



# ROSSCRAFT

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## ROSSCRAFT INSTRUMENTS TECHNICAL NOTES



Any product or practice can be improved. For 25 years, Rosscraft has responded to scientists and health professionals. The Centurion Kit reflects a consensus of what is required for comprehensive anthropometry for individual and team deployment. The Research and Development Division of Rosscraft Innovations Incorporated is committed to continual development of instruments, publications, course and individual learning materials concurrent with direct involvement in research. We preview items in our technical notes because our FOR's, Friends of Rosscraft, plan ahead and need to know what is under development and that their input is welcome.

All sales and services are handled by [rosscraft@datamedia.ca](mailto:rosscraft@datamedia.ca). This is the corporation generic email. Quotations and sales are handled immediately and communications forwarded to colleagues in our Research and Development Division <http://www.rosscraft.ca/> or our FOR's who have specific expertise.

We also maintain **Links** (recommended websites for human biologists and health professionals), **Quote un Quote** (appreciated by those who contribute and feel it is an antidote for narrow specializations in science and the health professions and **CompBib** a contributed bibliography of papers and publications relevant to those who use anthropometry and are focused on the interface between anatomy and physiology. The topics mainly have to do with growth and aging, exercise, performance, maturation, gross function and nutrition. CompBib is inclusive rather than exclusive. However, there is an emphasis it is on theory, technique and technology related to problem solving enterprise. These collations are included in the Animated Essay Series or sent as email attachments to contributors.

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The Rosscraft line of Campbell calipers are named after the late Mr. Robert Campbell, the inventor of the double siding branch principle, an exclusive Rosscraft design feature under US patent No. 4265021. To our knowledge, it is the only caliper manufactured in the world that has long branches that do not bind under pressure at the tips.

1. **Campbell 20** torso breadths such as biacromial, transverse chest, biiliocrystal, etc. are obtained with straight branches. AP Chest, and some head measurements are made using the AP Extension or Branch Pointers with olive tips. These are exactly 10 cm each (and can be calibrated using an adjustable screw and lock nut). Thus the caliper reading from AP branch tips will be 20 cm too large (easily corrected by subtracting a 20 cm constant in the data entry program or spreadsheet).

4. **Campbell 10** small bone caliper, 18 cm, based on the sliding branch principle, has pressure plates 10 mm diameter that provide areas that encompasses epicondyles and boney landmarks.

5. **Tommy 3** small bone caliper, 15 cm, based on an inverted "T" principle. This is an alternate instrument to the Campbell 10 (it is an updated model that replaces the popular entry level professional Tommy 2 caliper used extensively for O-Scale Physique Assessment Systems and the anthropometric derivation of Heath-Carter Somatotype ratings).

**6. Segmometer 4** for measuring lengths evolved from a prototype retractable carpenter or engineer's tape for use in Nigeria by Dr. Linda Blade. We affixed cotter-pin pointers with rubber bands for a sliding pointer and used 5-minute epoxy glue for attaching a fixed pointer. We found that the rustic instrument was as good or better than the classical anthropometer for obtaining projected heights and direct segmental lengths. Another prototype was designed in Australia by the University of Western Australia and used in the Kinanthropometric Aquatic Sports Project. The machined Rosscraft models dispense with the housing using only a flexible tape, with a machined base and slider indicator. Replicated measures in ISAK certification courses using the Rosscraft segmometer set a new standard for precision for measurement of both projected lengths from a box of known height or from direct measurements of landmark to landmark.

Technical note: Care must be taken to wind the tape with the convex side in the inside of the coil, winding against the convex side may cause crimping. All new models with a flat base plate pointer are read from the near edge of the slider for both direct and projected measures.

**4 Headboard and cm tape.** This is a portable, practical alternative to a stadiometer for measuring stature and sitting height. The headboard, consists of a horizontal plane and a triangle. Techniques for orientation of the head, in the Frankfort plane, marking heights and measurement are fully described in the ISAK standardization manual and explicitly illustrated in various Rosscraft publications including *Anthropometry Illustrated*, *Anthropometry Fundamentals* and the DVD menu driven movie, *Anthropometry Technique*. A retractable cm tape accompanies the headboard.

Rosscraft currently is designing and field testing a high end portable stadiometer that can be installed in a laboratory and quickly disassembled for a carrying case and installed anywhere, accommodates tall and short subjects. The Cordura case is 90 X 35 X 12 cm, weight 5 kg.

**5. Anthropometric tape** is a steel flexible tape with a filed notch and patch zero indicator to provide a better reading interface than a single zero line since the interface has no area. The notch helps orient the tape and align on the interface.

The scale on the obverse side is a diameter scale, the increments enlarge by  $\pi$  times the incremental circumference or linear scale values, e.g., 30.0 cm circumference girth is about 9.5 cm in diameter. The diameter scale has no apparent use in anthropometry as it has in the forest industry for assessing diameters of tree trunks and rolls of paper.

**8. Weight scales:** Not included in the Kits. 1. Preferred Professional metric portable strain gauge scale. accurate to 0.05 mm It has memory functions for tracking, and a zeroing feature that permits a mother to step on scale, zero, and obtain her baby's exact weight when placed in her arms. Shipping weight 3.5 kg. 2. Affordable Entry Level Professional Scale with replaceable type battery, digital readout accurate to 0.10 mm.

Some scales that have a BMI function or nonsensical extrapolation about ideal body weight are not a recommended feature. The information is invalid. (***BMI: a conspiracy of ignorance***, a free PDF file is available by email request). A PowerPoint® version is included in Animated Essays for Human Biologists and Health Professionals.



**6. Slim Guide Skinfold Caliper.**

**7. Harpenden Skinfold Caliper.**

The Slim Guide skinfold caliper is an inexpensive alternative to the Harpenden caliper. It yields approximately similar results and its rugged ABS plastic construction, with high quality springs, guarantees a long life of usage. In the hands of a trained anthropometrist, skinfold calipers percent technical errors of measurement for a single replication at 5% or less depending on training and technique.

Rosscraft markets both calipers. The Rosscraft Slim Guide calipers are black with a silver scale. It is also available in white with a black scale. They have a similar dynamic action to calipers costing over fifteen times as much. Made from high impact ABS plastic, the Slim Guide can be dropped without damage. It is so indestructible we can ship in a manila envelope with no extra padding. The scale of 0 to 85 mm is especially useful in assessing skinfolds at the upper ranges, that are not accommodated by most other calipers. Accuracy may be interpolated to 0.5 mm. There are grants for quantity purchase of Slim Guides for courses and projects.

**9. Animated Essays for Human Biologists and Health Professionals vol 1, What's what and why.** Animated Essays are being reviewed by FOR's Friends of Rosscraft (scholars, scientists, artists and artisans and various health, fitness, sport, physical education and lifestyle enhancement professionals). Volume 1 incorporates a new version of the O-Scale compiled by Dr Pat Wong. This provides A and W ratings, raw score summaries proportionality profile for a comprehensive anthropometric battery for children and youth 6 to 17, 18 and 19, and in five year increments thereafter to age 70 (based on 22,000 subjects). Re-issue in new format is scheduled for early 2006.

**10. Anthropometry Illustrated** CD is a digital textbook on physical measurement techniques for human biology and the health professions. It is designed for scientific and professional applications. Access to Anthropometry Illustrated is through a standard Web browser (Netscape® v. 4.0 and MS Explorer® v. 4.0 and higher). This permits cross-referenced links and book-marked references within the text. When on-line through an internet server, Anthropometry Illustrated provides links to designated e-mail addresses, useful Web sites and powerful search engines. With over 1000 illustrations it is a treatise for the new generation of micro-computer oriented students, human biologists, nutritionists, physical educators, health and lifestyle enhancement professionals. It is designed to invite, involve and inspire people to become participants and witnesses in research. Custom copies of a slightly revised edition are now available with a second revised and augmented edition planned for 2006.

**11. Anthropometry Fundamentals** a PowerPoint® instructional CD designed as a teaching aid for training anthropometrists for comprehensive data assembly. The over the shoulder illustrations show exactly the placement and manipulation of the instruments. It can be used for individual learning for large and small group training. The techniques are practically identical to those recommended by ISAK (International Society for the Advancement of Kinanthropometry) – with preferences noted in the instructions accompanying the slides. Anthropometry Fundamentals is available in single copies or student lots.

**12. Anthropometry Techniques: an Instructional DVD movie** is a full 120 minute visual learning system showing landmarking, and measurement with explicit technique based on years of time motion study and concurrent precision assessment. It is menu driven and can be used for instructional clips for teaching specific techniques, (~~Institutional and site licenses only, ranging to \$1200~~). In

field testing, clearly site licenses was a too limited outreach. Instead Rosscraft has a large production run for affordable single copies or for student lots. A free Anthropometry Technique trailer on applications of anthropometry is downloadable at <http://www.flyingturtle.ca/> -- on a Murray Robinson Home page with t "Power in the Tracks" a folk song with a rock beat. Those who like it, like it a lot.

**13. The Phantom Knows (about allometry, dimensionality and human proportionality).** A light hearted staged dialogue by Bill and Mary Ross with 80 illustrations, 12 tables, eight appendices and explicit examples of how to manage complex data assemblies made easy -- allometry, similitude, neonatal growth, elite figure skaters, longitudinal growth in boys, sex chromosome aneuploidy, international class body builders, black and white Olympic athletes, sexual dimorphism in aquatic sport, bantam and professional adult hockey players, inconmetrographic analyses and much more. The purpose of the book is to create an excitement and irresistibility for research and professional applications based on 30 years on the international lecture circuit and bonding with the NOW generation of human biologists and health professionals. In process, the *Phantom Knows* has a release date targeted for the ACSM 2006 annual meeting in Denver.

**14. ISAK Standardization Manual.** Rosscraft has agreed to serve as the English Language North American publisher and distributor of the 2006 edition as soon as possible before the International Commonwealth Games Scientific Congress in Melbourne in March.

**15. Centurion Kit.** With the addition of a weight scale, the Centurion Kit is a complete set of instruments for the ISAK measurement protocol supported by Rosscraft digital learning materials. Organized in troika (groups of three) one kit provides for six measurement stations involving 18 students alternating as measurer, subject and recorder. It equips six stations for multiple line data assemblies in measurement projects (e.g. International, national and local projects where the Centurion Kit provides the instruments of choice).

**Centurion Kit:** 1 Campbell 20 (54 cm) wide sliding caliper with AP branches, 1 Campbell 10 (18 cm) small bone caliper, 1 Segmometer , 1 Head square with 110 tape, 2 Slim Guide Skinfold Calipers, 2 Steel anthropometric tapes adapted with patch zero indicator and filed notch), 1 *Anthropometry Illustrated* CD interactive digital learning system, 1 *Anthropometry Fundamentals* Power Point CD. Custom Cordura carrying case: LWH 70 x 35 x 10 cm 3.5kg

**16. Tom Kit:** With the addition of a weight scale, the Tom Kit is an entry level professional set of instruments for the O-Scale Physique Assessment System for assessing physique status and monitoring change of eight skinfolds, 10 girths and 2 bone breadths and the anthropometric derivation of the Heath Carter Somatotype method.

**Tom Kit:** 1 Tommy 3 (15 cm) small bone caliper, 1 Slim Guide Skinfold Caliper, 1 steel anthropometric tape, *Anthropometry Fundamentals* CD Power Point instructional CD in Cordura carrying case (weight 1 kg)

A note on laboratory design, research and teaching stations. Rosscraft has alliances and distributors who work cooperatively in helping those planning laboratory and field study operations. Rosscraft offers an extended quotation period for those involved in budgeting or grant proposals. [rosscraft@datamedia.ca](mailto:rosscraft@datamedia.ca).