BASELINE® EVALUATION INSTRUMENTS

Hydraulic Hand Dynamometer

Instructions for Use

REF

12-0240 **Standard**
12-0241 **LiTE™**
12-0221 **HD™**
12-0243 **Hi-Res™**
12-0246 **ER™**
12-0271 **Standard (Reverse Feedback Model)**

Carrying Cases Only
12-0256 **(for 12-0240 and 12-0247)**
12-0258 **(for 12-0243, 12-0246)**

Standard Hydraulic Hand Dynamometer (12-0240)

FEI
FABRICATION ENTERPRISES INC.

Manufacturer and Master Distributor of Physical Therapy and Rehabilitation Products

rev0425

BASELINE® EVALUATION INSTRUMENTS

Hydraulic Hand Dynamometer

Intended Purpose:
The hydraulic hand dynamometer is a medical/therapeutic device designed to measure grip strength for hand assessment and evaluation.

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.

Parts/Specifications

Specifications	200 lb / 90 kg capacity
Grip adjust range	1.35 in / 3.35 cm
Weight	22.6 oz / 638 gm

Tolerance of the Dynamometer:
The 200 lb. hydraulic hand dynamometers are tested for accuracy at 20, 60, 100, 140, 180 and 200 lbs. TOLERANCES (Based on 3% through 1st 1/4 of range, 2% through 2nd and 3rd 1/4 of range and 3% through 4th 1/4 of range).

The 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 3% through 1/3 of range, 2% through 2/3 and 3% through 3/3).

⚠ 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

Data:
The Baseline® Hydraulic Hand Dynamometer can utilize same of data pertaining to the Jamar® Hydraulic Hand Dynamometer. The internal workings of both are hydraulic and bellows-operated.

Calibration:
The Baseline® Hydraulic Hand Dynamometer is a sealed unit and calibrated at the factory. However, if indicator needle is out of "zero-range" it may be reset. Remove the clear cover by turning counter clockwise. Adjustment pin located by 90 kg marking. Turn pin to reset to zero.

If unit is leaking hydraulic fluid it should be returned to the factory for evaluation.

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

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.

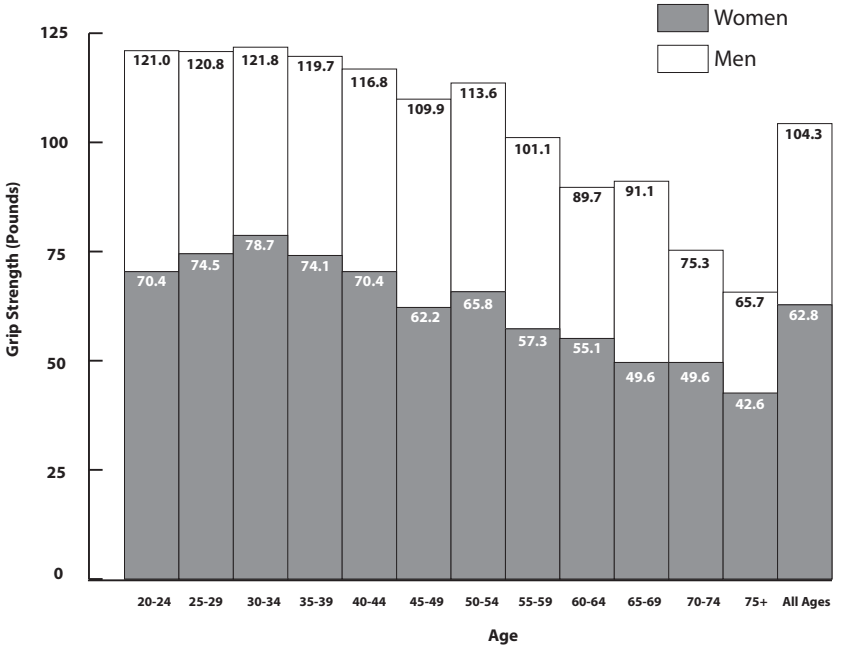
2. Everett P., Sills F.: The relationship of Grip Strength to Stature, Somatotype Components, and Anthropometric Measurements of the Hand. The Research Quarterly 23: 161-6, 1952

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

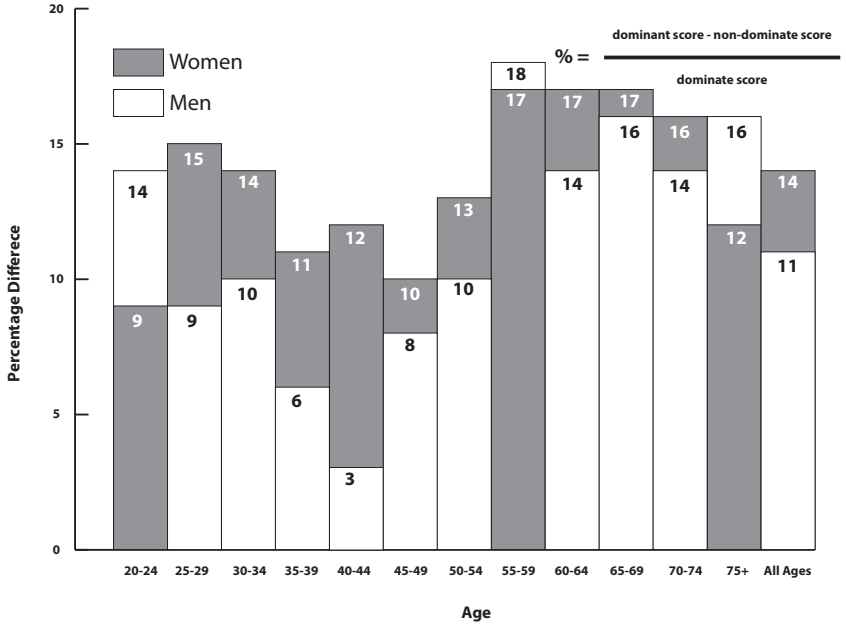
4. Mathiowetz V., Donahoe L., Renells C.: Effect of Elbow Position on Grip and Key Pinch Strength. The Journal of Hand Surgery 10A: 694-7, 1985

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

THE COLLEGE OF
ST. CATHERINE
2004 Randolph Avenue
St. Paul, Minnesota 55105
(612) 690-6000 FAX(612) 690-6024

Virgil Mathiowetz, PhD, OTR
Associate Professor
Department of Occupational Therapy
College of St. Catherine
2004 Randolph Avenue
St. Paul, MN 55105-1794

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

BASELINE® EVALUATION INSTRUMENTS

Hydraulic Hand Dynamometer

WARRANTY

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

12-0241
LiTE™ Hydraulic
Hand Dynamometer

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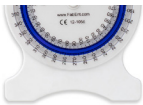

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EC REP MD
AJW Technology Consulting GmbH
Breite Strasse 3
40213 Dusseldorf Germany

MedEnvoy
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