BASELINE® EVALUATION INSTRUMENTS

Instruction Manual

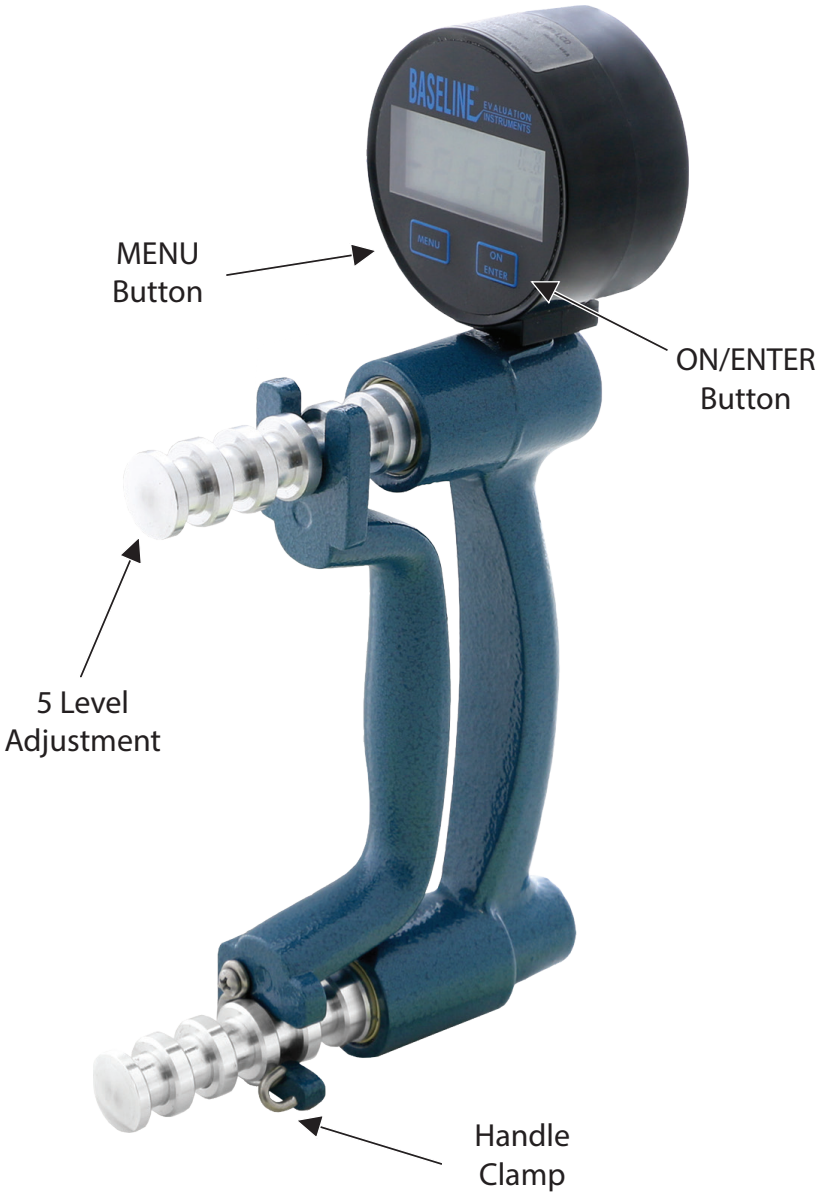
Hydraulic Hand Dynamometer with Digital LCD Gauge

FEI
FABRICATION ENTERPRISES INC.

Manufacturer and Master
Distributor of Physical Therapy
and Rehabilitation Products

REF 12-0247
ver 0723

Parts/Specifications



Specifications	300 lb / 136 kg capacity
Grip adjust range	1.35 in / 3.35 cm
Weight	22.6 oz / 638 gm

Hydraulic Hand Dynamometer with Digital LCD Gauge

Purpose / Intended Use

The purpose of this Medical Device is to measure a patient's grip strength. It can be used to evaluate initial and ongoing impacts of hand trauma and dysfunction. The Baseline Hydraulic Hand Dynamometer can be used to measure isometric force and peak strength with five adjustable grip positions. This helps track strength and rehabilitation over time and is ideal for physical therapy professionals.

How to Use

Set handle to comfortable grip for patient. Reset max indicator to zero. Have patient squeeze with maximum force, note reading. Reset to zero for next test.

Components

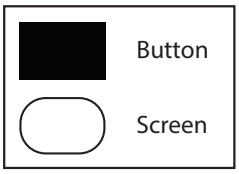
- Machined aluminum handle, post and body
- Bronze bellows
- Stainless steel hydraulic tubing
- Teflon bushings
- Non-toxic mechanical hydraulic pump fluid
- Digital Gauge

Accuracy greater than 97%.

Data

The Baseline® Hydraulic Hand Dynamometer with Digital LCD Gauge can utilize some of data pertaining to the Jamar® Hydraulic Hand Dynamometer. The internal workings of both are hydraulic and bellows-operated.

Instructions



How to turn on/off unit:

Press → ON ENTER

- Press ON/ENTER to switch ON and OFF.

How to zero out unit:

Hold MENU → Zero Screen ZERO UNIT → Hold ON ENTER

- Display "____" on the LCD. Zero the unit and save the Zero Offset.

How to view max:

Hold MENU → Zero Screen ZERO UNIT → Press MENU → Max Screen MAX → Hold ON ENTER

- Exit without changing anything.

How to clear max:

Hold MENU → Zero Screen ZERO UNIT → Press MENU → Max Screen MAX → Press MENU → Max Clear Screen MAX CLR

Hold ON ENTER → Confirm Clear CLR YES? → Hold ON ENTER

- Display "____" on the LCD. Clear MAX to 0 and save the MAX value.

How to switch between LB and KG:

Hold MENU → Zero Screen ZERO UNIT → Press MENU → Max Screen MAX → Press MENU → Max Clear Screen MAX CLR

Press MENU → Select Unit Screen LBKG SEL → Hold ON ENTER → Press MENU → Hold ON ENTER

- Switch the weight unit (LB and KG)
- Display "____" on the LCD. Save the weight unit.

Norms for Adult Grip Strength

A recent study by Dr. Virgil Mathiowetz indicates that "... individuals using the Baseline® dynamometer are justified in using the normative data collected with the Jamar® dynamometer..."

For each test of grip strength, the subject was seated with shoulder adducted and neutrally rotated with the elbow between 0° and 15° ulnar deviation.

The standard test protocol used the mean of three strength tests as a resultant score. A score was taken with both the dominant (right) and non-dominant (left) hands.

The rest results show a relationship between:

- hand strength vs. age
- hand strength of men vs. hand strength of women
- dominant hand strength vs. non-dominant hand strength

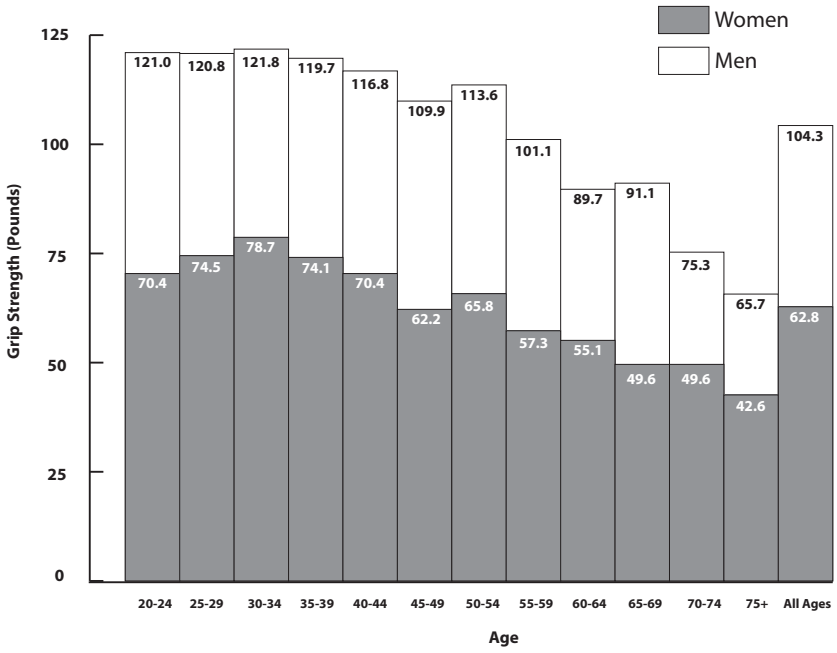
Average Performance of all Subjects on Grip Strength (pounds)- Test results

Men							Women				
Mean	SD	SE	Low	High	Age	Hand	Mean	SD	SE	Low	High
121.0	20.6	3.8	91	167	20-24	R	70.4	14.5	2.8	46	95
104.5	21.8	4.0	71	150		L	61.0	13.1	2.6	33	88
120.8	23.0	4.4	78	158	25-29	R	74.5	13.9	2.7	48	97
110.5	16.2	4.4	77	139		L	63.5	12.2	2.4	48	97
121.8	22.4	4.3	70	170	30-34	R	78.7	19.2	3.8	46	137
110.4	21.7	4.2	64	145		L	68.0	17.7	3.5	36	115
119.7	24.0	4.8	76	176	35-39	R	74.1	10.8	2.2	50	99
112.9	21.7	4.2	73	157		L	66.3	11.7	2.3	49	91
116.8	20.7	4.1	84	165	40-44	R	70.4	13.5	2.4	38	103
112.8	18.7	3.7	73	157		L	62.3	13.8	2.5	35	94
109.9	23.0	4.3	65	155	45-49	R	62.2	15.1	3.0	39	100
100.8	22.8	4.3	58	160		L	56.0	12.7	2.1	37	83
113.6	18.1	3.6	79	151	50-54	R	65.8	11.6	2.3	38	87
101.9	17.0	3.4	70	143		L	57.3	10.7	2.1	35	76
101.1	26.7	5.8	59	154	55-59	R	57.3	12.5	2.5	33	86
83.2	23.4	5.1	43	128		L	47.3	11.9	2.4	31	76
89.7	20.4	4.2	51	137	60-64	R	55.1	10.1	2.0	37	77
76.8	20.3	4.1	27	116		L	45.7	10.1	2.0	29	66
91.1	20.6	4.0	56	131	65-69	R	49.6	9.7	1.8	35	74
76.8	19.8	3.8	43	117		L	41.0	8.2	1.5	29	63
75.3	21.5	4.2	32	108	70-74	R	49.6	11.7	2.2	33	78
64.8	18.1	3.7	32	93		L	41.5	10.2	1.9	23	67
65.7	21.0	4.2	40	135	75+	R	42.6	11.0	2.2	25	65
55.0	17.0	3.4	31	119		L	37.6	8.9	1.7	24	61
104.3	28.3	1.6	32	176	All	R	62.8	17.0	0.96	25	137
93.1	27.6	1.6	27	160	Subjects	L	53.9	15.7	0.88	23	115

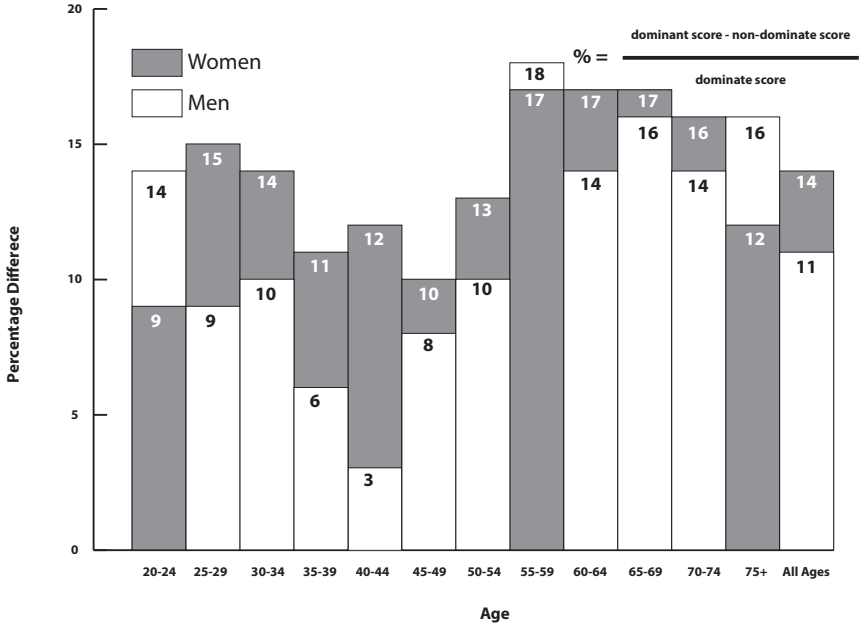
References:

1.Gill D., Reddon J., Renney C., Stefanyk W.: Hand Dynamometer: Effects of Trials and Sessions. Perpetual and Motor Skills 61: 195-8, 1985.
2. Everett P., Sills F.: The relationship of Grip Strength to Stature, Somatotype Components, and Anthropometric Measurements of the Hand. The Research Quarterly 23: 161-6, 1952
3. Mathiowetz V., Federman S., Wiermer D.: Grip and Pinch Strength: Norms for 6 to 19 Year Olds. The American Journal of Occupational Therapy 40: 705-11, 1986
4. Mathiowetz V., Donahoe L., Renells C.: Effect of Elbow Position on Grip and Key Pinch Strength. The Journal of Hand Surgery 10A: 694-7, 1985
5. Mathiowetz V., Kashman N., Volland G., Weber K., Dove M., Rogers S.: Grip and Pinch Strength: Normative Data for Adults. Archives of Physical Medicine and Rehabilitation 66: 69-74, 1985.

Grip Strength (Dominant Hand)



Grip Strength Difference Between Dominant and Non-Dominant Hand



* charts generated from data published in Mathiowetz's article "Grip and Pinch Strength: Normative Data for Adults", Archives of Physical Medicine and Rehabilitation 66: 69-74, 1985

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March 18, 1993

Mr. Elliott Goldberg,
Marketing Director
Fabrication Enterprises Inc.
Trent Building
South Buckout Street
Irvington, NY 10533

Dear Mr. Goldberg,

Recently, I completed the study to determine whether the Baseline and Jamar hydraulic dynamometers can be used interchangeable. A draft of the report has been completed and sent to you. In the summary, I concluded that, "The data from this study suggest that the Jamar and Baseline hydraulic hand dynamometers measure equivalently for practical purposes. As a result, individuals using the Baseline Dynamometer are justified in using the normative data, which was collected with the Jamar dynamometer (Mathiowetz et al., 1985; 1986)." This conclusion assumes that the same standard procedures are followed as were used in the original normative data studies.

Sincerely,

Virgil Mathiowetz

Virgil Mathiowetz, Phd, OTR
Associate Professor &
Research Consultant

WARRANTY

The Baseline® Hydraulic Hand Dynamometer with Digital LCD Gauge is warranted for 2 years covering parts and labor from date of purchase. If unit needs repair, contact your local dealer or Fabrication Enterprises, Inc.

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