

Hydraulic Hand Dynamometer, SH5001

Operating Manual



CE
2195

Grip **SAEHAN**[®]
www.saeahanmedical.com

FEATURES

The ***SAEHAN*** 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 (200 pounds or 90 kilograms maximum reading)

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

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

Adjustable Handle - To accommodate various size hands, the handle adjusts to five grip positions: from 1 3/8"(3.5cm) to 3 3/8"(8.6cm), in half-inch increments.

Since grip strength may also vary in an individual patient, this feature allows therapists to quantify grip strength for different size objects.

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 carried 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 a larger, inconsistent variation between the tests.

OPERATION

The **SAEHAN** Hydraulic 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 readings 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 maximum 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 : 9.5 cm
3. Height : 14 cm
4. Mesomorph

OPERATION(Continued)

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 instrymnt error detedted after the study.

- (1) Gill D., Reddon J., Renny C., Stefanyk W. "Hand Dynamoter: Effects of Trials and Sessions" *Perceptual and Motor skills* 61: 195-8, 1985
- (2) Everett P., Sils 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., Wlemer D. "Grip and Pinch Strength: Norms for 6 to 19 Tear Olds."

OPERATION(Continued)

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 instrymnt error detedted after the study.

- (1) Gill D., Reddon J., Renny C., Stefanyk W. "Hand Dynamoter: Effects of Trials and Sessions" *Perceptual and Motor skills* 61: 195-8, 1985
- (2) Everett P., Sils 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., Wlemer D. "Grip and Pinch Strength: Norms for 6 to 19 Tear Olds." *The American Journal of Occupational Therapy* 40:705-11, 1986.

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, return the instrument to ***SAEHAN*** Corporation for servicing.

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

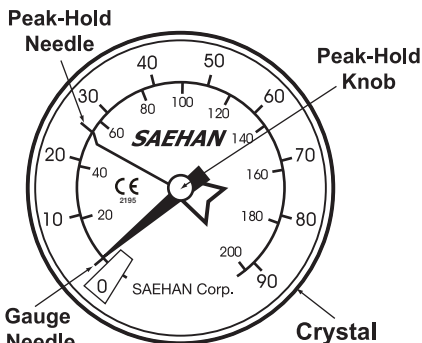
Hold the instrument normally and look carefully at the way the forks of the adjustable handle are supported on the posts. Each fork should touch the post close to its center. If they do not, return the instrument to ***SAEHAN*** Corporation for adjustment.

SERVICE TIPS(Continued)

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 **SAEHAN** Corporation. Do not try to perform this operation yourself! **SAEHAN** will perform the first annual calibration free of charge. Thereafter, recalibration will be done for a service charge.

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. 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, include a letter describing the nature of the difficulty and the serial number of the instrument you are returning.
3. Return to:

SAEHAN Corporation
23-29, Bongamgongdan 13-gil,
Masanhoewon-gu, Changwon-si,
Gyeongsangnam-do, 630-803, S.Korea

WARNING ;

The worst damaged is occurred by dropping down to the floor. When using, wear the strap on the wrist.

LIMITED TWO-YEAR WARRANTY

SAEHAN warrants this Hand Dynamometer to be free from defects in workmanship and materials for two years from the date of purchase. If this instrument is found to be defective during the two-year period, ***SAEHAN*** will repair or replace it, at its discretion. Thereafter, if a defect occurs, there will be a service charge for repairs. This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.

Manufacturer

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