Grip SAEHAN®

Hydraulic Hand Dynamometer

CE MD

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Introduction

The Hydraulic Hand Dynamometer gives accurate grip strength readings without the subject being able to „feel" the handle move.
The adjustable handle has 5 positions to be able to accommodate any hand size.
The indicator remains at the subject's maximum reading until it is reset.
This hand dynamometer has a scale in kilogram.

Intended Purpose & Intended user

Intended Purpose
Hydraulic Hand Dynamometer is to be used to measures grip force and pinch force in pounds and kilograms as rehabilitation equipment of patients.

Intended user
Healthcare professional: Trained medical or paramedical staff who understand how to operate the equipment and to interpret the data

Features

The Hydraulic Hand Dynamometer offers numerous features for standard screening work, as well as for assessing hand trauma and disease.

Dual-Scale Readout
Displays grip force in pounds and kilograms.
Maximum reading is 200 pounds or 90 kilograms.

Peak-Hold Needle
For convenience and ease of recording, it automatically retains the highest reading on the peak-hold needle.
That needle will remain on the gauge until it is reset.

Accurate & Reproducible
It is isometric in use with almost no perceptible motion on the handle, regardless of grip strength.
This ensures accurate, reproducible results.

Adjustable Handle:
To accommodate various hand sizes, the handle can be adjusted to 5 positions from 3,5cm to 8,5cm in 1cm increments.

Benefits

Some patients may be reluctant to exert maximum effort in grip force evaluation. Repeated tests after short rest periods will determine if a patient is exerting maximum effort.

1. Test grip in the usual manner taking readings with the hand grip in each position of the dynamometer.
2. Test the normal hand, followed by the injured hand. Allow the patient to see the readings.
3. After about five minutes, repeat the test.

Usually, if the patient has carreid out the test with full effort, there will be less than 10% variation in results for various grip positions, However, if the patient has not exerted maximum effort, there will be larger, inconsistent variation between the tests.

Operation

The SAEHAN Hytraulic Hand Dynamometer is a precision instrument and its accuracy can be impaired by abuse. Have the patient use the wrist safety strap to minimize the chance of dropping the instrument accidentally.

To Use the Dynamometer :

1. Set the adjustable handle to the desired spacing. Make sure the handle clip is located at the lower (furthest) post from the gauge before moving the handle from one position to another. If you do not replace the handle in the correct position, inaccurate reading will result.
2. Rotate the red peak-hold needle counter-clockwise to 0.
3. Let the patient arrange the instrument so that it fits in the hand comfortably. Request that the patient squeeze with mazimum strength. The peak-hold needle will automatically record the highest force exerted.
4. After the patient has used the instrument, record the reading.
5. Reset the peak-hold needle to zero before recording new readings.

Suggested Standard Procedures

1. Sit or stand comfortably
2. Keep shoulder adducted and neutrally rotated
3. Elbow should be flexed to 90 degrees
4. Forearm in neutral position
5. Wrist in neutral position
6. Repeat each test 3 times and record the average

Suggested Interfering Factors

The following factors have shown positive correlation with grip strength:

1. Weight: 732 gr
2. Hand width: 9.5cm
3. Height: 14cm
4. Mesomorph

Unit : lb

Age Group	Female Scores				Male Scores			
	Right Hand		Left Hand		Right Hand		Left Hand	
	From	To	From	To	From	To	From	To
6-7	20	39	16	36	21	42	18	38
8-9	18	55	16	49	27	61	19	63
10-11	37	82	32	59	35	79	26	73
12-13	39	79	25	76	33	98	22	107
14-15	30	93	26	73	49	108	41	94
16-17	23	126	23	87	64	149	41	123
18-19	46	90	41	86	64	172	54	149
20-24	46	95	33	88	91	167	71	150
25-29	48	97	48	97	78	158	77	139
30-34	46	137	36	115	70	170	64	145
35-39	50	99	49	91	76	176	73	157
40-44	38	103	35	94	84	165	73	157
45-49	39	100	37	83	65	155	58	160
50-54	38	87	35	76	79	151	70	143
55-59	33	86	31	76	59	154	43	128
60-64	37	77	29	66	51	137	27	116
65-69	35	74	29	63	56	131	43	117
70-74	33	78	23	67	32	108	32	93
75+	25	65	24	61	40	135	31	119
All Subjects	25	137	23	115	32	176	27	160

NOTE : The mean scores for individuals, aged 14-19 years, may be slightly low (0-10 lb. lower than they should be) due to instryment error detedted after the study.

(1) Gill D., Reddon J., Renny C., Stefanyk W. "Hand Dynamoter: Effects of Trials and Sessions" Percptual and Motor skills 61: 195-8, 1985

(2) Everett P., Sils F., "The Relationship of Grip Strength to Stature, Somatolype Components, and Anthropometric Measurements of The Hand." The Research Quarterly 23: 161-6, 1952

(3) Mathiowetz V., Federman S., Wlemer D. "Grip and Pinch Strength: Norms for 6 to 19 Tear Olds." The American Journal of Occupational Therapy 40:705-11, 1986.

Unit : kg

Age Group	Female Scores				Male Scores			
	Right Hand		Left Hand		Right Hand		Left Hand	
	From	To	From	To	From	To	From	To
6-7	9.07	17.69	7.26	16.33	9.53	19.05	8.16	17.24
8-9	8.16	24.95	7.26	22.23	12.25	27.67	8.62	28.58
10-11	16.78	37.19	14.51	26.76	15.88	35.83	11.79	33.11
12-13	17.69	35.83	11.34	34.47	14.97	44.45	9.98	48.53
14-15	13.61	42.18	11.79	33.11	22.23	48.99	18.60	42.64
16-17	10.43	57.15	10.43	39.46	29.03	67.59	18.60	55.79
18-19	20.87	40.82	18.60	39.01	29.03	78.02	24.49	67.59
20-24	20.87	43.09	14.97	39.92	41.28	75.75	32.21	68.04
25-29	21.77	44.00	21.77	44.00	35.38	71.67	34.93	63.05
30-34	20.87	62.14	16.33	52.16	31.75	77.11	29.03	65.77
35-39	22.68	44.91	22.23	41.28	34.47	79.83	33.11	71.21
40-44	17.24	46.72	15.88	42.64	38.10	74.84	33.11	71.21
45-49	17.69	45.36	16.78	37.65	29.48	70.31	26.31	72.57
50-54	17.24	39.46	15.88	34.47	35.83	68.49	31.75	64.86
55-59	14.97	39.01	14.06	34.47	26.76	69.85	19.50	58.06
60-64	16.78	34.93	13.15	29.94	23.13	62.14	12.25	52.62
65-69	15.88	33.57	13.15	28.58	25.40	59.42	19.50	53.07
70-74	14.97	35.38	10.43	30.39	14.51	48.99	14.51	42.18
75+	11.34	29.48	10.89	27.67	18.14	61.23	14.06	53.98
All Subjects	11.34	62.14	10.43	52.16	14.51	79.83	12.25	72.57

NOTE : The mean scores for individuals, aged 14-19 years, may be slightly low (0-10 lb. lower than they should be) due to instryment error detedted after the study.

(1) Gill D., Reddon J., Renny C., Stefanyk W. "Hand Dynamoter: Effects of Trials and Sessions" Percptual and Motor skills 61: 195-8, 1985

(2) Everett P., Sils F., "The Relationship of Grip Strength to Stature, Somatolype Components, and Anthropometric Measurements of The Hand." The Research Quarterly 23: 161-6, 1952

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Service Tips

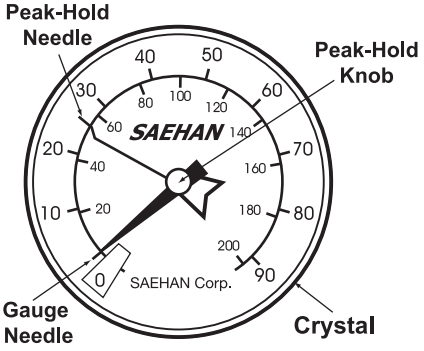
The SAEHAN Hydraulic Hand Dynamometer is designed to provide years of dependable service with minimal maintenance. To make sure the instrument is reading accurately, we suggest occasionally making the few checks listed below. If you detect a problem, please contact us by e-mail describing the nature of the difficulty and including the serial number of the instrument.

Posts
Remove the adjustable handle and check that each post moves up and down freely on its guide (the part that the post bears on), even when you exert pressure on the side of the post. If excessive friction exists between the posts and guide return the dynamometer for service.

Hydraulics
To check the hydraulic mechanism, first remove the adjustable handle. While keeping an eye on the top post, push down on the bottom post. Generally, both posts should move about 1/8""(3.2mm), with top and bottom posts moving in opposite directions. Movements of less than 1/16"(1.6mm) indicates a probable leak in the hydraulic system, which requires service.

Handle
Hold the instrument normally and look carefully at the way the forks of the adjustable handle are supported on the posts. Each fork should touch the post close to its center.
If they do not, please contact us by e-mail describing the nature of the difficulty and including the serial number of the instrument.

Peak-Hold Needle
Check for excessive friction in the peak-hold assembly by turning the peak-hold knob counter clockwise. If the peak-hold needle deflects the gauge needle, return the gauge for service.
If the peak-hold needle should disconnect from the support pin, it can easily be repositioned.
Unscrew the crystal and turn it upside down. Locate the brass pin in the center of the crystal (the pin is part of the chrome knob on the outside of the crystal).
Locate the slot on the brass pin and place the peak-hold needle into this slot.



Calibration
This instrument was calibrated at the factory by loading it at the center with weight and making appropriate adjustments in the gauge.
The calibration should be checked once a year. If the instrument has been dropped or there is some particular reason to suspect that the calibration is in error, the instrument should be serviced immediately.
When the instrument is found to be in need of recalibration we recommend that it be returned to MVS In Motion. Do not try to perform this operation yourself!

Service / Recalibration

When preparing to ship the dynamometer, be certain it is packed in its carrying case and protective carton. Always insure the instrument with the postal service or other shipping service.

Returning hydraulic Hand Dynamometer
Observe the following guidelines if you are requesting repair service:

1. Follow the service tips outlined in this manual to verify the malfunction.

2. If you determine that repair is required, please sen an email to info@mvs-in-motion.com describing the nature of the diffculty and the serial number of the instrument you are returning

3. Wait for written confirmation. We will send you a document to fill out.

4. Return to:

MVS In Motion
Krommebeekpark 11
8800 Roeselare
Belgium

Returning Hand Dynamometer

When you decid to return the hand dynamometer, we expect a written request from you. When you receive our confirmation/approval to send the hand dynamometer back, you can send it to us.

If you send us the hand dynamometer back without ou written approval to dos so, all costs (transport , repair,...) are for you account.

Tranportation and storage conditions

1. General :

- It is not aimed to be used in households.
- It is used in physical therapy rooms, doctors' offices and patients' rooms, etc.
- Equipment can be damaged when dropped to the floor.
  Impossible to expect to work properly any more
  If it works properly, calibration / exactitude should be maintained.

2. Conditions of visibility :

- Ambient luminance range : 100 lux – 1,500 lux
- Viewing distance : 20 cm – 40 cm
- Viewing angle : normal to the display ±20˚

3. Physical :

- Temperature range : 10˚C ~ 40˚C
- Relative humidity range : 10 % ~ 90 %
- Ambient pressure range : 700 hPa – 1,060 hPa

4. Storage and cleaning

Do not use aggressive detergents (solvents etc.). Apply soapy water to moist cloth or use household detergent. Prevent fluid from penetrating into device. Finish by polishing with dry soft cloth. Remove dirt immediately.
Clean the products by wet cloth or towel, and keep products in a case.(storage at room temperature)

Symbols	Meaning
	Manufacturer
	Date of manufactured
	Authorized representative in the European Community
	Medical device
	Serial number
	Batch code
	Catalogue number
	Caution
	Fragile, handle with care
	Keep dry
	Keep away from sunlight
	Consult instructions for use

REF SH5001

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