

Operation Manual GAP CONTROL

Smart Feeler Gauge for Measuring Gap Widths



PITSID Polygraphische innovative Technik Leipzig GmbH Mommsenstraße 2 | D-04329 Leipzig

Tel +49 341 25942-0 | Fax +49 341 25942-99 info@pitsidleipzig.com | www.pitsidleipzig.com



Index

1 General Information	5
1.1 Symbols	5
2 Intended Use and Restrictions	6
3 Safety Instructions	6
4 Technical Data	7
5 The Measuring Device	8
5.1 Scope of Delivery	8
5.2 Storage and Transport	9
5.3 Device Configuration	9
5.4 Control Elements and Connections	10
5.5 Operating Principle	10
6 Measurement	11
6.1 Measurement Preparation	11
6.2 Measurement	11
6.3 Measurement Accuracy Information	12
7 Calibration	12
8 Adding Additional Measuring Wedges	13
9 Maintenance	15
10 Battery Replacement	15
11 Repair, Service	16
12 Disposal	16
Attachment	
CE Declaration of Conformity	
Warranty	
Troubleshooting	18

1 General Information

These operating instructions will help you to set up, operate and maintain the Gap Guage GAP CONTROL.

It contains important instructions that must be observed to ensure safe use. Familiarise yourself carefully with this document before using the measuring device in order to avoid personal injury and material damage.

Keep the operating instructions close to the measuring device so that it is always available for reference. Any application or usage of the measuring device that deviates from or goes beyond the specifications in the operating instructions shall be deemed improper.

Modifications, bypassing or decommissioning of individual components of the measuring device are prohibited. The manufacturer accepts no liability if the measuring device is not used as intended. General safety and accident prevention regulations remain valid in addition to these operating instructions.

1.1 Symbols

Attention	Attention! Slight to moderate personal injury can occur
IMPORTANT	Property damage can occur
l	Important information for operating the measuring device
	NOTE! Note or tip on using the measuring device
*	Cross Reference See also!
Service	Labels of Menus, Panels, Buttons

2 Intended Use and Restrictions

The Gap Gauge GAP CONTROL was developed to carry out distance measurements between hard/hard paired cylinders (or rollers) in printing presses. It may also be necessary to determine distances between cylinders on any other machine. The device uses the contact position of the measuring wedge against the cylinders to determine their gap widths/distances and displays them digitally. On new machines, the measurements are used to assist with installation; on older machines, they are used for troubleshooting and adjustment during servicing and diagnostics.



DE

Follow the health and safety regulations for working on rotating machine parts! Measure only on stopped machines. Secure the machine against unintentional start-up by third parties.

IMPORTANT Contact between the measuring wedge and the cylinder surface can cause damage to the surface.

When using this measuring device, the diameter of the smaller cylinder should not exceed 500 mm to allow manual positioning of the measuring wedge in the cylinder gap.

Distance measurements in printing presses between plate cylinders and rollers or between plate and blanket cylinders or between blanket and impression cylinders are possible, but there will be a greater measuring error in the distance value the more these pairings act as hard/soft.

The measuring device can be used at an ambient temperature of $15^{\circ}C-30^{\circ}C$. (\checkmark Chap. 4 Technical Data).

The GAP CONTROL is not waterproof or dustproof (Chap. 5.2 Transport and Storage). It may only be used in dry environments (Chap. 3 Safety Instructions).

3 Safety Instructions



IMPORTANT	If safe operation of the device is not possible, the measuring device must be deactivated or not started up. If necessary, secure the device against unintentional start-up!
IMPORTANT	The device conforms to protection class III. The device has a degree of protection rating of IP 20.

Further safety instructions, which refer to specific procedures, can be found later in these instructions.

4 Technical Data

Hand-Held Device

Measurement range	1.800 mm – 9.999 mm ✦ Chap. 4 Technical Data/Measuring Wedges
Resolution	0.005 mm
Measurement accuracy	✦ Chap. 4 Technical Data/Measuring Wedges
Temperature	Operation: +15 °C bis +30 °C Storage: -10 °C bis +60 °C
Power supply	9V block battery
Automatic switch off	After 5 min without use
Dimensions (L x W x H)	210 mm x 100 mm x 40 mm
Weight	350 g

Measuring Wedges

Measurement range Standard measuring wedge 1 Standard measuring wedge 2 Special wedges	1.800mm 3.000mm 2.800mm 4.000mm Special size upon arrangement (MIN: 1.800mm; MAX: 9.999mm)
Measurement accuracy Standard measuring wedges	±0.02 mm with a measuring span of 1.2 mm
Dimension (L x B x H) Standard measuring wedge 1 Standard measuring wedge 2 Special wedges	220 mm x 26 mm x 3,6 mm 220 mm x 26 mm x 4,6 mm Special size upon arrangement
Weight Standard measuring wedge 1 Standard measuring wedge 2	60 g 72 g
Accessories	Mounting bracket, Additional weight (160g), Handle extension

5 The Measuring Device

5.1 Scope of Delivery

- Hand-held device (incl. 9V block battery, ready for use)
- Measuring wedge(s)
- Device case
- Operation manual

Optional Accessories

- Additional weight
- Handle extension for the measuring wedge



All parts of the measuring device were inspected before delivery. However, please check the delivery for missing components and transport damage after unpacking. Please contact the supplier or manufacturer in the event of damage or missing system components.

5.2 Storage and Transport

The device must be stored free from dust and moisture (Chap. 3 Safety Instructions). For safe and practical transport, the device case included in the scope of delivery holds the hand-held device, measuring wedges and accessories.

IMPORTANT	Store the hand-held device and measuring wedges in the device case. Protect your measuring device from mechanical damage.
Attention	Loops and tangles on the measuring wedge to hand-held device connection cable can cause hindrances and restrict freedom of movement.

5.3 Device Configuration

The measuring device consists of the hand-held device and a measuring wedge connected by cable. The power is supplied by a 9V block battery.



- (1) Hand-held device
- ② Control panel
- ③ Menu button
- ④ Plus button
- 5 Minus button
- 6 0n/0ff button
- ⑦ Display
- ⑧ Description/measured value
- 9 Operating information
- 1 Battery compartment (backside)
- 1 Measuring wedge
- 1 Measuring wedge identification
- ⁽¹³⁾ Measuring wedge socket
- (1) Measurement zone





DE

5.4 Control Elements and Connections

All buttons required for operation are placed on the control panel of the hand-held device. Input prompts, operating information, descriptions and measurement results are shown in the display.

Symbol	Name	Function
0	ON/Off button	Switching the device on or off, Exiting a selected submenu
>>>	Menu button	Changing a menu item
(+)	Plus button	Inputting parameters
(-)	Minus button	Inputting parameters
۲	Measuring wedge socket	Connecting the measuring wedge (3.5 mm jack plug, 3-pin)

ĺ

To switch the measuring device on and off, press and hold the On/Off button () for a longer period of time.

5.5 Operating Principle

A measuring wedge, on which a sensor is fixed, is inserted between a hard/hard cylinder pairing until its stopping point. The sensor detects the contact position with the cylinder surface. The distance between the cylinders (i.e. gap) is calculated from this contact position and displayed digitally. The diameter of the cylinder pairing must be entered to calculate the measured value.

6 Measurement



Measure the cylinder gap only on stopped cylinders or rollers. Switch off the machine. Secure the machine against unintentional start-up by third parties.

6.1 Measurement Preparation

Hold the GAP CONTROL in your hand or fix the hand-held device to a suitable surface directly on the machine using the built-in magnet on the back of the device. Connect the plug of the measuring wedge into the corresponding measuring wedge socket on the hand-held device

Switch on the GAP CONTROL by pressing and holding the On/Off button () for a longer period of time. Update the correct connected measuring wedge and the cylinder diameters. Measuring wedge parameters of up to 10 different measuring wedges can be stored in the device (Chap. 8 Adding Additional Measuring Wedges). Verify the indicated measuring wedge number with the label of the connected measuring wedge. If incorrect, select the corresponding measuring wedge number with the Plus button (+) or Minus button (-) on the hand-held device.

After selecting the correct measuring wedge, press the Menu button >>>. The diameters of the cylinders D1 and D2 then appear one after another (\rightarrow Chap. 5.5 Operating Principle). These values can be adjusted with the Plus button (+) or Minus button (-).

With the following display gap width ----, the device is ready to use.



The device switches off automatically after 5 minutes of inactivity.

6.2 Measurement

After preparing the measurement (→ Chap. 6.1 Measurement Preparation), the measuring wedge is to be gripped from the side between the thumb and index finger and pushed between the **stopped** cylinder pairing as far as it will go perpendicular to the measuring plane (→ Chap. 2 Intended Use and Restrictions, → Chap 6.3 Measurement Accuracy Information). The measuring wedge's active area (the measurement zone) faces the



cylinder with the diameter D1. Insert the measuring wedge with enough pressure so that it is clamped into the gap in such a way that it will keep its position without tilting when released. The gap width is read on the display in mm.

The display gap width ---- while in the measuring position indicates a measured value outside the measurement range of the measuring wedge.

	Remove the measuring wedge before starting up the machine!
Attention	

6.3 Measurement Accuracy Information

The accuracy of your measured results depends not only on the shape and condition of the measuring wedge but also on the correct position of the measuring wedge in the cylinder gap.



Mechanical damage to the measuring wedge, deformations, but also scratches or dirt can falsify the measured results.

IMPORTANT	Handle your measuring device with care.
IMPORTANT	Avoid strong mechanical stress on the measuring wedge, e.g. by gripping the measuring wedge with tools.
IMPORTANT	Make sure to always remove any contaminants adhering to the measuring wedge.
IMPORTANT	Do not use abrasive cleaning agents.

7. Calibration

The measuring wedges are calibrated by the manufacturer. In order to maintain a high level of measurement accuracy, the measuring wedge must be inspected regularly and recalibrated if necessary. The manufacturer recommends recalibrating the measuring wedge every 2 years, depending on use.

For calibration, send the measuring wedge and the hand-held device to the manufacturer (→ Chap. 11 Repair, Service).

8 Adding Additional Measuring Wedges

Before using additional measuring wedges, they must be initialized on the handheld device. Each measuring wedge has its own set of calibration data. You will find these in the documents of your measuring wedge. Calibration data of up to 10 measuring wedges can be permanently stored in the hand-held device.

l	The measurement accuracy (A Chap. 4 Technical Data/Measuring Wedges) is only ensured if the calibration data corresponding to the measuring wedge is used
(July)	Have additional measuring wedges initialised by the manufacturer.

The initialization of a new measuring wedge includes 2 steps:

- 1. Registration of a new measuring wedge number and labelling of the measuring wedge
- Switch on the hand-held device by pressing the On/Off button () for a long period of time. After updating the device parameters, wedge-no: XXX/YY appears in the display.
- Press the Menu button >>> for approx. 10 seconds until Settings XXX/YY appears.
- Now press the Menu button >>> several times to navigate to the menu item Wedge new.
- Confirm the submenu Wedge new with the Plus button (+). Wedge new XXX/ZZ is displayed.
- Select a free wedge number XXX/UU with the Plus button (+) or Minus button (-).
- Label the measuring wedge with the chosen wedge number XXX/U.
- Press the Menu button >>> until ESC Store appears in the display. Store the measuring wedge number XXX/UU of the new measuring wedge with the Plus button (+).

After saving, the device goes into main menu.

1	Matching the label of the measuring wedge with the measuring wedge number in the hand-held device is the basis for the correlation to the stored calibration data.
ĺ	The registration of a new measuring wedge must be followed by an adjustment of the calibration data.

2. Adjustment of the calibration data

- Press the Menu button >>> several times to navigate in the main menu to the menu item Wedge-No: XXX/UU. Check the displayed wedge number with the wedge number of the measuring wedge XXX/UU to be initialised.
- Press the Menu button >>> for approx. 10 seconds until Settings XXX/UU appears in the display.
- Confirm the submenu Settings XXX/UU with the Plus button (+) (ok).
- Now press the Menu button >>> several times to navigate to the menu item KW1
- Change KW1 with the Plus button (+) or Minus button (-) to the value of the corresponding calibration document.
- In the same way, change the parameters of the following menu items (KW2, R1, R2, deltaR1kal, deltaR2kal, Rokal, LR, Spalt_min, Spalt_max, Resolution) until the menu item Parts is displayed. Confirm the submenu Parts with the Plus button (+) (ok).
- The menu item x01 ... is displayed. Pressing the Plus button (+) sets x01 to 0.000mm. The first 0 blinks. Change the value with the Plus button (+) to the value of the corresponding calibration document.
- Pressing the menu button >>> activates the next digit. Change this value to the value of the corresponding calibration document as well. After the 4th digit, the menu item yo1... appears in the display.
- Repeat the input until all values xo, x1, ... and yo, y1, ... have been transferred. When setting the 4th digit yo, y1, ..., the sign of yo, y1, ... can be changed by pressing the Minus button (-).
- The menu item Menu close appears. Confirm the submenu Menu close with the Plus button (+). The calibration data are stored.

The device goes into measurement mode. The new measuring wedge is now ready for use.



It is recommended to double-check the set calibration data. Repeat the calibration data adjustment and confirm all data entries are correct.

9 Maintenance

The GAP CONTROL requires very little maintenance. Nevertheless, regular maintenance of the measuring device is recommended. The maintenance mainly consists of checking and, if necessary, recalibrating the measuring wedges (Chap. 7 Calibration).

Remove contaminants from the measuring wedge (sensor: PET, base body: aluminium) can usually be removed with a soft cloth. Any minor contaminants can also be easily removed from the ABS plastic housing of the hand-held device using standard cleaning agents and a soft cloth.

IMPORTANT	The device is not waterproof. When cleaning, avoid allowing moisture or liquids to penetrate the measuring wedge and the device.
IMPORTANT	Avoid aggressive or even abrasive cleaners to prevent damaging the surface of the measuring wedge and the device.

10 Battery Replacement

Power is supplied by a 9V block battery. When **Change battery** is displayed, a battery change is required. The battery compartment is located on the back of the hand-held device. Insert the new 9V block battery according to the polarity labelling inside the battery compartment.



If the polarity of the battery is incorrect, the device cannot be switched on.

11 Repair, Service

Repairs and service on the measuring device may only be carried out by the manufacturer.

After contacting, send the device with a short description of the error to the manufacturer.

PITSID Polygraphische innovative Technik Leipzig GmbH

Mommsenstraße 2

D-04329 Leipzig

(P

Tel: +49 341 25942-0 Fax: +49 341 25942-99 E-Mail: info@pitsidleipzig.com

Web: www.pitsidleipzig.com

12 Disposal

PITSID Polygraphische innovative Technik Leipzig GmbH takes responsibility for the disposal of old, sent-in GAP CONTROL measuring devices.

If you dispose of it yourself, you must comply with the current guidelines and safety regulations.



The GAP CONTROL hand-held measuring device must be disposed of as electronic waste in accordance with applicable laws. PITSID Polygraphische innovative Technik Leipzig GmbH is registered in the WEEE directive (Waste Electrical and Electronic Equipment) register under WEEE reg. No. DE73410149.

Attachment

CE Declaration of Conformity

The PITSID – Polygraphische Innovative Technik Leipzig GmbH

Mommsenstraße 2

D-04329 Leipzig

as manufacturer and distributor for the product declares:

Name: Gap Gauge

Series: GAP CONTROL

As of device no.: SMG-300

on the basis of

- EMC Directive 2014/30/EU of the European Parliament and of the Council of February 26, 2014 on the harmonization of the laws of the member states relating to electromagnetic compatibility
- RoHS Directive 2011/65/EU of the European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

that the product described above corresponds in its design and construction as well as in the version placed on the market to the provisions of the EU directives mentioned. If the product is changed without knowledge from the manufacturer, this declaration becomes invalid.

Compliance with the following harmonized standards is confirmed:

- EN 61326-1:2013: Electrical measuring, control, regulating and laboratory devices EMC requirements – Part 1: General requirements
- IEC 61010–1:2010: Safety regulations for electrical measuring, control, regulating and laboratory devices Part 1: General requirements

Complete technical documentation is available. The operation manual for the product is available in German (original) and English.

Leipzig, 05.04.2023

Dr. ²Ing. Thomas Kaulitz Managing Director

Warranty

DE

There is a warranty for the product within the framework of the contractual agreement. There is no warranty claim in the following cases:

- Accidental or wilful damage
- Damage due to failure to observe the documentation
- Unauthorized changes to hardware or software

The warranty claim expires if changes to the product by the customer or by third parties are not agreed upon with PITSID – Polygraphische Innovative Technik Leipzig GmbH and go beyond the activities described in this operation manual. This also applies to repair measures carried out independently or carried out by third parties.

Troubleshooting

Error	Causes	Actions
The device cannot be switched on	No battery	Check the polarity of the battery.
		Change the battery.
	Device defect	Contact the manufacturer.
The device cannot be switched off	User error	Press the On/Off button for a longer period of time.
	Device defect	Remove the battery. Contact the manufacturer.
No measuring wedge	Measuring wedge not connected	Connect the plug of the measuring wedge into the corresponding socket.
	Measuring wedge defect	Contact the manufacturer.



If the error cannot be fixed, contact the manufacturer (A Chap. 11 Repair, Service).