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5030J1

PATTERSON
MEDICAL

JAMAR®
a Patterson Brand

Hydraulic Hand Dynamometer Owner's Manual

The recognized standard for the measurement of hand grip strength

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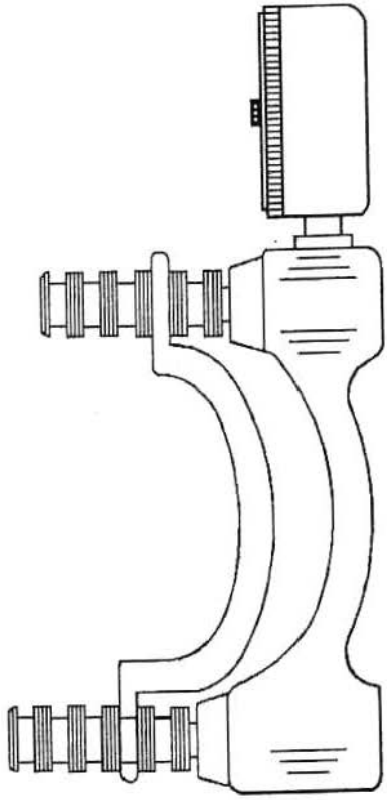
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ABOUT THE JAMAR®

For over 45 years the JAMAR Hand Dynamometer has been the industry standard for grip strength data collection. Many states use the JAMAR Hand Dynamometer as a standard testing instrument for compensation determinations.

If you have specific questions about the JAMAR Hand Dynamometer, feel free to call us toll-free at 1-800-323-5547.



FEATURES

The JAMAR® Hand Dynamometer offers many features for routine screening as well as evaluation of hand trauma and disease.

Dual-Scale Readout — The JAMAR Hand Dynamometer displays grip force in pounds and kilograms up to 200 pounds or 90 kilograms.

Peak-Hold Needle — Automatically retains the highest reading until reset. Ideal for easy recording.

Accurate and Reproducible — The JAMAR Hand Dynamometer is isometric in use and allows almost no perceptible motion of the handles, regardless of grip strength. Along with a comfortable grasp the JAMAR Hand Dynamometer ensures accurate and reproducible results.

Adjustable Handle — Accommodates various size hands. The JAMAR handle adjusts to five grip positions: from 1⅜" to 3⅜", in half-inch increments.

The adjustable handle allows therapists to quantify grip strength for different size objects since the size of the object being grasped may vary the grip strength on an individual patient.

OPERATION

To use the dynamometer:

1. Set the adjustable handle to desired spacing. (Before moving the handle from one position to another, note that the handle clip is located at the lower post (furthest from the gauge). If the handle is not replaced in the correct position, the readings will not be accurate.

2. Rotate the red peak-hold needle counter-clockwise to 0.

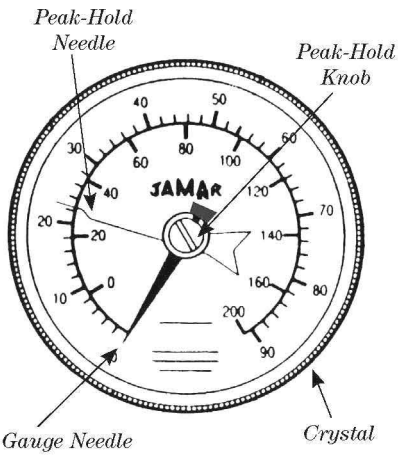
3. Let the patient comfortably arrange the instrument in his/her hand . Have patient squeeze with their maximum strength. The peak-hold needle will automatically record the highest force exerted.

4. Record the reading and reset the peak-hold needle to zero.

NOTE: Due to temperature extremes during shipping, the gauge needle on your new JAMAR® Hydraulic Hand Dynamometer may not be resting on zero when you receive the instrument.

If this is the case, the gauge needle can be easily repositioned by following these steps.

1. Unscrew the crystal and locate center screw that holds gauge needle.
2. Carefully hold the needle between your thumb and first finger.
3. Using a screwdriver, turn the screw clockwise to move the needle lower or counterclockwise to move the needle higher.
4. Check the needle to make sure it is not bent before replacing crystal.



OPERATION (continued)

Normative Grip Strength Data [2,3]

		Males		Females	
Age	*Hand*	*Mean*	*SD*	*Mean*	*SD*
6-7	R	32.5	4.8	28.6	4.4
	L	30.7	5.4	27.1	4.4
8-9	R	41.9	7.4	35.3	8.3
	L	39.0	9.3	33.0	6.9
10-11	R	53.9	9.7	49.7	8.1
	L	48.4	10.8	45.2	6.8
12-13	R	58.7	15.5	56.8	10.6
	L	55.4	16.9	50.9	11.9
14-15	R	77.3	15.4	58.1	12.3
	L	64.4	14.9	49.3	11.9
16-17	R	94.0	19.4	67.3	16.5
	L	78.5	19.1	56.9	14.0
18-19	R	108.0	24.6	71.6	12.3
	L	93.0	27.8	61.7	12.5
20-24	R	121.0	20.6	70.4	14.5
	L	104.5	21.8	61.0	13.1
25-29	R	120.8	23.0	74.5	13.9
	L	110.5	16.2	63.5	12.2
30-34	R	121.8	22.4	78.7	19.2
	L	110.4	21.7	68.0	17.7
35-39	R	119.7	24.0	74.1	10.8
	L	112.9	21.7	66.3	11.7
40-44	R	116.8	20.7	70.4	13.5
	L	112.8	18.7	62.3	13.8
45-49	R	109.9	23.0	62.2	15.1
	L	100.8	22.8	56.0	12.7
50-54	R	113.6	18.1	65.8	11.6
	L	101.9	17.0	57.3	10.7
55-59	R	101.1	26.7	57.3	12.5
	L	83.2	23.4	47.3	11.9
60-64	R	89.7	20.4	55.1	10.1
	L	76.8	20.3	45.7	10.1
65-69	R	91.1	20.6	49.6	9.7
	L	76.8	19.8	41.0	8.2
70-74	R	75.3	21.5	49.6	11.7
	L	64.8	18.1	41.5	10.2
75+	R	65.7	21.0	42.6	11.0
	L	55.0	17.0	37.6	8.9

You can order a laminated, 18" x 24" JAMAR Norms Wall Chart (#C9266-43) by calling 1-800-323-5547.

Proper Grip Strength Testing Procedures When Using Normative Data

Have the individual sit with their shoulder adducted and neutrally rotated, elbow flexed at 90°, forearm in neutral position, and wrist between 0° and 30° dorsiflexion and between 0° and 15° ulnar deviation. Set the JAMAR® Hand Dynamometer to the second handle position from the inside. Lightly hold around the readout dial to prevent inadvertent dropping. After the individual is positioned properly, say, "Squeeze as hard as you can...harder!...harder!...relax." [1]

Record the scores of three successive trials for each hand tested. The average score of the three trials can be compared to the normative data on the left, which is in pounds. From a statistical perspective, scores within two standard deviations of the mean are considered within normal limits. In addition, the individuals' ability to use their hand functionally needs to be considered when interpreting a grip strength performance.

1. Mathiowetz, V., Weber, K., Volland, G., & Kashman, N., (1984). Reliability and Validity of Hand Strength Evaluations. *Journal of Hand Surgery*, 9A, 222-226.
2. Mathiowetz, V., Kashman, N., Volland, G., Weber, K., Dowe, M., & Rogers, S. (1985). Grip and Pinch Strength: Normative Data for Adults. *Archives of Physical Medicine and Rehabilitation*, 66(2) 69-74.
3. Mathiowetz, V., Weimer, D.M., & Federman, S.M. (1986). Grip and Pinch Strength: Norms for 6- to 19- Year Olds. *American Journal of Occupational Therapy*, 40(10) 705-711.

SERVICE TIPS

The JAMAR® Hand Dynamometer provides reliable service, with minimum maintenance. Occasionally, it's a good idea to make a few checks (as listed below) to make sure the instrument is reading accurately. If you detect a problem, return the instrument to Patterson Medical for servicing.*

Posts

Remove the adjustable handle and check that each post moves freely up and down on its guide (the part the post bears on), even when you exert pressure on the side of the post. About once a year, place a small amount of grease on the two guides. If excessive friction exists between the post and guide, return the dynamometer for service.*

Hydraulics

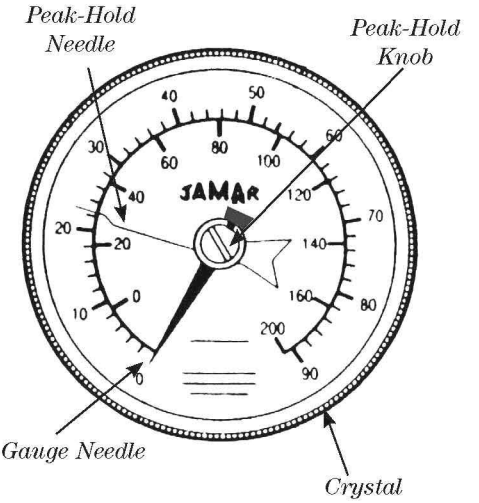
To check the hydraulic mechanism, first remove the adjustable handle. While watching the top post, push down on the bottom post. Normally, both posts should travel about 1/8", with top and bottom posts travelling in opposite directions. Travel less than 1/16" requires service since it indicates a probable leak in the hydraulic system.*

Handle

Grasp the instrument normally and carefully look at the way the forks of the adjustable handle are supported on the posts. Each fork should touch the post approximately at its mid-point. If not, return the instrument for adjustment.*

* See page 8 for instructions.

Peak-Hold Needle



Turn the peak-hold knob counter-clockwise to check for excessive friction in the peak-hold assembly. If the peak-hold needle deflects the gauge needle, return the gauge for service.

If the peak-hold needle is knocked off its support pin, it can readily be re-positioned. 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

The JAMAR® Hand Dynamometer is calibrated by loading the center with weight and making appropriate adjustments in the gauge. It is not recommended that the user perform this operation, but rather, that the instrument be returned to Patterson Medical for calibration. The calibration should be checked on a regular basis. If the instrument has been dropped or there is any reason to suspect that the calibration is erroneous, the instrument should be serviced immediately. See page 8 for instructions.

SERVICE/RECALIBRATION

Call toll free 1-800-323-5547 to receive a repair request and authorization (RA) number and shipping instructions.

LIMITED ONE YEAR WARRANTY

Patterson Medical warrants the JAMAR® 5030J1 Hand Dynamometer to be free from defects in workmanship and materials for one year from the date of purchase. Patterson Medical will repair or replace, at its discretion, any instrument found defective during this period. If failure occurs after the one year warranty period, repairs will be made for a service charge. This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

REFERENCES

The JAMAR® Hand Dynamometer has been in use for over 40 years, and has led to numerous data developments. Below is a partial list of references that may be used in order to further research data concerning the JAMAR Hand Dynamometer.

1. Delheimer S., Focht D., Schapmire D., Stewart T., St. James J.D., Townsend R. "Simultaneous Bilateral Testing: Validation of a New Protocol to Detect Insincere Effort During Grip and Pinch Strength Testing." *The Journal of Hand Therapy* 15: 242-250, 2002.

2. Ewing-Fess, E. "A Method for Checking JAMAR Dynamometer Calibration." *Journal of Hand Therapy* 1. 1: 28-32, 1987.

3. Gill D., Reddon J., Renney C., Stefanyk W. "Hand Dynamometer: Effects of Trials and Session." *Perceptual and Motor Skills* 61: 195-8, 1985.

4. Mathiowetz V., Federman S., Wiemer D. "Grip and Pinch Strength: Norms for 6 to 19 Year Olds." *The American Journal of Occupational Therapy* 40: 705-11, 1986.

5. 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.

6. Mathiowetz V., Dove M., Kashman N., Rogers S., Volland G., Weber K. "Grip and Pinch Strength: Normative Data for Adults." *Arch Phys Med Rehabilitation* 66: 69-72, 1985.

7. Mathiowetz V., Weber K., Volland G., Kashman N. "Reliability and Validity of Grip and Pinch Strength Evaluations." *The Journal of Hand Surgery* 9A: 22-6, 1984.



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