BASELINE® EVALUATION INSTRUMENTS

Instructions For Use

Hydraulic Hand Dynamometer with Digital LCD Gauge

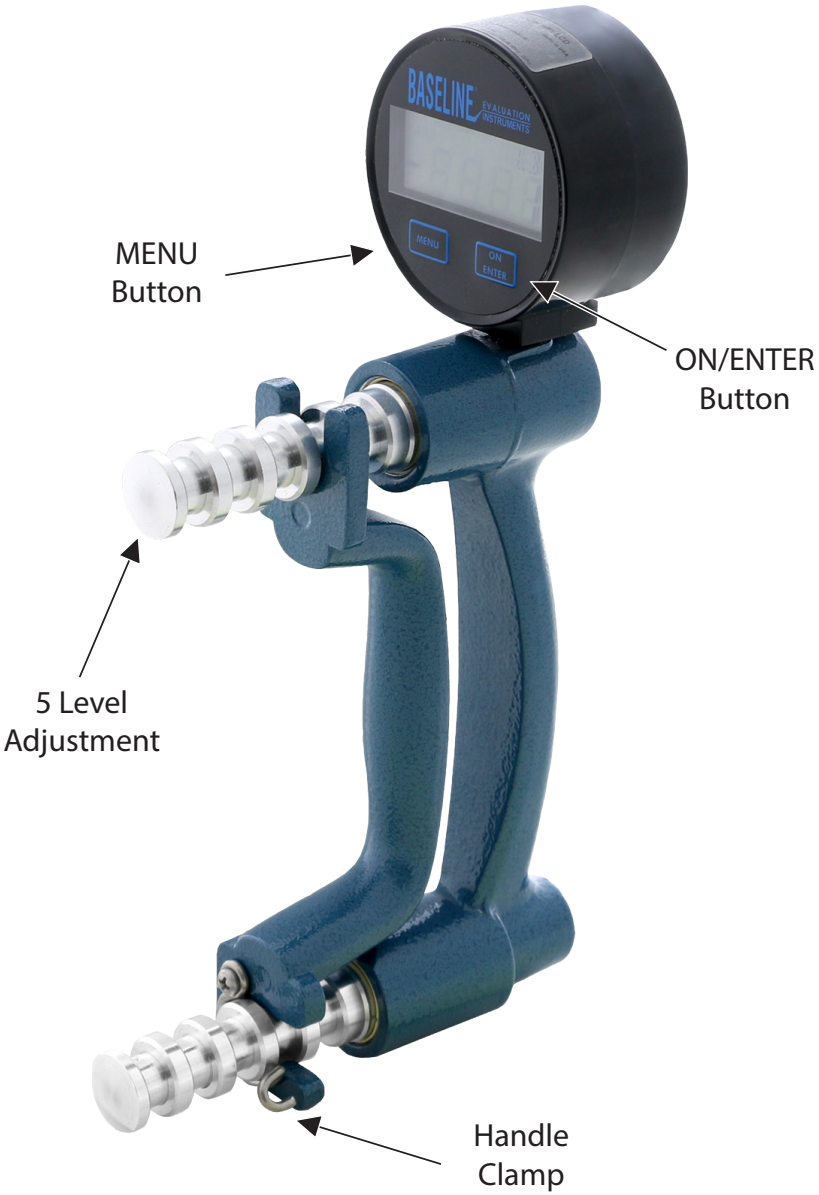
FEI
FABRICATION ENTERPRISES INC.

Manufacturer and Master
Distributor of Physical Therapy
and Rehabilitation Products

REF 12-0247

ver 0425

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

Intended Purpose

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

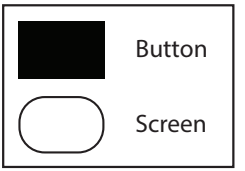
- Machined aluminum handle, post and body
- Bronze bellows
- Stainless steel hydraulic tubing
- Teflon bushings
- Non-toxic mechanical hydraulic pump fluid
- Digital Gauge

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:

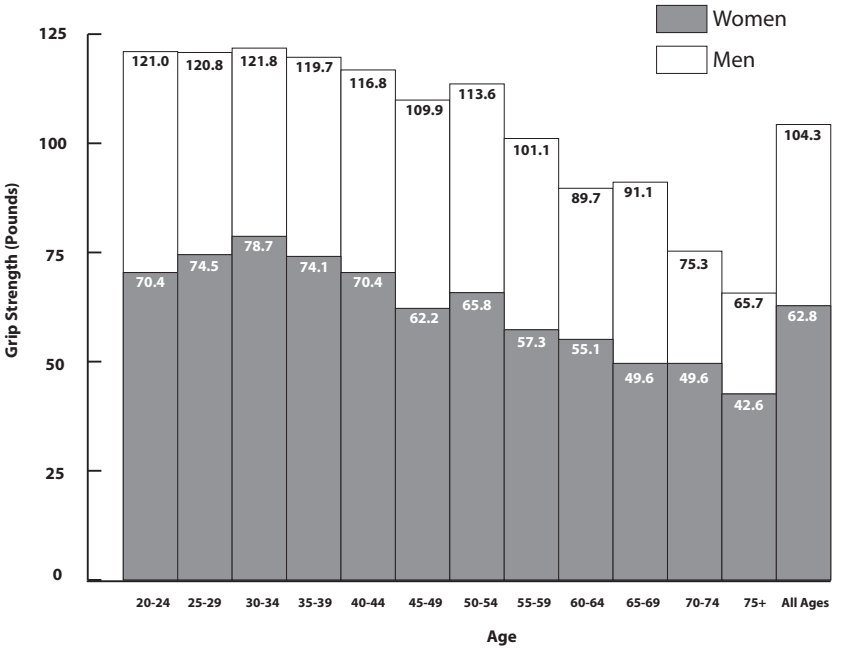
- hand strength vs. age
- hand strength of men vs. hand strength of women
- dominant hand strength vs. non-dominant hand strength

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

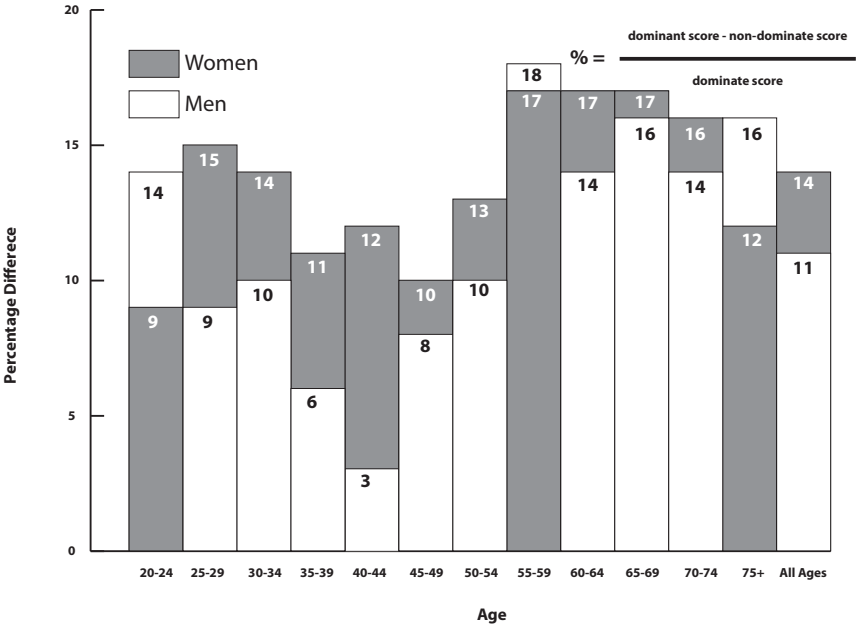
References:

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.

Tolerance of the Dynamometer

The digital extended range 300 lb. hydraulic hand dynamometer is tested for accuracy at 40, 80, 120, 150, 180, 220, 260 and 300 lbs. TOLERANCES (Based on 2% through entire range).

Disposal Method

Dispose of item in accordance with the local/regional/national/ international regulations.

⚠ WARNING:

- Ensure proper hand position and posture during testing
- Clean grip surfaces between patients
- Do not exceed maximum force capacity
- Stop testing if patient reports pain
- Store in protective case when not in use
- Inspect for damage before each use
- Keep moving parts clean and free of debris
- Check hydraulic system for leaks

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