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# 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*

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# **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').

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# Contents

	Page
1. Purpose .....	1
2. Scope and Classification .....	1
2.1. Scope .....	1
2.2. Classification .....	1
2.3. Size designations and ranges .....	1
2.4. Grading .....	1
3. Tables of Sizes and Corresponding Body Measurements .....	1
4. Application .....	1
5. Principal Body Landmarks .....	5
6. Methods of Measuring the Body .....	5
6.1. General .....	5
6.2. Vertical measurements .....	5
6.2.1. Stature .....	5
6.2.2. Cervicale height .....	5
6.2.3. Waist height .....	5
6.2.4. Crotch height .....	6
6.2.5. Knee height .....	6
6.3. Girth measurements .....	6
6.3.1. Chest .....	6
6.3.2. Waist .....	6
6.3.3. Hip .....	6
6.3.4. Vertical trunk .....	6
6.3.5. Total crotch length (girth of crotch) .....	6
6.3.6. Thigh .....	6
6.3.7. Knee .....	6
6.3.8. Calf .....	6
6.3.9. Neckbase .....	6
6.3.10. Armscye .....	6
6.3.11. Upper arm .....	6
6.3.12. Elbow .....	6
6.4. Width and length measurements .....	6
6.4.1. Shoulder length .....	6
6.4.2. Cross-back width .....	6
6.4.3. Cross-chest width .....	7
6.4.4. Scye depth .....	7
6.4.5. Cervicale to waist, including curve of spine (posterior waist length) .....	7
6.4.6. Collar bone to waist, along front of body (anterior waist length) .....	7
6.4.7. Waist to hips .....	7
6.4.8. Shoulder slope (degrees) .....	7
6.4.9. Cervicale to wrist length .....	7
7. Identification .....	7
8. Effective Date .....	8
9. History of Project .....	8
10. Standing Committee .....	8
11. Acceptors .....	9
Appendix A—Development of the Standard .....	10
Appendix B—Sizing Grades .....	12

## **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<sup>1</sup> 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

<sup>1</sup>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:

- Sizing or grading garment patterns.
- Preparing specifications for apparel and model forms.
- Coordinating body measurements of boys, as defined, with size designations for their apparel.
- 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	187
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	41
Vertical trunk	59¾	59¾	60¾	61¼	62¾	63	63¾	64¾	65¾	66¼	67
Neckbase	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	17½
Armscye	15¼	15¾	16	16¾	16¾	17½	17½	17¾	18¼	18¾	19
Upper arm	8¾	9¼	9¾	10	10¾	10¾	11½	11½	11¾	12¼	12½
Elbow	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	12¾
Thigh	18¾	19¼	19¾	20	20¾	20¾	21¾	22	22¾	23¼	23½
Calf, maximum	12½	12¾	13	13¼	13½	13¾	14	14¾	14¾	15½	15¾
Knee, tibiale	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	15½
WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS											
Shoulder length	4½ <sup>b</sup>	4¾	4¾	4¾	4¾	4¾	4¾	5	5	5½	5½
Shoulder slope (degrees)	25	25	25	25	25	25	25	25	25	25	25
Cross-back width	13¾	13¾	13¾	14¾	14¾	14¾	14¾	15¾	15¾	15¾	15¾
Cross-chest width	12¾	12¾	12¾	12¾	13¾	13¾	13¾	13¾	14¾	14¾	14¾
Crotch length, total	28¼	28½	28¾	29¾	29½	29¾	30¼	30¾	31	31¼	31¼
Cervicale to wrist length	31½	31¾	31¾	32¼	32¾	33	33¾	33¾	34¾	34¾	34¾
VERTICAL MEASUREMENTS—inches											
Head and neck length	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾	9¾
Cervicale height	58¾	58¾	58¾	58¾	59¾	59¾	60¾	60¾	61¾	61¾	61¾
Scye depth, along spine	7¾	7½	7½	7¾	7¾	7¾	8	8¾	8¼	8¼	8¼
Waist length, posterior	15½	15½	15½	15¾	15¾	15¾	16	16¾	16¼	16¼	16¼
Waist length, anterior	13½	13½	13½	13¾	13¾	13¾	14	14¾	14¼	14¼	14¼
Waist height	43¼	43¼	43¼	43½	43¾	44	44¼	44¾	45	45	45
Waist to hips, along side of body	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾
Crotch height	31¾	31¾	31¾	31¾	32	32¾	32¼	32¾	32¾	32¾	32¾
Knee height	18¾	18¾	18¾	18¾	19	19¾	19¼	19½	19¾	19¾	19¾

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

TABLE 2. LONGS \*—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

	32	33	34	35	36	37	38	39	40	41	42
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 -----	61¾	61¾	62¾	63¼	64¾	65	65¾	66¾	67¾	68¼	68¾
Neckbase -----	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	17½
Armseye -----	15½	15¾	16¼	16¾	17	17¾	17¾	18¾	18½	18¾	19¼
Upper arm -----	8¾	9¼	9¾	10	10¾	10¾	11½	11½	11¾	12¼	12¾
Elbow -----	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	12¾
Thigh -----	18¾	19¼	19¾	20	20¾	20¾	21¾	22	22¾	23¼	23¾
Calf, maximum -----	12½	12¾	13	13¼	13½	13¾	14	14¾	14¾	15½	15½
Knee, tibiale -----	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	15½

WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS

	32	33	34	35	36	37	38	39	40	41	42
Shoulder length -----	4½ <sup>b</sup>	4¾	4¾	4¾	4¾	4¾	4¾	5	5	5½	5½
Shoulder slope (degrees) -	26	26	26	26	26	26	26	26	26	26	26
Cross-back width -----	13¾	13¾	13¾	14¼	14¾	14¾	14¾	15½	15¾	15¾	15¾
Cross-chest width -----	12¾	12¾	12¾	12¾	13¾	13¾	13¾	13¾	14¼	14¾	14¾
Crotch length, total -----	29¾	29¾	29¾	30	30¾	30¾	31¾	31½	31¾	32¾	32¾
Cervicale to wrist length -	32¾	33	33¾	33¾	33¾	34¼	34¾	35	35¾	35½	35¾

VERTICAL MEASUREMENTS—inches

	32	33	34	35	36	37	38	39	40	41	42
Head and neck length ---	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼	10¼
Cervicale height -----	61¼	61¼	61¼	61¼	62¼	62¾	63¼	63¾	64¼	64¼	64¼
Scye depth, along spine -	7¾	7¾	7¾	8	8¾	8¼	8¾	8½	8¾	8¾	8¾
Waist length, posterior --	16¼	16¼	16¼	16¾	16½	16¾	16¾	16¾	17	17	17
Waist length, anterior --	14	14	14	14¾	14¼	14¾	14½	14¾	14¾	14¾	14¾
Waist height -----	45¾	45¾	45¾	46	46¼	46½	46¾	47¾	47½	47½	47½
Waist to hips, along side of body -----	8¾	8¾	8¾	8¾	8¾	8¾	8¾	8¾	9	9	9
Crotch height -----	33¾	33¾	33¾	33¾	33¾	34	34¾	34¾	34¾	34¾	34¾
Knee height -----	19¾	19¾	19¾	19¾	20	20¾	20¼	20½	20¾	20¾	20¾

\* 1 inch equals 2.54 centimeters, 1 pound equals 0.45 kilograms.  
<sup>b</sup> 1/16 inch pattern grade per size between sizes marked with this footnote.

TABLE 3. SHORTS \*—YOUNG MEN'S (STUDENTS') BODY MEASUREMENTS FOR SIZES 32

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	6'
Weight—in pounds -----	106	111	116	123	130	137	144	152	162	172	18

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	3
Hip -----	34	34½	35	35½	36	36½	37½	38½	39½	40½	4
Vertical trunk -----	57%	57⅞	58⅞	59¼	60⅞	61	61⅞	62¾	63⅞	64½	6
Neckbase -----	15	15¼	15½	15¾	16	16¼	16½	16¾	17	17¼	1
Armseye -----	15	15⅞	15¾	16⅞	16½	16⅞	17¼	17⅞	18	18⅞	1
Upper arm -----	8⅞	9¼	9⅞	10	10⅞	10¾	11⅞	11½	11⅞	12¼	1
Elbow -----	10¼	10½	10¾	11	11¼	11½	11¾	12	12¼	12½	1
Thigh -----	18⅞	19¼	19⅞	20	20⅞	20¾	21⅞	22	22⅞	23¼	2
Calf, maximum -----	12½	12¾	13	13¼	13½	13¾	14	14⅞	14¾	15⅞	1
Knee, tibiale -----	13	13¼	13½	13¾	14	14¼	14½	14¾	15	15¼	1

WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS

Shoulder length -----	4½ <sup>b</sup>	4⅞	4⅞	4¾	4¾	4⅞	4⅞	5	5	5⅞	
Shoulder slope (degrees) -	24	24	24	24	24	24	24	24	24	24	2
Cross-back width -----	13%	13⅞	13⅞	14⅞	14⅞	14⅞	14⅞	15⅞	15⅞	15⅞	1
Cross-chest width -----	12⅞	12⅞	12⅞	12⅞	13⅞	13⅞	13⅞	13⅞	14⅞	14⅞	1
Crotch length, total -----	27½	27¾	28	28⅞	28¾	29⅞	29½	29⅞	30¼	30½	3
Cervicale to wrist length -	30¼	30½	30⅞	31	31⅞	31¾	32⅞	32½	32⅞	33	3

VERTICAL MEASUREMENTS—inches

Head and neck length ---	9½	9½	9½	9½	9½	9½	9½	9½	9½	9½	
Cervicale height -----	55	55	55	55½	56	56½	57	57½	58	58	5
Scye depth, along spine -	7	7⅞	7⅞	7¼	7⅞	7½	7⅞	7¾	7⅞	7⅞	
Waist length, posterior -	14¾	14¾	14¾	14⅞	15	15⅞	15¼	15⅞	15½	15½	1
Waist length, anterior --	13	13	13	13⅞	13¼	13⅞	13½	13⅞	13¾	13¾	1
Waist height -----	40%	40¾	40¾	41	41¼	41½	41¾	42⅞	42½	42½	4
Waist to hips, along side of body -----	7⅞	7⅞	7⅞	7⅞	7¾	7⅞	7⅞	7⅞	8	8	
Crotch height -----	29⅞	29⅞	29⅞	30	30⅞	30¼	30⅞	30⅞	30⅞	30⅞	3
Knee height -----	17¾	17¾	17¾	17⅞	18	18⅞	18¼	18⅞	18½	18½	1

\* 1 inch equals 2.54 centimeters, 1 pound equals 0.45 kilograms.  
<sup>b</sup> 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.

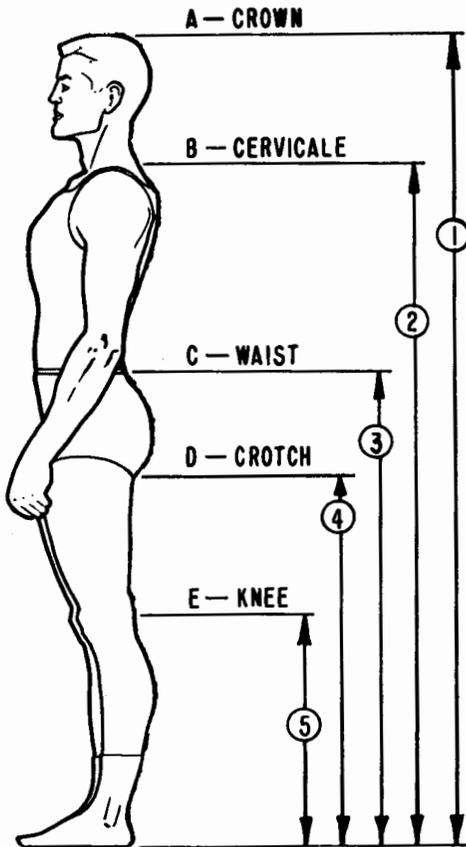


FIGURE 1. Key body landmarks and measurements.

## 6. METHODS OF MEASURING THE BODY <sup>2</sup>

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

### 6.2. Vertical measurements

<sup>2</sup> More complete information regarding the methods of measuring the body may be obtained from Miscellaneous Publication No. 366 of the USDA.

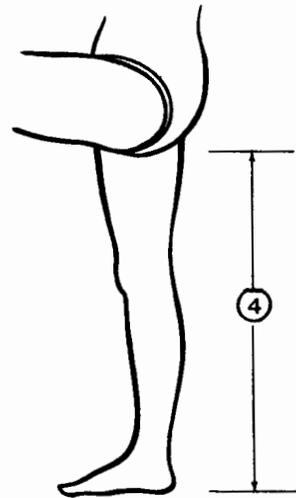


FIGURE 2. Crotch height.

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

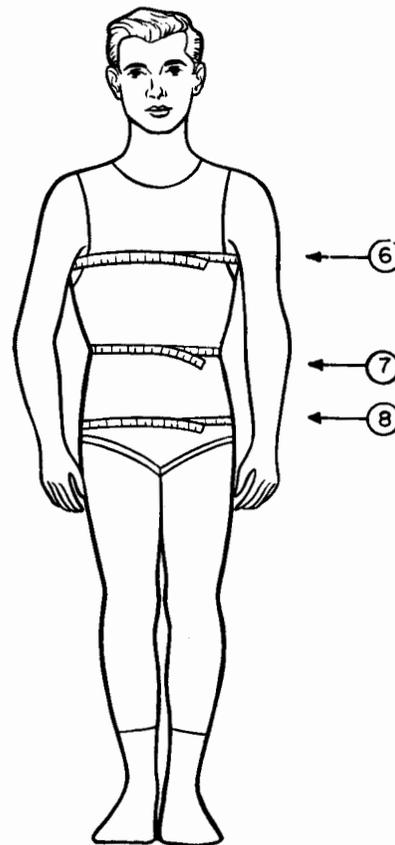


FIGURE 3. Chest, waist, and hip girths.

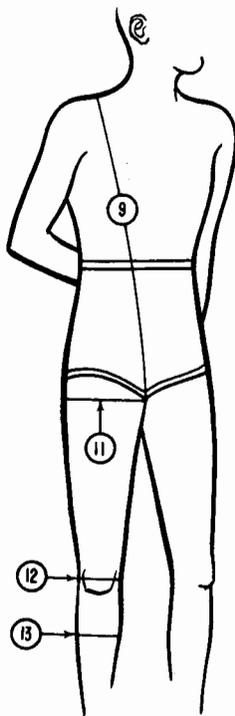


FIGURE 4. Vertical trunk, thigh, knee, and calf girths.

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).

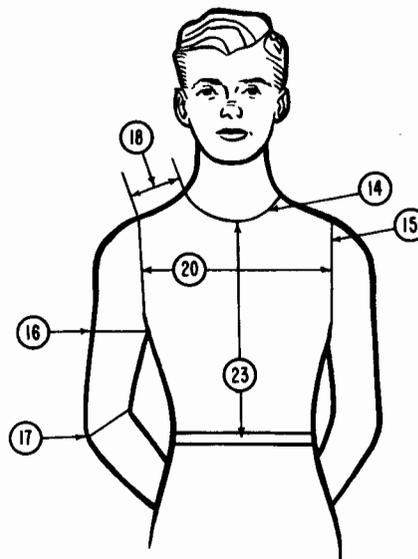


FIGURE 5. Neck, armscye, upper arm, and elbow girth. Shoulder and collar bone to waist lengths. Cross-chest width.

6.3.12. **Elbow**—With the arm flexed at a proximately 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

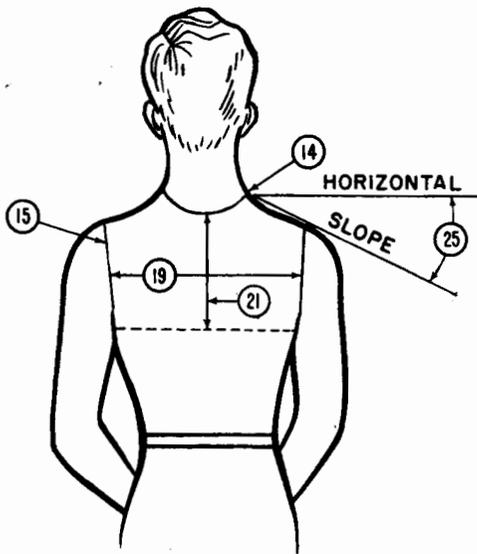


FIGURE 6. Neck and armscye girths. Shoulder slope. Cross-back width. Scye depth.

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

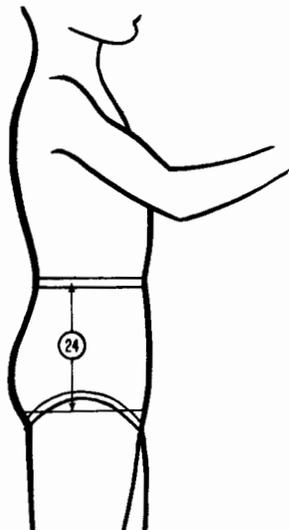


FIGURE 7. Waist to hips.

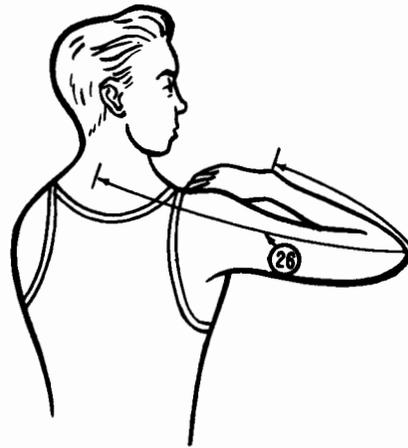


FIGURE 8. Cervicale to wrist length.

upper edge of collar bone to waist (23, figure 5)

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 measuremer 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

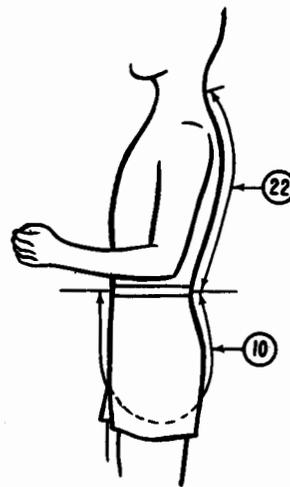


FIGURE 9. Cervicale to waist and total crotch length.

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. 20535, which acts as secretary for the committee.

#### *Representing Producers*

Floyd Baslow, (Chairman), Donmoor, Inc.,  
West 33d Street, New York, New York 10001  
William Aldrich, Warnaco, Inc., P.O. Box 500,  
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 10020  
Philip Rogers, G. C. Murphy Company,  
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, N.W., Washington, D.C. 20036

### *Representing General Interest*

Rowena Dowlen, U.S. Department of Agriculture, 2005 Lake Avenue, S.W., 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  
Sturd-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  
Trlo 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  
Walcraft 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  
Herpolzheimer 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  
Scarboroughs, 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

## USERS

Armstrong, Mary, Union, New Jersey  
Birchard, Helen, Saratoga Springs, New York  
Burton, John, Willamantic, 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, Washing-  
ton, 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.<sup>1</sup> 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 the 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 ( $\frac{3}{8}$  in.) larger and no more than 3 centimeters ( $1\frac{1}{8}$  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

<sup>1</sup>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 mainly with stature, were assumed to be the same as those for size 34 or 40, as relevant.
- (c) Those girth measurements which were mainly related to chest girth rather than to stature were extrapolated down from size 34 or up from size 40; the grades below size 34 or up from size 40 were the same as that between sizes 34 to 39 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

W A I S T -- 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																									
92																						1			
90																			2			1		2	
88																	1				2			1	
86															1				1	3	1			2	
84															1				5	1		1		1	
82										2	1				1				2	3	2	1		2	
80															3	1			7	1				2	
78						1			2	3		3	10	9	6	2	7	3	8	2	+4	1		3	
76									4	8	8	6	6	13	11	16	22	10	10	7	7	7	1		1
74						1			6	14	17	22	25	22	19	11	9	21	8	1	3	2			
72						1			7	18	24	20	37	26	16	+15	14	2	7	2	2	2			
70						1			7	28	33	22	32	21	17	13	10	7	4	2					
68						1			11	33	37	23	25	14	16	9	3	3	4	1	1				
66						1			13	36	40	27	39	22	24	17	18	6	2						
64						1			17	39	43	30	34	13	10	14	9	5	2	1	2				
62						1			21	42	46	31	36	7	6	10	3	2							
60						1			25	45	49	35	39	7	4	1		3	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		
						766					1434												203		

## 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
<b>GIRTH MEASUREMENTS (inches)</b>										
Chest -----	1	1	1	1	1	1	1	1	1	1
Waist -----	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1	1	1	1
Hip -----	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	1	1	1	1
Vertical trunk -----	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{3}{4}$						
Neckbase -----	$\frac{1}{4}$									
Armscye -----	$\frac{3}{8}$									
Upper arm -----	$\frac{3}{8}$									
Elbow -----	$\frac{1}{4}$									
Thigh -----	$\frac{3}{8}$									
Calf, maximum -----	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
Knee, tibiale -----	$\frac{1}{4}$									
<b>WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS</b>										
Shoulder length -----	$\frac{1}{8}$	0								
Shoulder slope -----	0	0	0	0	0	0	0	0	0	0
Cross-back width -----	$\frac{1}{4}$									
Cross-chest width -----	$\frac{1}{4}$									
Crotch length -----	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{4}$
Cervicale to wrist -----	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{1}{4}$
<b>VERTICAL MEASUREMENTS (inches)</b>										
Head and neck length --	0	0	0	0	0	0	0	0	0	0
Cervicale height -----	0	0	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0	0
Sceye depth, along spine	$\frac{1}{8}$	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	0	$\frac{1}{8}$
Waist length, posterior	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	0	0
Waist length, anterior	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	0	0
Waist height -----	0	0	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	0	0
Waist to hips, along side of body -----	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	0	0
Crotch height -----	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	0	0
Knee height -----	0	0	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	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
<b>GIRTH MEASUREMENTS (inches)</b>										
Chest -----	1	1	1	1	1	1	1	1	1	1
Waist -----	1/2	1/2	1/2	1/2	1/2	1	1	1	1	1
Hip -----	1/2	1/2	1/2	1/2	1/2	1	1	1	1	1
Vertical trunk -----	1/2	1/2	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Neckbase -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Armhole -----	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Upper arm -----	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Elbow -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Thigh -----	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Calf, maximum -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Knee, tibiale -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
<b>WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS</b>										
Shoulder length -----	1/8	0	1/8	0	1/8	0	1/8	0	1/8	0
Shoulder slope -----	0	0	0	0	0	0	0	0	0	0
Cross-back width -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Cross-chest width -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Crotch length -----	1/4	1/4	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Cervicale to wrist -----	1/4	1/8	3/8	3/8	3/8	3/8	3/8	3/8	1/8	1/4
<b>VERTICAL MEASUREMENTS (inches)</b>										
Head and neck length --	0	0	0	0	0	0	0	0	0	0
Cervicale height -----	0	0	1/2	1/2	1/2	1/2	1/2	1/2	0	0
Scye depth, along spine --	1/8	0	1/8	1/8	1/8	1/8	1/8	1/8	0	1/8
Waist length, posterior --	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Waist length, anterior --	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Waist height -----	0	0	1/4	1/4	1/4	1/4	3/8	3/8	0	0
Waist to hips, along side of body -----	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Crotch height -----	0	0	1/8	1/8	1/8	1/8	1/4	1/4	0	0
Knee height -----	0	0	1/8	1/8	1/8	1/8	1/4	1/4	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
<b>GIRTH MEASUREMENTS (inches)</b>										
Chest -----	1	1	1	1	1	1	1	1	1	1
Waist -----	1/2	1/2	1/2	1/2	1/2	1	1	1	1	1
Hip -----	1/2	1/2	1/2	1/2	1/2	1	1	1	1	1
Vertical trunk -----	1/2	1/2	7/8	7/8	7/8	7/8	7/8	7/8	5/8	5/8
Neckbase -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Armscye -----	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Upper arm -----	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Elbow -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Thigh -----	3/8	3/8	3/8	3/8	3/8	5/8	5/8	5/8	5/8	5/8
Calf, maximum -----	1/4	1/4	1/4	1/4	1/4	1/4	3/8	3/8	3/8	3/8
Knee, tibiale -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
<b>WIDTH and LENGTH (inches) and SLOPE (degrees) MEASUREMENTS</b>										
Shoulder length -----	1/8	0	1/8	0	1/8	0	1/8	0	1/8	0
Shoulder slope -----	0	0	0	0	0	0	0	0	0	0
Cross-back width -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Cross-chest width -----	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Crotch length -----	1/4	1/4	3/8	3/8	3/8	3/8	3/8	3/8	1/4	1/4
Cervicale to wrist -----	1/4	1/8	3/8	3/8	3/8	3/8	3/8	3/8	1/8	1/4
<b>VERTICAL MEASUREMENTS (inches)</b>										
Head and neck length --	0	0	0	0	0	0	0	0	0	0
Cervicale height -----	0	0	1/2	1/2	1/2	1/2	1/2	1/2	0	0
Sceye depth, along spine	1/8	0	1/8	1/8	1/8	1/8	1/8	1/8	0	1/8
Waist length, posterior	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Waist length, anterior	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Waist height -----	0	0	1/4	1/4	1/4	1/4	3/8	3/8	0	0
Waist to hips, along side of body -----	0	0	1/8	1/8	1/8	1/8	1/8	1/8	0	0
Crotch height -----	0	0	1/8	1/8	1/8	1/8	1/4	1/4	0	0
Knee height -----	0	0	1/8	1/8	1/8	1/8	1/4	1/4	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 mutual 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.