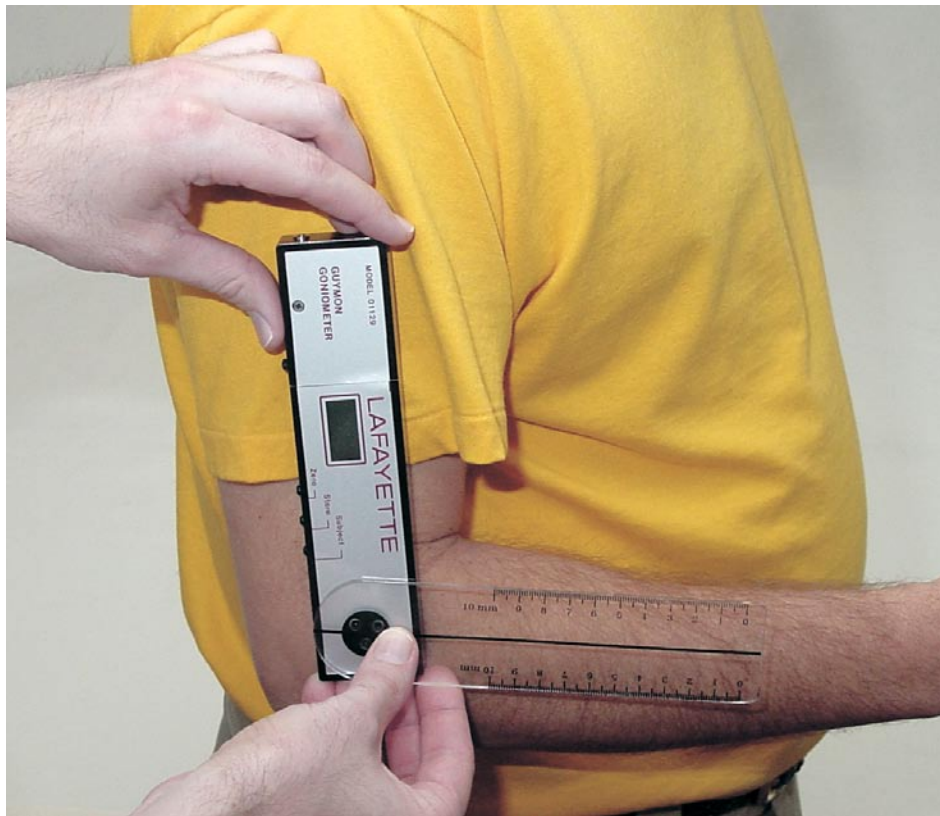


Model 01129

GUYMON GONIOMETER USER INSTRUCTIONS



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KEY FEATURES:

- Dual LCD display (one on each side)
- Optical sensor for high accuracy of measurement
- Full 360 degrees of measurement
- Storage of up to 80 measurement points including subject number
- Output to IBM or compatible computer
- Low battery indication
- Ability to re-orient the display (right-side-up/up-side-down)

SPECIFICATIONS:

Power

2AAA Alkaline Cells Duracell #MN2400 or Equivalent

Battery Life

20-30 hours of continuous operation

Measurement Accuracy

Accuracy ± 1 degree

Repeatability ± 1 degree

Measurement Transducer

Incremental Optical Encoder

Environment

Operating: 0 to 50 degrees Celsius, 10-90% R.H. non-condensing

Storage: -20 to 70 degrees Celsius

Inputs

3 - Push buttons (ZERO, STORE, SUBJECT) Angular movement of the arm.

Outputs

2 - LCD displays, 3 digits each with 0.35" character height, one on each side indicating degrees of angular displacement in measurement mode. The LCD's indicate subject number, data, low battery, and 'buffer full' in other modes. See instructions for details.

1 - TTL asynchronous serial port outputting stored data per the protocol outlined in the instructions for use. This port provides for interface to computers. The 01129IBM provides conversion of TTL signals to RS232 and includes software for interfacing IBM compatible computers equipped with an RS232 port to the 01129 for data downloading, printing, and disk filing.

Mechanical

Clear Arm dimensions: 7" x 1.65" x 0.125"

Display Arm dimensions: 7" x 1.65" x 0.65"

Instrument dimensions: 7" s 1.65" x 0.85"

Instrument weight (including batteries): approx. 7 ounces (200 grams)

Other

10 cm scale on clear arm graduated in millimeters

Lafayette Instrument Guymon Goniometer

MODES:

When the Guymon Goniometer is turned on, it is ready to be used. The Guymon Goniometer has two operating modes; Single Measurement and Multi-Measurement mode.

Single Measurement Mode

This instrument may be used in the standards single measurement mode, which is similar to the operating method of most goniometers. The following steps detail this mode of operation.

1. The ZERO button is pressed momentarily to clear the display or to set a reference. References may be set at any angle to facilitate differential measurements. References at 0, 90, 180, and 270 degrees may be obtained by setting the arm's top or axis end on a flat surface, then rotate the arm so its edge rests on the surface. Now press the ZERO button to set.
2. The arm of the instrument is moved to measure the angle or range of motion of a subject's joint.
3. The measurement is then manually recorded by the user.
4. The above steps are repeated for each measurement.

Multi-Measurement Mode

The instrument operates in the same manner as discussed above. However, the user need not record the measurement, he or she simply presses a button to store the measurement. The user may store multiple measurements per subject or a single measurement for multiple subjects or any combination of the two. The only limit is the total number of measurements. This version can store up to 80 measurements. CAUTION: The measurement data is stored in a volatile memory. If the unit is turned OFF, the data WILL BE LOST!

BUTTON DESCRIPTION SUMMARY:

There are three (3) buttons and one (1) switch on the Guymon Goniometer, which are used to control the instrument. The switch is a simple power ON/OFF switch. The following table briefly describes the function of each button.

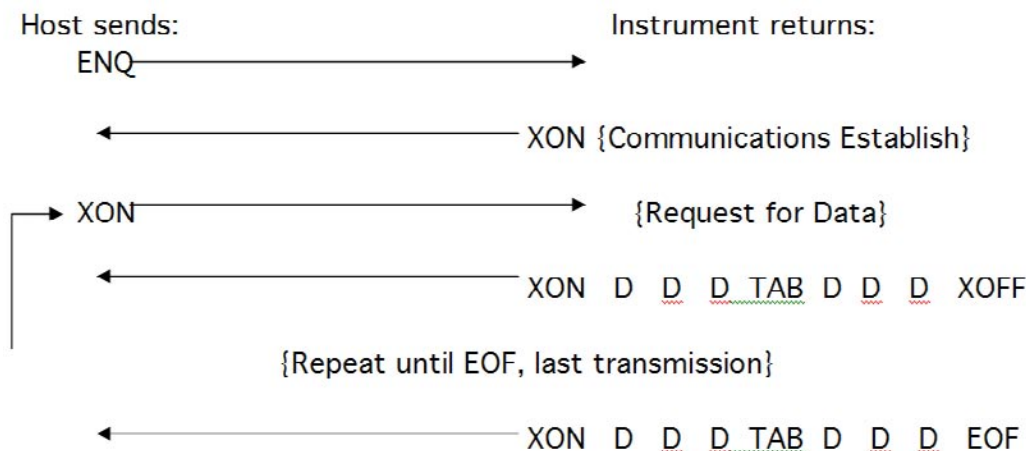
BUTTONS:	MEASUREMENT MODE:	RECALL DATA MODE:
ZERO Pressed momentarily	RESET instrument and CLEAR display	Display data for subject. Scroll through data and subjects in ascending order.
ZERO Pressed and held. (3 seconds)	Changes to RECALL DATA MODE.	Changes to MEASUREMENT MODE.
STORE Pressed once	Store the measurement for current subject #.	Decrement through store list of subject numbers.
SUBJECT Pressed once	Increment subject # for new subject.	Increment through store list of subject numbers

DOWNLOADING DATA TO IBM:

The stored measurement data and subject numbers may also be downloaded (transferred via an RS232 serial port) to an IBM or compatible computer. An RS232 interface box and a serial communications software package is necessary to transmit the data, and these are available from Lafayette Instrument Company. The RS232 interface box is necessary to convert the TTL serial signals from the instrument to ANSI standard RS232 for the IBM. Communications software may be developed by the user, however, Lafayette Instrument Company has available a software package for this purpose. The following describes the data transfer format.

BAUD	9600
Data Length	8 bits
Stop bit(s)	1
Parity	None

To start communications the host (IBM) sends an ENQ command, ASCII (05 hex). The instrument returns an XON, ASCII 17 (11 hex). Communications are now established; data may be retrieved. The host sends an XON, the instrument returns XON followed by three (3) ASCII characters representing the subject number, a TAB character, three ASCII characters representing the measurement data, then an XOFF, ASCII 19 (13 hex). When the end of the data list is reached, the instrument will send an EOF character. ASCII 26 (1A hex). This character replaces the XOFF character on the last data transmission.



NOTE: When the data is being transferred to a host, the display on the instrument will flicker. This is an indication that serial communication is taking place.

LOW BATTERY INDICATION:

The instrument will display “Lo” to indicate the low battery condition. Stored data may still be reviewed or transmitted to a computer. It is suggested that any measurement data be recorded or transferred at this time. The batteries should be replaced with the first occurrence of low battery indication.

DISPLAY ORIENTATION:

Normally, when the instrument is turned ON, the display is oriented such that the display reads left to right (right side up) with the buttons on the instrument pointed DOWN. The display maybe re-oriented such that when the buttons on the instrument are pointed DOWN, the display reads right to left (up side down). Thus, with the buttons on the instrument pointed UP, the display is in the right side up position.

To re-orient the display, follow these steps:

1. Turn the instrument OFF.
2. Press and hold the ZERO button.
3. While holding the ZERO button, turn the instrument ON.

To return the display to its normal orientation, turn the instrument OFF and then back ON.

Once all measurements are taken, the user may recall the data at time. The data may also be downloaded (transferred via an RS232 serial port) to an IBM or compatible computer. The data may be printed to a standard IBM compatible printer. If desired, a standard spreadsheet may be used to manipulate the data. For further explanation on data transfer, see the operating instructions for 01129 IBM communications software.

OPERATION (MULTI-MEASUREMENT MODE):

1. The ZERO button is pressed momentarily to clear the display or to set a reference. References may be set at any angle to facilitate differential measurements. References at 0, 90, 180, and 270 degrees may be obtained by setting the arm's top or axis end on a flat surface, then rotate the arm so its edge rests on the surface. Now press the ZERO button to set.
2. The arm of the instrument is moved to measure the angle or range of motion of a subject's joint.
3. The STORE button is pressed to store the measurement. The store function is indicated by the presence of a blinking decimal point in the display.
4. The above steps are repeated for each measurement on a single subject. Each stored measurement fills a consecutive storage location.
5. Measurements for multiple subjects may be stored. For each stored measurement, a subject number is also stored to label the data. The first subject number is 1. To increment the subject number, the SUBJECT button is pressed. The subject number is preceded by a double quote ("): this is to differentiate subject numbers from measurement data. Following the above steps (1 through 4) will store measurement data tagged with the new subject number (label). Subject numbers are incremental and range from 1 to 80.
6. A total of 80 measurements may be stored. When the storage buffer is full, a message will scroll across the display each time a store is attempted. The message is "BuFFEr FuLL" and it is displayed as is typed here.

DATA RETRIEVAL:

Once all measurements have been taken, the user may review the stored data by entering the RECALL DATA MODE. The following details are the steps necessary to review stored data.

1. To enter RECALL DATA MODE, the user presses and holds the ZERO button for three (3) seconds. The display will initially reset, then indicates RECALL DATA MODE by displaying the last recorded subject number. A decimal point is also displayed.
2. The STORE and SUBJECT buttons decrement and increment through the stored list of subject numbers. The STORE button decrements while the SUBJECT button increments the list.
3. Once the user has selected the subject number, the measurement may be viewed by pressing the ZERO button momentarily. If the ZERO button is pressed again, the instrument will display either the next measurement data for that subject or if only one measurement was stored for that subject, then the next subject number is displayed. The ZERO button can be used to scroll through the data for each in ascending order.
4. The STORE and SUBJECT buttons may be used to quickly go to a particular subject number at any time.
5. To return to the MEASUREMENT MODE, the user presses and holds the ZERO button for three (3) seconds. The display will reset to indicate returning to this mode. The display will show a single d 0 in the right most position.

Guymon Goniometer Demo Printout							
<u>Subject</u>	<u>Data</u>	<u>Subject</u>	<u>Data</u>	<u>Subject</u>	<u>Data</u>	<u>Subject</u>	<u>Data</u>
1	38	6	125	12	54		
1	38	7	82	12	53		
1	39	7	82	13	55		
2	29	7	82	13	54		
2	41	8	98	13	54		
2	39	8	97	14	179		
2	58	8	99	14	179		
2	59	9	27	14	179		
2	58	9	30				
3	71	9	29				
3	71	10	34				
3	71	10	33				
4	153	10	32				
4	155	10	60				
4	156	10	62				
5	28	10	59				
5	28	11	54				
5	28	11	52				
6	123	11	54				
6	124	12	54				

Lafayette Instrument Guymon Goniometer

Model 01129 User's Manual

Ordering Information:

All phone orders must be accompanied by a hard copy of your order. All must include the following information:

- 1) Complete billing and shipping addresses
- 2) Name and department of end user
- 3) Model number and description of desired item(s)
- 4) Quantity of each item desired
- 5) Purchase order number or method of payment
- 6) Telephone number

DOMESTIC TERMS

There is a \$50 minimum order. Open accounts can be extended to most recognized educational institutions, hospitals and government agencies. Net amount due 30 days from the date of shipment. Enclose payment with the order; charge with VISA, MasterCard, American Express; or pay COD. We must have a hard copy of your order by mail or fax. Students, individuals and private companies may call for a credit application.

INTERNATIONAL PAYMENT INFORMATION

There is a \$50 minimum order. Payment must be made in advance by: draft drawn on a major US bank; wire transfer to our account; charge with VISA, MasterCard, American Express; or confirmed irrevocable letter of credit. Proforma invoices will be provided upon request.

RETURNS

Equipment may not be returned without first receiving a Return Goods Authorization Number (RGA).

When returning equipment for service, please call Lafayette Instrument to receive a RGA number. Your RGA number will be good for 30 days. Address the shipment to: Lafayette Instrument Company, 3700 Sagamore Parkway North, Lafayette, IN 47904, U.S.A. Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction.

Please also state the name of the Lafayette Instrument representative authorizing the return. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence.

WARRANTY

Lafayette Instrument guarantees its equipment against all defects in materials and workmanship to the ORIGINAL PURCHASER for a period of one (1) year from the date of shipment, unless otherwise stated. During this period, Lafayette Instrument will repair or replace, at its option, any equipment found to be defective in materials or workmanship. If a problem arises, please contact our office for prior authorization before returning the item. This warranty does not extend to damaged equipment resulting from alteration, misuse, negligence or abuse, normal wear or accident. In no event shall Lafayette Instrument be liable for incidental or consequential damages. There are no implied warranties or merchantability of fitness for a particular use, or of any other nature. Warranty period for repairs or used equipment purchased from Lafayette Instrument is 90 days.

DAMAGED GOODS

Damaged equipment should not be returned to Lafayette Instrument prior to thorough inspection.

When a shipment arrives damaged, note damage on delivery bill and have the driver sign it to acknowledge the damage. Contact the delivery service, and they will file an insurance claim. When damage is not detected at the time of delivery, contact the carrier and request an inspection within 10 days of the original delivery. Please call the Lafayette Instrument Customer Service Department for a return authorization for repair or replacement of the damaged merchandise.



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