U.S. Department of Commerce (DoC)
National Institute of Standards and Technology-NIST
(formerly National Bureau of Standards-NBS)
Office of Standards Services

Body Measurements for the Sizing of Apparel

The commercial standard (CS) and products standards (PS) on the body measurements for the sizing of apparel for the following: Infants, Babies, Toddlers and Children (CS151-50); Boys (PS36-70); Young Men (PS45-71); Girls (PS54-72); and Women (PS42-70) maintained by NBS under the Voluntary Product Standards (VPS) Program **were withdrawn**. This was in accordance with the procedures announced on January 20, 1983 by the U.S. Department of Commerce (DoC) to withdraw these standards after sponsorship was assumed by the private industry sector.

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The American Society for Testing and Materials (ASTM) is developing standards on sizing of apparel. In October 1982, ASTM established Subcommittee D13.55 on Body Measurement and Apparel Sizes within Technical Committee D13 on Textiles to take over the work previously handled by the U.S. Department of Commerce, National Bureau of Standards (NBS).

For assistance on related or additional standards (see page 2) under the jurisdiction of ASTM Subcommittee D13.55 - Body Measurement for Apparel Sizing and/or copies, please contact:

American Society for Testing and Materials **(renamed ASTM International)**
100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428-2959, USA
Telephone: (610) 832-9500; Information Center (610) 832-9550
ASTM Fax: (610) 832-9555
Internet: http://www.astm.org (click on Standards, Technical Committees, etc.)

Technical Committee ASTM D13 on Textiles
Staff Manager: Maxie Topping (mtopping@astm.org)
Telephone: (610) 832-9737; Fax: (610) 832-9666

Technical information and questions, contact:

Ms. Sirvart Mellian
Chairperson, Subcommittee ASTM D13.55
U.S. Natick Clothing and Textile Research Facility
43 Boyd Street, Watertown, Massachusetts 02172, USA
Telephone: (508) 233-4133; Fax: (508) 233-4783

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The following organization may provide additional information sources on the subject, contact: American Apparel Manufacturers Association and the Footwear Industries of America (now the **American Apparel and Footwear Association-AAFA**), 1601 North Kent Street, Suite 1200, Arlington, Virginia 22209, USA Telephone: (800) 520-2262 (ext. 1034-Publications Dept.); (703) 524-1864 (ext.1034-Publications Dept.); Fax: (703) 522-6741.

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The activity on body-size standards began in the late 1940's under the Department of Commerce with NBS serving as a coordinator and point of contact for copies of the documents. The VPS body-size standards were developed by committees made up of textile manufacturers, designers, and retailers, and based on measurements obtained from the Department of Agriculture. The Mail Order Association provided the support for the body-size standards.

6/2002

Listed below are various standards under the jurisdiction of ASTM Subcommittee D13.55:

D4910-99, Standard Tables of Body Measurements for Infants, Sizes 0 to 24

D5219-99, Standard Terminology Relating to Body Dimensions for Apparel Sizing

D5585-95 (2001), Standard Table of Body Measurements for Adult Female Misses Figure Type, Sizes 2-20

D5586-95, Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types)

D5826-00, Standard Tables of Body Measurements for Children, Sizes 2 to 6x/7

D6192-98, Standard Tables of Body Measurements for Girls, Sizes 7 to 16

D6240-98, Standard Tables of Body Measurements for Men Sizes Thirty-Four to Sixty (34 to 60) Regular

D6458-99, Standard Tables of Body Measurements for Boys, Sizes 8 to 14 Slim and 8 to 20 Regular

Department of Defense– DOD:

HDBK-743A-1991, Anthropometry of U.S. Military Personnel (Metric)

MIL-STD-984A-1994, Size Labeling for Women's Uniform Clothing, Provisions for

International Market Research (IMR) Reports

IMR reports are original studies of growth export markets for selected U.S. industries. They are prepared on the spot, in the country of research, by market consultants under contract to the U.S. Department of Commerce or by the U.S. Foreign Commercial Service. The reports reflect the opinions and view of the surveyed country's end users, importers, agents, distributors and government officials. Fees for such reports are between $50 and $100, depending on length of the report.

Stephen B. Strauss,

Deputy Assistant Secretary for Trade Information and Analysis.

[FR Doc. 83-1585 Filed 1-19-83; 8:45 am]

BILLING CODE 3510-25-M

National Bureau of Standards

Status Report on Voluntary Product Standards

AGENCY: National Bureau of Standards, Commerce.

ACTION: Development, maintenance, and withdrawal of certain voluntary standards.

SUPPLEMENTARY INFORMATION: On August 30, 1982, the Department of Commerce (Department) announced in the **Federal Register** (47 FR 38171) the status of 26 standards classified as voluntary standards. The announcement was made in accordance with the revised "Procedures for the Development of Voluntary Product Standards" (15 CFR Part 10).

The August 30, 1982, notice specified the retention of specific standards for fixed periods of time. The updated status of all existing voluntary standards is indicated below.

The following Voluntary Product Standards will continue to be maintained by the Department:

Standard and Proponent Organization

PS 1-74 "Construction and Industrial Plywood", American Plywood Association

PS 20-70 "American Softwood Lumber Standard", American Lumber Standards Committee

PS 73-77 "Carbonated Soft Drink Bottles", Glass Packaging Institute

The Department has agreed to sponsor the development of a Voluntary Product Standard for the production of carbonated soft drinks in glass bottles, which was requested by the National Soft Drink Association. It has been determined that this standards project meets the six requirements for Department sponsorship stated in § 10.0(b) of the mentioned Procedures.

The following standards will be retained by the Department until January 20, 1984, to permit the orderly transfer of sponsorship of such standards from the Department to the identified organizations.

PS 56-73 "Structural Glued Laminated Timber", American Institute of Timber Construction

PS 67-76 "Marking of Gold Filled and Rolled Gold Plate Articles Other Than Watchcases", Jewelers Vigilance Committee

PS 68-76 "Marking of Articles Made of Silver in Combination with Gold", Jewelers Vigilance Committee

PS 69-76 "Marking of Articles Made Wholly or in Part of Platinum" Jewelers Vigilance Committee

PS 70-76 "Marking of Articles Made of Karat Gold", Jewelers Vigilance Committee

PS 71-76 "Marking of Jewelry and Novelties of Silver", Jewelers Vigilance Committee

PS 72-76 "Toy Safety", American Society for Testing and Materials

In accordance with § 10.13 of the mentioned Procedures, notice is hereby given of the withdrawal of the following standards. This action is taken in furtherance of the Department's announced intentions as set forth in the August 30, 1982, notice to withdraw these standards. The effective date for the withdrawal of the standards will be March 21, 1983. This withdrawal action terminates the authority to refer to these standards as voluntary standards developed under the Department of Commerce procedures. The organizations listed below have assumed responsibility for the standards.

PS 36-70 "Body Measurements for the Sizing of Boys' Apparel", American Society for Testing and Materials

PS 42-70 "Body Measurements for the Sizing of Women's Patterns and Apparel", American Society for Testing and Materials

PS 45-71 "Body Measurements for the Sizing of Apparel for Young Men (Students)", American Society for Testing and Materials

PS 51-71 "Hardwood and Decorative Plywood", Hardwood Plywood Manufacturers Association

PS 54-72 "Body Measurements for the Sizing of Girls' Apparel", American Society for Testing and Materials

PS 63-75 "Latex Foam Mattresses for Hospitals", American Society for Testing and Materials

PS 66-75 "Safety Requirements for Home Playground Equipment", American Society for Testing and Materials

CS 151-50 "Body Measurements for the Sizing of Apparel for Infants, Babies, Toddlers and Children (for the Knit Underwear Industry)", American Society for Testing and Materials

FOR FURTHER INFORMATION CONTACT: Karl G. Newell, Jr., Office of Product Standards Policy, National Bureau of Standards, Washington, D.C. 20234, Telephone: (301) 921-2368.

Dated: January 6, 1983.

Ernest Ambler,

Director.

[FR Doc. 83-927 Filed 1-19-83; 8:45 am]

BILLING CODE 3510-13-M

Office of the Secretary

President's Private Sector Survey on Cost Control; Open Meeting

AGENCY: Office of the Secretary, Commerce.

ACTION: Notice of Public meeting of the Executive Committee of the President's Private Sector Survey on Cost Control.

SUMMARY: The President's Private Sector Survey on Cost Control was established by the President pursuant to Executive Order 12369 of June 30, 1982, and extended by Executive Order 12398 of December 31, 1982. The Executive Committee of the Survey is chartered by the Department of Commerce as a public advisory committee in accord with the Federal Advisory Committee Act.

The purpose of the President's Private Sector Survey on Cost Control is to conduct a private sector survey on cost control in the Federal Government and to advise the President, the Secretary of Commerce, and other Executive agency heads with respect to improving managment and reducing costs.

Time and Place

February 4, 1983 at 11:00 a.m. The meeting will take place at the U.S. Department of Commerce Auditorium, First Floor, Herbert C. Hoover Building, 14th Street and Constitution Avenue, N.W., Washington, D.C. 20230.

Agenda

(1) Receive a status report on activities of the President's Private Sector Survey.

(2) Establish a Subcommittee of the Executive Committee. The purposes of the Subcommittee are: (i) To review the recommendations submitted, including task force reports and public comments, and (ii) determine which recommendations should be made to the President and Departments and Agencies.

SUPPLEMENTARY INFORMATION: To accomplish the President's objective that the survey be funded, to the

ITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION

NBS Voluntary Product Standard

PS 45-71

Body Measurements for the Sizing of Apparel for Young Men (Students)

A Voluntary Standard Developed by Producers, Distributors, and Users With the Cooperation of the National Bureau of Standards

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards

UNITED STATES DEPARTMENT OF COMMERCE • Maurice H. Stans, *Secretary*

NATIONAL BUREAU OF STANDARDS • Lewis M. Branscomb, *Director*

Voluntary Product Standard
PS 45-71

Body Measurements for the Sizing of Apparel for Young Men (Students)

Technical Standards Coordinator: C. W. Devereux

Abstract

This Voluntary Product Standard covers size categories, size designations, and body measurements for the sizing of apparel for boys designated young men or students. The young men (students) category is intended to include those boys and young men who have achieved most of their adult height, but not adult girth. The Standard includes the following: applications of the body sizing system, methods of measuring the body, an explanation of the development of the Standard (appendix A) and sizing grades (appendix B). Also included is a method of identifying products that are sized using the measurements and designations in this Standard.

Key words: Apparel, young men's (students'); body measurements, young men's (students'); classification, young men's (students') size; grading charts, young men's (students') size; size designations, young men's (students').

Nat. Bur. Stand. (U.S. Prod. Stand. 45-71, 16 pages (January, 1972)
CODEN: XNPSAX

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (Order by SD Catalog No. C13.20/2:45–71. Price 30 cents.

Contents

VOLUNTARY PRODUCT STANDARDS

Voluntary Product Standards are standards developed under procedures established by the Department of Commerce (15 CFR Part 10, as amended, May 28, 1970). The standards may include (1) dimensional requirements for standard sizes and types of various products, (2) technical requirements, and (3) methods of testing, grading, and marking. The objective of a *Voluntary Product Standard* is to establish requirements which are in accordance with the principal demands of the industry and, at the same time, are not contrary to the public interest.

Development of a VOLUNTARY PRODUCT STANDARD

The Office of Engineering Standards Services of the National Bureau of Standards has been assigned by the Department of Commerce the responsibility to work closely with scientific and trade associations and organizations, business firms, testing laboratories, and other appropriate groups to develop *Voluntary Product Standards.* The Bureau has the following role in the development process: It (1) provides editorial assistance in the preparation of the standard; (2) supplies such assistance and review as is required to assure the technical soundness of the standard; (3) acts as an unbiased coordinator in the development of the standard; (4) sees that the standard is representative of the views of producers, distributors, and users or consumers; (5) seeks satisfactory adjustment of valid points of disagreement; (6) determines the compliance with the criteria established in the Department's procedures cited above; and (7) publishes the standard.

Industry customarily (1) initiates and participates in the development of a standard; (2) provides technical counsel on a standard; and (3) promotes the use of, and support for, the standard. (A group interested in developing a *Voluntary Product Standard* may submit a written request to the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234.)

A draft of a proposed standard is developed in consultation with interested trade groups. Subsequently, a Standard Review Committee is established to review the proposed standard. The committee, appropriately balanced, includes qualified representatives of producers, distributors, and users or consumers of the product being standardized. When the committee approves a proposal, copies are distributed for industry consideration and acceptance. When the acceptances show general industry agreement, and when there is no substantive objection deemed valid by the Bureau, the Bureau announces approval of the *Voluntary Product Standard* and proceeds with its publication.

Use of a VOLUNTARY PRODUCT STANDARD

The adoption and use of a *Voluntary Product Standard* is completely voluntary. *Voluntary Product Standards* have been used most effectively in conjunction with legal documents such as sales contracts, purchase orders, and building codes. When a standard is made part of such a document, compliance with the standard is enforceable by the purchaser or the seller along with other provisions of the document.

Voluntary Product Standards are useful and helpful to purchasers, manufacturers, and distributors. Purchasers may order products that comply with *Voluntary Product Standards* and determine for themselves that their requirements are met. Manufacturers and distributors may refer to the standards in sales catalogs, advertising, invoices, and labels on their product. Commercial inspection and testing programs may also be employed, together with grade labels and certificates assuring compliance, to promote even greater public confidence. Such assurance of compliance promotes better understanding between purchasers and sellers.

Body Measurements for the Sizing of Apparel for Young Men (Students)

Effective May 10, 1971 (See section 8.)

(This Standard, initiated by the Mail Order Association of America, has been developed under the *Procedures for the Development of Voluntary Product Standards*, published by the U.S. Department of Commerce. See Section 9, *History of Project*, for further information.)

1. PURPOSE

The purpose of this Voluntary Product Standard is to establish nationally recognized size categories, size designations, and body measurements for the sizing of apparel for young men. It is also intended to provide consumers with a means of associating young men's body types with standard size designations so that they may obtain the best fit, irrespective of type or style of garment, price or quality of merchandise, or producer.

2. SCOPE AND CLASSIFICATION

2.1. **Scope**—This Voluntary Product Standard covers size categories, size designations, and body measurements[1] for the sizing of apparel for boys designated young men or students. The young men (students) category is intended to include those boys and young men who have achieved most of their adult height, but not adult girth. The Standard includes the following: applications of the body sizing system, methods of measuring the body, an explanation of the development of the Standard (appendix A), and sizing grades (appendix B). Also included is a method of identifying products that are sized using the measurements and designations in this Standard.

2.2. **Classification**—The primary classification in this sizing Standard is young men (students). There are three subclassifications based on the range of stature of the boys covered:

"Shorts" (S) for boys 64½ to 67½ inches tall
"Regulars" (R) for boys 68 to 71 inches tall
"Longs" (L) for boys 71½ to 74½ inches tall

[1] The measurements are based on the anthropometric data contained in *Body Measurements of American Boys and Girls for Garment and Pattern Construction*, U.S. Department of Agriculture (USDA) Miscellaneous Publication No. 366, 1941 (see appendix A). The body measurements for sizes 34 to 40 are based on the data of 16- and 17-year-olds contained in the Department of Agriculture's publication. The measurements for sizes 32, 33, 41, and 42 are extrapolated from that data.

It should be noted that the individual chest and waist girths remain constant within each of the three categories for the size designated. Only the stature and those measurements affected by stature change from category to category.

2.3. **Size designations and ranges**—The basic size designations in this Standard are identified by number. The numbers are based on the chest girths of the boys covered by the system (e.g., a size 34 has a 34-inch chest, and the corresponding body measurements shown in tables 1, 2, and 3).

2.4. **Grading**—A guide to grading has been included in appendix B. The difference between similar body measurements of consecutive sizes within a classification is called the grade.

3. TABLES OF SIZES AND CORRESPONDING BODY MEASUREMENTS

The size designations and corresponding body measurements for 28 dimensions are given in tables 1 to 3 for the three height categories as follows:

Table 1—"Regulars"
Table 2—"Longs"
Table 3—"Shorts"

4. APPLICATION

The measurements and size designations given herein are applicable to:

a. Sizing or grading garment patterns.
b. Preparing specifications for apparel and model forms.
c. Coordinating body measurements of boys, as defined, with size designations for their apparel.
d. Providing consumers with information concerning the sizing of garments.

TABLE 1. REGULARS '—YOUNG MEN'S (STUDENTS') BODY MEASUREMENTS FOR SIZES 32-42

SIZE (number)	32	33	34	35	36	37	38	39	40	41	42
Stature—in inches	68	68	68	68½	69	69½	70	70½	71	71	71
Weight—in pounds	113	118	123	130	137	144	152	160	170	180	190
GIRTH MEASUREMENTS—inches											
Chest	32	33	34	35	36	37	38	39	40	41	42
Waist	26½	27	27½	28	28½	29	30	31	32	33	34
Hip	34	34½	35	35½	36	36½	37½	38½	39½	40½	41½
Vertical trunk	59⅜	59⅞	60⅜	61¼	62⅛	63	63⅞	64¾	65⅝	66¼	66⅞
Neckbase	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	17½
Armscye	15¼	15⅝	16	16⅜	16¾	17⅛	17½	17⅞	18¼	18⅝	19
Upper arm	8⅞	9¼	9⅝	10	10⅜	10¾	11⅛	11½	11⅞	12¼	12⅝
Elbow	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	12¾
Thigh	18⅞	19¼	19⅝	20	20⅜	20¾	21⅜	22	22⅝	23¼	23⅞
Calf, maximum	12½	12¾	13	13¼	13½	13¾	14	14⅜	14¾	15⅛	15½
Knee, tibiale	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	15½
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS											
Shoulder length	4½ [b]	4⅝	4⅝	4¾	4¾	4⅞	4⅞	5	5	5⅛	5⅛ [b]
Shoulder slope (degrees)	25	25	25	25	25	25	25	25	25	25	25
Cross-back width	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝	14⅞	15⅛	15⅜	15⅝	15⅞
Cross-chest width	12⅛	12⅜	12⅝	12⅞	13⅛	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝
Crotch length, total	28¼	28½	28¾	29⅛	29½	29⅞	30¼	30⅝	31	31¼	31½
Cervicale to wrist length	31½	31¾	31⅞	32¼	32⅝	33	33⅜	33¾	34⅛	34¼	34½
VERTICAL MEASUREMENTS—inches											
Head and neck length	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞	9⅞
Cervicale height	58⅛	58⅛	58⅛	58⅝	59⅛	59⅝	60⅛	60⅝	61⅛	61⅛	61⅛
Scye depth, along spine	7⅜	7½	7½	7⅝	7¾	7⅞	8	8⅛	8¼	8¼	8⅜
Waist length, posterior	15½	15½	15½	15⅝	15¾	15⅞	16	16⅛	16¼	16¼	16¼
Waist length, anterior	13½	13½	13½	13⅝	13¾	13⅞	14	14⅛	14¼	14¼	14¼
Waist height	43¼	43¼	43¼	43½	43¾	44	44¼	44⅝	45	45	45
Waist to hips, along side of body	8⅛	8⅛	8⅛	8⅛	8¼	8⅛	8⅜	8⅛	8½	8½	8½
Crotch height	31¾	31¾	31¾	31⅞	32	32⅛	32¼	32½	32¾	32¾	32¾
Knee height	18¾	18¾	18¾	18⅞	19	19⅛	19¼	19½	19¾	19¾	19¾

[a] 1 inch equals 2.54 centimeters, 1 pound equals 0.45 kilograms.
[b] 1/16 inch pattern grade per size between sizes marked with this footnote.

TABLE 2. LONGS [a]—YOUNG MEN'S (STUDENTS') BODY MEASUREMENTS FOR SIZES 32-42

SIZE (number)	32	33	34	35	36	37	38	39	40	41	42
Stature—in inches	71½	71½	71½	72	72½	73	73½	74	74½	74½	74½
Weight—in pounds	121	126	131	138	145	152	160	168	178	188	198
GIRTH MEASUREMENTS—inches											
Chest	32	33	34	35	36	37	38	39	40	41	42
Waist	26½	27	27½	28	28½	29	30	31	32	33	34
Hip	34	34½	35	35½	36	36½	37½	38½	39½	40½	41½
Vertical trunk	61⅜	61⅞	62⅜	63¼	64⅛	65	65⅞	66¾	67⅝	68¼	68⅞
Neckbase	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	17½
Armscye	15½	15⅞	16¼	16⅝	17	17⅜	17¾	18⅛	18½	18⅞	19¼
Upper arm	8⅞	9¼	9⅝	10	10⅜	10¾	11⅛	11½	11⅞	12¼	12⅝
Elbow	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	12¾
Thigh	18⅞	19¼	19⅝	20	20⅜	20¾	21⅜	22	22⅝	23¼	23⅞
Calf, maximum	12½	12¾	13	13¼	13½	13¾	14	14⅜	14¾	15⅛	15½
Knee, tibiale	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	15½
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS											
Shoulder length	4½ [b]	4⅝	4⅝	4¾	4¾	4⅞	4⅞	5	5	5⅛	5⅛ [b]
Shoulder slope (degrees)	26	26	26	26	26	26	26	26	26	26	26
Cross-back width	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝	14⅞	15⅛	15⅜	15⅝	15⅞
Cross-chest width	12⅛	12⅜	12⅝	12⅞	13⅛	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝
Crotch length, total	29⅛	29⅜	29⅝	30	30⅜	30¾	31⅛	31½	31⅞	32⅛	32⅜
Cervicale to wrist length	32¾	33	33⅛	33½	33⅞	34¼	34⅝	35	35⅜	35½	35¾
VERTICAL MEASUREMENTS—inches											
Head and neck length	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼
Cervicale height	61¼	61¼	61¼	61¾	62⅛	62¾	63¼	63¾	64¼	64¼	64¼
Scye depth, along spine	7¾	7⅞	7⅞	8	8⅛	8¼	8⅜	8½	8⅝	8⅝	8¾
Waist length, posterior	16¼	16¼	16¼	16⅜	16½	16⅝	16¾	16⅞	17	17	17
Waist length, anterior	14	14	14	14⅛	14¼	14⅜	14½	14⅝	14¾	14¾	14¾
Waist height	45¾	45¾	45¾	46	46¼	46½	46¾	47⅛	47½	47½	47½
Waist to hips, along side of body	8⅝	8⅝	8⅝	8 11/16	8¾	8 13/16	8⅞	8 15/16	9	9	9
Crotch height	33⅝	33⅝	33⅝	33¾	33⅞	34	34⅛	34⅜	34⅝	34⅝	34⅝
Knee height	19¾	19¾	19¾	19⅞	20	20⅛	20¼	20½	20¾	20¾	20¾

[a] 1 inch equals 2.54 centimeters, 1 pound equals 0.45 kilograms.
[b] 1/16 inch pattern grade per size between sizes marked with this footnote.

TABLE 3. SHORTS [a]—YOUNG MEN'S (STUDENTS') BODY MEASUREMENTS FOR SIZES 32-42

SIZE (number)	32	33	34	35	36	37	38	39	40	41	42
Stature—in inches	64½	64½	64½	65	65½	66	66½	67	67½	67½	67½
Weight—in pounds	106	111	116	123	130	137	144	152	162	172	182
GIRTH MEASUREMENTS—inches											
Chest	32	33	34	35	36	37	38	39	40	41	42
Waist	26½	27	27½	28	28½	29	30	31	32	33	34
Hip	34	34½	35	35½	36	36½	37½	38½	39½	40½	41½
Vertical trunk	57⅜	57⅞	58⅜	59¼	60⅛	61	61⅞	62¾	63⅝	64½	64⅞
Neckbase	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	17½
Armscye	15	15⅜	15¾	16⅛	16½	16⅞	17¼	17⅝	18	18⅜	18¾
Upper arm	8⅞	9¼	9⅝	10	10⅜	10¾	11⅛	11½	11⅞	12¼	12⅝
Elbow	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	12¾
Thigh	18⅞	19¼	19⅝	20	20⅜	20¾	21⅜	22	22⅝	23¼	23⅞
Calf, maximum	12½	12¾	13	13¼	13½	13¾	14	14⅜	14¾	15⅛	15½
Knee, tibiale	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	15½
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS											
Shoulder length	4½ [b]	4⅝	4⅝	4¾	4¾	4⅞	4⅞	5	5	5⅛	5⅛ [b]
Shoulder slope (degrees)	24	24	24	24	24	24	24	24	24	24	24
Cross-back width	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝	14⅞	15⅛	15⅜	15⅝	15⅞
Cross-chest width	12⅛	12⅜	12⅝	12⅞	13⅛	13⅜	13⅝	13⅞	14⅛	14⅜	14⅝
Crotch length, total	27½	27¾	28	28⅜	28¾	29⅛	29½	29⅞	30¼	30½	30¾
Cervicale to wrist length	30¼	30½	30⅝	31	31⅜	31¾	32⅛	32½	32⅞	33	33¼
VERTICAL MEASUREMENTS—inches											
Head and neck length	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½
Cervicale height	55	55	55	55½	56	56½	57	57½	58	58	58
Scye depth, along spine	7	7⅛	7⅛	7¼	7⅜	7½	7⅝	7¾	7⅞	7⅞	8
Waist length, posterior	14¾	14¾	14¾	14⅞	15	15⅛	15¼	15⅜	15½	15½	15½
Waist length, anterior	13	13	13	13⅛	13¼	13⅜	13½	13⅝	13¾	13¾	13¾
Waist height	40¾	40¾	40¾	41	41¼	41½	41¾	42⅛	42½	42½	42½
Waist to hips, along side of body	7⅝	7⅝	7⅝	7⅞	7¾	7⅞	7⅞	7⅞	8	8	8
Crotch height	29⅞	29⅞	29⅞	30	30⅛	30¼	30⅜	30⅝	30⅞	30⅞	30⅞
Knee height	17¾	17¾	17¾	17⅞	18	18⅛	18¼	18⅜	18½	18½	18½

[a] 1 inch equals 2.54 centimeters, 1 pound equals 0.45 kilograms.
[b] 1/16 inch pattern grade per size between sizes marked with this footnote.

5. PRINCIPAL BODY LANDMARKS

Principal body landmarks are identified on figure 1 by capital letters A to E as follows:

A. **Crown**—Top of head.

B. **Cervicale**—The prominence on the seventh or lowest cervical vertebra at the back of the neck, which becomes more prominent when the head is bent forward. (Cervicale height measurements are taken only when the head is in an erect position.)

C. **Waist**—The lower edge of lower floating rib, located at the side of the body in a line directly below the center of the armpit.

D. **Crotch**—The level of the base of the left buttock.

E. **Knee**—The inner bony prominence at the upper end of the tibia, the larger of the two bones of the leg extending from knee to ankle.

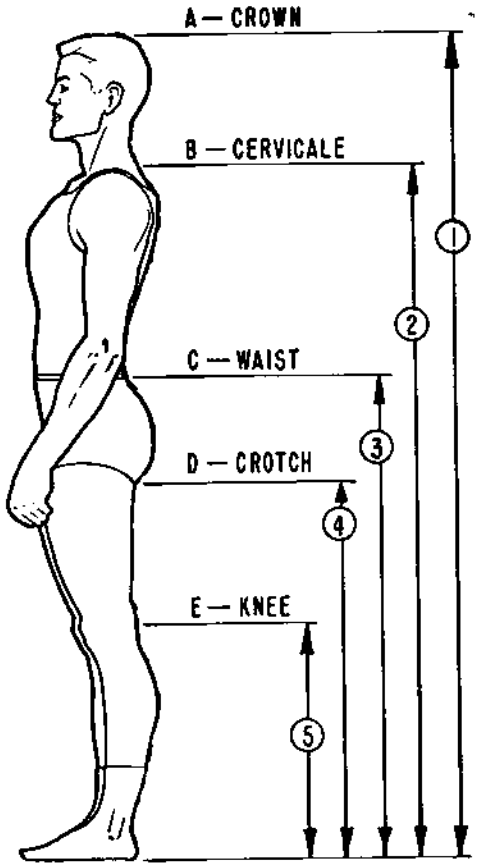

FIGURE 1. *Key body landmarks and measurements.*

6. METHODS OF MEASURING THE BODY [2]

6.1. **General**—Body measurements are identified on figures 1 to 9 by circled numbers (1 to 26).

6.2. **Vertical measurements**

[2] More complete information regarding the methods of measuring the body may be obtained from Miscellaneous Publication No. 366 of the USDA.

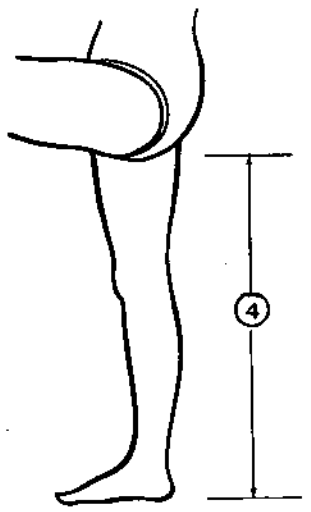

FIGURE 2. *Crotch height.*

6.2.1. **Stature**—Measure from crown to soles of feet (1, figure 1).

6.2.2. **Cervicale height**—Measure from cervicale to soles of feet (2, figure 1).

6.2.3. **Waist height**—Measure from waist to

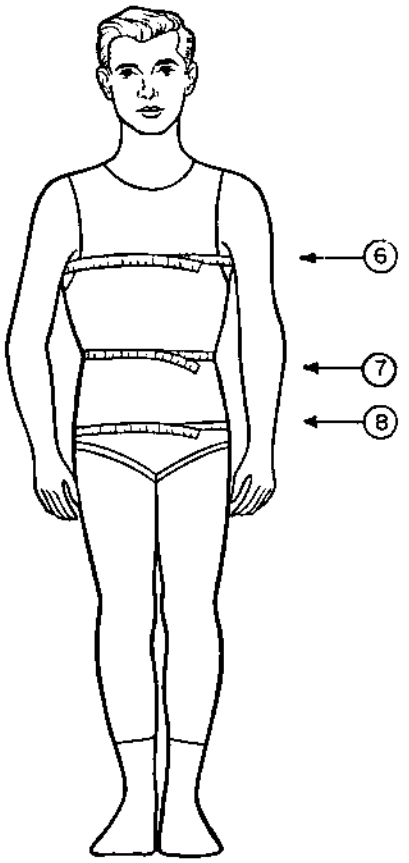

FIGURE 3. *Chest, waist, and hip girths.*

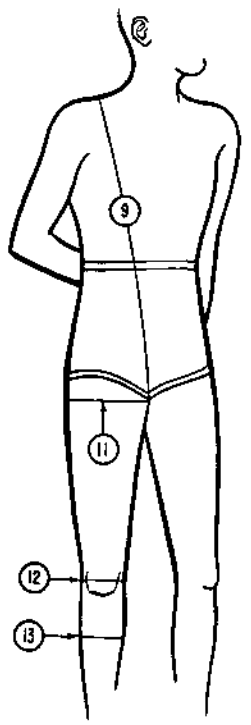

FIGURE 4. *Vertical trunk, thigh, knee, and calf girths.*

soles of feet (3, figure 1). This waist height establishes the waist level around the body.

6.2.4. **Crotch height**—Measure from the midpoint of the crotch to soles of feet (4, figure 2). The end of the tape measure (or anthropometer) should be raised until it firmly presses against the flesh of the left buttock when the upper left thigh is in a horizontal position.

6.2.5. **Knee height**—Measure from knee to soles of feet (5, figure 1).

6.3. **Girth measurements**—(See figures 3 and 4 for typical garments worn at the time of measuring.)

6.3.1. **Chest**—Measure horizontally close up under arms. The measurements should include the lower portion of the shoulder blades (6, figure 3).

6.3.2. **Waist**—Measure horizontally at waist height with belt removed (7, figure 3).

6.3.3. **Hip**—Measure at the side of the body, directly over great trochanter, a rough prominence at the upper part of the femur (8, figure 3).

6.3.4. **Vertical trunk**—Measure from a point on the shoulder midway between the neck and the normal armhole line, down through the crotch, and back to the shoulder point (9, figure 4). The measurement should be taken without constriction at the crotch.

6.3.5. **Total crotch length (girth of crotch)**—Measure from waist level at front through the crotch to the waist level at back (10, figure 9).

6.3.6. **Thigh**—Measure horizontally around the upper part of the leg, close up to the crotch (11, figure 4).

6.3.7. **Knee**—Measure horizontally around the leg at knee height (12, figure 4).

6.3.8. **Calf**—Measure horizontally around the leg at the level of maximum girth (13, figure 4).

6.3.9. **Neckbase**—Measure around the neck, touching the cervicale at the back and the upper borders of the collar bone at the front, and following the curve that would be made by a fine-link chain passing over these landmarks (14, figures 5 and 6).

6.3.10. **Armscye**—Measure from a point at the armhole edge of the shoulder, midway between the acromion (the outer extremity of the shoulder blade) and the highest prominence at the lateral end of the collar bone, and through the underarm midpoint (15, figures 5 and 6).

6.3.11. **Upper arm**—Measure horizontally without constriction, when the arms are relaxed, midway between the shoulder and the elbow (16, figure 5).

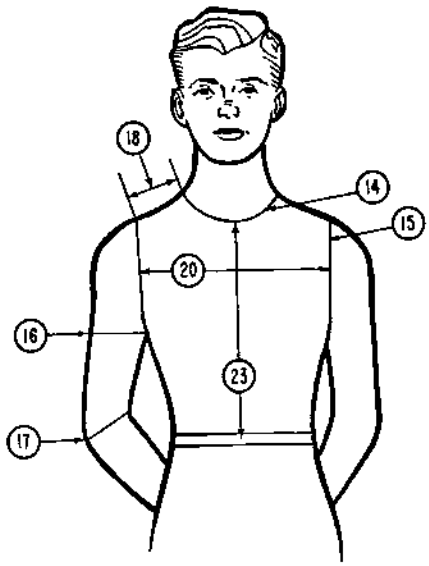

FIGURE 5. *Neck, armscye, upper arm, and elbow girths. Shoulder and collar bone to waist lengths. Cross-chest width.*

6.3.12. **Elbow**—With the arm flexed at approximately a 90° angle, measure around the arm over the elbow (17, figure 5).

6.4. **Width and length measurements**

6.4.1. **Shoulder length**—Measure along the line corresponding to the customary shoulder line of a garment from the neckbase line to the armscye line (18, figure 5).

6.4.2. **Cross-back width**—Measure across the back from armscye to armscye, halfway between

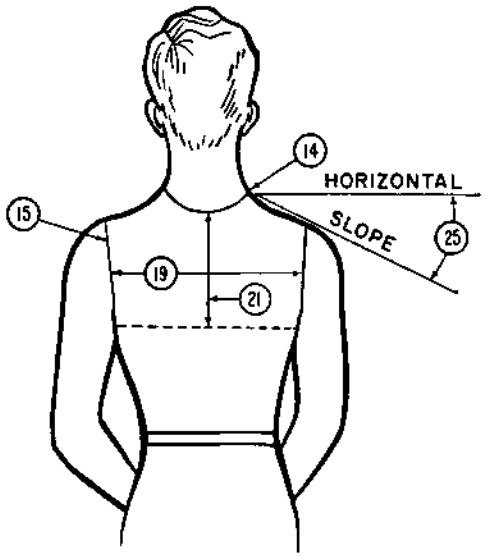

FIGURE 6. *Neck and armscye girths. Shoulder slope. Cross-back width. Scye depth.*

the cervicale and the bottom of the armscye (19, figure 6).

6.4.3. **Cross-chest width**—Measure across the chest from armscye to armscye, halfway between the high shoulder point and the bottom of the armscye (20, figure 5).

6.4.4. **Scye depth**—Measure from the cervicale to point where chest line crosses the "center back" line (21, figure 6).

6.4.5. **Cervicale to waist, including curve of spine (posterior waist length)**—Measure along the spine from cervicale to waist (22, figure 9).

6.4.6. **Collar bone to waist, along front of body (anterior waist length)**—Measure from upper edge of collar bone to waist (23, figure 5).

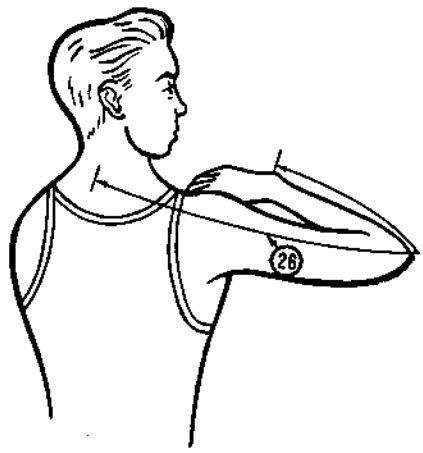

FIGURE 8. *Cervicale to wrist length.*

6.4.7. **Waist to hips**—Measure along the contour of the body from the waist level to the hip level directly below (24, figure 7).

6.4.8. **Shoulder slope (degrees)**—Measure slope of the shoulder in degrees with respect to the horizontal (25, figure 6).

6.4.9. **Cervicale to wrist length**—Measure from the cervicale to the wristbone at the back of the hand (26, figure 8). The arm should be bent at the elbow and raised so that the measurement can be taken as straight as possible from cervicale to elbow.

7. IDENTIFICATION

In order that purchasers may identify products conforming to all requirements of this Voluntary Product Standard, producers and distributors may include a statement of compliance in

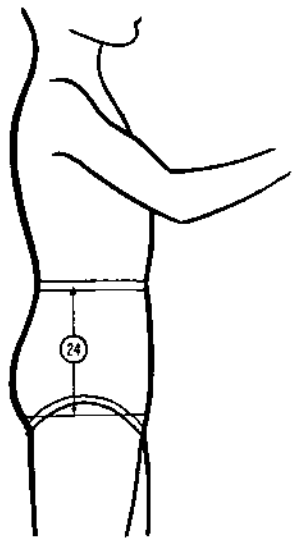

FIGURE 7. *Waist to hips.*

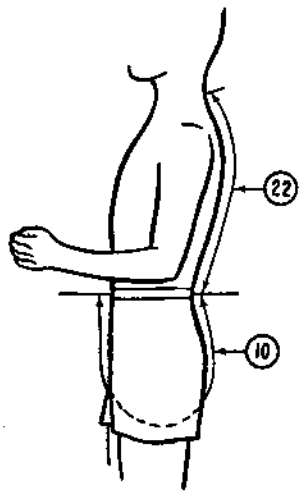

FIGURE 9. *Cervicale to waist and total crotch length.*

conjunction with their name and address on product labels, invoices, sales literature, and the like. The following statement is suggested when sufficient space is available:

> This apparel is sized in accordance with Voluntary Product Standard PS 45–71, developed cooperatively with the industry and published by the National Bureau of Standards under the *Procedures for the Development of Voluntary Product Standards* of the U.S. Department of Commerce. Full responsibility for the conformance of this product to the standard is assumed by (name and address of producer or distributor).

The following abbreviated statement is suggested when available space on labels is insufficient for the full statement:

> Sized in accordance with Voluntary Product Standard PS 45–71, (name and address of producer or distributor).

8. EFFECTIVE DATE

The effective date of this Voluntary Product Standard is the date upon which reference to the Standard may be made by producers, distributors, users and consumers, and other interested parties. Compliance by producers with all of the requirements of this Voluntary Product Standard may not actually occur until some time after its effective date. Products shall not be represented as conforming to this Voluntary Product Standard until such time as all requirements established in the Standard are met. The effective date of this Standard is May 10, 1971.

9. HISTORY OF PROJECT

The initial proposed draft of this Standard was developed by a committee representative of seven garment industry associations in cooperation with the U.S. Department of Commerce and the U.S. Department of Agriculture. In 1968, the proposed standard was submitted by the Mail Order Association of America, to the National Bureau of Standards for processing under the *Procedures for the Development of Voluntary Product Standards.*

The proposed Standard was mailed to the Standard Review Committee in June 1968 and was revised in light of comments received from the committee. When the proposal was resubmitted to the committee, they recommended that it be circulated throughout the industry to determine its acceptability. In January 1971, the recommended Standard was mailed to producers, distributors, consumers or users, and to others with a general interest in related matters. An analysis of the responses indicated a consensus as defined in the published procedures.

Accordingly, the Standard, designated PS 45–71, *Body Measurements for the Sizing of Apparel for Young Men (Students)*, was approved for publication by the National Bureau of Standards and became effective on May 10, 1971.

10. STANDING COMMITTEE

The individuals whose names are listed below constitute the membership of the Standing Committee for this Standard. The function of the committee is to review all proposed revisions and amendments in order to keep this Standard up to date. Comments concerning this Standard and suggestions for its revision may be addressed to any member of the committee or to the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234, which acts as secretary for the committee.

Representing Producers

Floyd Baslow, (Chairman), Donmoor, Inc., 34 West 33d Street, New York, New York 10001

William Aldrich, Warnaco, Inc., P.O. Box 212, Ashaway, Rhode Island 02804

Robert Gur-Arie, Boys' and Young Men's Apparel Manufacturers Association, Inc., 10 West 33d Street, New York, New York 10001

Robert Kaplan, Clothing Manufacturers Association of the United States of America, 135 West 50th Street, New York, New York 10020

Nicholas Furno, Eagle Clothes, 225 Sixth Street, Brooklyn, New York 11215

Representing Distributors

Shirley Trosk, The Boys' and Young Men's Apparel Buyers Association, 350 Fifth Avenue, New York, New York 10001

Warren A. Clohisy, Mail Order Association of America, 612 North Michigan Avenue, Chicago, Illinois 60611

Aubrey Jay, J. C. Penny Company, 1301 Avenue of the Americas, New York, New York 10019

Philip Rogers, G. C. Murphy Company, 531 Fifth Avenue, McKeesport, Pennsylvania 15132

Don DeBolt, Menswear Retailers of America, 390 National Press Building, Washington, D.C. 20004

Representing Consumers

June Wilbur, College of Home Economics, Department of Textiles and Consumer Economics, University of Maryland, College Park, Maryland 20742

Jules Labarthe, Carnegie Mellon University, Schenley Park, Pittsburgh, Pennsylvania 15213

Richard S. Bell, Eaten Point, Gloucester, Massachusetts 01930

Edmund Churchill, Antioch College, Yellow Springs, Ohio 45387

Sarah Newman, National Consumers League, 1029 Vermont Avenue, NW., Washington, D.C. 20036

Representing General Interest

Rowena Dowlen, U.S. Department of Agriculture, 2005 Lake Avenue, SW., Knoxville, Tennessee 37916

11. ACCEPTORS

The producers, distributors, users, and others listed below have individually indicated in writing their acceptance of this Voluntary Product Standard prior to its publication. The acceptors have indicated their intention to use this Standard as far as practicable but reserve the right to depart from it when necessary. The list is published to show the extent of recorded public support for this Standard.

ASSOCIATIONS

Boys' and Young Men's Apparel Manufacturers Association, New York, New York
Consumer Conference of Cincinnati, Cincinnati, Ohio
Designers and Patternmakers Guild of Philadelphia, Melrose Park, Pennsylvania
Educational Foundation for the Fashion Industries, New York, New York
Mail Order Association of America, Chicago, Illinois
Maryland Consumers Association, Inc., Annapolis, Maryland
National Retail Merchants Association, New York, New York

PRODUCERS

Aalpha Die Cutting and Manufacturing Corporation, Los Angeles, California
ABC School Uniforms, Inc., Miami, Florida
Aberdeen Sportswear, Inc., New York, New York
Achilles KCI Corporation, New York, New York
Adler Pants Company, New York, New York
American Argo Corporation, Schuylkill Haven, Pennsylvania
Anderson Brothers, Inc., Danville, Virginia
Anvil Brand, Inc., High Point, North Carolina
Ark Manufacturing Company, Inc., Los Angeles, California
Arkay Pants Company, Fall River, Massachusetts
Arrow Company, The, Troy, New York
Barouch Brothers, Inc., New York, New York
Barrow Manufacturing Company, Winder, Georgia
Baw Manufacturing Company, Los Angeles, California
Bayly Manufacturing Company, Denver, Colorado
Bell Garment Company, Inc., Fall River, Massachusetts
Bernstein & Son, New York, New York
Blauer Manufacturing Company, Inc., Boston, Massachusetts
Block Industries, Inc., Wilmington, North Carolina
Blue Bell, Inc., Greensboro, North Carolina
Blue Jeans, Jonbil Corporation, New York, New York
Blue Star Knitting, Inc., Milwaukee, Wisconsin
Brunswick Corporation, Tulsa, Oklahoma
Burlington Sock, Asheboro, North Carolina
Butwin Sportswear, St. Paul, Minnesota
Calvin Clothing Corporation, New Bedford, Massachusetts
Carolina Underwear Company, Inc., Thomasville, North Carolina
Carter, William, Company, The, Needham Heights, Massachusetts
Catalina, Los Angeles, California
Chips 'n Twigs, Philadelphia, Pennsylvania
Cinderella Knitting Mills, New York, New York
Dickson/Jenkins Manufacturing Company, Fort Worth, Texas
Elder Manufacturing Company, St. Louis, Missouri
Finesilver Manufacturing Company, San Antonio, Texas
Fordham-Bardell Shirt Corporation, New York, New York
Fox Knapp Manufacturing Company, New York, New York
Hicks-Ponder Company, El Paso, Texas
Jay Garment Company, The, Portland, Indiana
Jem Manufacturing Company, Rockville Centre, Long Island, New York
Kaminsky, H. R., & Sons, Fitzgerald, Georgia
Kanter & Alpert, Inc., Chicago, Illinois
Kayser Roth Corporation, Woodbury, Tennessee
Kazoo, Inc., Kalamazoo, Michigan
Kelsman Manufacturing Company, Marseilles, Illinois
Kellwood Company, Maryland Heights, Missouri
Koury Company, Inc., Sanford, North Carolina
Kurtz, David, Company, Inc., New York, New York
Lacy Manufacturing Company, Inc., Martinsville, Virginia
Lee, H. D., Company, Inc., Shawnee Mission, Kansas
Lynott, Dick, Inc., Duluth, Georgia
Mann Manufacturing Company, Inc., El Paso, Texas
Marks, Irving, Nite-Wear Corporation, New York, New York
Maxon Shirt Company, Greenville, South Carolina
Mighty-Mac, Inc., Gloucester, Massachusetts
Morell Industries, New York, New York
Munsingwear, Inc., Minneapolis, Minnesota
Nathans, B., and Company, Philadelphia, Pennsylvania
Osborn Apparel Manufacturing Company, Salt Lake City, Utah
Profile Sports Corporation, West Lebanon, New Hampshire
Publix Shirt Corporation, New York, New York
Puritan Company, Inc., Lansdale, Pennsylvania
Rice Mills, Inc., Belton, South Carolina
Rob Roy Shirt Company, Cambridge, Maryland
Royal Manufacturing Company, Inc., New York, New York
Rutter, J. H.-Rex Manufacturing Company, Inc., New Orleans, Louisiana
Sale Knitting Company, Inc., Martinsville, Virginia
Shepard Clothing Company, New Bedford, Massachusetts
Simon & Mogilner, Birmingham, Alabama
Sportsguide Manufacturing Company, Inc., Worcester, Massachusetts
Sturdi-Wear Clothes, Inc., Scranton, Pennsylvania
Sullcraft Manufacturing Company, Inc., Dushore, Pennsylvania
Sunset Sportswear, San Francisco, California
Supreme Belt Company, Inc., New York, New York
Sutton Shirt Corporation, Byrdstown, Tennessee
Sweet-Orr & Company, Inc., New York, New York
Thomson Company, Thomson, Georgia
Trio Pants Company, New York, New York
Troutman Industries, Inc., Troutman, North Carolina
Tuf Nut Company, Inc., Little Rock, Arkansas
Valentine, C. C., and Company, Inc., New York, New York
Wahlcraft Manufacturing Corporation, New York, New York
Woolrich Woolen Mills, Woolrich, Pennsylvania

DISTRIBUTORS

Aldens, Inc., Chicago, Illinois
Anderson, S. W., Company, Inc., Owensboro, Kentucky
Anderson-Newcomb Company, Huntington, West Virginia
Ann & Hope, Cumberland, Rhode Island
Benoit, A. H., and Company, Portland, Maine
Berkowitz, M., Company, Inc., New York, New York
Deans, E. S., and Company, Inc., New York, New York
Donaldson's, Minneapolis, Minnesota
Dorfman-Pacific Company, Inc., Oakland, California
Eckles Department Store Company, Inc., Dodge City, Kansas
Famous-Barr Company, St. Louis, Missouri
Fantle's, Inc., Sioux Falls, South Dakota
Fowler's Apparel Center, Cheyenne, Wyoming
Fox Associates, Inc., New York, New York
Griggs Department Store, Pasco, Washington
Herpolsheimer Company, Grand Rapids, Michigan
Herpst, Inc., Fargo, North Dakota
Higginbotham-Bailey Company, Dallas, Texas
Hinkel's Inc., Wichita, Kansas
Hunter Sportswear Company, Fitchburg, Massachusetts
Hutton, A. P., Company, Kellogg, Idaho
Intercontinental Men's Apparel Corporation, New York, New York
Johnson Stores Company, Inc., Larimore, North Dakota
Killian Company, The, Cedar Rapids, Iowa
Leggett Department Store, Lynchburg, Virginia
Lynch Corporation, The, Manchester, New Hampshire
Macy, R. H., Company, Inc., New York, New York
Magee's, Inc., Lincoln, Nebraska
Mens Fashion Guild, New York, New York
Meyer, Fred, Inc., Portland, Oregon
Myerson Stores, Inc., Tucson, Arizona
Navy Resale System Office, Brooklyn, New York
Neiman Marcus, Dallas, Texas
Paul's Store, Inc., Hurley, Wisconsin
Penney, J. C., Company, Inc., New York, New York
Phillips Boyswear, Los Angeles, California
Scarbroughs, Austin, Texas
Sears, Roebuck and Company, Chicago, Illinois
Slovin Company, Inc., The, Worcester, Massachusetts
Taylor's, Inc., Beaver Falls, Pennsylvania
Thomas, Field and Company, Charleston, West Virginia
Tri-State Distributors, Inc., Moscow, Idaho
United Knitwear, Cincinnati, Ohio
Vornado, Inc., Hanover, New Jersey

Wolens, K., Inc., Consicana, Texas
Woodward & Lothrop, Washington, D.C.

USERS

Armstrong, Mary, Union, New Jersey
Birchard, Helen, Saratoga Springs, New York
Burton, John, Williamantic, Connecticut
Butterfield, Norma, Bloomfield Hills, Michigan
California Fashion Institute, Los Angeles, California
Chandler, Edward, Mrs., Martinsville, New Jersey
Consumer Testing Labs, Inc., Boston, Massachusetts
Dean, Mary Margaret, Silver Spring, Maryland
Hoffman, Adeline, Iowa City, Iowa
Hovermale, Ruth, Rock Hill, South Carolina
Johnson, Robert, Lafayette, Indiana
Krofta, Janet, Orono, Maine
LaBelle, Oliver, Waterbury, Connecticut
Pfafflin, Nancy, Coram, New York
Price, Ray, Minneapolis, Minnesota
Trieshmann, Helmuth, South Plainfield, New Jersey

GENERAL INTEREST

Arizona, University of, School of Home Economics, Tucson, Arizona
Barry College, Miami Shores, Florida
Bowling Green State University, Bowling Green, Ohio
Connecticut, University of, Storrs, Connecticut
Fashion Institute of Technology, New York, New York
Good Housekeeping Institute, New York, New York
Goshen College, Goshen, Indiana
Hamilton Central School, Hamilton, New York
Hawaii, University of, Honolulu, Hawaii
Iowa, University of, Department of Home Economics, Iowa City, Iowa
Italian Trade Commission, Philadelphia, Pennsylvania
Kent State University, Kent, Ohio
Lapidese, Martin, New Hyde Park, New York
Macomb Credit Adjustors, Mt. Clemens, Michigan
Madison High School, Madison, Ohio
Michigan State University, East Lansing, Michigan
Murray State University, Murray, Kentucky
Newark Senior High, Newark, Ohio
New Jersey Home Economics Association, Flemington, New Jersey
Northeastern University, Lexington, Massachusetts
Ohio University, Athens, Ohio
Purdue University, Lafayette, Indiana
State University College, Oneonta, New York
Texas Christian University, Fort Worth, Texas
Wyoming, University of, Laramie, Wyoming

FEDERAL GOVERNMENT

Agriculture, U.S. Department of, Knoxville, Tennessee
Army Natick Laboratory, U.S., Natick, Massachusetts
Health, Education, and Welfare, U.S. Department of, Washington, D.C.

STATE AND LOCAL GOVERNMENTS

Cooperative Extension Service, Pell City, Alabama
Cooperative Extension Service, Gaithersburg, Maryland
Cooperative Extension Service, Las Vegas, Nevada
Cooperative Extension Service, Concord, New Hampshire
Cooperative Extension Service, Rochester, New Hampshire
Cooperative Extension Service, Wauseon, Ohio
Cornell University, Ithaca, New York
Department of Property and Supplies, Harrisburg, Pennsylvania
District of Columbia Government, Bureau of Procurement, Washington, D.C.
Idaho, University of, Boise, Idaho
Iowa State University Extension Service, Newton, Iowa
Kansas State University, Manhattan, Kansas
Oklahoma State University, Stillwater, Oklahoma

APPENDIX A. DEVELOPMENT OF THE STANDARD

The following paragraphs describe how the values presented in tables 1, 2, and 3 of this Standard were determined.

The basic measurement data for this Standard were those gathered by the U.S. Department of Agriculture during the late 1930's.[1] These same data provided the basis for Commercial Standard CS 155–50, *Body Measurements for the Sizing of Boys' Apparel*, and for the recent revision of that standard.

The data used to compile this Standard were critically evaluated because the measurements were taken 30 years ago. The evidence available from recent anthropometric (body size) studies strongly suggests that these data are valid and adequate for sizing purposes. It is probable that the percentages of boys of various sizes in the present population differ from those in the measured sample, and that boys reach the larger sizes today at earlier ages than their fathers did. Nevertheless, it is reasonable to assume that a present day boy and one from the survey sample (who is of the same height and chest girth) are also quite similar in those other respects which are important for the sizing of their clothing. After preliminary analyses of the data were carried out, an industry committee on sizing of young men's (students') clothing decided that the basic data would be those from the previously mentioned survey for boys 16 and 17 years of age; and that stature, chest girth, and waist girth were to be the basic control measurements.

Measurements were taken and recorded in centimeters and translated into inches in the final step. Table A1 shows young men's (students') measurements sorted into four principal groups, marked sizes 34, 36, 38, and 40. The groups were selected from the frequencies of occurrence of various combinations in the sample data and are based on industry desires and practices. The key chest and waist girth measurements are marked with crosses.

The data cards referenced above were then sorted into groups with chest girths in the centimeter ranges of 81 to 86, 87 to 92, 93 to 98, and 99 to 104. The 81 to 86 centimeter group was further subdivided into three groups on the basis of stature values of 160 to 168, 169 to 177, and 178 to 186. The next chest girth group, 87 to 92 centimeters, was subdivided on the basis of stature values in all cases 2 centimeters larger than the first set of stature groupings (viz, 162 to 170, 171 to 179, 180 to 188, etc.). Within each of these stature-chest girth groupings, a final selection was made of boys with waist girth values no more than 1 centimeter (3/8 in.) larger and no more than 3 centimeters (1 1/8 in.) smaller than the agreed upon waist girth (i.e., the values excluding the proper clothing allowance given for waist girth in tables 1, 2, and 3).

The 12 resulting groups of cards were run through computer equipment and the average values were obtained for each of the 28 measurements listed in the tables. Minor adjustments were made to these average values to provide an even trend from size to size. These values with

[1] O'Brien, Ruth; Girschick, M.A.; and Hunt, E.P.; *Body Measurements of American Boys and Girls for Garment and Pattern Construction*, U.S. Department of Agriculture, Miscellaneous Publication No. 366, 1941.

their clothing allowances became the values presented in the tables for the even sizes from 34 to 40. The boys whose body proportions lie within the sizing rectangles are expected to be fitted. The balance of the boys have body measurements that may require special consideration.

Values for the odd sizes, 35 to 39, were obtained by interpolating between the adjacent even sizes. Values for sizes 32 and 33 at the low end and sizes 41 and 42 at the high end were obtained as follows:

(a) Stature values for sizes 32 and 33 were the same as those for size 34, those for 41 and 42 were the same as those for size 40. These statures were established by the industry committee.

(b) Vertical measurements, which vary primarily with stature, were assumed to be the same as those for size 34 or 40, as was relevant.

(c) Those girth measurements which were primarily related to chest girth rather than to stature were extrapolated down from size 34 or up from size 40; the grades being the same as that between sizes 34 to 35 and that between sizes 39 and 40.

(d) For a few measurements, such as vertical trunk girth which varied with both stature and chest girth, equations were developed. These equations estimated the amount of change which was associated separately with changes in stature and with changes in chest girth.

Table A1. Young Men's (Students') Data -- Regulars in Height

WAIST — centimeters	STATURE GROUPING 169-177 cm Size 34						STATURE GROUPING 171-179 cm Size 36						STATURE GROUPING 173-181 cm Size 38						STATURE GROUPING 175-183 cm Size 40					
	CHEST (cm)						CHEST (cm)						CHEST (cm)						CHEST (cm)					
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
98																					1			1
96																								
94																								1
92																						1	2	
90																		1		2		1		
88																	1				2		1	
86															1		1	3	1	3	1			2
84														1	1			1	1	1		2		3
82										2	1		1		1	1	1	2	5	1	1	2	1	
80									2	3		3	1	1	3	1	1	2	2	3	2	1		
78						1	1	2			3	5	1	1	3	1	7	5	7	1			2	2
76								1	2		2	4		1	8	2	7	3	8	2	+4	1	3	
74						1		4	1	5	5	8	10	9	6	2	7	6	4	4	4	1	1	1
72	-					1	1	7	6	14	17	22	4	12	8	11	16	15	8	6	1	2	1	1
70	1		2	1	4	5	7	19	25	28	33	22	11	17	15	7	12	12	6	9		3	3	
68			3	7	8	9	17	26	30	29	32	37	13	11	16	22	10	10	7	7	7	1	2	1
66			3	6	18	17	19	21	32	+33	26	38	25	22	19	+11	9	21	8	1	3	2		
64	2	7	11	12	22	35	31	42	51	+36	31	26	37	26	16	15	14	2	7	2	2	2		
62	7	6	10	19	26	28	38	31	27	36	17	15	32	21	17	13	10	7	4	2				
60	1	11	13	22	+39	35	27	39	22	24	17	18	23	25	14	16	9	3	4	1	1			
	6	9	13	26	+36	25	20	34	13	10	14	9	23	18	15	6	7	3	2	1	1			
	11	11	17	16	20	17	12	17	7	6	10	3	11	12	1	9	1		1		1			
	6	15	8	13	10	11	7	6	7	4	1		16	11	4	2	1							
	5	12	7	4	8	13	5	6	2	3	1		6	2										
	5	4	3	5	5	2	1	1	1				5	2	1	2								
	3	2	2	2	1	4	1	2					2											
	1	4	3		2	1							3	2										
	1	1	2																					
Total	50	82	97	133	199	205	193	265	239	259	242	236	224	194	151	121	114	98	76	46	31	20	18	12
						766						1434						902						203

203
902
1434
766
3305

APPENDIX B. SIZING GRADES

Young Men (Students) Shorts

	Grade between 32S-33S	Grade between 33S-34S	Grade between 34S-35S	Grade between 35S-36S	Grade between 36S-37S	Grade between 37S-38S	Grade between 38S-39S	Grade between 39S-40S	Grade between 40S-41S	Grade between 41S-42S
GIRTH MEASUREMENTS (inches)										
Chest	1	1	1	1	1	1	1	1	1	1
Waist	½	½	½	½	½	1	1	1	1	1
Hip	½	½	½	½	½	1	1	1	1	1
Vertical trunk	½	½	⅞	⅞	⅞	⅞	⅞	⅞	⅞	⅞
Neckbase	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Armscye	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Upper arm	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Elbow	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Thigh	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Calf, maximum	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Knee, tibiale	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS										
Shoulder length	⅛	0	⅛	0	⅛	0	⅛	0	⅛	0
Shoulder slope	0	0	0	0	0	0	0	0	0	0
Cross-back width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Cross-chest width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Crotch length	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	¼	¼
Cervicale to wrist	¼	⅛	⅜	⅜	⅜	⅜	⅜	⅜	⅛	¼
VERTICAL MEASUREMENTS (inches)										
Head and neck length	0	0	0	0	0	0	0	0	0	0
Cervicale height	0	0	½	½	½	½	½	½	0	0
Scye depth, along spine	⅛	0	⅛	⅛	⅛	⅛	⅛	⅛	0	⅛
Waist length, posterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist length, anterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist height	0	0	¼	¼	¼	¼	⅜	⅜	0	0
Waist to hips, along side of body	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0
Crotch height	0	0	⅛	⅛	⅛	⅛	¼	¼	0	0
Knee height	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0

APPENDIX B. SIZING GRADES (Continued)

Young Men (Students) Regulars

	Grade between 32R-33R	Grade between 33R-34R	Grade between 34R-35R	Grade between 35R-36R	Grade between 36R-37R	Grade between 37R-38R	Grade between 38R-39R	Grade between 39R-40R	Grade between 40R-41R	Grade between 41R-42R
GIRTH MEASUREMENTS (inches)										
Chest	1	1	1	1	1	1	1	1	1	1
Waist	½	½	½	½	½	1	1	1	1	1
Hip	½	½	½	½	½	1	1	1	1	1
Vertical trunk	½	½	⅞	⅞	⅞	⅞	⅞	⅞	⅝	⅝
Neckbase	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Armscye	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Upper arm	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Elbow	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Thigh	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Calf, maximum	¼	¼	¼	¼	¼	¼	⅜	⅜	⅜	⅜
Knee, tibiale	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS										
Shoulder length	⅛	0	⅛	0	⅛	0	⅛	0	⅛	0
Shoulder slope	0	0	0	0	0	0	0	0	0	0
Cross-back width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Cross-chest width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Crotch length	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	¼	¼
Cervicale to wrist	¼	⅛	⅜	⅜	⅜	⅜	⅜	⅜	⅛	¼
VERTICAL MEASUREMENTS (inches)										
Head and neck length	0	0	0	0	0	0	0	0	0	0
Cervicale height	0	0	½	½	½	½	½	½	0	0
Scye depth, along spine	⅛	0	⅛	⅛	⅛	⅛	⅛	⅛	0	⅛
Waist length, posterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist length, anterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist height	0	0	¼	¼	¼	¼	⅜	⅜	0	0
Waist to hips, along side of body	0	0	1/16	1/16	1/16	1/16	1/16	1/16	0	0
Crotch height	0	0	⅛	⅛	⅛	⅛	¼	¼	0	0
Knee height	0	0	⅛	⅛	⅛	⅛	¼	¼	0	0

APPENDIX B. SIZING GRADES (Continued)

Young Men (Students) Longs

	Grade between 32L-33L	Grade between 33L-34L	Grade between 34L-35L	Grade between 35L-36L	Grade between 36L-37L	Grade between 37L-38L	Grade between 38L-39L	Grade between 39L-40L	Grade between 40L-41L	Grade between 41L-42L
GIRTH MEASUREMENTS (inches)										
Chest	1	1	1	1	1	1	1	1	1	1
Waist	½	½	½	½	½	1	1	1	1	1
Hip	½	½	½	½	½	1	1	1	1	
Vertical trunk	½	½	⅞	⅞	⅞	⅞	⅞	⅞	⅝	⅝
Neckbase	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Armscye	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Upper arm	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Elbow	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	¼	¼
Thigh	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Calf, maximum	⅜	⅜	⅜	⅜	⅜	⅝	⅝	⅝	⅝	⅝
Knee, tibiale	¼	¼	¼	¼	¼	¼	⅜	⅜	⅜	⅜
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS										
Shoulder length	⅛	0	⅛	0	⅛	0	⅛	0	⅛	0
Shoulder slope	0	0	0	0	0	0	0	0	0	0
Cross-back width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Cross-chest width	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼
Crotch length	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	¼	¼
Cervicale to wrist	¼	⅛	⅜	⅜	⅜	⅜	⅜	⅜	⅛	¼
VERTICAL MEASUREMENTS (inches)										
Head and neck length	0	0	0	0	0	0	0	0	0	0
Cervicale height	0	0	½	½	½	½	½	½	0	0
Scye depth, along spine	⅛	0	⅛	⅛	⅛	⅛	⅛	⅛	0	⅛
Waist length, posterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist length, anterior	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Waist height	0	0	¼	¼	¼	¼	⅜	⅜	0	0
Waist to hips, along side of body	0	0	⅛	⅛	⅛	⅛	⅛	⅛	0	0
Crotch height	0	0	⅛	⅛	⅛	⅛	¼	¼	0	0
Knee height	0	0	⅛	⅛	⅛	⅛	¼	¼	0	0

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance of a Voluntary Product Standard and its significance:

1. *Enforcement*—Voluntary Product Standards contain requirements which are established by mutul consent of those concerned in accordance with the *Procedures for the Development of Voluntary Product Standards* published by the Department of Commerce (15 CFR Part 10, as amended, May 28, 1970). The standards provide a common basis of understanding among producers, distributors, and users or consumers. The National Bureau of Standards has *no* regulatory power in the enforcement of the provisions of voluntary standards, but since these standards represent the will of the interested groups as a whole, their provisions soon become established as trade customs and become effective when the standards are referenced in sales contracts, procurement specifications, government regulations, and the like.

2. *The Responsibility of the Acceptor*—The purpose of Voluntary Product Standards is to establish, for specific items, nationally recognized sizes, grades, material requirements, or performance criteria. The benefits that result from these standards will be in direct proportion to general recognition and actual use of the standards. Instances will occur when it may be necessary to deviate from a standard. The signing of an acceptance does not preclude such departures. The acceptor's signature, however, indicates an intention to follow the standard, where practicable, in the production, distribution, or use and consumption of the product in question.

* U. S. GOVERNMENT PRINTING OFFICE : 1972—481-331/176

ACCEPTANCE OF VOLUNTARY PRODUCT STANDARD

PS 45-71, BODY MEASUREMENTS FOR THE SIZING OF APPAREL FOR YOUNG MEN (STUDENTS)

This form properly completed, signed, and returned will show your acceptance of this *Voluntary Product Standard.*

Date _____

Office of Engineering Standards Services
National Bureau of Standards
U.S. Department of Commerce
Washington, D.C. 20234

Gentlemen:

We are primarily engaged in the following segment of the industry:

(Please check only one.)

( ) Production
( ) Distribution
( ) Use/consumption
( ) General Interest

We believe that this *Voluntary Product Standard* constitutes a useful standard of practice, and we plan to use it as far as practicable. *However*, we reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those products which actually conform to the standard in all respects may be represented as conforming thereto.

Signature of authorized officer _____

(Please type or print the following)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed.)

Street Address _____

City, State, and ZIP Code _____

(*Note:* Separate acceptances should be filed for each subsidiary company and affiliate which is to be listed as an acceptor.)

(Cut on this line)