valve".
- Increase the "reducer" to maximum.
- Open the "bleed valve".
- Connect the filling hose to the 'refill connection'.
- Set the compressor or the external bottle to a maximum of 200 bar.
- Slowly open the "bottle shut off valve". The gas bottle will be refilled and the pressure of the bottle can be checked on the manometer.
- Slowly let the gas bottle be refilled. A quick refilling will increase the temperature. An increase in temperature will affect the pressure by increasing it. This means no optimal filling will be obtained.
- Close the gas 'bottle shut off valve" and shut-off the compressor.
- To get the filling hose free of pressure, decrease the "reducer" to a minimum and open the 'Pressure shut off valve'
- Then disconnect the filling hose.

## 2.4 End of use

- Close the "bottle shut off valve"
- Open the "bleed valve".
- Set the "reducer" to a minimum.
- Open the "pressure shut of valve".
- Disconnect the unit under test from the unit.
- Disconnect the test hoses and put them in the carrying case in the lid of the 8185.
- Place the lid of the 8185 back on and close the four locks.

## 2.5 Storage

End the utilization of the 8185 as follows:

- Store it indoors, in a temperature between 0 and 60° Celsius.
- Decrease the "reducer" turning it fully anti clock wise
- Open both the "bleed valve" and the "pressure shut off valve".
- Empty the internal gas bottles by slowly opening the "bottle shut off valve".
- Place the lid of the 8185 back on and close the four locks.
- Place the case a horizontal position.

## **2.6 Calibration**

After manufacturing the 8185 has been adjusted and calibrated. The calibration report is supplied together with the instrument.

Before rearranging the 8185 for recalibration, the applicable definitions as stated in the Dutch standard NEN 2649.

### **2.6.1 Adjusting**

The term adjusting in this manual means the following:

- Performing actions required to let a measuring instrument (the 8185) function in such a way that the difference with the primary standard lies within the determined accuracy limits.

### **2.6.2 Calibration**

The term calibration in this manual means the following:

- Determining the value of the deviation of a measuring instrument (the 8185) in respect of an applicable standard. The values are laid down in a measuring report.
- The 8185 must be submitted periodically to a calibration and, if necessary, to an adjustment. The normal calibration interval is 12 months. The calibration interval can be extended depending on the frequency and the circumstances of the use.
- A pressure calibration must be performed over a total of 21 measuring points (11 ascending and 10 descending). The calibration must be performed with a dead weight tester with a minimum accuracy of 0.05% of the measured value.



## 3. Maintenance instructions

Check the 8185 for possible damages on:

- housing
- test connections and hoses
- regulating valves
- pressure gauges

### 3.1 Housing

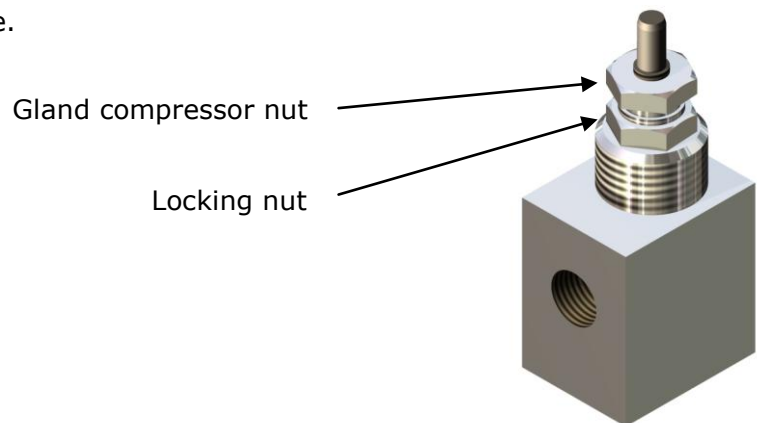
Check the aluminum carrying case and clean it with a non-aggressive and non-corrosive liquid.

### 3.2 Test connections and hoses

Check the test connections and hoses for any damages. If any damages are found they have to be replaced.

### 3.3 Regulating valves

Check the regulating valves for leakage.



If a leakage is detected when the valve is closed, the following procedure has to be followed:

- Open the valve.
- Unscrew the 11 mm locking nut.
- Adjust the 11mm gland compressor nut. Adjustment must be made in order that a light friction is detected when turning the control knob.
- When ready tighten the lock nut again.

A spare part kit with new needle and seats is available at Tradinco Instruments

### 3.4 Pressure gauges

Check that the pressure gauges are firmly fixed to the instruments front panel. Make sure that the sight glasses of the pressure gauges are not cracked or broken and that the dial is in the correct position, not corroded and clearly readable.

### 3.5 High pressure gas bottles

This unit contains high pressure gas bottles. These bottles need regular inspection on:

- Leaks
- Internal / external corrosion
- Damages

The interval for these inspections is 5 year. It is strongly recommended to return this instrument to Tradinco Instruments B.V. for such inspections.

The user of the instrument is strongly advised to handle the bottle carefully and needs to pay attention if corrosive gasses and or fluids are used in the proximity and/or in pressure measuring lines.

If the before mentioned inspections are not carried out in a proper way, by a proper institute, **very serious accidents may occur** to personal and equipment in the proximity of the instrument/bottles. 'Tradinco Instrumenten-Apparaten B.V.' cannot be held liable for any of such incidents.

## 4. Product specifications

### 4.1 General

Pressure Gauge	: Analog, dial size 160 mm, protected against excess pressures
Pressure range	: See data sheet
Test connection	: Minimes 1215 quick connect coupling with internal shut off valve
Test hose/filling hose	: Minimes 1215 ¼" NPT male coupling
Filling hose	: Minimes 1215 + Ru3
Refill connection	: For connection to nitrogen bottle, standard RU-3
Reducer	: Model 8810 max 350 bar
Venting valve	: Model T 1700 soft seat, tight shut-off.
Monitor gauge	: 3 Pieces
Gas bottles	: Maximal working pressure 200 bar, capacity 2 x 1 liter
Safety	: Gas bottles protect by safety valve, set at 220 bar
Carrying case	: Portable case in Aluminum.
Dimensions	: (L x W x H) 405x295x255 mm
Weight	: ±14 kg.
Operating temp.	: 0°C to 60
Certification	: PED 3.3 SEP

### 4.2 Measurement

Pressure accuracy:

- ±0.5% FS
- ±0.25 % FS available on request.

Ranges (others on request): 0- 10/16/25/40/60/100/160/250 bar

### 4.3 Generation and control

Up to 200 bar pressure from the internal gas bottles.

### 4.4 Options & Accessories

#### 4.4.1 Standard Supply includes

- 8185 Calibrator
- Test-hose(Minimes) and test connection ¼" NPT
- Filling hose(Minimes)
- Refill connection(RU-3)
- Calibration Report
- Quick start
- User manual (CD)

#### 4.4.2 Optional Supply

- High pressure connection set 10 – 400 bar
- RvA accredited calibration certificate for pressure, traceable to international standards

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