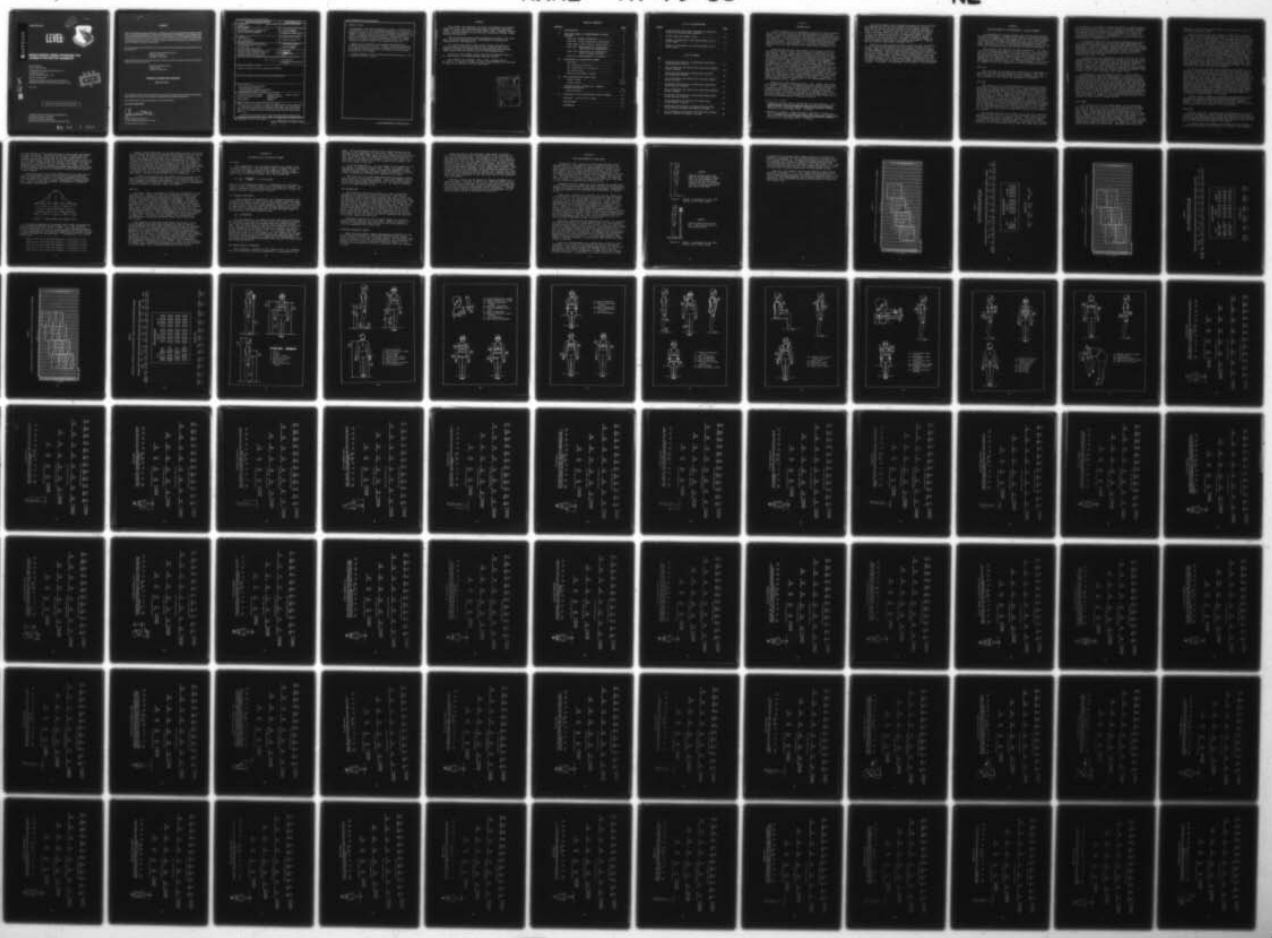
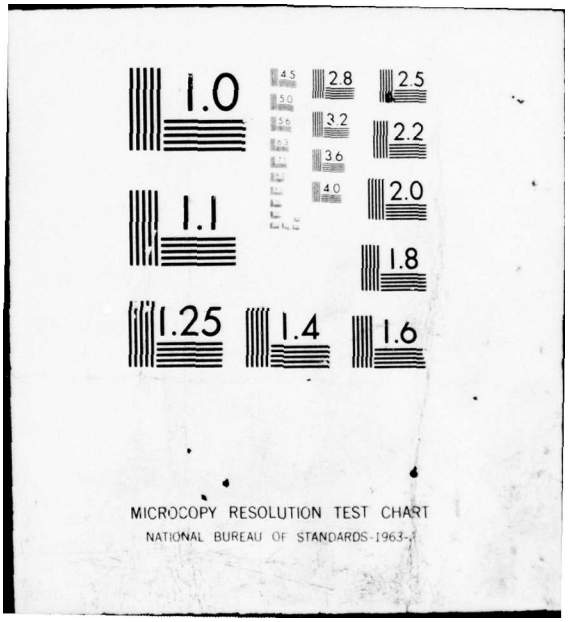
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LEVEL II

HEIGHT/WEIGHT SIZING PROGRAMS FOR WOMEN'S PROTECTIVE GARMENTS

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TECHNICAL REVIEW AND APPROVAL

AMRL-TR-79-35

This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

FOR THE COMMANDER



CHARLES BATES, JR.
Chief
Human Engineering Division
Aerospace Medical Research Laboratory

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Presented in this report is a series of height/weight sizing programs for use by designers of protective clothing for USAF women. The sizing values are based on an analysis of data obtained in the 1968 survey of Air Force women and cover some 60 dimensions (excluding head, hand and foot measurements).

Sizing tables containing specific data from which design values can be obtained are given for four-, six-, eight-, and twelve-size programs devised

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20. ABSTRACT (cont'd)

to accommodate the USAF women's population as a whole. In addition, the authors present a four-size system designed specifically for a women's flying population and based on data obtained from a subgroup of the 1968 sample composed of individuals who meet the height and weight requirements for USAF aircrew. Accompanying these working data are: bivariate tables which graphically illustrate how the sizing programs were arrived at; summary statistics and selected percentile data for each variable; and tariffs suggesting the number of garments to be procured for each size.

Supporting text, designed to give the reader some background and guidance in the use of this material, includes a step-by-step explanation of how sizing programs are developed, an explanation of statistical terms and procedures, and some guidelines for selection of the sizing program appropriate for a given garment.

A companion document containing updated height/weight programs for USAF aircrewmen is currently in press.

PREFACE

This report was prepared to fulfill requirements of contract F33615-79-C-0511 with the Aerospace Medical Research Laboratory (AMRL) at Wright-Patterson Air Force Base, Ohio. Contract monitor was Mr. Charles Clauser of Crew Station Integration Branch, Human Engineering Division.

The illustrations which add considerable clarity to the text were originally executed by Ms. Kay Downing and graphically enhanced by Mr. Ron Robinette.

Mr. Paul Kikta and Mr. Glen Potter of the University of Dayton Research Institute patiently ran, modified and re-ran computer programs to produce the sizing programs and bivariate tables which form the central core of this presentation.

Credit for the typing, layout and final production goes to Ms. Jane Reese of the Anthropology Research Project.

The authors are grateful, also, to Mr. Clauser and to Dr. Melvin J. Warrick of AMRL for their knowledgeable and thorough reviews of the material in this manuscript.

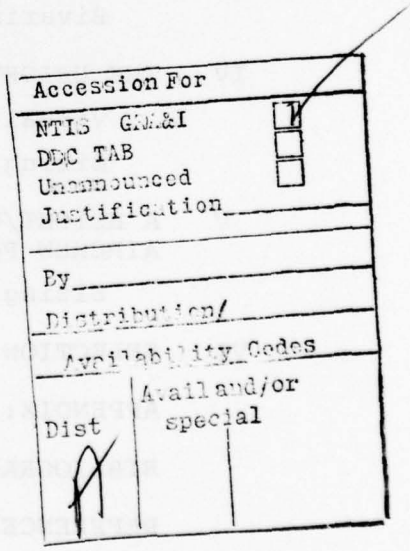


TABLE OF CONTENTS

Section		Page
I	INTRODUCTION	4
II	THE DEVELOPMENT OF ANTHROPOMETRIC SIZING PROGRAMS	6
	Step One (sample selection).....	6
	Step Two (sizing dimension selections)...	6
	Step Three (size interval selections)....	7
	Step Four (development of dimensional data for size categories).....	8
	Step Five (conversion of statistical data to design values).....	10
	Step Six (establishment of tariffs).....	12
III	EXPLANATION OF STATISTICAL TERMS	13
	The Mean.....	13
	The Standard Deviation.....	13
	The Coefficient of Variation.....	13
	The Percentiles.....	14
	Bivariate Frequency Tables.....	14
IV	THE HEIGHT/WEIGHT SIZING DATA.	16
	Visual Index.....	27-35
	Sizing Tables.....	36-93
V	A HEIGHT/WEIGHT PROGRAM FOR A WOMEN'S AIRCREW POPULATION	94
	Sizing Tables.....	97-116
VI	SELECTION OF THE APPROPRIATE SIZING PROGRAM. . . .	117
	APPENDIX: Definition of Terms	119
	BIBLIOGRAPHY	122
	REFERENCES	122

LIST OF ILLUSTRATIONS

Figure		Page
1	Height/weight bivariate distribution table for eight-size height/weight program	9
2	Areas under the normal curve	11
3	Height, as measured in the 1968 survey of Air Force women.	17
4	Weight, as measured in the 1968 survey of Air Force women.	17

LIST OF TABLES

No.		
1	Bivariate Distribution Illustrating Four-Size Height/Weight Program.	19
2	Size Categories and Tariff for Four-Size Height/ Weight Program	20
3	Bivariate Distribution Illustrating Six-Size Height/Weight Program.	21
4	Size Categories and Tariff for Six-Size Height/ Weight Program	22
5	Bivariate Distribution Illustrating Eight-Size Height/Weight Program.	23
6	Size Categories and Tariff for Eight-Size Height/ Weight Program	24
7	Bivariate Distribution Illustrating Twelve-Size Height/Weight Program.	25
8	Size Categories and Tariff for Twelve-Size Height/Weight Program.	26
9	Bivariate Distribution Illustrating Four-Size Height/Weight Program for Women's Aircrew.	95
10	Size Categories and Tariff for Four-Size Height/ Weight Program for Women's Aircrew	96

SECTION I

INTRODUCTION

In 1959, Emanuel et al. developed a series of sizing programs for flight clothing based on the key dimensions of height and weight. Practical applications over the next 20 years demonstrated the validity of this approach to the design of protective clothing for USAF men. To date, however, nothing comparable has been published for women. In this report is a series of height/weight sizing programs for women based on an analysis of body size data obtained from the 1968 survey of Air Force women (Clauser et al., 1972).

Opportunities for Air Force women, once largely limited to offices and hospital wards, have broadened considerably in the last decade. Today, women perform virtually every task heretofore exclusively assigned to men including the piloting of high performance aircraft. Occupational diversification brings with it the increasing need for protective garments and equipment designed to fit a range of women's body sizes. The opportunity to address this problem arose during the preparation of revised height/weight sizing programs for USAF men (Alexander et al., 1979).* At that time a combined sizing program for men and women was considered but a study of dimensional data for both sexes suggested that such an amalgamation should be attempted only with specific garments in mind. For purposes of a general sizing program, the significant proportional differences between the sexes cannot be reconciled by an assumption that women, in general, simply require smaller scaled sizes of the same garments worn by men (Robinette et al., 1979).**

Presented in this report are four-, six-, eight- and twelve-size systems designed to accommodate the USAF women's population as a whole. In addition, we have prepared a four-size system for a subgroup comprising USAF women who meet current height and weight criteria for pilots. This group is assumed to represent the body sizes of the potential women's flying population. Sixty separate dimensions were analyzed to obtain the data contained in the sizing programs given in Sections IV and V.

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* Alexander, Milton, John T. McConville and Ilse Tebbetts, 1979, Height/Weight Sizing Programs for Men's Protective Garments, AMRL-TR-79-28, Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio. In Press.

** Robinette, Kathleen, Thomas Churchill and John T. McConville, 1979, A Comparison of Male and Female Body Sizes and Proportions, AMRL-TR-79-33, Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio. In Press.

The survey sample which provided the basis for this analysis was composed of 1905 Air Force women of whom about 30% were officers or officer trainees and 70% were enlisted personnel or basic trainees. Ninety-one percent of the subjects were White, close to 8% were Black and about 1% were classified as "Other." In age, the sample ranged from a considerable number of basic trainees of 18 and 19 years old to a small number of senior officers in their mid-fifties. Because of the large number of young trainees, median age of the sample was about 21. Median age for officers (excluding trainees) was 29.

While the sizing tables containing specific data from which design values can be obtained are the central feature of this report, supporting chapters serve as guidelines for the designer in understanding, selecting and applying the data best suited to his or her needs. These include a brief explanation of how sizing programs are developed, an explanation of statistical terms and procedures used in this report, illustrated descriptions of each variable measured, and a concluding chapter suggesting criteria by which the designer can select from among the alternative sizing systems. A glossary of measurement terms appears in the Appendix.

SECTION II

THE DEVELOPMENT OF ANTHROPOMETRIC SIZING PROGRAMS

An anthropometric sizing analysis for clothing and personal-protective equipment is based on the concept of dividing the population into subgroups of individuals who are more or less similar in certain relevant body size dimensions (e.g. tall and slender, short and heavy) and then analyzing the anthropometric data for these subgroups to arrive at appropriate dimensional design values which will accommodate the size variability within each group.

Specifically, the sequence of steps involved is: (1) selection of an appropriate body of data for analysis, (2) selection of the key or sizing dimensions, (3) selection of intervals for the key dimensions that will establish each size category, (4) development of the dimensional data for each of the established size categories, (5) conversion of the summary statistical data to the appropriate design values, and (6) establishment of the tariff or numbers of each size necessary to outfit the user population.

STEP ONE

The rationale for selecting the 1968 survey of USAF women as the basis for this sizing analysis is self-evident. The 1968 survey represents the most recent and most comprehensive body of data available on USAF women, the population of interest.

STEP TWO

The choice of key or sizing dimensions is of crucial importance but is seldom, if ever, clear cut. These dimensions should be conveniently measurable and have a high degree of correlation with other dimensions which are of importance in the design and sizing of the end item. Sometimes a key dimension, such as bust circumference, is chosen simply because it is the most obviously critical dimension in the fit of the garment. In fact, no single body measurement or dimension is adequate as a basis for sizing most items of clothing or personal-protective equipment because no single dimension is closely related both to the lengths or heights of the body and to its girths, breadths and depths. For example, hip or waist measurements alone are inadequate to obtain a good fit in trousers since women of comparable girths vary so widely in leg length.

The obvious solution is to choose two or more key dimensions selected so that each will control some different aspect of body size variability such as linearity or mass. The next problem is to determine which pair should be used in a particular sizing program. The selection often depends on which ones exercise maximum control over other dimensions of body size which are relevant

in the design. By "control" we mean the degree to which changes in a given dimension correlate with changes in another dimension. The statistic used to measure this relationship is the correlation coefficient--the higher the relationship, the closer the correlation coefficient ("r") approaches 1.0. If little or no relationship exists between two dimensions, then the correlation coefficient will approach 0.00.

It should be clear from the foregoing discussion that pairs of key dimensions need not correlate well with each other but that each key dimension should correlate well with other related dimensions. Thus, for example, height which controls other height measurements such as leg length and waist height, and weight which correlates well with other measurements of girth and breadth, typically have but moderate relationship with each other (r is approximately equal to .500).

In selecting the key dimensions, an evaluation of the interrelationships of all the dimensions involved in the design of the garment is made. The results of such an evaluation conducted by Emanuel et al. (1959) showed that height and weight were the optimum combination of key dimensions for flight clothing. This finding, based on multiple correlation coefficients, corroborated similar findings from previous studies (O'Brien and Shelton, 1941, O'Brien et al., 1941, and Morant and Gilson, 1945).

In addition to its statistical virtues, a height/weight system has numerous practical advantages. Fitting in the field is simplified since these two measurements are generally known to persons being fitted and can, in any case, be easily measured. Distribution to field units and spot checks on USAF needs can be made by reference to records of yearly USAF physical examinations during which height and weight are ascertained. Further, because height and weight are not directly built into the design of the garment, there is overlap between sizes for all design dimensions. This results in greater flexibility in accommodating the subject population since it allows for more upgrading and downgrading of sizes than would be possible if key sizing dimensions were incorporated directly into the garment design.

STEP THREE

Step three calls for the establishment of size intervals. The width of the size interval of the key dimension(s) dictates not only the size variation for that dimension but for all the other design dimensions that are highly correlated with it as well. Thus, in the small-medium-large system often used to categorize inexpensive clothing, there is a very high degree of body size variability to be found among persons in each group. A "medium" sized sweater might be the garment of choice for a short woman with a relatively heavy torso, a woman whose height and bust circumference approach the mean for U.S. women, or a tall woman with a narrow torso and small bust. Obviously there will be a

good deal less variation among women in each group if a six- or eight-size system is used.

While a surprisingly large number of women can be successfully fitted by a limited-size program, it is clear that more sizes will fit more women better. On the other hand, it has been found that overall size homogeneity of individuals within a size category cannot be indefinitely improved by the addition of more sizes--that is, by subdivision of the key dimensions into more and more increments. At some point the minimum level of within-group variance for the body dimensions in the design will be approached and, even by doubling the number of sizes, this level of within-a-size variance will remain essentially constant. For example, slacks sized on hip circumference and stature may be made in 15 sizes with three stature measurements (long, medium and short) for each of five hip sizes. By doubling the number of sizes a better fit in the key dimensions is achieved but this will not necessarily improve the fit at waist and crotch. This is a function of the less than perfect relationships that other body dimensions have with the key dimensions by which the individuals in the size category are selected.

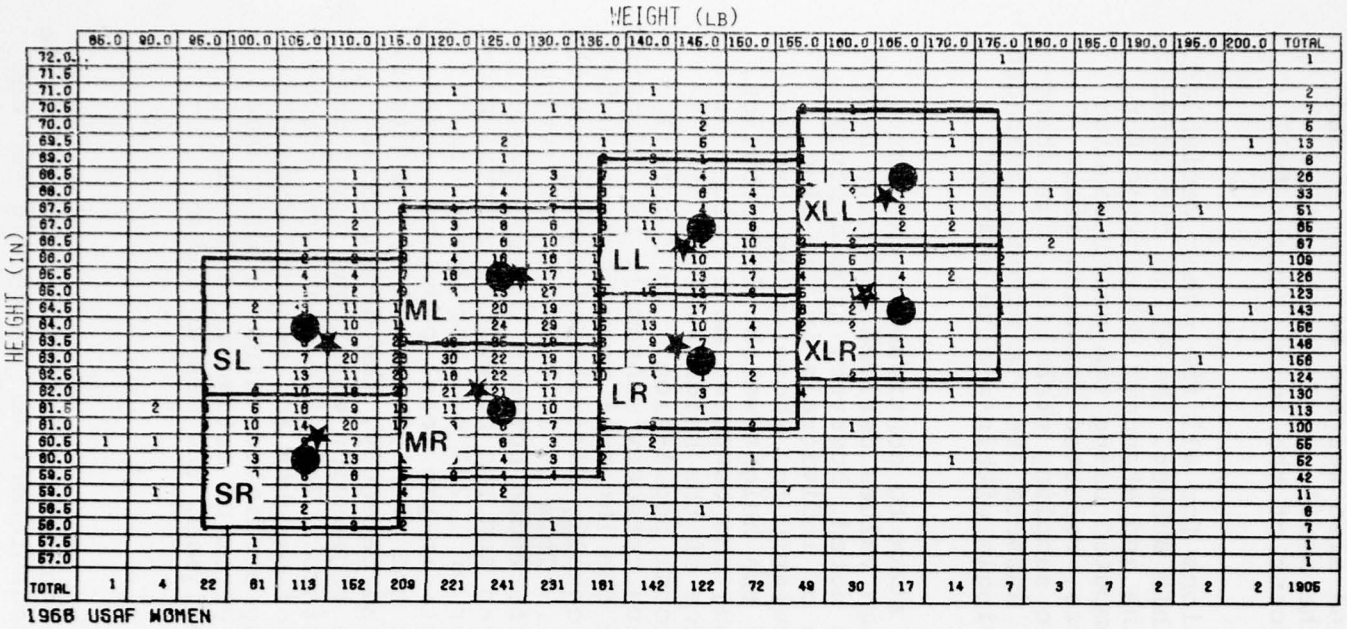
It is not only the body size variability that must be considered in establishing the sizing interval but factors such as the type of fit necessitated, the material that will be used in fabrication, the cut and possibly the logistics of procurement and stocking of the final item. At some point, decisions will be made regarding the various trade-offs among the design considerations and the sizing category intervals will be established. The major thrust of any such decision, of course, is to provide the best fit possible for the maximum number of users with the fewest number of sizes. Inevitably, there will be individuals within the design group who, because of extremes in body dimensions or unusual proportions, will not be satisfactorily fitted. An effective sizing scheme, however, will keep the number of individuals disaccommodated to a minimum.

In this report a number of alternative height/weight sizing programs are offered and guidelines for choosing the one best suited to a particular need are suggested in the concluding chapter. Selection of size intervals, of course, varies according to how many sizes are included in a given program.

STEP FOUR

The next step is to establish the dimensional data for each of the size categories. This is done by treating all the individuals in the sample who fall within the limits of a size category as a subsample and computing the means and standard deviations for each of the dimensions included in the design.

It can be seen, for instance, by reference to the height/weight bivariate table below (Figure 1), that the size intervals



HEIGHT (IN)	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0																			1						1
71.5																									
71.0								1				1													2
70.5									1	1	1		1			1									7
70.0								1					2			1		1							5
69.5									2		1	1	6	1	1			1						1	13
69.0									1			3	1		1										6
68.5						1	1			3	2	3	4	1	1	1		1							26
68.0						1	1	1	4	2	5	1	6	4	2	2		1		1					33
67.5						1	4	4	3	7	8	6	4	3	1	2	2	1			2		1		51
67.0						2	3	8	6	8	9	11	12	8	4	2		2			1				85
66.5					1	1	6	9	6	10	13	11	12	10	4	2				2					87
66.0					6	6	9	4	16	16	11	13	10	14	5	5	1		2			1			109
65.5				1	4	4	7	16	14	17	11	13	13	7	4	1	4	2			1				126
65.0					7	7	9	9	15	27	17	16	13	8	5	2	4				1				123
64.5				2	3	11	11	13	20	19	19	9	17	7	3	2			1		1	1		1	143
64.0				1	10	10	14	14	24	29	15	13	10	4	2	2		1			1				156
63.5					9	9	20	16	25	18	18	9	7	1	2	1	1	1							146
63.0				7	20	29	30	22	19	12	6	1	1			1							1		156
62.5				13	11	20	18	22	17	10	4	2	2			2	1	1							124
62.0				6	16	20	21	21	11	7	3		3		4			1							130
61.5		2	3	6	18	9	19	11	10	4	1		1												113
61.0			3	10	14	20	17	9	6	7	5	3		6		1									100
60.5	1	1		7	7	7	8	6	6	3	1	2													66
60.0			2	3	13	8	5	4	4	3	2			1				1							62
59.5			2	1	6	6	5	3	4	1	1														42
59.0		1		1	1	1	4		2																11
58.5					2	1	1					1	1												6
58.0					1	3	2			1															7
57.5				1																					1
57.0				1																					1
TOTAL	1	4	22	61	113	152	209	221	241	231	181	142	122	72	49	30	17	14	7	3	7	2	2	2	1905

1968 USAF WOMEN

Size	Weight (lb)	Height (in)
Small Regular	95.00-114.99	58.00-61.99
Small Long	95.00-114.99	62.00-65.99
Medium Regular	115.00-134.99	59.50-63.49
Medium Long	115.00-134.99	63.50-67.49
Large Regular	135.00-154.99	61.00-64.99
Large Long	135.00-154.99	65.00-68.99
X-Large Regular	155.00-174.99	62.50-66.49
X-Large Long	155.00-174.99	66.50-70.49

Figure 1. Height/weight bivariate distribution table for eight-size height/weight program.

for the eight-size program are 4 inches for height and 20 pounds for weight. For purposes of creating the dimensional data for the small-regular size category, all individuals who fell within the interval 58 to 61.99 inches and also weighed between 95 and 114.99 pounds became members of the small-regular subsample. Some 211 individuals or 11.08 percent of the total sample fell within these limits.

We must now establish dimensions for all the other variables. What are the crotch heights for this subset, the thigh circumferences, the hip breadths? The means and standard deviations for all the relevant variables are computed using the small-regular subsample. This step is, of course, repeated for each size category. For reasons relating to sampling stability, the standard deviations for the individual subsets are, in effect, averaged to provide for each dimension a single within-a-size standard deviation.

It would be possible at this stage to continue to the next step--the development of the design values derived directly from the dimensional data. It will be noted, however, from a study of Figure 1 that the distribution of individuals in the size categories is not uniform, particularly for those categories at the lower left and upper right of the height/weight distribution. Because of the uneven distribution, the computed mean values are unevenly weighted toward the center of the height/weight distribution of the mean value of the total population. In Figure 1, the mean height and weight for each category subsample is indicated by a star (★) and contrasted with the interval mean that would be obtained if the individuals were equally distributed throughout the height/weight sizing interval (•). This is in essence the sizing category midpoint. While the differences between the mean values computed directly from the subgroup and the category interval midpoints are not large, on the order of 1.24% or less, they are sufficient to penalize the subjects in the least populated areas of the size category. To correct the problem caused by the distribution of individuals within a size category, the dimensional values are computed from multiple regression equations using the size category midpoints as predictors. The effect of this procedure is to even the distribution of heights and weights throughout each size category. The resulting predicted value is then used in conjunction with the standard error of estimate to develop the next element in the sizing analysis, the design value.

STEP FIVE

The design value is a single numerical value for each variable that represents the actual body measurement for which a given end item will be designed. While the mean value of the small-regular size bust circumference in the eight-size system may be 33.4 inches, its design value may be set at the mean value plus 1.65 standard deviations (equivalent to the 95th percentile value), since it must

be large enough to fit around the bust of the larger individuals in that size group. The design value for an elasticized wrist closure, on the other hand, may be the mean value minus 1.65 standard deviations (equivalent to the 5th percentile) so that it will be small enough to seal the sleeve of the persons having the smaller wrist circumferences in the same size group. For each dimensional variable of interest and each size, there will be a specific design minimum and design maximum representing the range of adjustability that must be considered within that particular sizing category.

The design value can be any combination of the mean plus or minus some increment of the within-a-size standard deviation. Figure 2 shows the coverage of a normal distribution of values as a function of the plus or minus increments of standard deviation. (For all practical purposes, anthropometric dimensions are normally distributed.)

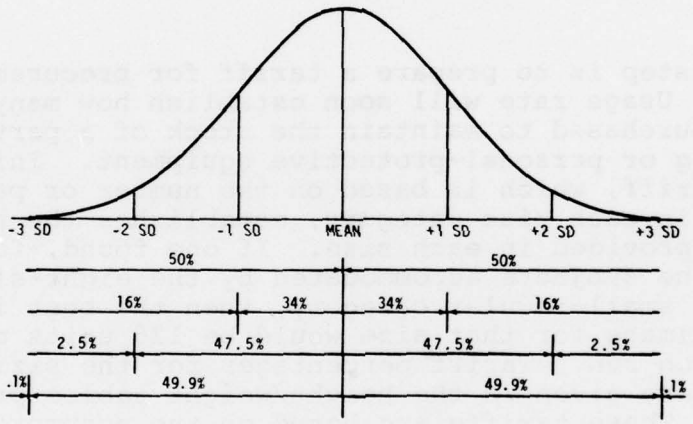


Figure 2. Areas under the normal curve.

The ranges suggested by the graph fall between approximately three standard deviations below the mean ($\bar{X}$ - 3 SD) to three standard deviations above it ($\bar{X}$ + 3 SD). Other important points on the distribution of a set of anthropometric data can be located, at least approximately, by adding or subtracting a multiple of the standard deviation to the mean value. In particular, it is worth noting that:

about 2/3 of a set of data fall between $\bar{X}$ - 1.0 SD and $\bar{X}$ + 1.0 SD

about 87% of a set of data fall between $\bar{X}$ - 1.5 SD and $\bar{X}$ + 1.5 SD

about 90% of a set of data fall between $\bar{X}$ - 1.65 SD and $\bar{X}$ + 1.65 SD

about 95% of a set of data fall between $\bar{X}$ - 2.0 SD and $\bar{X}$ + 2.0 SD

almost all of a set of data fall between $\bar{X}$ - 3.0 SD and $\bar{X}$ + 3.0 SD

Design values equivalent to the mean plus or minus 1.65 standard deviations were selected because they encompass the central 90 percent of the individual values for a particular variable. To select the design values beyond these limits means increasing the range of adjustability that must be considered and may result in a poorer fit for the majority of users for the sake of accommodating the few persons with exceptionally high and low values for a particular dimension or group of dimensions. An individual whose height and weight measurements would indicate a probable fit in a large-regular size but who has exceptionally long arms or legs, for example, may well be accommodated by the large-long size. In some cases a custom designed garment will be necessary.

It should be stressed that the design value is related to the body size of the population and should not be confused with the actual garment and pattern measurements. To arrive at those values, seam allowances are added and, where necessary, varying increments to permit freedom of movement within the garment.

STEP SIX

The final step is to prepare a tariff for procurement of the various sizes. Usage rate will soon establish how many of what sizes must be purchased to maintain the stock of a particular item of clothing or personal-protective equipment. Initially, however, the tariff, which is based on the number or percentage of individuals in each size category, establishes the number of garments to be provided in each size. If one found, for example, that 12.5% of the subjects accommodated by the eight-size program fell within the small-regular category, then the best initial procurement estimate for that size would be 125 units per thousand of the production run. Tariff percentages for the sizing programs in this report are given in the height/weight tables presented in Chapter IV. These tariffs are based on the assumption of the procurement of several thousands rather than a few dozen of an item.

The sequence of steps described above constitutes a well-tried procedure which has been successfully used to develop sizing programs for USAF flight clothing and protective garments. The final test of a successful sizing program is the fitting of garments on a representative sample of the target population. Results of fit tests of four protective flight garments designed for men on the basis of a height/weight sizing system were reported by Emanuel et al. (1959) to exceed all expectations of success. Ninety-six percent of the test subjects were fitted by their indicated sizes and over half the remainder were accommodated by upgrading or downgrading of suit sizes. There is every reason to assume that a similarly high degree of success can be achieved in fitting women with a height/weight-based sizing system.

SECTION III

EXPLANATION OF STATISTICAL TERMS

THE MEAN

This commonest of the statistics denoting an average value is widely understood. The arithmetic mean is simply the sum of a given set of values divided by the number of values. Thus, since the 1905 women measured in the 1968 USAF survey weighed a grand total of 242,468.4 pounds, their mean weight was

$$\bar{X} = \frac{\Sigma X}{N} = \frac{242,468.4}{1905} = 127.28 \text{ pounds}$$

where Σ is the summation operator, X represents the individual values, $\bar{X}$ their arithmetic mean, and N the number of values. The mean is designated in the statistical literature by a variety of symbols the most common being M, μ and $\bar{X}$.

THE STANDARD DEVIATION

A basic measure of variability, the standard deviation (SD) indicates the extent to which the values cluster around the mean. If most of the data cluster close to their mean value, the standard deviation is low; if a large number of values in the set lie at some distance from the mean, the standard deviation is high. By definition the standard deviation is the root-mean square of the deviations from the arithmetic mean:

$$SD = \sqrt{\Sigma (X-\bar{X})^2/N}$$

For the designer it is useful to know that about two-thirds of the values in a given set of data will fall between one standard deviation below and one standard deviation above the mean. Thus, when the mean height of the Air Force women was found to be 63.82 inches and the standard deviation 2.36 inches, it can be safely assumed that two-thirds of the 1905 subjects measured are between 61.46 and 66.18 inches tall. It is further true that approximately 95% of a given sample will fall between two standard deviations below and two standard deviations above the mean, and virtually all the subjects in a sample will be encompassed in a range from three standard deviations below the mean to three standard deviations above it.

THE COEFFICIENT OF VARIATION

This statistic, denoted in this report as CV, is a restatement of the standard deviation expressed as a percentage of the

mean. The relationships noted for the standard deviation also pertain to the coefficient of variation. Thus, in the case of the USAF survey where mean height is 63.82 inches and the coefficient of variation is 3.7%, about two-thirds of the women will, once again, be between 63.82 inches -3.7% and 63.82 inches +3.7% while 95% of the subjects will fall between 63.82 inches -7.4% and 63.82 inches +7.4%, etc.

CV is non-dimensional. It is an index to the variability of the values in relation to their size. Thus, for example, the variability of bustpoint height (variable #6) compared to mean bustpoint height is about the same as the variability of vertical trunk circumference (variable #35) compared to its mean.

The value of CV is often associated with the general anatomical nature of the variable involved. Long bone lengths, such as height and other height measurements, tend to have coefficients of variation which range from 3.5% to 5%. For fleshy circumferences, CV ranges from 6% to 10%.

THE PERCENTILES

This group of statistics belongs to a class of measures designated as "measures of order or position." They can be thought of as being obtained by arranging the data in order from the smallest value to the largest one and then observing the value of the datum which lies at a specified position in the array. The smallest value, the next-to-the-largest value, the middle value, and the like are examples of this type of statistic. The 99 percentiles--ranging from the 1st to the 99th--are values at the points which separate consecutive blocks or units of 1% of the data in the ordered array. The first percentile is the value which separates the smallest 1% of the data from 99% of the data with larger values; the second percentile separates the smallest 2% from the larger 98% and so on.

Reported in Section IV are a limited number of percentile values ranging from the 1st to the 99th. These are useful to indicate to the designer what portion of the total population will be accommodated by a given size.

BIVARIATE FREQUENCY TABLES

Among the more graphic ways of presenting information on the various ways and degrees to which body dimensions are related to one another are bivariate frequency tables. The bivariate table shows the ranges of any two given measurements and the numbers of subjects who fall within a particular range of values for one variable and simultaneously within a specified range for a second variable.

Referring back to the bivariate table shown in Figure 1, it will be noted that each row and column in the table has an inch and pound designation. The former is on the Y or vertical axis and the latter on the X or horizontal axis. Each numerical designation on the left and upper perimeter of the table is the midpoint value for a particular row or column. The first bivariate entry on the extreme left of the table shows one individual in the height/weight category of 60.5 inches and 85 pounds. This indicates that this individual, while perhaps not exactly 60.5 inches in height and 85 pounds in weight, falls within the limits of 60.25-60.74 inches and 82.50-87.49 pounds. Numbers along the right and lower periphery of the table are sums of the respective rows and columns.

Bivariate tables can be useful to clothing designers in a number of ways. As shown in Section IV, they are used to determine optimum size categories for alternative sizing systems with the aim of covering as wide a range as possible of the user population while retaining reasonable sizing increments. A second useful purpose served by the bivariate is establishment of the clothing tariff which is explained in Section II.

SECTION IV

THE HEIGHT/WEIGHT SIZING DATA

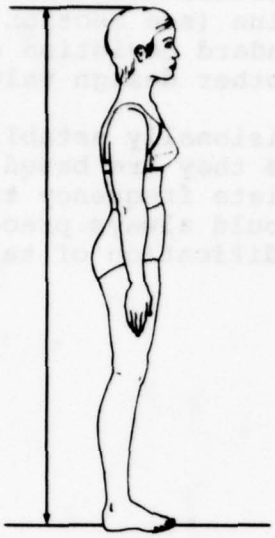
Presented in this section are four height/weight sizing systems with all the supporting data necessary to arrive at design values for garments for which height and weight of the user population are the key sizing dimensions. As the reader will recall, the six steps required in the formulation of a successful sizing program were outlined and explained in Section II. Appearing here is the "input" to be plugged into that process. By referring back to Section II as needed, the designer will be guided in the proper interpretation and use of the data in this section to achieve his particular end.

Steps one and two, selection of an appropriate sample population (1968 Air Force women) and choice of key sizing dimensions (height and weight), have already been established. Measurements of the key dimensions are described and illustrated in Figures 3 and 4.

Step three, selection of intervals for the key dimensions, is achieved by use of the bivariate distribution tables (Tables 1, 3, 5, and 7). As can be seen, the aim is to cover as large a portion of the user population as possible. Evenly spaced increments while not altogether essential are highly desirable. The resulting size categories are summarized in Tables 2, 4, 6, and 8. While it is virtually impossible to accommodate every single individual in a large fairly heterogeneous population, it should be noted that some number of persons around the fringes of the outlined size categories are nearly always accommodated by the sizes nearest to theirs. Thus, a sizing system which statistically encompasses only about 90% of the population will, in fact, usually accommodate closer to 95% of it.

Step four, establishing the dimensions for each size category, was done by analyzing the anthropometric data for each category in each sizing program to arrive at a usable range of values from which the design value will be selected. This analysis was carried out for 60 separate dimensions and the results constitute the bulk of the tables in this section. Accompanying the sizing data for each variable are a simplified line drawing and a measurement description to indicate as precisely as possible exactly what bodily dimension is referred to. A visual index precedes these tables to aid the designer in locating and identifying the dimensions of interest.

Step five, establishment of a single design value for each dimension, is the task of the designer and can be achieved by reference to the design minimum and maximum values in the following tables. Most design values will probably fall near the maximum values so as to accommodate at least 90% of the persons in that size group. Occasionally, as noted in Section II, when



HEIGHT

Subject stands erect with head in the Frankfort plane. With the anthropometer arm firmly touching the scalp, measure the vertical distance from the standing surface to the top of the head.

Figure 3. Height, as measured in the 1968 survey of Air Force women.



WEIGHT

Subject wears panties and bra. The scale is read to the nearest pound.

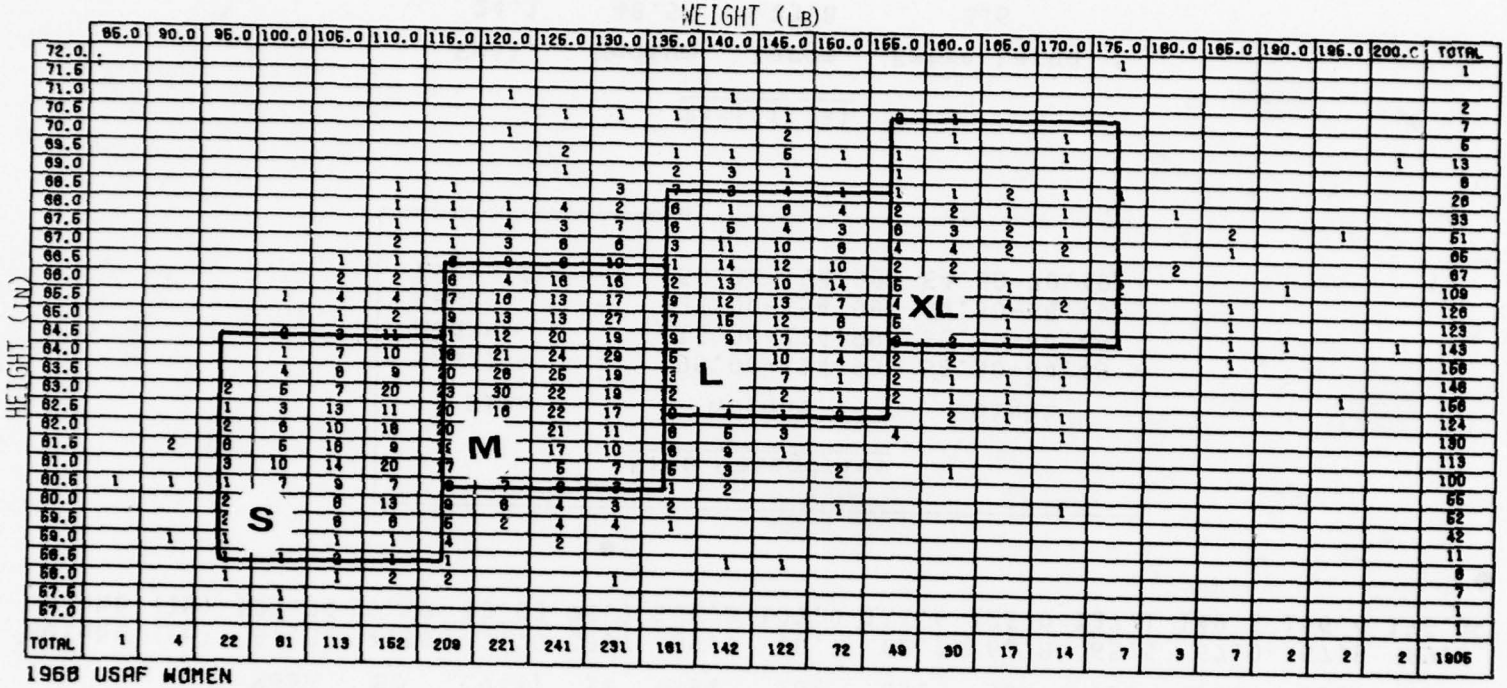
Figure 4. Weight, as measured in the 1968 survey of Air Force women.

a portion of the garment must conform closely to the body for protective purposes, it may be elasticized and the design value will be the minimum one. Minimum and maximum design values can be expanded still farther by adding or subtracting more than 1.65 standard deviations to the mean value (see Section II). Both the size category mean and the size standard deviation are given on each table to permit computation of other design values.

Step six, the tariffs, can be provisionally established by reference to Tables 1, 3, 5, and 7 where they are based on the size categories delineated by the bivariate frequency tables. Fit testing of prototype garments, which should always precede final production, will sometimes result in modification of tariffs as they appear here.

TABLE 1

BIVARIATE DISTRIBUTION ILLUSTRATING FOUR-SIZE HEIGHT/WEIGHT PROGRAM



HEIGHT (IN)	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0	.																		1						1
71.5								1				1													
71.0									1	1	1		1			1									2
70.5								1					2			1		1							7
70.0									2		1	1	6	1	1			1						1	13
69.5									1		2	3	1		1										8
69.0						1	1			3	3	3	4	1	1	1	2	1		1					26
68.5						1	1	1	4	2	6	1	6	4	2	2	1	1			2		1		33
68.0						1	1	4	3	7	6	5	4	3	0	3	2	1			1				51
67.5						2	1	3	6	6	3	11	10	6	4	4	2	2		2		1			65
67.0					1	1	6	9	6	10	11	14	12	10	2	2					1				67
66.5					2	2	6	4	16	16	12	13	10	14	5		1					1			109
66.0				1	4	4	7	10	13	17	19	12	13	7	4		4	2			1				126
65.5					1	2	9	13	13	27	17	15	12	6	6		1				1				123
65.0				0	0	11	11	12	20	19	19	9	17	7	0	0	1				1	1		1	143
64.5				1	7	10	16	21	24	29	15		10	4	2	2		1			1				158
64.0				4	8	9	20	26	25	19	13		7	1	2	1	1	1							146
63.5			2	5	7	20	23	30	22	19	12		2	1	2	1	1						1		156
63.0			1	3	13	11	20	16	22	17	6	1	1	0		2	1	1							124
62.5			2	6	10	18	20		21	11	8	5	3		4			1							130
62.0		2	0	5	18	9	14		17	10	6	9	1												113
61.5			3	10	14	20	17		5	7	5	3		2		1									100
61.0	1	1	1	7	9	7	0	3	0	3	1	2													55
60.5			2		8	13	9	6	4	3	2			1				1							52
60.0			2		0	0	5	2	4	4	1														42
59.5		1	1		1	1	4		2																11
59.0			0	1	0	1	1					1	1												8
58.5			1		1	2	2			1															7
58.0				1																					1
57.5				1																					1
57.0																									
TOTAL	1	4	22	81	113	152	209	221	241	231	161	142	122	72	49	30	17	14	7	3	7	2	2	2	1905

1968 USAF WOMEN

TABLE 2

SIZE CATEGORIES AND TARIFF FOR
FOUR-SIZE HEIGHT/WEIGHT PROGRAM

Summary Statistics and Selected Percentiles for Total Sample (n=1905)

	Mean	SD	CV(%)	1%	5%	10%	25%	50%	75%	90%	95%	99%
Height (in)	63.82	2.36	3.70	58.7	59.9	60.7	62.1	63.8	65.5	67.0	67.8	69.5
Weight (lb)	127.28	16.59	13.03	96.7	102.5	107.0	115.6	126.0	137.1	148.5	156.4	175.3

Size Categories

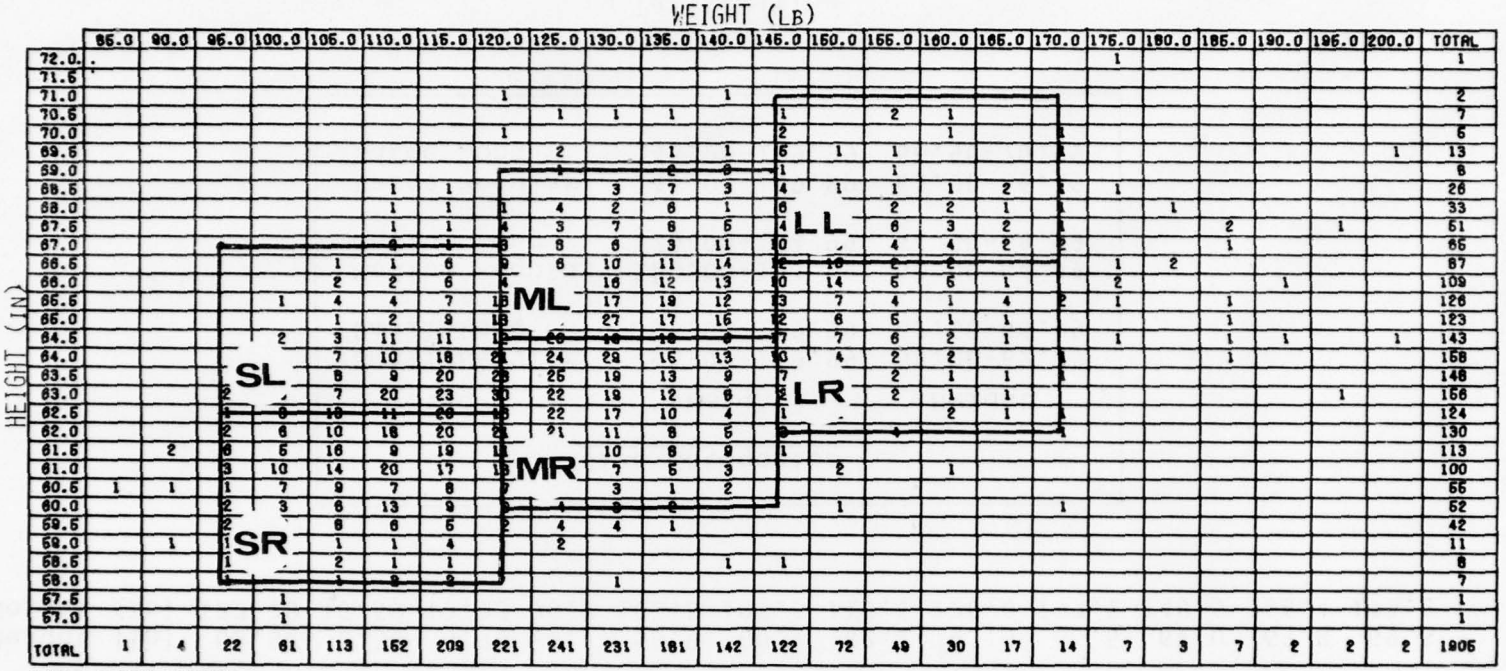
Size	Weight	Height
Small	95.00-114.99	58.50-64.49
Medium	115.00-134.99	60.50-66.49
Large	135.00-154.99	62.50-68.49
Extra Large	155.00-174.99	64.50-70.49

Tariff (%)

Small	Medium	Large	Extra Large
24.1	48.5	23.8	3.6

TABLE 3

BIVARIATE DISTRIBUTION ILLUSTRATING SIX-SIZE HEIGHT/WEIGHT PROGRAM



HEIGHT (IN)	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0																			1						1
71.5																									
71.0								1				1													2
70.5									1	1	1		1		2	1		1							7
70.0								1					2			1		1							5
69.5									2		1	1	6	1	1			1						1	13
69.0									1		2	0	1		1										6
68.5						1	1			3	7	3	4	1	1	1	2	1	1						26
68.0						1	1	1	4	2	6	1	6		2	2	1	1		1					33
67.5						1	1	4	3	7	6	6	4		6	3	2	1			2		1		51
67.0						0	1	8	8	6	3	11	10		4	4	2	2			1				66
66.5					1	1	6	9	6	10	11	14	12	10	6	6			1	2					87
66.0					2	2	6	4		16	12	13	10	14	5	6	1		2			1			109
65.5				1	4	4	7	15		17	19	12	13	7	4	1	4	2	1		1				126
65.0					1	2	9	15		27	17	16	12	6	5	1	1				1				123
64.5				2	3	11	11	12		20	10	10	9	7	7	6	2	1	1		1	1		1	143
64.0					7	10	18	21		24	29	15	13	10	4	2	2				1				158
63.5					8	9	20	26		25	19	13	9	7		2	1	1	1						148
63.0			2		7	20	23	30		22	19	12	6	2		2	1	1					1		156
62.5			1	6	10	11	20	15		22	17	10	4	1			2	1	1						124
62.0			2	6	10	16	20	21		21	11	8	5	0					1						130
61.5		2	0	5	16	9	19	11			10	8	9	1											113
61.0			3	10	14	20	17	15			7	5	3		2		1								100
60.5	1	1	1	7	9	7	8	7			3	1	2												55
60.0			2	3	6	13	9	3			0	0			1			1							52
59.5			2		6	6	5	2		4	4	1													42
59.0		1	1		1	1	4			2															11
58.5			1		2	1	1					1	1												6
58.0			0		0	0					1														7
57.5				1																					1
57.0				1																					1
TOTAL	1	4	22	61	113	152	209	221	241	231	181	142	122	72	49	30	17	14	7	3	7	2	2	2	1905

1968 USAF WOMEN

TABLE 4

SIZE CATEGORIES AND TARIFF FOR
SIX-SIZE HEIGHT/WEIGHT PROGRAM

Summary Statistics and Selected Percentiles for Total Sample (n=1905)

	Mean	SD	CV(%)	1%	5%	10%	25%	50%	75%	90%	95%	99%
Height (in)	63.82	2.36	3.70	58.7	59.9	60.7	62.1	63.8	65.5	67.0	67.8	69.5
Weight (lb)	127.28	16.59	13.03	96.7	102.5	107.0	115.6	126.0	137.1	148.5	156.4	175.3

Size Categories

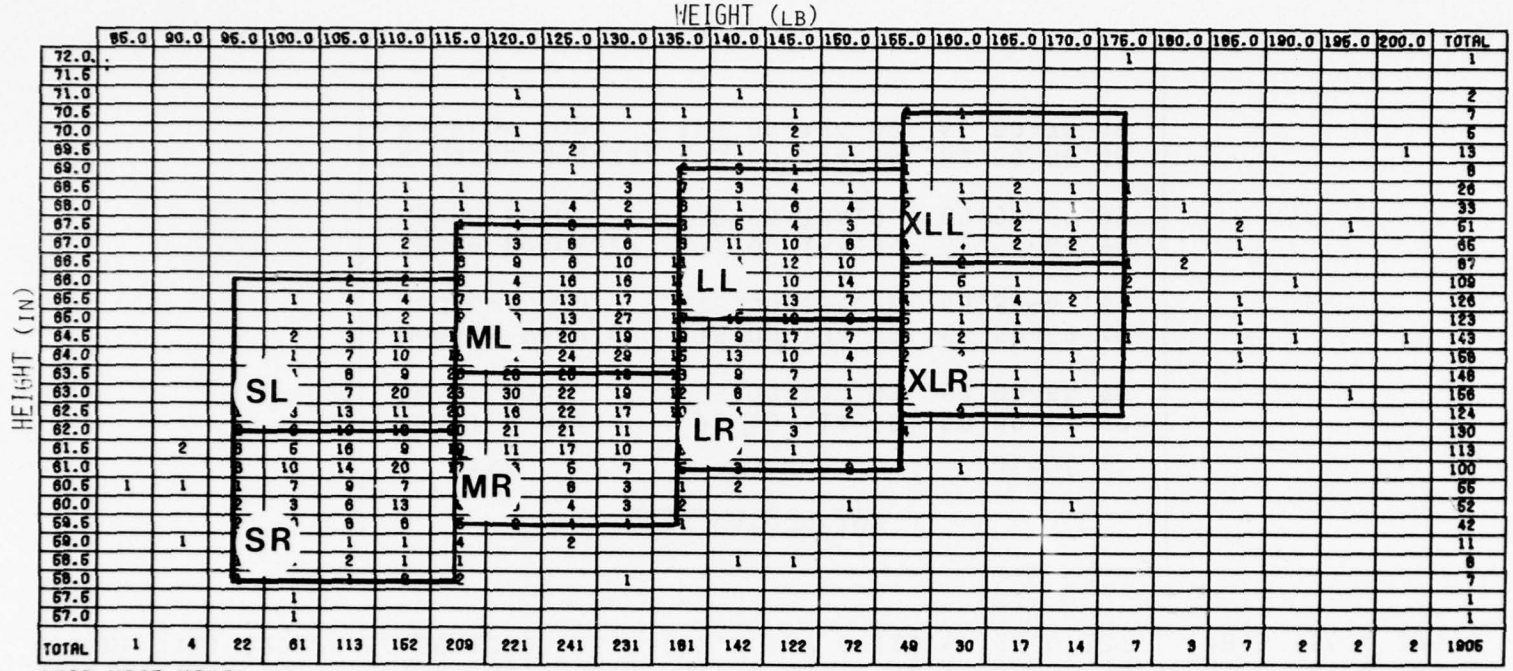
Size	Weight	Height
Small Regular	95.00-119.99	58.00-62.49
Small Long	95.00-119.99	62.50-66.99
Medium Regular	120.00-144.99	60.00-64.49
Medium Long	120.00-144.99	64.50-68.99
Large Regular	145.00-169.99	62.00-66.49
Large Long	145.00-169.99	66.50-70.99

Tariff (%)

Small Regular	Small Long	Medium Regular	Medium Long	Large Regular	Large Long
18.8	15.7	30.0	23.7	7.2	4.6

TABLE 5

BIVARIATE DISTRIBUTION ILLUSTRATING EIGHT-SIZE HEIGHT/WEIGHT PROGRAM



	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0																			1						1
71.5																									
71.0								1				1													2
70.5									1	1	1		1			1									7
70.0								1					2			1		1							5
69.5									2		1	1	6	1				1						1	13
69.0									1			3	1												8
68.5						1	1			3	7	3	4	1		1	2	1	1						26
68.0						1	1	1	4	2	6	1	6	4			1	1		1					33
67.5						1						5	4	3			2	1			2		1		51
67.0						2	1	3	6	6	9	11	10	6			2	2			1				66
66.5					1	1		9	6	10			12	10					1	2					67
66.0					2	2		4	16	16			10	14	5	6	1		2			1			109
65.5				1	4	4	7	16	13	17			13	7	1	1	4	2	1		1				126
65.0					1	2			13	27			10	6	5	1	1				1				123
64.5				2	3	11			20	19		9	17	7	6	2	1		1		1	1		1	143
64.0				1	7	10			24	29		13	10	4	2			1			1				158
63.5					8	9						9	7	1			1	1							148
63.0					7	20			22	19		8	2	1			1					1			156
62.5					13	11			22	17			1	2				1							124
62.0									21	11			3					1							130
61.5		2			16	9			17	10			1												113
61.0					14	20			6	7															100
60.5	1	1			9	7			8	3															55
60.0					6	13			4	3															52
59.5					8	6																			42
59.0		1			1	1			2																11
58.5					2	1																			8
58.0																									7
57.5																									1
57.0																									1
TOTAL	1	4	22	61	113	152	209	221	241	231	181	142	122	72	49	30	17	14	7	3	7	2	2	2	1905

1968 USAF WOMEN

TABLE 6

SIZE CATEGORIES AND TARIFF FOR
EIGHT-SIZE HEIGHT/WEIGHT PROGRAM

Summary Statistics and Selected Percentiles for Total Sample (n=1905)

	Mean	SD	CV(%)	1%	5%	10%	25%	50%	75%	90%	95%	99%
Height (in)	63.82	2.36	3.70	58.7	59.9	60.7	62.1	63.8	65.5	67.0	67.8	69.5
Weight (lb)	127.28	16.59	13.03	96.7	102.5	107.0	115.6	126.0	137.1	148.5	156.4	175.3

Size Categories

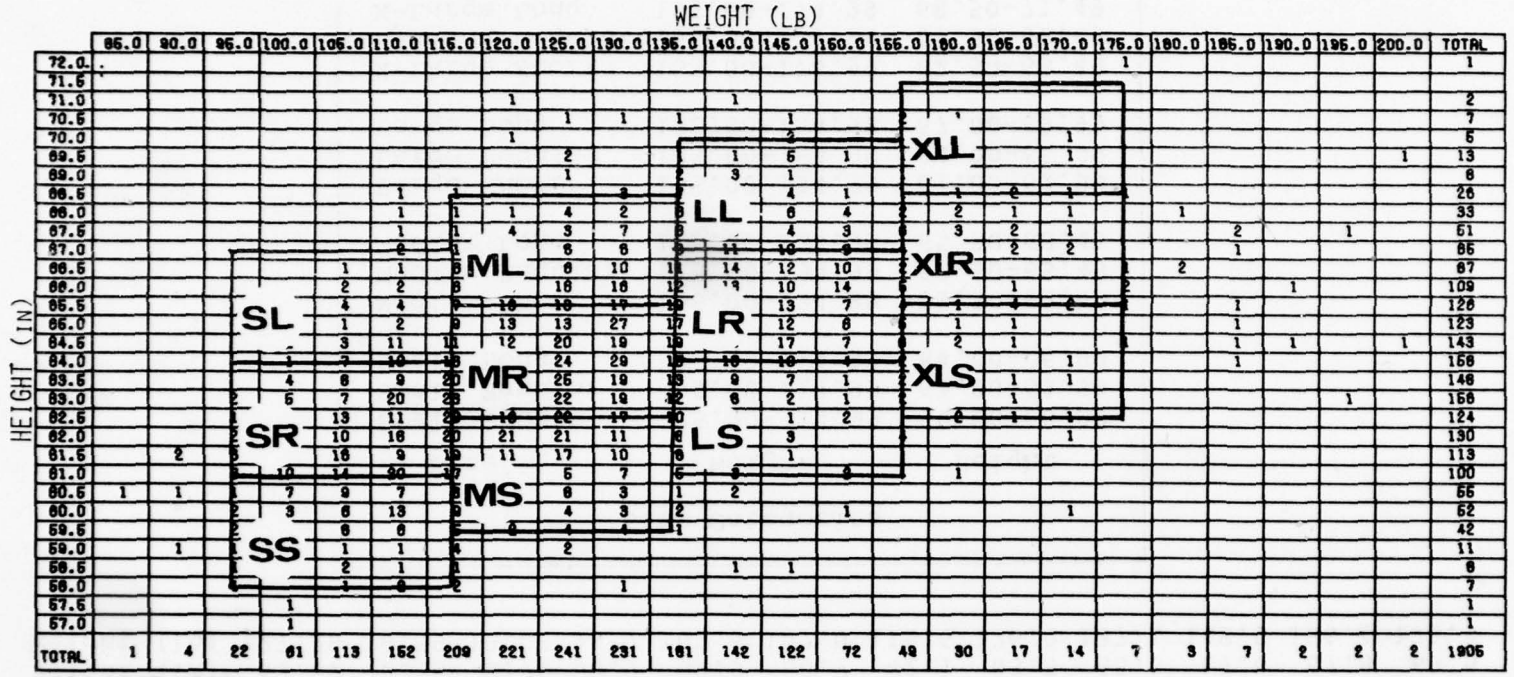
Size	Weight	Height
Small Regular	95.00-114.99	58.00-61.99
Small Long	95.00-114.99	62.00-65.99
Medium Regular	115.00-134.99	59.50-63.49
Medium Long	115.00-134.99	63.50-67.49
Large Regular	135.00-154.99	61.00-64.99
Large Long	135.00-154.99	65.00-68.99
X-Large Regular	155.00-174.99	62.50-66.49
X-Large Long	155.00-174.99	66.50-70.49

Tariff (%)

Small Regular	Small Long	Medium Regular	Medium Long	Large Regular	Large Long	X-Large Regular	X-Large Long
12.5	11.4	22.9	25.1	10.2	13.7	2.4	1.8

TABLE 7

BIVARIATE DISTRIBUTION ILLUSTRATING TWELVE-SIZE HEIGHT/WEIGHT PROGRAM



	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0																			1						1
71.5																									
71.0								1				1													2
70.5									1	1	1		1		2	1									7
70.0								1					2					1							5
69.5									2			1	5	1				1						1	13
69.0									1		2	3	1												8
68.5						1	1			3	7		4	1		1	0	1	1						26
68.0						1	1	1	4	2	6		6	4	2	2	1	1		1					33
67.5						1	1	4	3	7	9		4	3	6	3	2	1			2		1		51
67.0						0	0		6	6	9	11	10	6			2	2			1				65
66.5					1	1	5		8	10	11	14	12	10	2				1	2					87
66.0					2	2	6		16	16	12	13	10	14	5		1		2			1			109
65.5					4	4	5	10	10	17	20		13	7	4	1	4	0	1		1				126
65.0					1	2	9	13	13	27	17		12	8	6	1	1				1				123
64.5					3	11	11	12	20	19	15		17	7	0	2	1		1		1	1		1	143
64.0				1	7	10	13		24	29	19	16	10	4	2			1			1				158
63.5				4	6	9	20		25	19	15	9	7	1	2		1	1							148
63.0			2	6	7	20	25		22	19	22	6	2	1	2		1						1		156
62.5			1		13	11	20	16	22	17	20		1	2		0	1	1							124
62.0			2		10	16	20	21	21	11	8		3		2			1							130
61.5		2	5		16	9	15	11	17	10	6		1												113
61.0			4	10	14	20	17		5	7	5	5		0		1									100
60.5	1	1	1	7	9	7	8		6	3	1	2													66
60.0			2	3	6	13	9		4	3	2			1				1							62
59.5			2		6	6	5	6	4	4	1														42
59.0		1	1		1	1	4		2																11
58.5			1		2	1	1					1	1												6
58.0			0		1	0	2			1															7
57.5				1																					1
57.0				1																					1
TOTAL	1	4	22	61	113	152	209	221	241	231	181	142	122	72	49	30	17	14	7	3	7	2	2	2	1905

1968 USAF WOMEN

TABLE 8

BIVARIATE DISTRIBUTION ILLUSTRATING TWELVE-SIZE HEIGHT/WEIGHT PROGRAM

Summary Statistics and Selected Percentiles for Total Sample (n=1905)

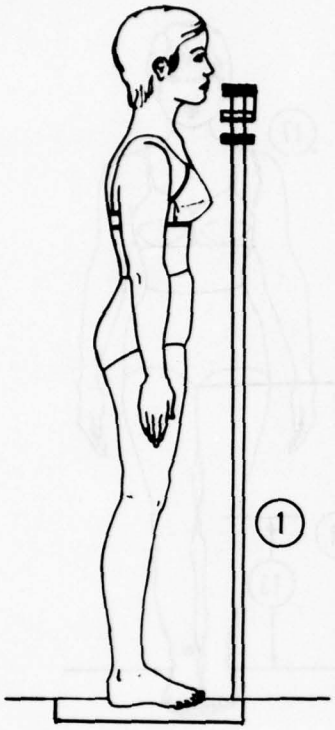
	Mean	SD	CV(%)	1%	5%	10%	25%	50%	75%	90%	95%	99%
Height (in)	63.82	2.36	3.70	58.7	59.9	60.7	62.1	63.8	65.5	67.0	67.8	69.5
Weight (lb)	127.28	16.59	13.03	96.7	102.5	107.0	115.6	126.0	137.1	148.5	156.4	175.3

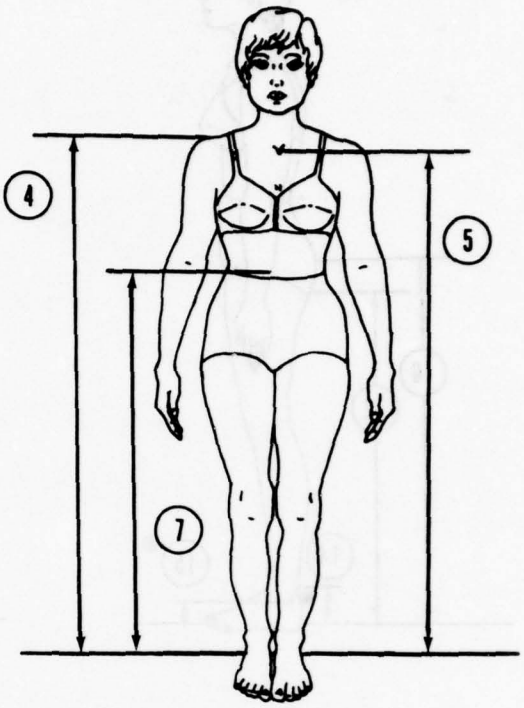
Size Categories

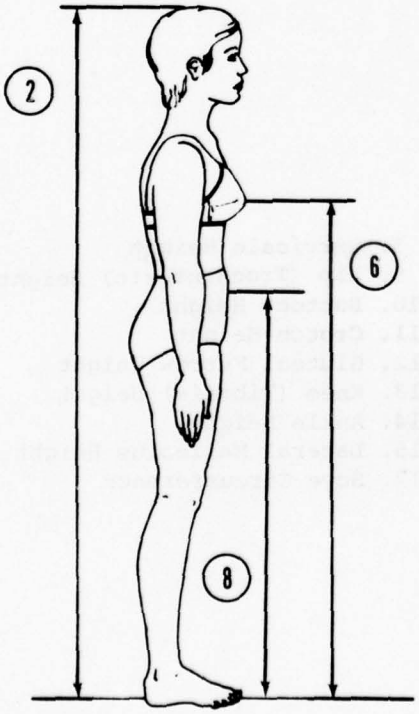
Size	Weight	Height
Small Short	95.00-114.99	58.00-60.99
Small Regular	95.00-114.99	61.00-63.99
Small Long	95.00-114.99	64.00-66.99
Medium Short	115.00-134.99	59.50-62.49
Medium Regular	115.00-134.99	62.50-65.49
Medium Long	115.00-134.99	65.50-68.49
Large Short	135.00-154.99	61.00-63.99
Large Regular	135.00-154.99	64.00-66.99
Large Long	135.00-154.99	67.00-69.99
X-Large Short	155.00-174.99	62.50-65.49
X-Large Regular	155.00-174.99	65.50-68.49
X-Large Long	155.00-174.99	68.50-71.49

Tariff (%)

Small Short	Small Reg.	Small Long	Med. Short	Med. Reg.	Med. Long	Large Short	Large Reg.	Large Long	X-Large Short	X-Large Reg.	X-Large Long
6.1	14.7	3.1	12.8	26.2	9.2	5.3	14.4	4.3	1.2	2.5	0.2

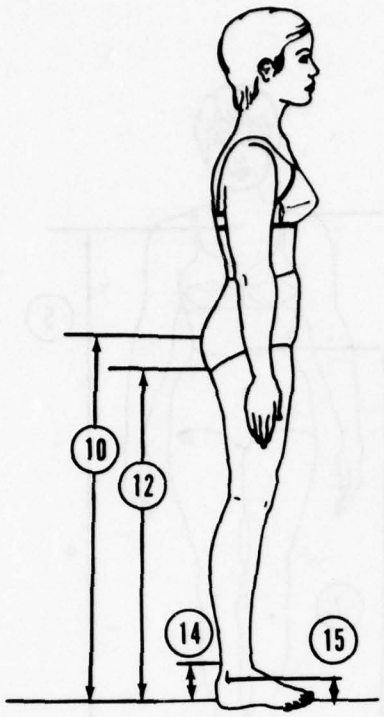


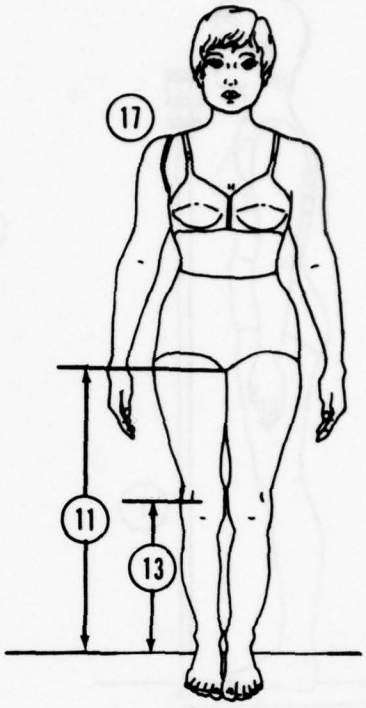


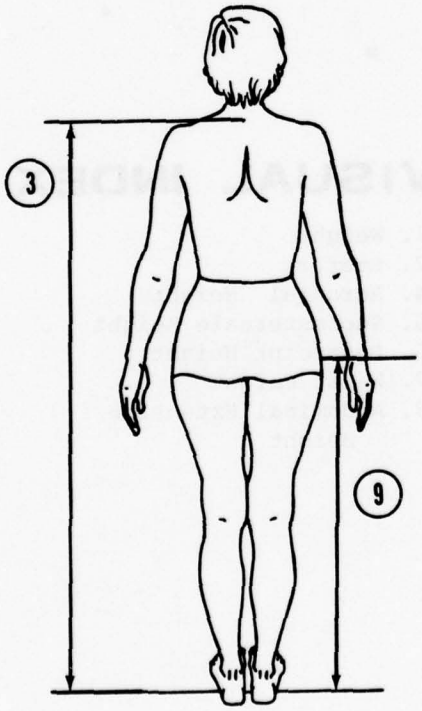


VISUAL INDEX

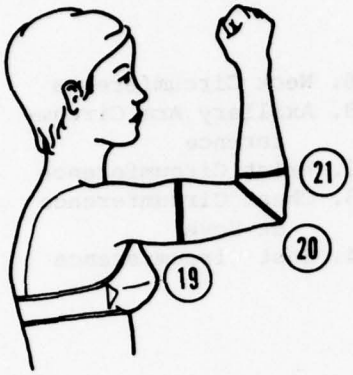
1. Weight
2. Stature
4. Acromial Height
5. Suprasternale Height
6. Bustpoint Height
7. Waist Height
8. Abdominal Extension Height



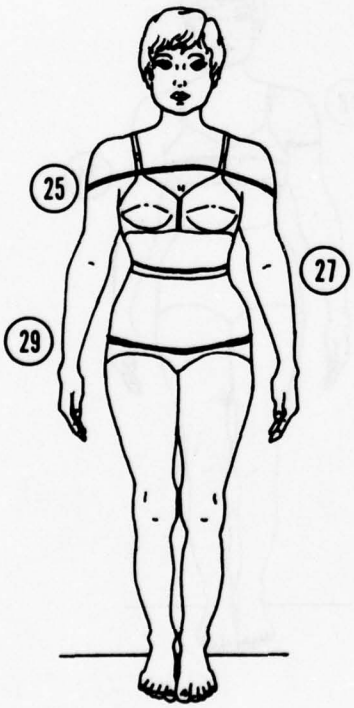


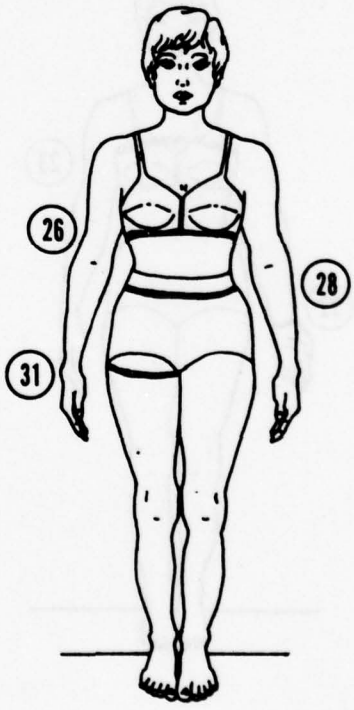


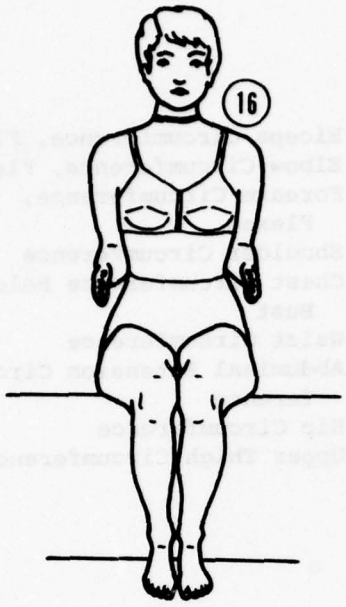
3. Cervicale Height
9. Hip (Trochanteric) Height
10. Buttock Height
11. Crotch Height
12. Gluteal Furrow Height
13. Knee (Tibiale) Height
14. Ankle Height
15. Lateral Malleolus Height
17. Scye Circumference



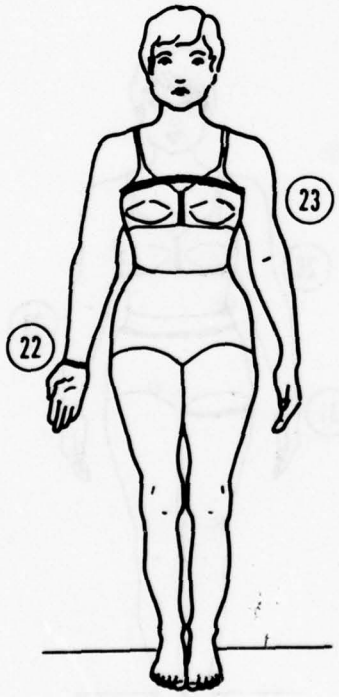
19. Biceps Circumference, Flexed
20. Elbow Circumference, Flexed
21. Forearm Circumference, Flexed
25. Shoulder Circumference
26. Chest Circumference Below Bust
27. Waist Circumference
28. Abdominal Extension Circumference
29. Hip Circumference
31. Upper Thigh Circumference

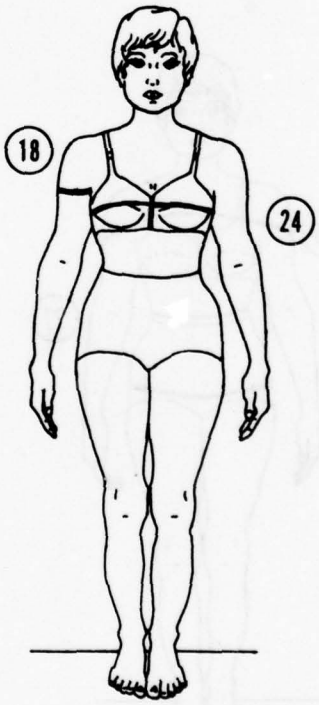


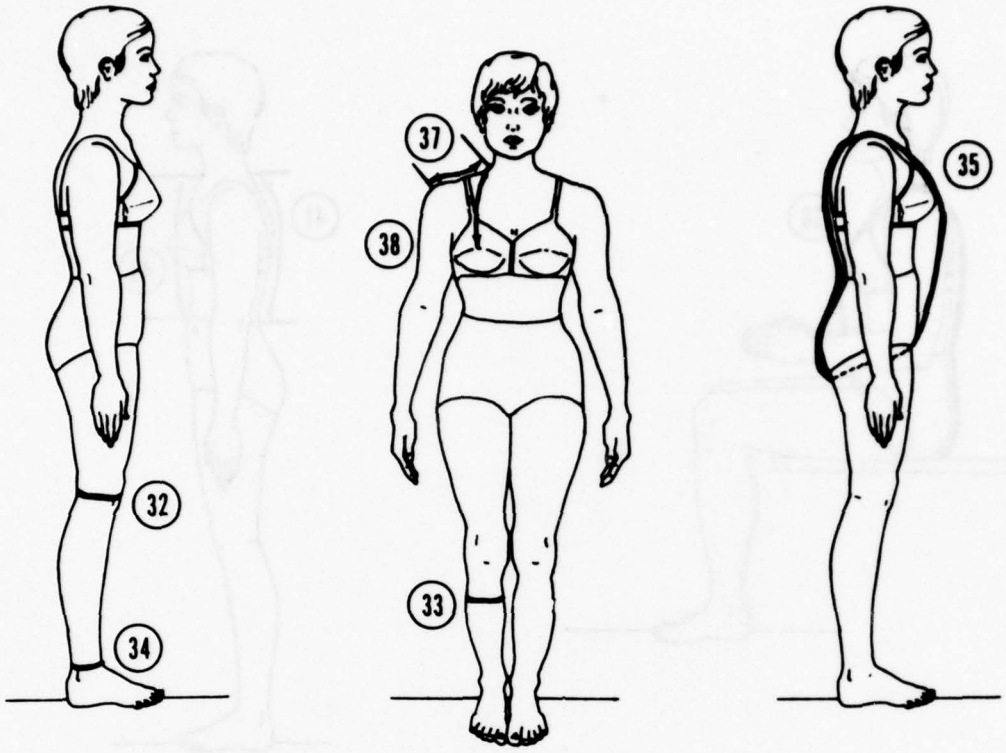


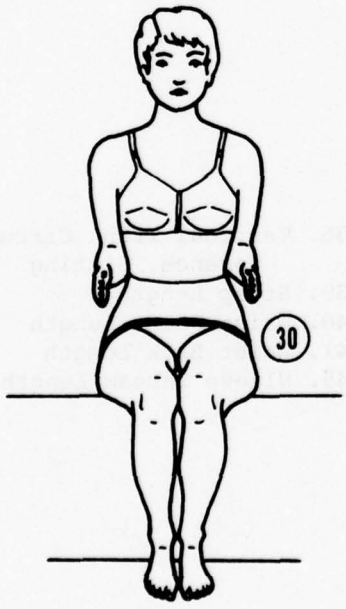


16. Neck Circumference
18. Axillary Arm Circumference
22. Wrist Circumference
23. Chest Circumference at Scye
24. Bust Circumference

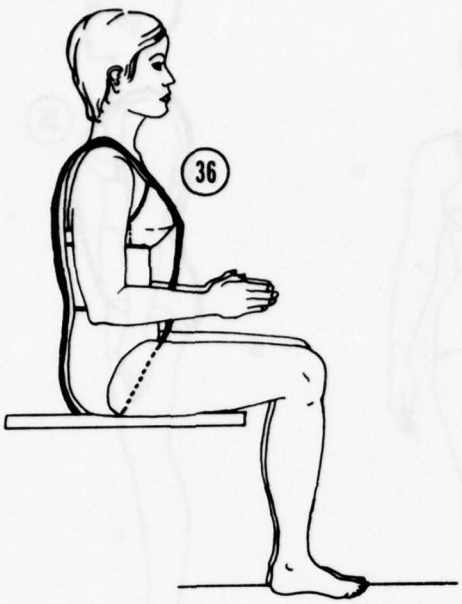


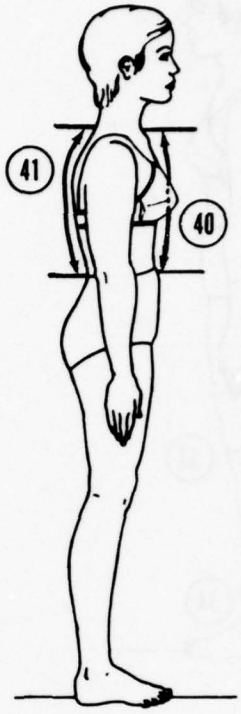


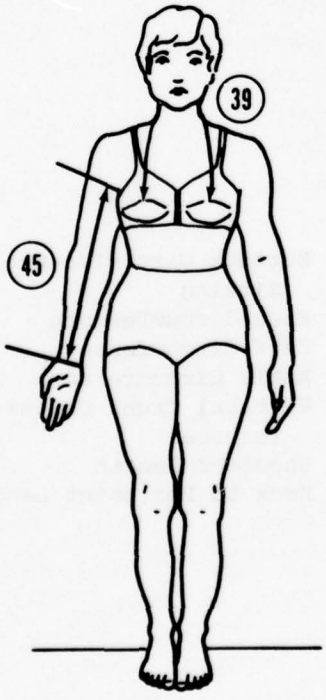




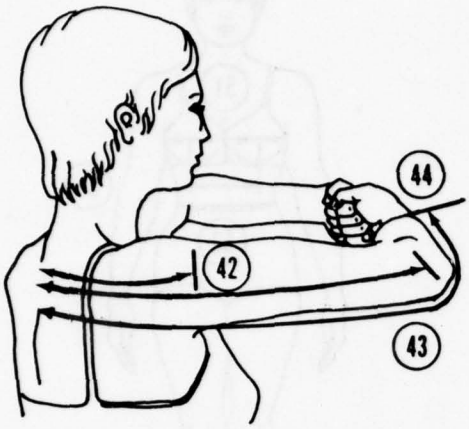
30. Buttock Circumference, Sitting
32. Knee Circumference
33. Calf Circumference
34. Ankle Circumference
35. Vertical Trunk Circumference
37. Shoulder Length
38. Neck to Bustpoint Length

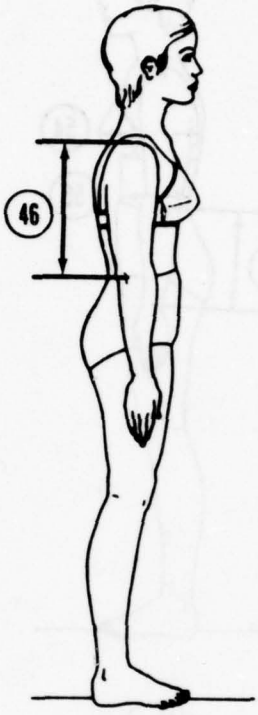


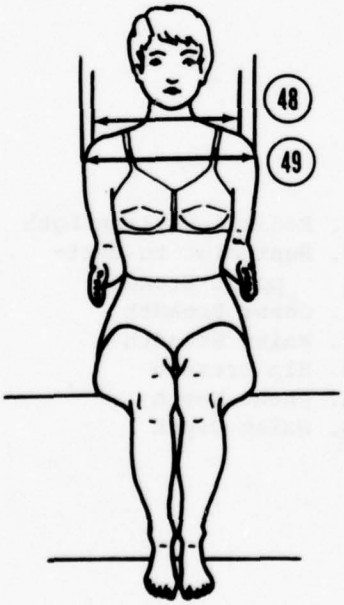




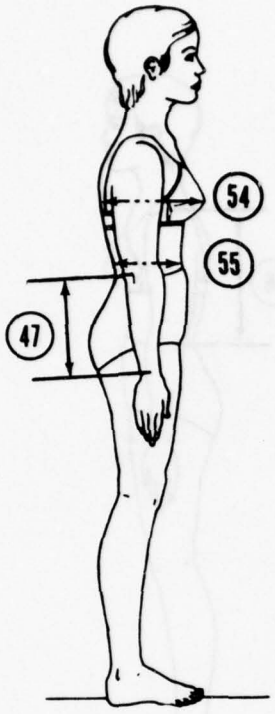
36. Vertical Trunk Circumference, Sitting
39. Strap Length
40. Waist Front Length
41. Waist Back Length
45. Sleeve Inseam Length

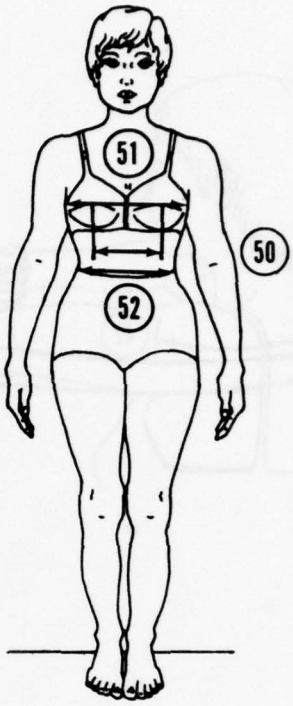


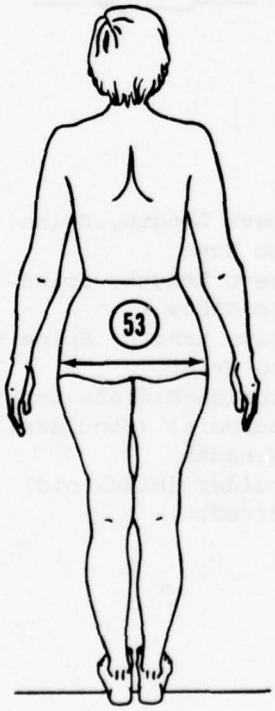




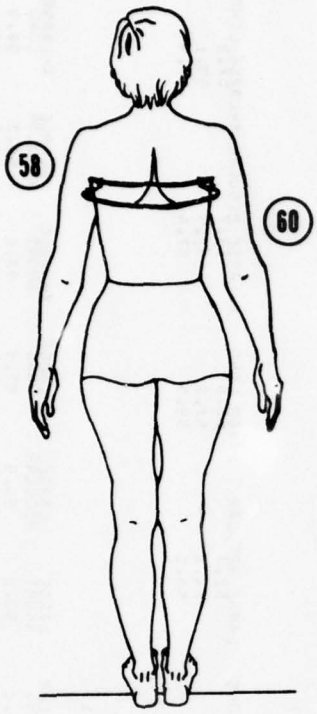
42. Sleeve Length, Spine to Scye
43. Sleeve Length, Spine to Elbow
44. Sleeve Length, Spine to Wrist
46. Acromion-Radiale Length
48. Biacromial (Shoulder) Breadth
49. Shoulder (Bideltoid) Breadth

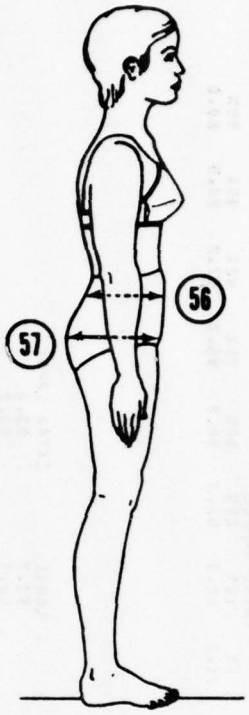


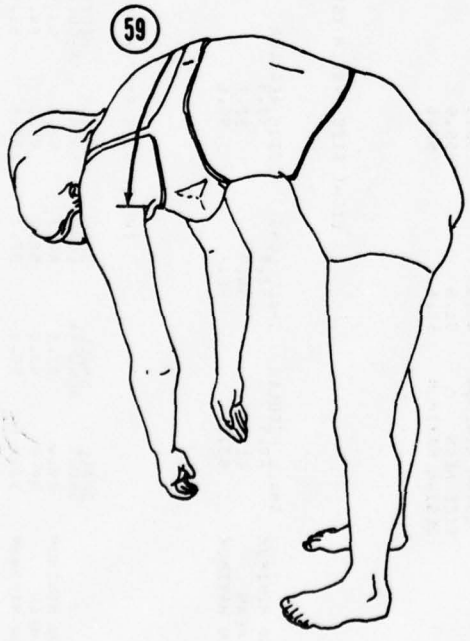




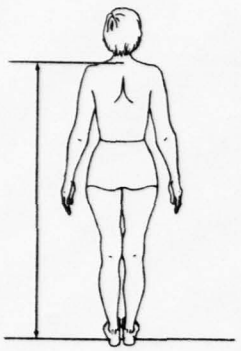
47. Radiale-Stylion Lgth
50. Bustpoint to Bust-point Breadth
51. Chest Breadth
52. Waist Breadth
53. Hip Breadth
54. Chest Depth
55. Waist Depth







56. Abdominal Extension Depth
57. Buttock Depth
58. Interscye Curvature
59. Interscye Curvature, Maximum
60. Back Curvature at Bust



(3) CERVICALE HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE CERVICALE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
54.86	2.17	4.0%	50.1	51.2	52.0	53.3	54.8	56.3	57.7	58.5	60.0

FOUR SIZE SYSTEM (SD=1.6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	50.0	51.9	53.7	55.6
SIZE MEAN	52.7	54.5	56.3	58.2
DESIGN MAXIMUM	55.3	57.1	59.0	60.8

SIX SIZE SYSTEM (SD=1.2 IN.)

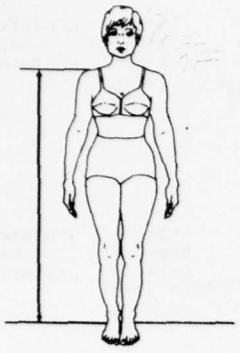
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	49.5	53.5	51.4	55.4	53.3	57.2
SIZE MEAN	51.6	55.5	53.4	57.4	55.3	59.3
DESIGN MAXIMUM	53.6	57.6	55.5	59.4	57.3	61.3

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	49.5	53.0	50.9	54.4	52.3	55.8	53.7	57.2
SIZE MEAN	51.3	54.9	52.7	56.3	54.1	57.7	55.5	59.1
DESIGN MAXIMUM	53.2	56.7	54.6	58.1	56.0	59.5	57.4	60.9

TWELVE SIZE SYSTEM (SD= .9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	49.4	52.1	54.7	50.8	53.5	56.1	52.2	54.9	57.5	53.6	56.3	58.9
SIZE MEAN	50.9	53.5	56.2	52.3	54.9	57.6	53.7	56.3	59.0	55.1	57.7	60.4
DESIGN MAXIMUM	52.4	55.0	57.7	53.8	56.4	59.1	55.2	57.8	60.5	56.6	59.2	61.9



(4) ACROMIAL HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE RIGHT ACROMIAL LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
51.91	2.16	4.2%	47.2	48.4	49.1	50.4	51.9	53.4	54.8	55.6	57.1

FOUR SIZE SYSTEM (SD=1.6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	47.2	49.0	50.9	52.7
SIZE MEAN	49.8	51.6	53.5	55.3
DESIGN MAXIMUM	52.4	54.2	56.1	57.9

SIX SIZE SYSTEM (SD=1.3 IN.)

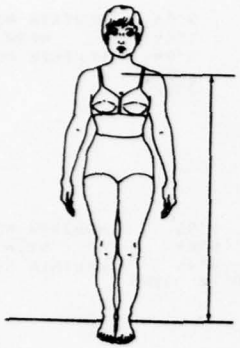
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	46.7	50.5	48.6	52.4	50.4	54.2
SIZE MEAN	48.7	52.5	50.6	54.4	52.5	56.3
DESIGN MAXIMUM	50.8	54.6	52.7	56.5	54.6	58.4

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	46.6	50.0	48.0	51.4	49.5	52.8	50.9	54.3
SIZE MEAN	48.5	51.9	49.9	53.3	51.3	54.7	52.8	56.2
DESIGN MAXIMUM	50.4	53.8	51.8	55.2	53.2	56.6	54.7	58.1

TWELVE SIZE SYSTEM (SD= .9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	46.5	49.1	51.6	47.9	50.5	53.0	49.4	51.9	54.4	50.8	53.3	55.9
SIZE MEAN	48.1	50.6	53.2	49.5	52.0	54.6	50.9	53.5	56.0	52.3	54.9	57.4
DESIGN MAXIMUM	49.6	52.2	54.7	51.1	53.6	56.2	52.5	55.0	57.6	53.9	56.5	59.0



(5) SUPRASTERNALE HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE SUPRASTERNALE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
51.97	2.09	4.0%	47.3	48.6	49.2	50.5	51.9	53.4	54.8	55.6	57.0

FOUR SIZE SYSTEM (SD=1.5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	47.4	49.2	51.0	52.8
SIZE MEAN	49.9	51.7	53.5	55.3
DESIGN MAXIMUM	52.4	54.2	56.0	57.8

SIX SIZE SYSTEM (SD=1.2 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	46.9	50.7	48.7	52.5	50.6	54.3
SIZE MEAN	48.9	52.6	50.7	54.4	52.5	56.3
DESIGN MAXIMUM	50.8	54.6	52.6	56.4	54.5	58.2

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	46.9	50.2	48.2	51.6	49.6	53.0	51.0	54.3
SIZE MEAN	48.6	52.0	50.0	53.4	51.4	54.7	52.8	56.1
DESIGN MAXIMUM	50.4	53.8	51.8	55.1	53.2	56.5	54.5	57.9

TWELVE SIZE SYSTEM (SD= .9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	46.8	49.3	51.8	48.2	50.7	53.2	49.5	52.0	54.6	50.9	53.4	55.9
SIZE MEAN	48.2	50.7	53.2	49.6	52.1	54.6	51.0	53.5	56.0	52.3	54.9	57.4
DESIGN MAXIMUM	49.6	52.2	54.7	51.0	53.5	56.0	52.4	54.9	57.4	53.8	56.3	58.8



⑥ BUSTPOINT HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE BUSTPOINT LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
46.58	2.05	4.4%	41.9	43.3	44.0	45.1	46.5	48.0	49.4	50.2	51.7

FOUR SIZE SYSTEM (SD=1.6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	42.1	43.6	45.2	46.7
SIZE MEAN	44.8	46.3	47.9	43.4
DESIGN MAXIMUM	47.5	49.0	50.5	52.1

SIX SIZE SYSTEM (SD=1.3 IN.)

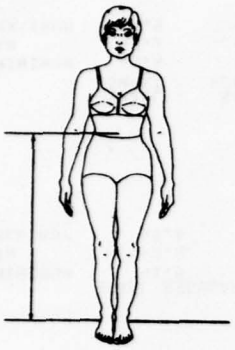
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	41.6	45.3	43.1	46.8	44.6	48.3
SIZE MEAN	43.7	47.5	45.2	49.0	46.7	50.5
DESIGN MAXIMUM	45.9	49.6	47.4	51.1	48.9	52.6

EIGHT SIZE SYSTEM (SD=1.2 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	41.5	44.8	42.7	46.0	43.8	47.1	44.9	48.2
SIZE MEAN	43.6	46.9	44.7	48.0	45.8	49.1	46.9	50.2
DESIGN MAXIMUM	45.6	48.9	46.7	50.0	47.8	51.1	48.9	52.2

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	41.4	43.9	46.4	42.5	45.0	47.5	43.6	46.1	48.6	44.8	47.2	49.7
SIZE MEAN	43.1	45.6	48.1	44.3	46.7	49.2	45.4	47.9	50.3	46.5	49.0	51.5
DESIGN MAXIMUM	44.9	47.4	49.8	46.0	48.5	51.0	47.1	49.6	52.1	48.2	50.7	53.2



(7) WAIST HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE ANTERIOR WAIST LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
39.48	1.77	4.5%	35.6	36.6	37.2	38.2	39.4	40.7	41.8	42.5	43.8

FOUR SIZE SYSTEM (SD=1.4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	35.6	37.0	38.4	39.8
SIZE MEAN	37.9	39.3	40.6	42.0
DESIGN MAXIMUM	40.1	41.5	42.9	44.3

SIX SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	35.1	38.2	36.5	39.6	37.9	41.0
SIZE MEAN	37.0	40.1	38.4	41.5	39.8	42.9
DESIGN MAXIMUM	38.9	42.0	40.3	43.3	41.7	44.7

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	35.1	37.8	36.1	38.9	37.2	39.9	38.2	41.0
SIZE MEAN	36.8	39.6	37.9	40.6	38.9	41.7	40.0	42.7
DESIGN MAXIMUM	38.6	41.3	39.7	42.4	40.7	43.4	41.7	44.5

TWELVE SIZE SYSTEM (SD= .9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	35.0	37.0	39.1	36.0	38.1	40.1	37.1	39.1	41.1	38.1	40.2	42.2
SIZE MEAN	36.5	38.5	40.6	37.6	39.6	41.6	38.6	40.6	42.7	39.7	41.7	43.7
DESIGN MAXIMUM	38.0	40.1	42.1	39.1	41.1	43.2	40.1	42.2	44.2	41.2	43.2	45.3



(8) ABDOMINAL EXTENSION HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE ABDOMINAL EXTENSION LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
36.67	1.74	4.7%	32.8	33.8	34.4	35.4	36.6	37.9	39.0	39.7	41.0

FOUR SIZE SYSTEM (SD=1.4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	32.9	34.1	35.4	36.6
SIZE MEAN	35.2	36.5	37.7	38.9
DESIGN MAXIMUM	37.6	38.8	40.0	41.3

SIX SIZE SYSTEM (SD=1.2 IN.)

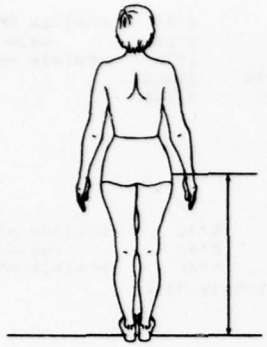
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	32.4	35.5	33.6	36.7	34.8	37.9
SIZE MEAN	34.4	37.4	35.6	38.6	36.8	39.8
DESIGN MAXIMUM	36.3	39.4	37.5	40.6	38.7	41.8

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	32.4	35.1	33.3	36.0	34.2	36.9	35.1	37.8
SIZE MEAN	34.2	36.9	35.1	37.8	36.0	38.7	36.9	39.6
DESIGN MAXIMUM	36.0	38.8	36.9	39.7	37.8	40.5	38.7	41.4

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	32.3	34.3	36.4	33.2	35.2	37.3	34.0	36.1	38.2	34.9	37.0	39.1
SIZE MEAN	33.9	35.9	38.0	34.8	36.8	38.9	35.6	37.7	39.8	36.5	38.6	40.7
DESIGN MAXIMUM	35.5	37.5	39.6	36.3	38.4	40.5	37.2	39.3	41.4	38.1	40.2	42.3



(9) HIP (TROCHANTERIC) HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE TROCHANTERIC LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
32.55	1.68	5.2%	28.7	29.8	30.3	31.3	32.5	33.7	34.8	35.4	36.6

FOUR SIZE SYSTEM (SD=1.4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	28.9	30.1	31.3	32.5
SIZE MEAN	31.1	32.4	33.6	34.8
DESIGN MAXIMUM	33.4	34.6	35.8	37.0

SIX SIZE SYSTEM (SD=1.2 IN.)

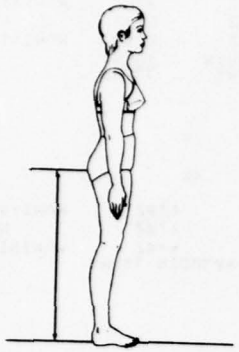
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	28.4	31.1	29.7	32.4	30.9	33.6
SIZE MEAN	30.4	33.1	31.6	34.3	32.8	35.5
DESIGN MAXIMUM	32.3	35.0	33.5	36.3	34.8	37.5

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.4	30.8	29.3	31.7	30.2	32.6	31.1	33.5
SIZE MEAN	30.2	32.6	31.1	33.6	32.1	34.5	33.0	35.4
DESIGN MAXIMUM	32.1	34.5	33.0	35.4	33.9	36.3	34.8	37.2

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.2	30.0	31.9	29.2	31.0	32.8	30.1	31.9	33.7	31.0	32.8	34.6
SIZE MEAN	29.9	31.7	33.5	30.8	32.7	34.5	31.8	33.6	35.4	32.7	34.5	36.3
DESIGN MAXIMUM	31.6	33.4	35.2	32.5	34.3	36.1	33.5	35.3	37.1	34.4	36.2	38.0



(10) BUTTOCK HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE BUTTOCK LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
32.37	1.64	5.1%	28.7	29.7	30.2	31.2	32.3	33.5	34.6	35.2	36.+

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	28.8	30.0	31.2	32.4
SIZE MEAN	31.0	32.2	33.4	34.6
DESIGN MAXIMUM	33.2	34.4	35.6	36.8

SIX SIZE SYSTEM (SD=1.1 IN.)

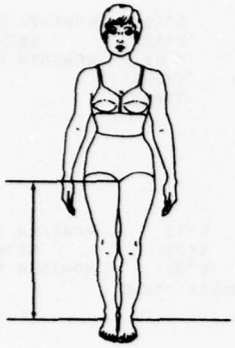
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	28.4	31.0	29.6	32.2	30.8	33.4
SIZE MEAN	30.3	32.9	31.5	34.1	32.7	35.3
DESIGN MAXIMUM	32.1	34.8	33.4	36.0	34.6	37.2

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.3	30.6	29.2	31.5	30.1	32.4	31.0	33.4
SIZE MEAN	30.1	32.4	31.0	33.3	31.9	34.2	32.8	35.2
DESIGN MAXIMUM	31.9	34.2	32.8	35.1	33.7	36.1	34.7	37.0

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.2	29.9	31.6	29.1	30.8	32.5	30.0	31.7	33.5	30.9	32.6	34.4
SIZE MEAN	29.8	31.5	33.3	30.7	32.5	34.2	31.6	33.4	35.1	32.6	34.3	36.0
DESIGN MAXIMUM	31.5	33.2	34.9	32.4	34.1	35.9	33.3	35.0	36.8	34.2	35.9	37.7



(11) CROTCH HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET, HEELS APPROXIMATELY 10 CM APART. THE ARM OF THE ANTHROPOMETER IS RAISED UNTIL CONTACT IS MADE WITH THE INFERIOR SURFACE OF THE CROTCH. MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE CROTCH.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
29.33	1.59	5.4%	25.8	26.7	27.3	28.2	29.3	30.4	31.4	32.1	33.3

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	25.9	27.0	28.1	29.2
SIZE MEAN	28.0	29.2	30.3	31.4
DESIGN MAXIMUM	30.2	31.3	32.4	33.5

SIX SIZE SYSTEM (SD=1.1 IN.)

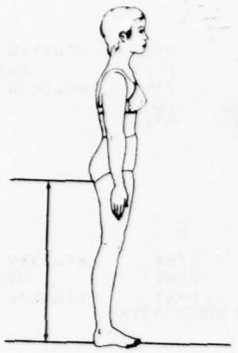
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	25.5	28.1	26.5	29.2	27.6	30.2
SIZE MEAN	27.3	29.9	28.4	31.0	29.5	32.1
DESIGN MAXIMUM	29.2	31.8	30.3	32.9	31.3	34.0

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	25.4	27.7	26.2	28.5	27.0	29.4	27.8	30.2
SIZE MEAN	27.2	29.5	28.0	30.3	28.8	31.1	29.6	31.9
DESIGN MAXIMUM	28.9	31.3	29.8	32.1	30.6	32.9	31.4	33.7

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	25.3	27.0	28.8	26.1	27.8	29.6	26.9	28.6	30.4	27.7	29.5	31.2
SIZE MEAN	26.9	28.6	30.4	27.7	29.4	31.2	28.5	30.3	32.0	29.3	31.1	32.8
DESIGN MAXIMUM	28.5	30.2	32.0	29.3	31.1	32.8	30.1	31.9	33.6	30.9	32.7	34.4



(12) GLUTEAL FURROW HEIGHT

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE LOWEST POINT ON THE RIGHT GLUTEAL FURROW.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
28.62	1.56	5.4%	25.1	26.1	26.6	27.5	28.5	29.7	30.7	31.3	32.4

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	25.3	26.3	27.2	28.2
SIZE MEAN	27.5	28.5	29.4	30.4
DESIGN MAXIMUM	29.7	30.7	31.6	32.6

SIX SIZE SYSTEM (SD=1.2 IN.)

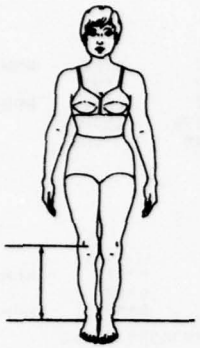
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	24.8	27.4	25.8	28.4	26.7	29.3
SIZE MEAN	26.7	29.4	27.7	30.3	28.6	31.2
DESIGN MAXIMUM	28.6	31.3	29.6	32.2	30.5	33.1

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	24.8	27.1	25.5	27.8	26.2	28.5	26.8	29.2
SIZE MEAN	26.6	28.9	27.3	29.6	28.0	30.3	28.6	31.0
DESIGN MAXIMUM	28.4	30.8	29.1	31.4	29.8	32.1	30.5	32.8

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	24.7	26.4	28.2	25.3	27.1	28.8	26.0	27.8	29.5	26.7	28.4	30.2
SIZE MEAN	26.3	28.1	29.8	27.0	28.7	30.5	27.7	29.4	31.2	28.4	30.1	31.8
DESIGN MAXIMUM	28.0	29.7	31.5	28.7	30.4	32.1	29.3	31.1	32.8	30.0	31.8	33.5



(13) KNEE (TIBIALE) HEIGHT

SUBJECT STANDS ERECT, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH AN ANTHROPOMETER, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE TIBIALE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.53	.94	5.7%	14.4	14.9	15.2	15.8	16.5	17.2	17.9	18.3	19.2

FOUR SIZE SYSTEM (SD= .8 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	14.5	15.1	15.7	16.3
SIZE MEAN	15.8	16.4	17.0	17.7
DESIGN MAXIMUM	17.1	17.7	18.3	19.0

SIX SIZE SYSTEM (SD= .7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	14.3	15.7	14.9	16.3	15.5	16.9
SIZE MEAN	15.4	16.8	16.0	17.4	16.6	18.1
DESIGN MAXIMUM	16.6	18.0	17.2	18.6	17.8	19.2

EIGHT SIZE SYSTEM (SD= .7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.2	15.5	14.7	15.9	15.1	16.4	15.6	16.8
SIZE MEAN	15.3	16.6	15.8	17.1	16.3	17.5	16.7	18.0
DESIGN MAXIMUM	16.5	17.7	16.9	18.2	17.4	18.6	17.8	19.1

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.1	15.1	16.3	14.6	15.5	16.5	15.3	16.3	16.9	15.5	16.4	17.4
SIZE MEAN	15.2	16.1	17.1	15.5	16.6	17.5	16.1	17.0	18.0	16.6	17.5	18.4
DESIGN MAXIMUM	16.2	17.2	18.1	16.7	17.6	18.6	17.1	18.1	19.0	17.6	18.5	19.5



(14) ANKLE HEIGHT

SUBJECT STANDS WITH WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH THE SPECIAL MEASURING BLOCK, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE ANKLE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
4.40	.53	12.1%	3.3	3.6	3.7	3.9	4.4	4.9	5.3	5.5	6.3

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	3.4	3.5	3.7	3.8
SIZE MEAN	4.2	4.4	4.5	4.7
DESIGN MAXIMUM	5.1	5.2	5.4	5.5

SIX SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	3.3	3.6	3.4	3.8	3.6	3.9
SIZE MEAN	4.2	4.5	4.3	4.6	4.4	4.7
DESIGN MAXIMUM	5.0	5.3	5.1	5.5	5.3	5.6

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	3.3	3.6	3.4	3.7	3.5	3.8	3.6	3.9
SIZE MEAN	4.1	4.4	4.2	4.5	4.3	4.6	4.4	4.7
DESIGN MAXIMUM	5.0	5.3	5.1	5.4	5.2	5.5	5.3	5.6

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	3.3	3.5	3.7	3.4	3.6	3.8	3.5	3.7	3.9	3.6	3.8	4.0
SIZE MEAN	4.1	4.3	4.5	4.2	4.4	4.6	4.3	4.5	4.7	4.4	4.6	4.8
DESIGN MAXIMUM	5.0	5.2	5.4	5.1	5.3	5.5	5.2	5.4	5.6	5.3	5.5	5.7



(15) LATERAL MALLEOLUS HEIGHT

SUBJECT STANDS WITH WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH THE SPECIAL MEASURING BLOCK, MEASURE THE VERTICAL DISTANCE FROM THE STANDING SURFACE TO THE LATERAL MALLEOLUS LANDMARK ON THE LEG.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
2.67	.23	8.7%	1.5	1.8	2.0	2.5	2.9	3.2	3.4	3.4	3.5

FOUR SIZE SYSTEM (SD= .2 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	2.2	2.3	2.4	2.5
SIZE MEAN	2.6	2.7	2.7	2.8
DESIGN MAXIMUM	2.9	3.0	3.1	3.2

SIX SIZE SYSTEM (SD= .2 IN.)

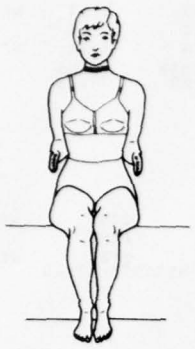
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	2.2	2.3	2.3	2.4	2.3	2.5
SIZE MEAN	2.5	2.7	2.6	2.8	2.7	2.9
DESIGN MAXIMUM	2.9	3.1	3.0	3.1	3.1	3.2

EIGHT SIZE SYSTEM (SD= .2 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	2.2	2.3	2.2	2.4	2.3	2.4	2.4	2.5
SIZE MEAN	2.5	2.7	2.6	2.7	2.6	2.8	2.7	2.9
DESIGN MAXIMUM	2.9	3.0	2.9	3.1	3.0	3.2	3.1	3.2

TWELVE SIZE SYSTEM (SD= .2 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	2.1	2.3	2.4	2.2	2.3	2.4	2.3	2.4	2.5	2.3	2.5	2.6
SIZE MEAN	2.5	2.6	2.7	2.6	2.7	2.8	2.6	2.7	2.9	2.7	2.8	2.9
DESIGN MAXIMUM	2.8	3.0	3.1	2.9	3.0	3.1	3.0	3.1	3.2	3.0	3.2	3.3



(16) NECK CIRCUMFERENCE

SUBJECT SITS ERECT LOOKING STRAIGHT AHEAD. MEASURE THE CIRCUMFERENCE OF THE NECK WITH A TAPE WHICH IS PLACED AROUND THE NECK SO THAT IT PASSES OVER THE NECK MARKS. THE PLANE OF THIS CIRCUMFERENCE IS PERPENDICULAR TO THE LONG AXIS OF THE NECK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.29	.65	5.0%	11.5	12.0	12.3	12.8	13.3	13.8	14.3	14.6	15.3

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	11.9	12.3	12.8	13.3
SIZE MEAN	12.8	13.2	13.7	14.2
DESIGN MAXIMUM	13.7	14.1	14.6	15.1

SIX SIZE SYSTEM (SD= .6 IN.)

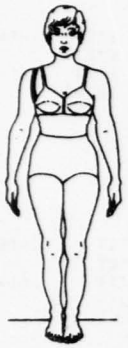
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	11.9	11.9	12.5	12.5	13.1	13.1
SIZE MEAN	12.8	12.8	13.4	13.4	14.0	14.0
DESIGN MAXIMUM	13.7	13.8	14.3	14.3	14.9	14.9

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.9	11.9	12.3	12.3	12.8	12.8	13.2	13.3
SIZE MEAN	12.8	12.8	13.2	13.2	13.7	13.7	14.2	14.2
DESIGN MAXIMUM	13.7	13.7	14.1	14.2	14.6	14.6	15.1	15.1

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.8	11.9	11.9	12.3	12.3	12.3	12.8	12.8	12.8	13.2	13.2	13.3
SIZE MEAN	12.8	12.8	12.8	13.2	13.2	13.2	13.7	13.7	13.7	14.2	14.2	14.2
DESIGN MAXIMUM	13.7	13.7	13.7	14.1	14.1	14.2	14.6	14.6	14.6	15.1	15.1	15.1



(17) SCYE CIRCUMFERENCE

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. THE ARM IS ABDUCTED SUFFICIENTLY TO ALLOW PLACEMENT OF A TAPE INTO THE AXILLA. WITH A TAPE PASSING THROUGH THE AXILLA, OVER THE ANTERIOR AND POSTERIOR-VERTICAL SCYE LANDMARKS AND OVER THE RIGHT ACROMIALE LANDMARK, MEASURE THE CIRCUMFERENCE OF THE SCYE. THE AXILLARY TISSUE IS NOT COMPRESSED.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.61	.90	6.2%	12.5	13.1	13.4	13.9	14.6	15.2	15.9	16.3	17.2

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	12.7	13.5	14.3	15.1
SIZE MEAN	13.7	14.5	15.3	16.2
DESIGN MAXIMUM	14.7	15.5	16.4	17.2

SIX SIZE SYSTEM (SD= .6 IN.)

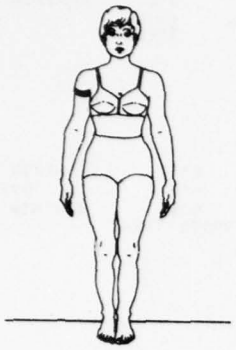
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	12.8	12.6	13.8	13.7	14.9	14.7
SIZE MEAN	13.8	13.7	14.9	14.8	15.9	15.8
DESIGN MAXIMUM	14.9	14.8	15.9	15.8	17.0	16.9

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.7	12.6	13.5	13.4	14.4	14.3	15.2	15.1
SIZE MEAN	13.7	13.6	14.6	14.5	15.4	15.3	16.3	16.1
DESIGN MAXIMUM	14.7	14.6	15.6	15.5	16.4	16.3	17.3	17.2

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.7	12.6	12.6	13.6	13.5	13.4	14.4	14.3	14.2	15.2	15.2	15.1
SIZE MEAN	13.7	13.7	13.6	14.6	14.5	14.4	15.4	15.3	15.3	16.3	16.2	16.1
DESIGN MAXIMUM	14.8	14.7	14.6	15.6	15.5	15.4	16.4	15.4	16.3	17.3	17.2	17.1



(18) AXILLARY ARM CIRCUMFERENCE

SUBJECT STANDS WITH ARM ABDUCTED SUFFICIENTLY TO ALLOW CLEARANCE OF A TAPE BETWEEN THE ARM AND TRUNK. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE UPPER ARM, MEASURE THE CIRCUMFERENCE OF THE ARM AT THE LEVEL OF THE ANTERIOR ARM-SCYE LANDMARK. THE AXILLARY TISSUE IS NOT COMPRESSED.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.80	.92	8.5%	8.6	9.2	9.5	10.1	10.7	11.4	12.1	12.5	13.4

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	8.9	9.7	10.5	11.3
SIZE MEAN	9.9	10.7	11.5	12.3
DESIGN MAXIMUM	10.9	11.8	12.6	13.4

SIX SIZE SYSTEM (SD= .7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	9.1	8.5	10.2	9.6	11.3	10.7
SIZE MEAN	10.2	9.6	11.3	10.7	12.4	11.8
DESIGN MAXIMUM	11.3	10.7	12.4	11.8	13.5	12.8

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.1	8.6	10.0	9.5	10.9	10.3	11.8	11.2
SIZE MEAN	10.1	9.6	11.0	10.4	11.9	11.3	12.8	12.2
DESIGN MAXIMUM	11.1	10.6	12.0	11.4	12.9	12.3	13.8	13.2

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.2	8.8	8.4	10.1	9.7	9.3	11.0	10.6	10.1	11.9	11.4	11.0
SIZE MEAN	10.2	9.8	9.3	11.1	10.7	10.2	12.0	11.5	11.1	12.8	12.4	12.0
DESIGN MAXIMUM	11.2	10.7	10.3	12.1	11.6	11.2	12.9	12.5	12.1	13.8	13.4	13.0



(19) BICEPS CIRCUMFERENCE, FLEXED

SUBJECT STANDS, UPPER ARM RAISED SO THAT ITS LONG AXIS IS HORIZONTAL, ELBOW FLEXED 90 DEGREES, BICEPS STRONGLY CONTRACTED, AND FIST TIGHTLY CLENCHED. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE UPPER ARM, MEASURE THE CIRCUMFERENCE OF THE ARM AT THE LEVEL OF THE BICEPS LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.55	.91	8.6%	8.5	9.0	9.3	9.8	10.5	11.2	11.8	12.2	13.2

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	8.6	9.5	10.3	11.1
SIZE MEAN	9.7	10.5	11.3	12.1
DESIGN MAXIMUM	10.7	11.5	12.3	13.1

SIX SIZE SYSTEM (SD= .6 IN.)

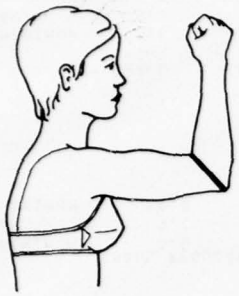
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	8.9	8.3	10.0	9.4	11.1	10.5
SIZE MEAN	10.0	9.3	11.1	10.4	12.2	11.5
DESIGN MAXIMUM	11.0	10.4	12.1	11.5	13.2	12.6

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	8.9	8.3	9.8	9.2	10.7	10.1	11.6	11.0
SIZE MEAN	9.9	9.3	10.8	10.2	11.6	11.1	12.5	12.0
DESIGN MAXIMUM	10.8	10.3	11.7	11.1	12.6	12.0	13.5	12.9

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.0	8.6	8.1	9.9	9.5	9.0	10.8	10.3	9.9	11.7	11.2	10.8
SIZE MEAN	9.9	9.5	9.1	10.8	10.4	10.0	11.7	11.3	10.9	12.6	12.2	11.7
DESIGN MAXIMUM	10.9	10.5	10.1	11.8	11.3	10.9	12.7	12.2	11.8	13.5	13.1	12.7



(20) ELBOW CIRCUMFERENCE, FLEXED

SUBJECT STANDS, UPPER ARM RAISED SO THAT ITS LONG AXIS IS HORIZONTAL, ELBOW FLEXED 90 DEGREES, BICEPS STRONGLY CONTRACTED, AND FIST TIGHTLY CLENCHED. WITH A TAPE PASSING OVER THE TIP AND THROUGH THE CROTCH OF THE ELBOW, MEASURE THE CIRCUMFERENCE OF THE ELBOW.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.82	.70	6.6%	8.7	9.4	9.6	10.1	10.6	11.1	11.7	12.0	12.5

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	9.1	9.6	10.1	10.6
SIZE MEAN	10.1	10.6	11.1	11.6
DESIGN MAXIMUM	11.0	11.5	12.0	12.5

SIX SIZE SYSTEM (SD= .6 IN.)

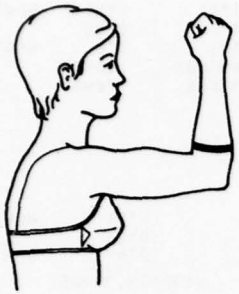
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	9.1	9.3	9.7	9.9	10.3	10.5
SIZE MEAN	10.0	10.2	10.7	10.9	11.3	11.5
DESIGN MAXIMUM	11.0	11.2	11.6	11.8	12.2	12.4

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.0	9.2	9.5	9.7	10.0	10.2	10.5	10.7
SIZE MEAN	10.0	10.2	10.5	10.6	11.0	11.1	11.4	11.6
DESIGN MAXIMUM	10.9	11.1	11.4	11.6	11.9	12.1	12.4	12.6

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.0	9.1	9.3	9.5	9.6	9.8	10.0	10.1	10.2	10.5	10.6	10.7
SIZE MEAN	10.0	10.1	10.2	10.4	10.6	10.7	10.9	11.1	11.2	11.4	11.5	11.7
DESIGN MAXIMUM	10.9	11.1	11.2	11.4	11.5	11.7	11.9	12.0	12.2	12.4	12.5	12.6



(21) FOREARM CIRCUMFERENCE, FLEXED

SUBJECT STANDS, UPPER ARM RAISED SO THAT ITS LONG AXIS IS HORIZONTAL, ELBOW FLEXED 90 DEGREES, AND FIST TIGHTLY CLENCHED. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE FOREARM, MEASURE THE CIRCUMFERENCE OF THE ARM AT THE LEVEL OF THE FOREARM LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.83	.60	6.1%	8.5	8.6	8.8	9.3	9.8	10.3	10.7	11.1	11.5

FOUR SIZE SYSTEM (SD= .4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	8.5	9.1	9.6	10.2
SIZE MEAN	9.2	9.8	10.3	10.9
DESIGN MAXIMUM	9.9	10.5	11.0	11.5

SIX SIZE SYSTEM (SD= .4 IN.)

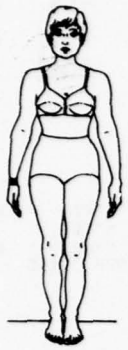
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	8.6	8.5	9.3	9.2	10.0	9.9
SIZE MEAN	9.4	9.2	10.1	9.9	10.8	10.6
DESIGN MAXIMUM	10.1	9.9	10.8	10.6	11.5	11.3

EIGHT SIZE SYSTEM (SD= .4 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	8.6	8.5	9.2	9.0	9.7	9.6	10.3	10.1
SIZE MEAN	9.3	9.1	9.9	9.7	10.4	10.3	11.0	10.8
DESIGN MAXIMUM	10.0	9.8	10.5	10.4	11.1	10.9	11.7	11.5

TWELVE SIZE SYSTEM (SD= .4 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	8.6	8.5	8.4	9.2	9.1	9.0	9.8	9.6	9.5	10.3	10.2	10.1
SIZE MEAN	9.3	9.2	9.1	9.9	9.8	9.6	10.4	10.3	10.2	11.0	10.9	10.8
DESIGN MAXIMUM	10.0	9.9	9.8	10.5	10.4	10.2	11.1	11.0	10.9	11.7	11.6	11.4



(22) WRIST CIRCUMFERENCE

SUBJECT STANDS WITH ARM SLIGHTLY ABDUCTED AND THE HAND EXTENDED. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE FOREARM AND HAND, MEASURE THE CIRCUMFERENCE OF THE WRIST AT THE LEVEL OF THE WRIST LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
5.89	.28	4.8%	4.7	5.2	5.5	5.8	6.0	6.2	6.4	6.5	6.8

FOUR SIZE SYSTEM (SD= .2 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	5.3	5.5	5.7	6.0
SIZE MEAN	5.6	5.9	6.1	6.3
DESIGN MAXIMUM	6.0	6.2	6.5	6.7

SIX SIZE SYSTEM (SD= .2 IN.)

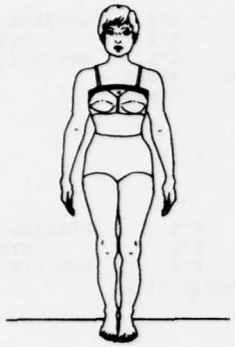
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	5.3	5.4	5.5	5.6	5.8	5.9
SIZE MEAN	5.6	5.7	5.9	6.0	6.2	6.3
DESIGN MAXIMUM	6.0	6.1	6.3	6.4	6.6	6.6

EIGHT SIZE SYSTEM (SD= .2 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	5.2	5.3	5.5	5.5	5.7	5.8	5.9	6.0
SIZE MEAN	5.6	5.7	5.8	5.9	6.0	6.1	6.3	6.3
DESIGN MAXIMUM	6.0	6.0	6.2	6.3	6.4	6.5	6.6	6.7

TWELVE SIZE SYSTEM (SD= .2 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	5.2	5.3	5.3	5.5	5.5	5.6	5.7	5.7	5.8	5.9	5.9	6.0
SIZE MEAN	5.6	5.7	5.7	5.8	5.9	5.9	6.0	6.1	6.1	6.3	6.3	6.4
DESIGN MAXIMUM	6.0	6.0	6.1	6.2	6.2	6.3	6.4	6.5	6.5	6.6	6.7	6.7



(23) CHEST CIRCUMFERENCE AT SCYE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET, SHOULDERS RELAXED, AND ARMS ABDUCTED SUFFICIENTLY TO ALLOW PASSAGE OF A TAPE BETWEEN ARMS AND TRUNK. WITH A TAPE, MEASURE THE CIRCUMFERENCE OF THE TRUNK AT THE LEVEL OF THE HORIZONTAL SCYE LANDMARK. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.17	1.95	5.9%	29.2	30.2	30.8	31.8	33.0	34.3	35.8	36.7	38.9

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	29.0	30.8	32.6	34.5
SIZE MEAN	31.2	33.0	34.8	36.6
DESIGN MAXIMUM	33.3	35.1	36.9	38.8

SIX SIZE SYSTEM (SD=1.4 IN.)

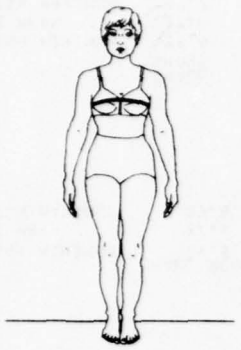
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	29.4	28.6	31.7	31.0	34.1	33.3
SIZE MEAN	31.6	30.9	34.0	33.3	36.3	35.6
DESIGN MAXIMUM	33.9	33.2	36.2	35.5	38.6	37.9

EIGHT SIZE SYSTEM (SD=1.3 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	29.3	28.6	31.2	30.5	33.1	32.4	35.0	34.3
SIZE MEAN	31.4	30.8	33.3	32.7	35.2	34.6	37.1	36.5
DESIGN MAXIMUM	33.5	32.9	35.4	34.8	37.3	36.7	39.2	38.6

TWELVE SIZE SYSTEM (SD=1.3 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	29.4	28.9	28.4	31.2	30.8	30.3	33.1	32.7	32.2	35.0	34.6	34.1
SIZE MEAN	31.5	31.0	30.5	33.4	32.9	32.4	35.3	34.8	34.3	37.2	36.7	36.2
DESIGN MAXIMUM	33.6	33.1	32.7	35.5	35.0	34.5	37.4	36.9	36.4	39.3	38.8	38.3



(24) BUST CIRCUMFERENCE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. THE ARMS ARE ABDUCTED SUFFICIENTLY TO ALLOW CLEARANCE OF A TAPE BETWEEN THE ARMS AND TRUNK. WITH A TAPE HELD IN THE HORIZONTAL PLANE AND PASSING OVER THE BUSTPOINTS, MEASURE THE CIRCUMFERENCE OF THE TRUNK. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
35.33	2.24	6.4%	30.9	32.3	32.6	33.7	35.0	36.6	38.3	39.5	42.1

FOUR SIZE SYSTEM (SD=1.5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	30.6	32.6	34.7	36.7
SIZE MEAN	33.1	35.1	37.2	39.2
DESIGN MAXIMUM	35.6	37.6	39.7	41.7

SIX SIZE SYSTEM (SD=1.6 IN.)

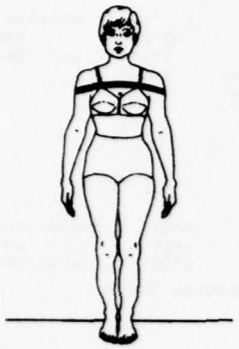
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	31.0	30.0	33.7	32.7	36.4	35.4
SIZE MEAN	33.5	32.6	36.3	35.3	39.0	38.0
DESIGN MAXIMUM	36.3	35.3	38.9	37.9	41.6	40.6

EIGHT SIZE SYSTEM (SD=1.5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	30.9	30.0	33.1	32.2	35.3	34.4	37.4	36.5
SIZE MEAN	33.4	32.5	35.6	34.7	37.7	36.8	39.9	39.0
DESIGN MAXIMUM	35.8	34.9	38.0	37.1	40.2	39.3	42.3	41.5

TWELVE SIZE SYSTEM (SD=1.5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	31.1	30.4	29.7	33.2	32.6	31.9	35.4	34.7	34.1	37.6	36.9	36.2
SIZE MEAN	33.5	32.8	32.2	35.7	35.0	34.3	37.8	37.2	36.5	40.0	39.3	38.7
DESIGN MAXIMUM	35.9	35.3	34.6	38.1	37.4	36.8	40.3	39.6	38.9	42.4	41.8	41.1



(25) SHOULDER CIRCUMFERENCE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, ARMS RELAXED AT SIDES, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE, MEASURE THE CIRCUMFERENCE OF THE BODY AT THE LEVEL OF THE DELTOID LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
39.53	2.02	5.1%	35.6	36.4	37.0	38.1	39.4	40.8	42.2	43.1	45.2

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	35.2	37.2	39.2	41.2
SIZE MEAN	37.3	39.3	41.3	43.3
DESIGN MAXIMUM	39.5	41.4	43.4	45.4

SIX SIZE SYSTEM (SD=1.4 IN.)

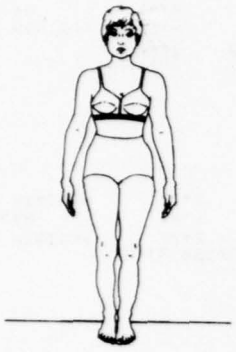
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	35.5	35.0	38.1	37.5	40.6	40.0
SIZE MEAN	37.8	37.2	40.3	39.7	42.9	42.3
DESIGN MAXIMUM	40.0	39.4	42.6	42.0	45.1	44.5

EIGHT SIZE SYSTEM (SD=1.3 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	35.5	34.9	37.5	37.0	39.5	39.0	41.6	41.0
SIZE MEAN	37.5	37.0	39.6	39.1	41.6	41.1	43.7	43.1
DESIGN MAXIMUM	39.6	39.1	41.7	41.1	43.7	43.2	45.8	45.2

TWELVE SIZE SYSTEM (SD=1.3 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	35.5	35.1	34.7	37.6	37.2	36.8	39.6	39.2	38.8	41.6	41.2	40.8
SIZE MEAN	37.6	37.2	36.8	39.7	39.3	38.9	41.7	41.3	40.9	43.7	43.3	42.9
DESIGN MAXIMUM	39.7	39.3	38.9	41.7	41.3	40.9	43.8	43.4	43.0	45.8	45.4	45.0



(26) CHEST CIRCUMFERENCE, BELOW BUST

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. THE ARMS ARE ABDUCTED SUFFICIENTLY TO ALLOW CLEARANCE OF A TAPE BETWEEN THE ARMS AND TRUNK. WITH A TAPE HELD IN A HORIZONTAL PLANE, MEASURE THE CIRCUMFERENCE OF THE TRUNK AT A LEVEL JUST BELOW THE CUPS OF THE BRA. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
29.26	1.92	6.5%	25.5	26.4	26.9	27.9	29.1	30.4	31.8	32.8	35.0

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	25.2	26.9	28.7	30.4
SIZE MEAN	27.3	29.1	30.8	32.6
DESIGN MAXIMUM	29.5	31.2	33.0	34.7

SIX SIZE SYSTEM (SD=1.4 IN.)

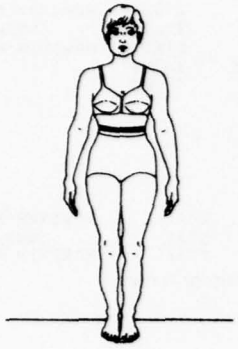
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	25.5	24.8	27.8	27.1	30.0	29.4
SIZE MEAN	27.8	27.1	30.0	29.4	32.3	31.6
DESIGN MAXIMUM	30.0	29.4	32.3	31.6	34.6	33.9

EIGHT SIZE SYSTEM (SD=1.3 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	25.4	24.8	27.2	26.6	29.1	28.5	30.9	30.3
SIZE MEAN	27.5	26.9	29.4	28.8	31.2	30.6	33.0	32.4
DESIGN MAXIMUM	29.7	29.1	31.5	30.9	33.3	32.7	35.2	34.6

TWELVE SIZE SYSTEM (SD=1.3 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	25.5	25.0	24.6	27.3	26.9	26.4	29.2	28.7	28.3	31.0	30.5	30.1
SIZE MEAN	27.6	27.2	26.7	29.5	29.0	28.6	31.3	30.8	30.4	33.1	32.7	32.2
DESIGN MAXIMUM	29.7	29.3	28.8	31.6	31.1	30.7	33.4	33.0	32.5	35.2	34.8	34.3



(27) WAIST CIRCUMFERENCE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE PASSING OVER THE WAIST LANDMARKS, MEASURE THE CIRCUMFERENCE OF THE TRUNK. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION. THE SUBJECT MUST NOT PULL IN HER STOMACH.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
26.46	2.16	8.1%	22.6	23.4	23.9	24.9	26.2	27.7	29.3	30.5	33.2

FOUR SIZE SYSTEM (SD=1.4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	21.9	23.9	26.0	28.0
SIZE MEAN	24.2	26.2	28.3	30.3
DESIGN MAXIMUM	26.5	28.5	30.6	32.6

SIX SIZE SYSTEM (SD=1.5 IN.)

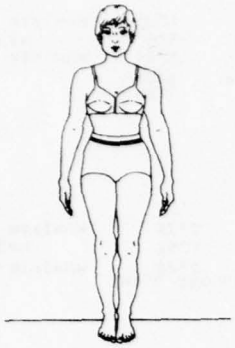
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	22.3	21.4	25.0	24.1	27.6	26.7
SIZE MEAN	24.8	23.8	27.4	26.5	30.1	29.2
DESIGN MAXIMUM	27.2	26.3	29.9	28.9	32.5	31.6

EIGHT SIZE SYSTEM (SD=1.4 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	22.2	21.4	24.4	23.6	26.5	25.7	28.7	27.9
SIZE MEAN	24.5	23.7	26.7	25.8	28.8	28.0	30.9	30.1
DESIGN MAXIMUM	26.8	26.0	28.9	28.1	31.1	30.2	33.2	32.4

TWELVE SIZE SYSTEM (SD=1.4 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	22.4	21.7	21.1	24.5	23.9	23.3	26.7	26.0	25.4	28.8	28.2	27.6
SIZE MEAN	24.6	24.0	23.4	26.8	26.1	25.5	28.9	28.3	27.7	31.0	30.4	29.8
DESIGN MAXIMUM	26.9	26.2	25.6	29.0	28.4	27.8	31.1	30.5	29.9	33.3	32.7	32.1



(28) ABDOMINAL EXTENSION CIRCUMFERENCE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A HORIZONTAL PLANE, MEASURE THE CIRCUMFERENCE OF THE TRUNK AT THE LEVEL OF THE ABDOMINAL EXTENSION LANDMARK. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION. THE SUBJECT MUST NOT PULL IN HER STOMACH.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.72	2.87	8.5%	28.0	29.5	30.3	31.7	33.4	35.4	37.5	38.9	42.2

FOUR SIZE SYSTEM (SD=1.9 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	27.6	30.2	32.8	35.4
SIZE MEAN	30.9	33.5	36.0	38.6
DESIGN MAXIMUM	34.1	36.7	39.3	41.9

SIX SIZE SYSTEM (SD=2.0 IN.)

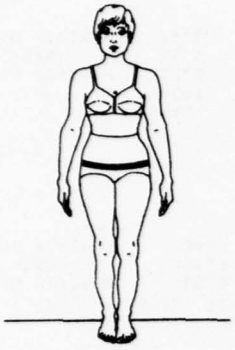
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	28.3	26.9	31.7	30.3	35.1	33.7
SIZE MEAN	31.6	30.3	35.0	33.7	38.4	37.1
DESIGN MAXIMUM	35.0	33.6	38.4	37.0	41.8	40.4

EIGHT SIZE SYSTEM (SD=1.9 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.2	26.9	30.9	29.7	33.6	32.4	36.4	35.2
SIZE MEAN	31.3	30.1	34.1	32.8	36.8	35.6	39.5	38.3
DESIGN MAXIMUM	34.5	33.3	37.2	36.0	40.0	38.7	42.7	41.5

TWELVE SIZE SYSTEM (SD=1.9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.3	27.4	26.5	31.1	30.2	29.3	33.8	32.9	32.0	36.6	35.7	34.8
SIZE MEAN	31.5	30.6	29.6	34.2	33.3	32.4	37.0	36.0	35.1	39.7	38.8	37.9
DESIGN MAXIMUM	34.6	33.7	32.8	37.3	36.4	35.5	40.1	39.2	38.3	42.8	41.9	41.0



(29) HIP CIRCUMFERENCE - NINE INCHES BELOW WAIST LEVEL

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A HORIZONTAL PLANE, MEASURE THE CIRCUMFERENCE OF THE TRUNK AT THE LEVEL OF THE 9-INCH HIP LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
37.51	2.37	6.3%	32.1	33.7	34.5	35.9	37.4	39.0	40.6	41.7	44.2

FOUR SIZE SYSTEM (SD=1.4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	32.6	35.0	37.5	39.9
SIZE MEAN	34.8	37.2	39.7	42.2
DESIGN MAXIMUM	37.0	39.5	41.9	44.4

SIX SIZE SYSTEM (SD=1.5 IN.)

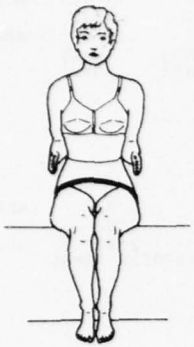
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	32.9	32.2	36.1	35.4	39.2	38.5
SIZE MEAN	35.3	34.6	38.5	37.8	41.6	40.9
DESIGN MAXIMUM	37.7	37.0	40.9	40.2	44.0	43.3

EIGHT SIZE SYSTEM (SD=1.3 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	32.8	32.2	35.4	34.7	37.9	37.3	40.4	39.8
SIZE MEAN	35.0	34.4	37.6	36.9	40.1	39.5	42.6	42.0
DESIGN MAXIMUM	37.2	36.6	39.8	39.1	42.3	41.7	44.8	44.2

TWELVE SIZE SYSTEM (SD=1.3 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	32.9	32.4	32.1	35.4	35.0	34.5	38.0	37.5	37.0	40.5	40.0	39.6
SIZE MEAN	35.1	34.6	34.2	37.6	37.2	36.7	40.2	39.7	39.2	42.7	42.2	41.8
DESIGN MAXIMUM	37.3	36.8	36.4	39.8	39.4	38.9	42.4	41.9	41.4	44.9	44.4	44.0



(30) BUTTOCK CIRCUMFERENCE, SITTING

SUBJECT SITS ERECT ON A FLAT SURFACE, LOOKING STRAIGHT AHEAD, THIGHS PARALLEL, UPPER ARMS HANGING RELAXED, AND ARMS FOLDED ACROSS HER CHEST. DRAWING A TAPE AS FAR FORWARD AS FREELY POSSIBLE UNDER THE SUBJECT'S BUTTOCKS AND BRINGING IT UPWARD AND DIAGONALLY ACROSS HER LAP AT THE LEVEL OF THE THIGH-TRUNK INTERSECTION, MEASURE THE CIRCUMFERENCE OF THE BUTTOCKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
39.37	2.40	6.1%	34.4	35.7	36.4	37.7	39.2	40.8	42.4	43.6	46.4

FOUR SIZE SYSTEM (SD=1.3 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	34.4	36.9	39.5	42.0
SIZE MEAN	36.5	39.1	41.6	44.2
DESIGN MAXIMUM	38.7	41.2	43.8	46.3

SIX SIZE SYSTEM (SD=1.4 IN.)

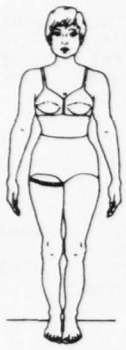
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	34.7	34.1	38.0	37.3	41.2	40.6
SIZE MEAN	37.1	36.4	40.3	39.7	43.6	42.9
DESIGN MAXIMUM	39.4	38.8	42.7	42.0	45.9	45.3

EIGHT SIZE SYSTEM (SD=1.3 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	34.6	34.1	37.3	36.7	39.9	39.3	42.5	41.9
SIZE MEAN	36.8	36.2	39.4	38.8	42.0	41.4	44.6	44.0
DESIGN MAXIMUM	38.9	38.3	41.5	40.9	44.1	43.5	46.7	46.2

TWELVE SIZE SYSTEM (SD=1.3 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	34.7	34.3	33.9	37.3	36.9	36.5	39.9	39.5	39.1	42.6	42.1	41.7
SIZE MEAN	36.8	36.4	36.0	39.4	39.0	38.6	42.1	41.6	41.2	44.7	44.3	43.8
DESIGN MAXIMUN	39.0	38.5	38.1	41.6	41.1	40.7	44.2	43.8	43.3	46.8	46.4	45.9



(31) UPPER THIGH CIRCUMFERENCE

SUBJECT STANDS ERECT, HEELS APPROXIMATELY 10 CM APART AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE THIGH, MEASURE THE CIRCUMFERENCE OF THE THIGH AT THE LEVEL OF THE LOWEST POINT ON THE GLUTEAL FURROW. WHERE THE FURROW IS DEEPLY INDENTED, THE MEASUREMENT IS MADE JUST DISTAL TO THE FURROW.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
21.84	1.66	7.6%	18.1	19.1	19.7	20.7	21.8	22.9	24.0	24.7	26.3

FOUR SIZE SYSTEM (SD=1.0 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	18.4	19.9	21.5	23.1
SIZE MEAN	20.1	21.7	23.3	24.9
DESIGN MAXIMUM	21.8	23.4	25.0	26.6

SIX SIZE SYSTEM (SD=1.1 IN.)

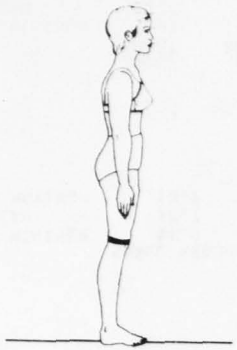
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	18.7	17.9	20.8	20.0	22.9	22.1
SIZE MEAN	20.5	19.7	22.6	21.8	24.7	23.9
DESIGN MAXIMUM	22.4	21.6	24.5	23.7	26.5	25.7

EIGHT SIZE SYSTEM (SD=1.0 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	18.7	17.9	20.3	19.6	22.0	21.3	23.7	23.0
SIZE MEAN	20.3	19.6	22.0	21.3	23.7	23.0	25.4	24.7
DESIGN MAXIMUM	22.0	21.3	23.7	23.0	25.4	24.7	27.1	26.4

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	18.8	18.2	17.7	20.5	19.9	19.4	22.1	21.6	21.1	23.8	23.3	22.8
SIZE MEAN	20.4	19.9	19.4	22.1	21.6	21.1	23.8	23.3	22.7	25.5	25.0	24.4
DESIGN MAXIMUM	22.1	21.6	21.0	23.8	23.3	22.7	25.5	24.9	24.4	27.2	26.6	26.1



(32) KNEE CIRCUMFERENCE

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, HEELS APPROXIMATELY 10 CM APART, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE LEG, MEASURE THE CIRCUMFERENCE OF THE KNEE AT THE LEVEL OF THE KNEE LANDMARK. THE SUBJECT MUST NOT TENSE HER KNEE DURING THE MEASUREMENT.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.29	.89	6.2%	12.5	12.8	13.0	13.6	14.3	14.9	15.6	16.0	16.9

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	12.4	13.2	14.1	15.0
SIZE MEAN	13.3	14.2	15.1	15.9
DESIGN MAXIMUM	14.3	15.1	16.0	16.9

SIX SIZE SYSTEM (SD= .6 IN.)

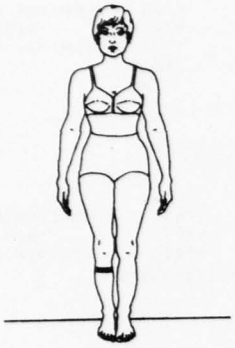
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	12.5	12.4	13.6	13.5	14.7	14.6
SIZE MEAN	13.5	13.4	14.6	14.5	15.7	15.6
DESIGN MAXIMUM	14.5	14.4	15.6	15.5	16.7	16.6

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.4	12.3	13.3	13.2	14.2	14.1	15.1	15.0
SIZE MEAN	13.4	13.3	14.2	14.1	15.1	15.0	16.0	15.9
DESIGN MAXIMUM	14.3	14.2	15.2	15.1	16.1	16.0	17.0	16.9

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.4	12.4	12.3	13.3	13.2	13.2	14.2	14.1	14.0	15.1	15.0	14.9
SIZE MEAN	13.4	13.3	13.2	14.3	14.2	14.1	15.1	15.1	15.0	16.0	15.9	15.9
DESIGN MAXIMUM	14.3	14.2	14.2	15.2	15.1	15.1	16.1	16.0	15.9	17.0	16.9	16.8



(33) CALF CIRCUMFERENCE

SUBJECT STANDS ERECT, HEELS APPROXIMATELY 10 CM APART, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE LOWER LEG, MEASURE THE CIRCUMFERENCE OF THE CALF AT THE LEVEL OF THE CALF LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.44	.88	6.6%	11.5	11.9	12.2	12.7	13.4	14.1	14.7	15.1	15.8

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	11.5	12.3	13.1	13.9
SIZE MEAN	12.6	13.4	14.1	14.9
DESIGN MAXIMUM	13.6	14.4	15.2	16.0

SIX SIZE SYSTEM (SD= .7 IN.)

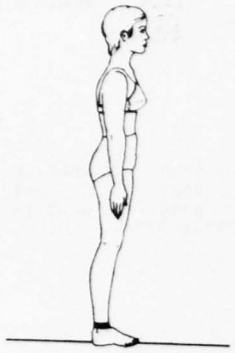
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	11.7	11.4	12.7	12.4	13.7	13.4
SIZE MEAN	12.8	12.5	13.8	13.5	14.8	14.5
DESIGN MAXIMUM	13.8	13.6	14.8	14.6	15.8	15.6

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.6	11.4	12.4	12.2	13.2	13.0	14.0	13.8
SIZE MEAN	12.7	12.4	13.5	13.2	14.3	14.1	15.1	14.9
DESIGN MAXIMUM	13.7	13.5	14.5	14.3	15.3	15.1	16.1	15.9

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.7	11.5	11.3	12.5	12.3	12.1	13.3	13.1	12.9	14.1	13.9	13.7
SIZE MEAN	12.7	12.5	12.4	13.5	13.3	13.2	14.3	14.1	14.0	15.1	14.9	14.8
DESIGN MAXIMUM	13.7	13.6	13.4	14.5	14.4	14.2	15.3	15.2	15.0	16.1	16.0	15.8



(34) ANKLE CIRCUMFERENCE

SUBJECT STANDS ERECT WITH WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A TAPE HELD IN A PLANE PERPENDICULAR TO THE LONG AXIS OF THE LOWER LEG, MEASURE THE CIRCUMFERENCE OF THE LEG AT THE LEVEL OF THE ANKLE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.30	.51	6.1%	6.6	7.3	7.5	7.8	8.2	8.7	9.2	9.4	9.7

FOUR SIZE SYSTEM (SD= .4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	7.2	7.6	7.9	8.3
SIZE MEAN	7.9	8.3	8.6	9.0
DESIGN MAXIMUM	8.6	9.0	9.3	9.7

SIX SIZE SYSTEM (SD= .4 IN.)

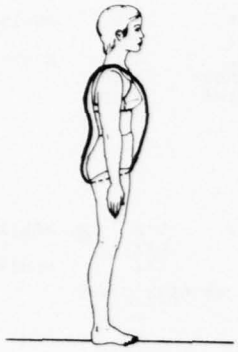
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	7.2	7.3	7.7	7.7	8.1	8.2
SIZE MEAN	7.9	8.0	8.4	8.4	8.8	8.9
DESIGN MAXIMUM	8.6	8.7	9.1	9.1	9.5	9.6

EIGHT SIZE SYSTEM (SD= .4 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.2	7.2	7.5	7.6	7.9	7.9	8.3	8.3
SIZE MEAN	7.9	7.9	8.2	8.3	8.6	8.6	9.0	9.0
DESIGN MAXIMUM	8.6	8.6	8.9	9.0	9.3	9.3	9.7	9.7

TWELVE SIZE SYSTEM (SD= .4 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.2	7.2	7.2	7.5	7.6	7.6	7.9	7.9	8.0	8.3	8.3	8.3
SIZE MEAN	7.9	7.9	7.9	8.2	8.3	8.3	8.6	8.6	8.7	9.0	9.0	9.0
DESIGN MAXIMUM	8.6	8.6	8.6	8.9	9.0	9.0	9.3	9.3	9.4	9.6	9.7	9.7



(35) VERTICAL TRUNK CIRCUMFERENCE, STANDING

SUBJECT STANDS WITH LEGS SLIGHTLY APART. PASS A TAPE BETWEEN THE LEGS, OVER THE PROTRUSION OF THE RIGHT BUTTOCK AND UP THE BACK TO THE MIDSHOULDER MARK. BRING THE OTHER END OF THE TAPE UP OVER THE RIGHT BUSTPOINT TO MIDSHOULDER. THE SUBJECT BRINGS HER HEELS TOGETHER AND THE TRUNK CIRCUMFERENCE IS MEASURED AT THE POINT OF MAXIMUM QUIET INSPIRATION. (THE TAPE FOLLOWS THE BACK BODY CONTOUR BUT NOT THE FRONT.)

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
60.80	2.70	4.4%	55.1	56.5	57.3	58.9	60.7	62.6	64.3	65.5	68.0

FOUR SIZE SYSTEM (SD=1.7 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	54.9	57.6	60.3	63.0
SIZE MEAN	57.7	60.5	63.2	65.9
DESIGN MAXIMUM	60.6	63.3	66.1	68.8

SIX SIZE SYSTEM (SD=1.8 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	54.7	55.1	57.9	59.4	61.2	62.6
SIZE MEAN	57.6	59.0	60.8	62.3	64.1	65.5
DESIGN MAXIMUM	60.5	61.9	63.7	65.2	67.0	68.4

EIGHT SIZE SYSTEM (SD=1.7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	54.5	55.7	57.0	58.3	59.6	60.9	62.1	63.4
SIZE MEAN	57.3	58.5	59.8	61.1	62.4	63.7	64.9	66.2
DESIGN MAXIMUM	60.1	61.3	62.6	63.9	65.2	66.5	67.7	69.0

TWELVE SIZE SYSTEM (SD=1.7 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	54.3	55.3	56.2	56.9	57.8	58.8	59.5	60.4	61.4	62.0	63.0	63.9
SIZE MEAN	57.1	58.1	59.0	59.7	60.6	61.6	62.2	63.2	64.1	64.8	65.7	66.7
DESIGN MAXIMUM	59.9	60.8	61.8	62.4	63.4	64.3	65.0	65.9	66.9	67.5	68.5	69.5



(36) VERTICAL TRUNK CIRCUMFERENCE, SITTING

SUBJECT INITIALLY STANDS WITH LEGS SLIGHTLY APART. A LENGTH OF TAPE IS PASSED BETWEEN THE LEGS, OVER THE PROTRUSION OF THE RIGHT BUTTOCK, AND UP THE BACK TO THE MIDSHOULDER LANDMARK. THE SUBJECT THEN SITS, HER TRUNK ERECT AND ARMS RELAXED. THE OTHER END OF THE TAPE IS BROUGHT OVER THE RIGHT BUSTPOINT LANDMARK TO MID-SHOULDER. THE SUBJECT BRINGS HER LEGS TOGETHER AND THE CIRCUMFERENCE OF THE TORSO IS MEASURED AT THE POINT OF MAXIMUM QUIET INSPIRATION. (THE TAPE FOLLOWS THE BACK BODY CONTOUR BUT NOT THE FRONT.)

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
59.18	2.58	4.4%	53.6	54.9	55.7	57.2	59.0	60.8	62.4	63.5	65.5

FOUR SIZE SYSTEM (SD=1.8 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	53.4	55.9	58.4	60.9
SIZE MEAN	56.2	58.8	61.3	63.8
DESIGN MAXIMUM	59.1	61.6	64.1	66.7

SIX SIZE SYSTEM (SD=1.7 IN.)

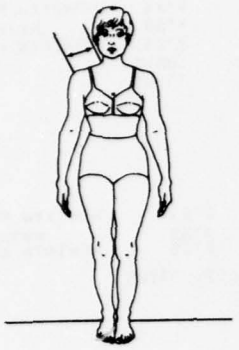
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	53.1	55.0	56.0	57.9	58.9	60.9
SIZE MEAN	55.9	57.9	58.8	60.8	61.7	63.7
DESIGN MAXIMUM	58.7	60.7	61.7	63.6	64.6	66.5

EIGHT SIZE SYSTEM (SD=1.7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	52.9	54.6	55.1	56.9	57.4	59.2	59.7	61.5
SIZE MEAN	55.6	57.3	57.9	59.6	60.2	61.9	62.5	64.2
DESIGN MAXIMUM	58.3	60.1	60.6	62.4	62.9	64.7	65.2	66.9

TWELVE SIZE SYSTEM (SD=1.6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	52.7	54.0	55.3	55.0	56.3	57.6	57.3	58.6	59.9	59.6	60.9	62.2
SIZE MEAN	55.4	56.7	58.0	57.7	59.0	60.3	59.9	61.3	62.6	62.2	63.5	64.9
DESIGN MAXIMUM	58.1	59.4	60.7	60.3	61.7	63.0	62.6	63.9	65.2	64.9	66.2	67.5



(37) SHOULDER LENGTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. WITH A TAPE, MEASURE THE SURFACE DISTANCE ALONG THE TOP OF THE SHOULDER FROM THE LATERAL NECK LANDMARK TO THE ACROMIAL LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
5.77	.40	7.0%	4.5	4.7	4.9	5.5	5.9	6.2	6.4	6.5	7.2

FOUR SIZE SYSTEM (SD= .4 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	5.0	5.1	5.3	5.4
SIZE MEAN	5.6	5.7	5.9	6.1
DESIGN MAXIMUM	6.2	6.4	6.5	6.7

SIX SIZE SYSTEM (SD= .4 IN.)

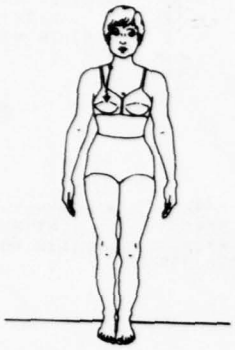
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	4.9	5.1	5.1	5.3	5.2	5.5
SIZE MEAN	5.5	5.8	5.7	5.9	5.9	6.1
DESIGN MAXIMUM	6.2	6.4	6.3	6.6	6.5	6.7

EIGHT SIZE SYSTEM (SD= .4 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	4.9	5.1	5.0	5.2	5.2	5.4	5.3	5.5
SIZE MEAN	5.5	5.7	5.6	5.9	5.8	6.0	5.9	6.1
DESIGN MAXIMUM	6.1	6.3	6.3	6.5	6.4	6.6	6.5	6.7

TWELVE SIZE SYSTEM (SD= .4 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	4.9	5.0	5.2	5.0	5.2	5.3	5.1	5.3	5.4	5.3	5.4	5.6
SIZE MEAN	5.5	5.6	5.8	5.6	5.8	5.9	5.7	5.9	6.1	5.9	6.0	6.2
DESIGN MAXIMUM	6.1	6.3	6.4	6.2	6.4	6.6	6.4	6.5	6.7	6.5	6.7	6.8



(38) NECK TO BUSTPOINT LENGTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. WITH A TAPE, MEASURE THE STRAIGHT LINE DISTANCE FROM THE LATERAL NECK LANDMARK TO THE BUSTPOINT LANDMARK. THE TAPE IS HELD TENSE AND DOES NOT FOLLOW THE SURFACE CONTOUR OF THE BODY.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.04	.74	7.4%	8.3	8.7	9.0	9.4	10.0	10.6	11.1	11.5	12.2

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	8.4	8.9	9.4	10.0
SIZE MEAN	9.5	10.0	10.5	11.0
DESIGN MAXIMUM	10.5	11.0	11.5	12.0

SIX SIZE SYSTEM (SD= .6 IN.)

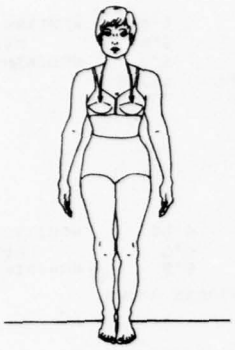
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	8.5	8.4	9.2	9.1	9.8	9.7
SIZE MEAN	9.6	9.5	10.2	10.1	10.8	10.8
DESIGN MAXIMUM	10.6	10.5	11.3	11.2	11.9	11.8

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	8.5	8.4	9.0	8.9	9.5	9.4	10.0	9.9
SIZE MEAN	9.5	9.4	10.0	9.9	10.5	10.5	11.0	11.0
DESIGN MAXIMUM	10.5	10.5	11.1	11.0	11.6	11.5	12.1	12.0

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	8.5	8.4	8.4	9.0	8.9	8.9	9.5	9.4	9.4	10.0	10.0	9.9
SIZE MEAN	9.5	9.5	9.4	10.0	10.0	9.9	10.5	10.5	10.4	11.1	11.0	10.9
DESIGN MAXIMUM	10.5	10.5	10.4	11.1	11.0	11.0	11.6	11.5	11.5	12.1	12.0	12.0



(39) STRAP LENGTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. WTIH A TAPE, MEASURE THE DISTANCE FROM THE RIGHT BUSTPOINT LANDMARK, ACROSS THE POSTERIOR NECK LANDMARK, TO THE LEFT BUSTPOINT LANDMARK. THE TAPE IS HELD TENSE AND DOES NOT FOLLOW THE CURVATURE OF THE FRONT OF THE BODY.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
25.68	1.54	6.0%	22.2	23.2	23.7	24.6	25.6	26.7	27.8	28.5	29.8

FOUR SIZE SYSTEM (SD=1.2 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	22.3	23.5	24.7	25.9
SIZE MEAN	24.3	25.5	26.7	28.0
DESIGN MAXIMUM	26.4	27.6	28.8	30.0

SIX SIZE SYSTEM (SD=1.3 IN.)

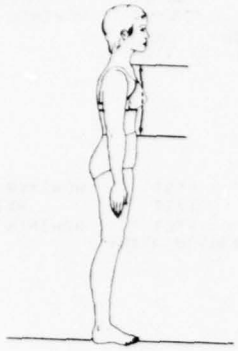
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	22.5	22.4	24.0	23.9	25.5	25.4
SIZE MEAN	24.5	24.4	26.0	25.9	27.6	27.5
DESIGN MAXIMUM	26.6	26.5	28.1	28.0	29.6	29.5

EIGHT SIZE SYSTEM (SD=1.2 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	22.4	22.3	23.6	23.5	24.8	24.7	26.0	25.9
SIZE MEAN	24.4	24.3	25.6	25.5	26.8	26.7	28.0	27.9
DESIGN MAXIMUM	26.4	26.3	27.6	27.5	28.8	28.7	30.0	30.0

TWELVE SIZE SYSTEM (SD=1.2 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	22.4	22.3	22.2	23.6	23.5	23.4	24.8	24.7	24.7	26.0	26.0	25.9
SIZE MEAN	24.4	24.3	24.2	25.6	25.5	25.5	26.8	26.7	26.7	28.0	28.0	27.9
DESIGN MAXIMUM	26.4	26.3	26.3	27.6	27.5	27.5	28.8	28.8	28.7	30.1	30.0	29.9



(40) WAIST FRONT LENGTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. WITH A TAPE, MEASURE THE SURFACE DISTANCE FROM THE ANTERIOR NECK LANDMARK TO THE ANTERIOR WAIST LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.22	.77	5.8%	11.5	11.8	12.1	12.6	13.2	13.8	14.4	14.7	15.5

FOUR SIZE SYSTEM (SD= .7 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	11.6	12.0	12.5	13.0
SIZE MEAN	12.7	13.2	13.6	14.1
DESIGN MAXIMUM	13.8	14.3	14.8	15.2

SIX SIZE SYSTEM (SD= .7 IN.)

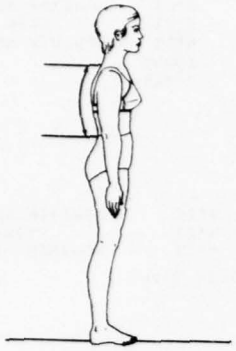
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	11.5	11.9	12.0	12.5	12.6	13.0
SIZE MEAN	12.6	13.0	13.1	13.6	13.7	14.1
DESIGN MAXIMUM	13.7	14.1	14.3	14.7	14.8	15.2

EIGHT SIZE SYSTEM (SD= .7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.4	11.8	11.9	12.2	12.3	12.7	12.7	13.1
SIZE MEAN	12.5	12.9	13.0	13.4	13.4	13.8	13.8	14.2
DESIGN MAXIMUM	13.6	14.0	14.1	14.5	14.5	14.9	14.9	15.3

TWELVE SIZE SYSTEM (SD= .7 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.4	11.7	12.0	11.8	12.1	12.4	12.2	12.5	12.8	12.7	13.0	13.2
SIZE MEAN	12.5	12.8	13.1	12.9	13.2	13.5	13.3	13.6	13.9	13.8	14.1	14.3
DESIGN MAXIMUM	13.6	13.9	14.2	14.0	14.3	14.6	14.4	14.7	15.0	14.9	15.2	15.4



(41) WAIST BACK LENGTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD, WITH A TAPE, MEASURE THE SURFACE DISTANCE ALONG THE SPINE FROM THE CERVICALE LANDMARK TO THE POSTERIOR WAIST LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
15.95	.87	5.5%	13.7	14.4	14.8	15.3	16.0	16.6	17.2	17.6	18.3

FOUR SIZE SYSTEM (SD= .8 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	14.1	14.6	15.0	15.4
SIZE MEAN	15.5	15.9	16.3	16.7
DESIGN MAXIMUM	16.8	17.2	17.6	18.0

SIX SIZE SYSTEM (SD= .8 IN.)

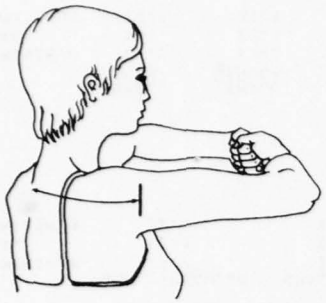
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	13.9	14.9	14.3	15.3	14.8	15.7
SIZE MEAN	15.2	16.2	15.6	16.6	16.0	17.0
DESIGN MAXIMUM	16.4	17.4	16.9	17.8	17.3	18.3

EIGHT SIZE SYSTEM (SD= .8 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	13.9	14.8	14.2	15.1	14.5	15.4	14.8	15.7
SIZE MEAN	15.1	16.0	15.4	16.3	15.8	16.6	16.1	16.9
DESIGN MAXIMUM	16.4	17.2	16.7	17.6	17.0	17.9	17.3	18.2

TWELVE SIZE SYSTEM (SD= .7 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	13.8	14.5	15.1	14.1	14.8	15.4	14.4	15.1	15.8	14.7	15.4	16.1
SIZE MEAN	15.0	15.7	16.3	15.3	16.0	16.6	15.6	16.3	17.0	16.0	16.6	17.3
DESIGN MAXIMUM	16.2	16.9	17.5	16.5	17.2	17.9	16.8	17.5	18.2	17.2	17.8	18.5



(42) SLEEVE LENGTH, SPINE TO SCYE

SUBJECT STANDS, ARMS HORIZONTAL, ELBOWS FLEXED ABOUT 60 DEGREES, FISTS CLENCHED AND TOUCHING. A TAPE WITH ITS ZERO-POINT ON THE MIDLINE OF THE SPINE IS PASSED HORIZONTALLY AROUND THE SHOULDER AND OVER THE TIP OF THE ELBOW TO THE WRIST LANDMARK. MEASURE THE SURFACE DISTANCE FROM THE SPINE TO THE POSTERIOR VERTICAL-SCYE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.02	.53	6.7%	6.4	6.9	7.1	7.5	8.0	8.5	8.9	9.1	9.6

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	6.9	7.2	7.5	7.7
SIZE MEAN	7.7	8.0	8.3	8.5
DESIGN MAXIMUM	8.5	8.8	9.1	9.4

SIX SIZE SYSTEM (SD= .5 IN.)

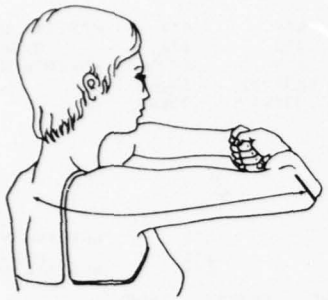
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	6.9	7.0	7.3	7.3	7.6	7.7
SIZE MEAN	7.7	7.8	8.1	8.1	8.4	8.5
DESIGN MAXIMUM	8.5	8.6	8.9	8.9	9.2	9.3

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.9	6.9	7.2	7.2	7.4	7.5	7.7	7.8
SIZE MEAN	7.7	7.7	8.0	8.0	8.2	8.3	8.5	8.6
DESIGN MAXIMUM	8.5	8.5	8.8	8.8	9.0	9.1	9.3	9.4

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.9	6.9	6.9	7.2	7.2	7.2	7.4	7.5	7.5	7.7	7.7	7.8
SIZE MEAN	7.7	7.7	7.7	8.0	8.0	8.0	8.2	8.3	8.3	8.5	8.5	8.6
DESIGN MAXIMUM	8.5	8.5	8.5	8.8	8.8	8.8	9.0	9.1	9.1	9.3	9.3	9.4



(43) SLEEVE LENGTH, SPINE TO ELBOW

SUBJECT STANDS, ARMS HORIZONTAL, ELBOWS FLEXED ABOUT 60 DEGREES, AND FISTS CLENCHED AND TOUCHING. A TAPE WITH ITS ZERO-POINT ON THE MIDLINE OF THE SPINE IS PASSED HORIZONTALLY AROUND THE SHOULDER AND OVER THE TIP OF THE ELBOW TO THE WRIST LANDMARK. MEASURE THE SURFACE DISTANCE FROM THE SPINE TO THE TIP OF THE ELBOW.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
20.99	.95	4.5%	18.6	19.3	19.7	20.3	21.0	21.6	22.3	22.7	23.5

FOUR SIZE SYSTEM (SD= .8 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	18.9	19.6	20.4	21.1
SIZE MEAN	20.1	20.9	21.6	22.4
DESIGN MAXIMUM	21.4	22.1	22.9	23.6

SIX SIZE SYSTEM (SD= .7 IN.)

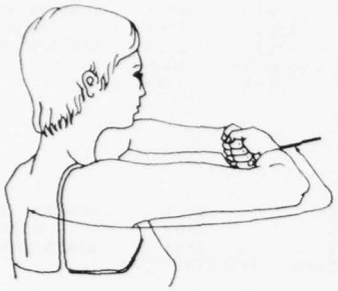
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	18.7	19.7	19.6	20.5	20.4	21.3
SIZE MEAN	19.9	20.9	20.7	21.7	21.6	22.5
DESIGN MAXIMUM	21.1	22.0	21.9	22.9	22.8	23.7

EIGHT SIZE SYSTEM (SD= .7 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	18.7	19.5	19.3	20.1	19.9	20.8	20.6	21.4
SIZE MEAN	19.8	20.7	20.5	21.3	21.1	22.0	21.8	22.6
DESIGN MAXIMUM	21.0	21.8	21.6	22.5	22.3	23.1	22.9	23.8

TWELVE SIZE SYSTEM (SD= .7 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	18.6	19.2	19.8	19.2	19.9	20.5	19.9	20.5	21.1	20.5	21.1	21.8
SIZE MEAN	19.7	20.3	21.0	20.4	21.0	21.6	21.0	21.6	22.3	21.7	22.3	22.9
DESIGN MAXIMUM	20.8	21.5	22.1	21.5	22.1	22.8	22.1	22.8	23.4	22.8	23.4	24.0



(44) SLEEVE LENGTH, SPINE TO WRIST

SUBJECT STANDS, ARMS HORIZONTAL, ELBOWS FLEXED ABOUT 60 DEGREES, AND FISTS CLENCHED AND TOUCHING. A TAPE WITH ITS ZERO-POINT ON THE MIDLINE OF THE SPINE IS PASSED HORIZONTALLY AROUND THE SHOULDER AND OVER THE TIP OF THE ELBOW TO THE WRIST LANDMARK. MEASURE THE SURFACE DISTANCE FROM THE SPINE TO THE WRIST LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
31.33	1.31	4.2%	28.5	29.1	29.6	30.4	31.3	32.2	33.1	33.6	34.7

FOUR SIZE SYSTEM (SD=1.0 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	28.4	29.5	30.6	31.6
SIZE MEAN	30.1	31.2	32.2	33.3
DESIGN MAXIMUM	31.8	32.9	33.9	35.0

SIX SIZE SYSTEM (SD= .9 IN.)

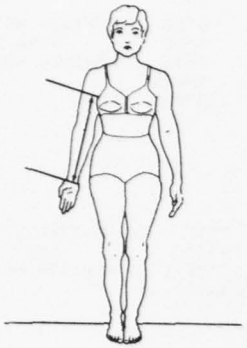
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	28.2	29.7	29.3	30.9	30.5	32.1
SIZE MEAN	29.7	31.3	30.9	32.5	32.0	33.6
DESIGN MAXIMUM	31.3	32.9	32.4	34.0	33.6	35.2

EIGHT SIZE SYSTEM (SD= .9 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.1	29.5	29.0	30.4	29.8	31.3	30.7	32.1
SIZE MEAN	29.6	31.0	30.5	31.9	31.4	32.8	32.2	33.7
DESIGN MAXIMUM	31.1	32.5	32.0	33.4	32.9	34.3	33.8	35.2

TWELVE SIZE SYSTEM (SD= .9 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	28.0	29.0	30.1	28.9	29.9	31.0	29.7	30.8	31.9	30.6	31.7	32.7
SIZE MEAN	29.4	30.5	31.5	30.3	31.4	32.4	31.2	32.2	33.3	32.1	33.1	34.2
DESIGN MAXIMUM	30.9	31.9	33.0	31.7	32.8	33.9	32.6	33.7	34.7	33.5	34.6	35.6



(45) SLEEVE INSEAM LENGTH

SUBJECT STANDS, ARM SLIGHTLY ABDUCTED AND PALM FORWARD. WITH A TAPE, MEASURE THE DISTANCE FROM THE ANTERIOR SCYE POINT LANDMARK TO THE ULNAR SIDE OF THE WRIST LANDMARK. THE TAPE IS HELD TENSE AND DOES NOT FOLLOW THE SURFACE CONTOUR OF THE ARM.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
17.37	.95	5.5%	15.1	15.8	16.1	16.7	17.4	18.1	18.7	19.1	19.7

FOUR SIZE SYSTEM (SD= .9 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	15.4	15.9	16.4	16.8
SIZE MEAN	16.8	17.3	17.8	18.2
DESIGN MAXIMUM	18.2	18.7	19.2	19.7

SIX SIZE SYSTEM (SD= .9 IN.)

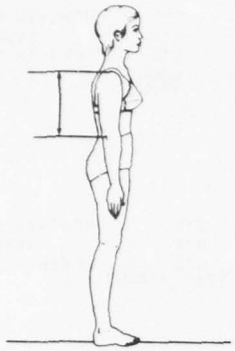
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	15.1	15.5	15.6	17.0	16.0	17.4
SIZE MEAN	16.4	17.8	16.8	18.2	17.3	18.7
DESIGN MAXIMUM	17.7	19.1	18.1	19.5	18.6	20.0

EIGHT SIZE SYSTEM (SD= .8 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	15.1	16.3	15.4	16.7	15.7	17.0	16.1	17.3
SIZE MEAN	16.3	17.6	16.7	17.9	17.0	18.2	17.3	18.6
DESIGN MAXIMUM	17.6	18.8	17.9	19.2	18.2	19.5	18.6	19.8

TWELVE SIZE SYSTEM (SD= .7 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	15.0	15.9	16.9	15.3	16.3	17.2	15.7	16.6	17.5	16.0	16.9	17.8
SIZE MEAN	16.2	17.1	18.1	16.5	17.4	18.4	16.8	17.8	18.7	17.2	18.1	19.0
DESIGN MAXIMUM	17.4	18.3	19.2	17.7	18.6	19.6	18.0	19.0	19.9	18.3	19.3	20.2



(46) ACROMION-RADIALE LENGTH

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD AND WITH ARMS RELAXED. WITH A BEAM CALIPER HELD PARALLEL TO THE LONG AXIS OF THE RIGHT UPPER ARM, MEASURE THE DISTANCE FROM THE ACROMIAL LANDMARK TO THE RADIALE LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
12.21	.64	5.2%	10.5	10.9	11.2	11.7	12.2	12.7	13.1	13.4	13.9

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	10.8	11.2	11.7	12.1
SIZE MEAN	11.7	12.1	12.6	13.0
DESIGN MAXIMUM	12.6	13.0	13.5	13.9

SIX SIZE SYSTEM (SD= .5 IN.)

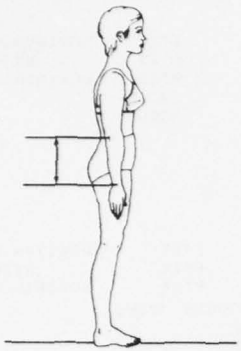
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	10.7	11.5	11.1	11.9	11.5	12.4
SIZE MEAN	11.5	12.3	11.9	12.8	12.4	13.2
DESIGN MAXIMUM	12.3	13.1	12.8	13.6	13.2	14.0

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	10.6	11.4	11.0	11.7	11.3	12.0	11.6	12.4
SIZE MEAN	11.4	12.2	11.8	12.5	12.1	12.8	12.4	13.2
DESIGN MAXIMUM	12.2	13.0	12.6	13.3	12.9	13.7	13.3	14.0

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	10.6	11.1	11.7	10.9	11.5	12.0	11.2	11.8	12.4	11.6	12.1	12.7
SIZE MEAN	11.3	11.9	12.5	11.7	12.2	12.8	12.0	12.6	13.1	12.4	12.9	13.5
DESIGN MAXIMUM	12.1	12.7	13.2	12.4	13.0	13.6	12.8	13.3	13.9	13.1	13.7	14.2



(47) RADIALE-STYLION LENGTH

SUBJECT STANDS ERECT WITH ARMS RELAXED. WITH A BEAM CALIPER HELD PARALLEL TO THE LONG AXIS OF THE RIGHT FOREARM, MEASURE THE DISTANCE FROM THE RADIALE LANDMARK TO THE STYLION LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.21	.54	5.8%	7.5	8.2	8.4	8.8	9.2	9.6	10.1	10.3	10.7

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	8.1	8.4	8.7	9.0
SIZE MEAN	8.8	9.2	9.5	9.8
DESIGN MAXIMUM	9.6	9.9	10.3	10.6

SIX SIZE SYSTEM (SD= .4 IN.)

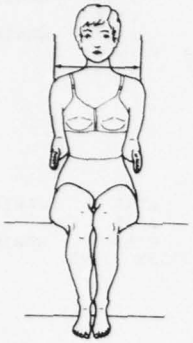
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	7.9	8.6	8.2	8.9	8.6	9.2
SIZE MEAN	8.7	9.3	9.0	9.6	9.3	10.0
DESIGN MAXIMUM	9.4	10.1	9.7	10.4	10.0	10.7

EIGHT SIZE SYSTEM (SD= .4 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.9	8.5	8.1	8.7	8.4	9.0	8.6	9.2
SIZE MEAN	8.6	9.2	8.9	9.5	9.1	9.7	9.3	9.9
DESIGN MAXIMUM	9.3	9.9	9.6	10.2	9.8	10.4	10.1	10.7

TWELVE SIZE SYSTEM (SD= .4 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.8	8.3	8.7	8.1	8.5	9.0	8.3	8.8	9.2	8.6	9.0	9.5
SIZE MEAN	8.5	9.0	9.4	8.8	9.2	9.7	9.0	9.5	9.9	9.3	9.7	10.2
DESIGN MAXIMUM	9.2	9.7	10.1	9.5	9.9	10.4	9.7	10.2	10.6	10.0	10.4	10.9



(48) BIACROMIAL (SHOULDER) BREADTH

SUBJECT SITS ERECT, LOOKING STRAIGHT AHEAD, UPPER ARMS HANGING RELAXED, FOREARMS AND HANDS EXTENDED FORWARD HORIZONTALLY. WITH A BEAM CALIPER, MEASURE THE DISTANCE BETWEEN THE ACROMIALE LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.11	.65	4.6%	12.5	12.8	13.1	13.6	14.1	14.6	15.0	15.3	15.9

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	12.7	13.1	13.6	14.0
SIZE MEAN	13.6	14.1	14.5	14.9
DESIGN MAXIMUM	14.6	15.0	15.4	15.8

SIX SIZE SYSTEM (SD= .6 IN.)

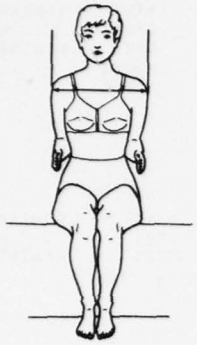
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	12.7	13.0	13.1	13.5	13.6	14.0
SIZE MEAN	13.6	13.9	14.1	14.4	14.6	14.9
DESIGN MAXIMUM	14.5	14.8	15.0	15.3	15.5	15.8

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.6	12.9	13.0	13.3	13.4	13.7	13.8	14.1
SIZE MEAN	13.5	13.8	13.9	14.2	14.3	14.6	14.7	15.0
DESIGN MAXIMUM	14.4	14.7	14.8	15.1	15.2	15.5	15.6	15.9

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	12.6	12.8	13.0	13.0	13.2	13.4	13.3	13.6	13.8	13.7	14.0	14.2
SIZE MEAN	13.5	13.7	13.9	13.9	14.1	14.3	14.3	14.5	14.7	14.6	14.9	15.1
DESIGN MAXIMUM	14.4	14.6	14.8	14.8	15.0	15.2	15.2	15.4	15.6	15.5	15.8	16.0



(49) SHOULDER (BIDELTOID) BREADTH

SUBJECT SITS ERECT, LOOKING STRAIGHT AHEAD, UPPER ARMS HANGING RELAXED, FOREARMS AND HANDS EXTENDED FORWARD HORIZONTALLY. WITH A BEAM CALIPER, MEASURE THE DISTANCE ACROSS THE BODY AT THE LEVEL OF THE DELTOID LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.49	.91	5.5%	14.4	14.9	15.3	15.8	16.5	17.1	17.8	18.2	19.1

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	14.5	15.4	16.2	17.1
SIZE MEAN	15.6	16.4	17.2	18.1
DESIGN MAXIMUM	16.6	17.4	18.3	19.1

SIX SIZE SYSTEM (SD= .6 IN.)

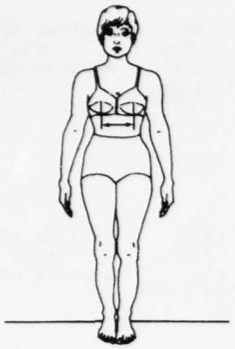
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	14.7	14.4	15.8	15.5	16.9	16.6
SIZE MEAN	15.8	15.5	16.8	16.5	17.9	17.6
DESIGN MAXIMUM	16.8	16.5	17.9	17.6	19.0	18.7

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.6	14.4	15.5	15.3	16.4	16.1	17.3	17.0
SIZE MEAN	15.7	15.4	16.5	16.3	17.4	17.1	18.3	18.0
DESIGN MAXIMUM	16.7	16.4	17.5	17.3	18.4	18.1	19.3	19.0

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.7	14.5	14.3	15.6	15.4	15.2	16.4	16.2	16.0	17.3	17.1	16.9
SIZE MEAN	15.7	15.5	15.3	16.6	16.4	16.2	17.4	17.2	17.0	18.3	18.1	17.9
DESIGN MAXIMUM	16.7	16.5	16.3	17.6	17.4	17.2	18.4	18.2	18.0	19.3	19.1	18.9



(50) BUSTPOINT TO BUSTPOINT BREADTH

THE SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DISTANCE BETWEEN THE BUSTPOINT LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
7.30	.61	8.4%	5.5	6.1	6.4	6.8	7.3	7.7	8.2	8.5	9.2

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	6.0	6.4	6.8	7.2
SIZE MEAN	6.8	7.3	7.7	8.1
DESIGN MAXIMUM	7.7	8.1	8.5	8.9

SIX SIZE SYSTEM (SD= .5 IN.)

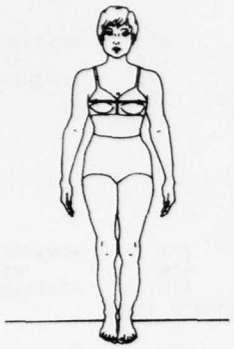
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	6.1	5.9	6.6	6.5	7.2	7.0
SIZE MEAN	6.9	6.8	7.5	7.3	8.0	7.9
DESIGN MAXIMUM	7.8	7.6	8.3	8.2	8.9	8.7

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.1	5.9	6.5	6.3	6.9	6.8	7.3	7.2
SIZE MEAN	6.9	6.7	7.3	7.2	7.8	7.6	8.2	8.0
DESIGN MAXIMUM	7.7	7.6	8.2	8.0	8.6	8.5	9.0	8.9

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.1	6.0	5.9	6.5	6.4	6.3	6.9	6.8	6.7	7.4	7.3	7.1
SIZE MEAN	6.9	6.8	6.7	7.3	7.2	7.1	7.8	7.7	7.6	8.2	8.1	8.0
DESIGN MAXIMUM	7.8	7.6	7.5	8.2	8.1	8.0	8.6	8.5	8.4	9.0	8.9	8.8



(51) CHEST BREADTH

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, WITH HEELS TOGETHER AND ARMS SLIGHTLY ABDUCTED. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DISTANCE ACROSS THE TORSO AT THE LEVEL OF THE BUSTPOINT LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
11.02	.75	6.8%	9.4	9.7	9.9	10.4	11.0	11.5	12.1	12.5	13.4

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	9.4	10.0	10.6	11.2
SIZE MEAN	10.3	11.0	11.6	12.2
DESIGN MAXIMUM	11.3	11.9	12.5	13.1

SIX SIZE SYSTEM (SD= .6 IN.)

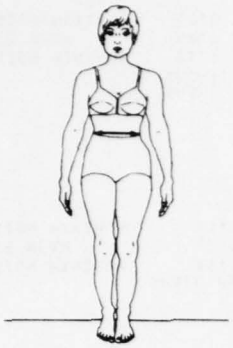
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	9.5	9.3	10.3	10.1	11.1	10.9
SIZE MEAN	10.5	10.3	11.3	11.1	12.1	11.9
DESIGN MAXIMUM	11.5	11.3	12.2	12.1	13.0	12.8

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.5	9.3	10.1	9.9	10.7	10.6	11.4	11.2
SIZE MEAN	10.4	10.2	11.0	10.9	11.7	11.5	12.3	12.1
DESIGN MAXIMUM	11.3	11.2	12.0	11.8	12.6	12.4	13.3	13.1

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	9.5	9.4	9.2	10.1	10.0	9.9	10.8	10.6	10.5	11.4	11.3	11.1
SIZE MEAN	10.4	10.3	10.2	11.1	10.9	10.8	11.7	11.6	11.4	12.3	12.2	12.1
DESIGN MAXIMUM	11.4	11.2	11.1	12.0	11.9	11.7	12.6	12.5	12.4	13.3	13.1	13.0



(52) WAIST BREADTH

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, WITH HEELS TOGETHER AND ARMS SLIGHTLY ABDUCTED. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL BREADTH ACROSS THE TRUNK AT THE LEVEL OF THE WAIST LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.50	.75	8.0%	7.5	8.1	8.4	8.8	9.4	10.0	10.7	11.0	11.6

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	7.9	8.5	9.2	9.9
SIZE MEAN	8.7	9.4	10.1	10.8
DESIGN MAXIMUM	9.6	10.3	11.0	11.7

SIX SIZE SYSTEM (SD= .6 IN.)

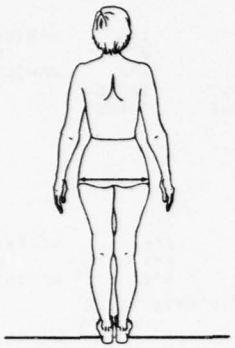
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	8.0	7.8	8.8	8.7	9.7	9.6
SIZE MEAN	8.9	8.7	9.6	9.6	10.6	10.5
DESIGN MAXIMUM	9.8	9.6	10.7	10.5	11.6	11.4

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.9	7.8	8.6	8.5	9.3	9.2	10.0	9.9
SIZE MEAN	8.8	8.6	9.5	9.4	10.2	10.1	10.9	10.8
DESIGN MAXIMUM	9.7	9.5	10.4	10.2	11.1	10.9	11.8	11.6

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.9	7.8	7.7	8.6	8.5	8.4	9.3	9.2	9.1	10.0	9.9	9.8
SIZE MEAN	8.8	8.7	8.6	9.5	9.4	9.3	10.2	10.1	10.0	10.9	10.8	10.7
DESIGN MAXIMUM	9.7	9.6	9.5	10.4	10.3	10.2	11.1	11.0	10.9	11.8	11.7	11.6



(53) HIP BREADTH

SUBJECT STANDS ERECT, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A BEAM CALIPER, MEASURE THE MAXIMUM HORIZONTAL BREADTH OF THE HIPS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.77	.87	6.3%	11.6	12.2	12.6	13.1	13.7	14.4	15.0	15.4	16.4

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	11.9	12.7	13.5	14.3
SIZE MEAN	12.9	13.7	14.5	15.3
DESIGN MAXIMUM	13.9	14.7	15.5	16.3

SIX SIZE SYSTEM (SD= .6 IN.)

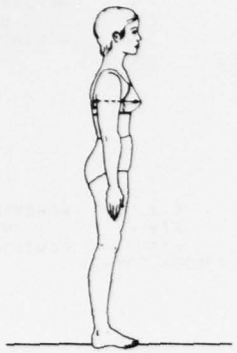
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	12.0	11.8	13.0	12.9	14.0	13.9
SIZE MEAN	13.0	12.9	14.0	13.9	15.1	14.9
DESIGN MAXIMUM	14.1	13.9	15.1	14.9	16.1	16.0

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.9	11.8	12.7	12.6	13.6	13.4	14.4	14.2
SIZE MEAN	12.9	12.8	13.7	13.6	14.6	14.4	15.4	15.2
DESIGN MAXIMUM	13.9	13.8	14.7	14.6	15.6	15.4	16.4	16.2

TWELVE SIZE SYSTEM (SD= .6 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.9	11.9	11.8	12.8	12.7	12.6	13.6	13.5	13.4	14.4	14.3	14.2
SIZE MEAN	12.9	12.9	12.8	13.8	13.7	13.6	14.6	14.5	14.4	15.4	15.3	15.2
DESIGN MAXIMUM	13.9	13.9	13.8	14.8	14.7	14.6	15.6	15.5	15.4	16.4	16.3	16.2



(54) CHEST DEPTH

SUBJECT STANDS ERECT LOOKING STRAIGHT AHEAD, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DEPTH OF THE TRUNK AT THE LEVEL OF THE BUSTPOINT LANDMARKS. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.31	.76	8.2%	7.5	8.0	8.3	8.7	9.2	9.8	10.5	10.8	11.6

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	7.7	8.3	9.0	9.6
SIZE MEAN	8.6	9.2	9.9	10.5
DESIGN MAXIMUM	9.5	10.2	10.8	11.4

SIX SIZE SYSTEM (SD= .6 IN.)

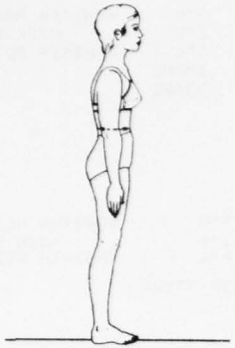
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	7.8	7.5	8.7	8.3	9.5	9.2
SIZE MEAN	8.8	8.4	9.6	9.3	10.5	10.1
DESIGN MAXIMUM	9.7	9.4	10.6	10.2	11.4	11.1

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.8	7.5	8.5	8.2	9.2	8.9	9.9	9.6
SIZE MEAN	8.7	8.4	9.4	9.1	10.1	9.8	10.8	10.5
DESIGN MAXIMUM	9.6	9.3	10.3	10.0	11.0	10.7	11.7	11.4

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.9	7.6	7.4	8.5	8.3	8.1	9.2	9.0	8.8	9.9	9.7	9.5
SIZE MEAN	8.7	8.5	8.3	9.4	9.2	9.0	10.1	9.9	9.7	10.8	10.6	10.3
DESIGN MAXIMUM	9.6	9.4	9.2	10.3	10.1	9.9	11.0	10.8	10.6	11.7	11.5	11.2



(55) WAIST DEPTH

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, ARMS AT SIDES, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DEPTH OF THE TRUNK AT THE LEVEL OF THE WAIST LANDMARKS. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION. THE SUBJECT MUST NOT PULL IN HER STOMACH.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
6.70	.66	9.8%	5.5	5.6	5.7	6.1	6.6	7.2	7.5	8.1	9.1

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	5.3	5.8	6.4	6.9
SIZE MEAN	6.1	6.6	7.2	7.7
DESIGN MAXIMUM	6.9	7.4	8.0	8.5

SIX SIZE SYSTEM (SD= .5 IN.)

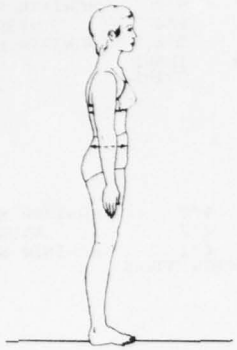
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	5.5	5.1	6.2	5.8	6.9	6.6
SIZE MEAN	6.3	5.9	7.0	6.7	7.7	7.4
DESIGN MAXIMUM	7.1	6.8	7.8	7.5	8.5	8.2

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	5.4	5.1	6.0	5.7	6.6	6.3	7.2	6.9
SIZE MEAN	6.2	5.9	6.8	6.5	7.4	7.1	8.0	7.7
DESIGN MAXIMUM	7.0	6.7	7.6	7.3	8.2	7.9	8.7	8.4

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	5.5	5.2	5.0	5.1	5.8	5.6	6.6	6.4	6.2	7.2	7.0	6.8
SIZE MEAN	6.3	6.0	5.8	5.8	6.6	6.4	7.4	7.2	7.0	8.0	7.8	7.5
DESIGN MAXIMUM	7.0	6.8	6.6	7.6	7.4	7.1	8.2	8.0	7.7	8.8	8.5	8.3



(56) ABDOMINAL EXTENSION DEPTH

SUBJECT STANDS ERECT, LOOKING STRAIGHT AHEAD, ARMS AT SIDES, HEELS TOGETHER, AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DEPTH OF THE TRUNK AT THE LEVEL OF THE ABDOMINAL EXTENSION LANDMARK. THE READING IS MADE AT THE POINT OF MAXIMUM QUIET INSPIRATION. THE SUBJECT MUST NOT PULL IN HER STOMACH.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.22	.83	10.1%	6.5	6.8	7.1	7.6	8.1	8.7	9.4	9.9	11.1

FOUR SIZE SYSTEM (SD= .6 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	6.5	7.2	9.0	8.7
SIZE MEAN	7.4	8.1	8.9	9.6
DESIGN MAXIMUM	8.3	9.1	9.8	10.6

SIX SIZE SYSTEM (SD= .6 IN.)

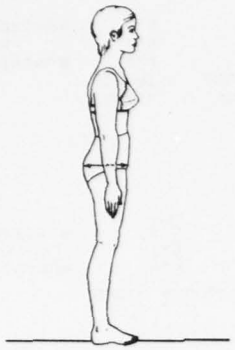
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	6.7	6.2	7.7	7.2	8.6	8.2
SIZE MEAN	7.7	7.2	8.6	8.2	9.6	9.2
DESIGN MAXIMUM	8.6	8.2	9.6	9.1	10.6	10.1

EIGHT SIZE SYSTEM (SD= .6 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.6	6.2	7.4	7.0	8.2	7.8	9.0	8.6
SIZE MEAN	7.6	7.1	8.4	7.9	9.2	8.7	10.0	9.5
DESIGN MAXIMUM	8.5	8.1	9.3	8.9	10.1	9.7	10.9	10.4

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	6.7	6.4	6.1	7.5	7.2	6.9	8.3	8.0	7.7	9.1	8.8	8.5
SIZE MEAN	7.6	7.3	7.0	8.4	8.1	7.8	9.2	8.9	8.6	10.0	9.7	9.4
DESIGN MAXIMUM	8.5	8.2	7.9	9.3	9.0	8.7	10.1	9.8	9.5	10.9	10.6	10.3



(57) BUTTOCK DEPTH

SUBJECT STANDS ERECT, HEELS TOGETHER AND WEIGHT DISTRIBUTED EQUALLY ON BOTH FEET. WITH A BEAM CALIPER, MEASURE THE HORIZONTAL DEPTH OF THE TRUNK AT THE LEVEL OF THE BUTTOCK LANDMARK.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.33	.70	8.5%	6.5	7.0	7.3	7.8	8.3	8.8	9.4	9.7	10.5

FOUR SIZE SYSTEM (SD= .5 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	6.8	7.5	8.1	8.8
SIZE MEAN	7.6	8.3	8.9	9.6
DESIGN MAXIMUM	8.4	9.0	9.7	10.3

SIX SIZE SYSTEM (SD= .5 IN.)

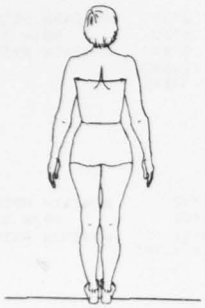
	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	7.0	6.6	7.8	7.5	8.7	8.3
SIZE MEAN	7.8	7.5	8.7	8.3	9.5	9.2
DESIGN MAXIMUM	8.6	8.3	9.5	9.1	10.3	10.0

EIGHT SIZE SYSTEM (SD= .5 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.0	6.7	7.7	7.3	8.3	8.0	9.0	8.7
SIZE MEAN	7.7	7.4	8.4	8.1	9.1	8.8	9.8	9.5
DESIGN MAXIMUM	8.5	8.2	9.2	8.9	9.9	9.5	10.6	10.2

TWELVE SIZE SYSTEM (SD= .5 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	7.0	6.8	6.5	7.7	7.5	7.2	8.4	8.2	7.9	9.1	8.8	8.6
SIZE MEAN	7.8	7.5	7.3	8.5	8.2	8.0	9.1	8.9	8.7	9.8	9.5	9.4
DESIGN MAXIMUM	8.5	8.3	8.1	9.2	9.0	8.7	9.9	9.7	9.4	10.6	10.3	10.1



(58) INTERSCYE CURVATURE

SUBJECT STANDS ERECT WITH ARMS RELAXED. WITH A TAPE HELD IN THE HORIZONTAL PLANE, MEASURE THE SURFACE DISTANCE ACROSS THE BACK BETWEEN THE POSTERIOR SCYE POINT LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.80	.96	7.0%	11.5	12.1	12.4	13.1	13.8	14.5	15.2	15.6	16.4

FOUR SIZE SYSTEM (SD= .8 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	11.8	12.4	13.0	13.5
SIZE MEAN	13.1	13.7	14.3	14.9
DESIGN MAXIMUM	14.5	15.1	15.7	16.3

SIX SIZE SYSTEM (SD= .8 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	11.9	11.7	12.7	12.4	13.4	13.2
SIZE MEAN	13.3	13.1	14.1	13.8	14.8	14.6
DESIGN MAXIMUM	14.7	14.5	15.5	15.2	16.2	16.0

EIGHT SIZE SYSTEM (SD= .8 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.9	11.6	12.5	12.3	13.1	12.9	13.7	13.5
SIZE MEAN	13.2	13.0	13.8	13.6	14.5	14.2	15.1	14.9
DESIGN MAXIMUM	14.6	14.4	15.2	15.0	15.8	15.6	16.5	16.2

TWELVE SIZE SYSTEM (SD= .8 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	11.9	11.7	11.6	12.5	12.3	12.2	13.1	13.0	12.8	13.7	13.6	13.4
SIZE MEAN	13.3	13.1	12.9	13.9	13.7	13.5	14.5	14.3	14.2	15.1	15.0	14.8
DESIGN MAXIMUM	14.6	14.5	14.3	15.2	15.1	14.9	15.9	15.7	15.5	16.5	16.3	16.2



(59) INTERSCYE CURVATURE, MAXIMUM

SUBJECT STANDS, TORSO BENT FORWARD FROM THE WAIST AT AN ANGLE OF ABOUT 90 DEGREES AND ARMS HANGING RELAXED. WITH A TAPE, MEASURE THE SURFACE DISTANCE ACROSS THE BACK BETWEEN THE POSTERIOR SCYE-POINT LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
19.45	1.29	6.7%	16.2	17.3	17.8	18.6	19.4	20.3	21.1	21.6	22.5

FOUR SIZE SYSTEM (SD=1.1 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	16.6	17.5	18.4	19.3
SIZE MEAN	18.5	19.3	20.2	21.1
DESIGN MAXIMUM	20.3	21.2	22.0	22.9

SIX SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	16.7	16.9	17.7	17.9	18.8	19.0
SIZE MEAN	18.5	18.7	19.6	19.8	20.7	20.9
DESIGN MAXIMUM	20.3	20.5	21.4	21.6	22.5	22.7

EIGHT SIZE SYSTEM (SD=1.1 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	16.6	16.8	17.4	17.6	18.3	18.5	19.2	19.3
SIZE MEAN	18.4	18.6	19.3	19.4	20.1	20.3	21.0	21.2
DESIGN MAXIMUM	20.2	20.4	21.1	21.2	21.9	22.1	22.8	23.0

TWELVE SIZE SYSTEM (SD=1.1 IN.)

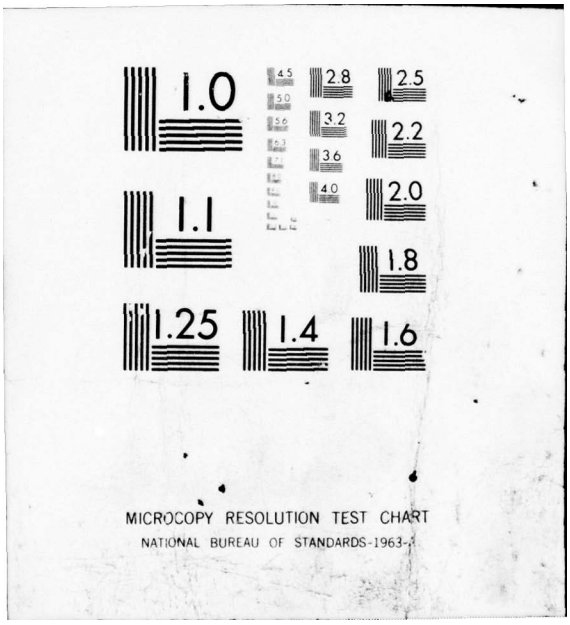
	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	16.6	16.7	16.8	17.4	17.5	17.7	18.3	18.4	18.5	19.1	19.3	19.4
SIZE MEAN	18.4	18.5	18.6	19.2	19.4	19.5	20.1	20.2	20.4	21.0	21.1	21.2
DESIGN MAXIMUM	20.2	20.3	20.4	21.0	21.2	21.3	21.9	22.0	22.2	22.8	22.9	23.0

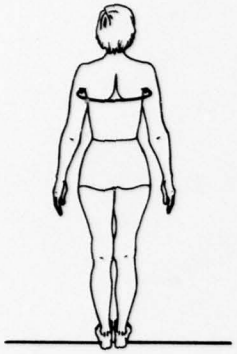
AD-A072 376 ANTHROPOLOGY RESEARCH PROJECT INC YELLOW SPRINGS OH F/G 6/17
HEIGHT/WEIGHT SIZING PROGRAMS FOR WOMEN'S PROTECTIVE GARMENTS.(U)
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



(60) BACK CURVATURE AT BUST

SUBJECT STANDS ERECT WITH HANDS ON HIPS. WITH A TAPE, MEASURE THE SURFACE DISTANCE ACROSS THE BACK BETWEEN THE MIDAXILLARY LANDMARKS AT THE LEVEL OF THE BUSTPOINT LANDMARKS.

TOTAL SAMPLE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.59	1.20	7.2%	13.9	14.7	15.1	15.8	16.5	17.4	18.3	18.9	19.9

FOUR SIZE SYSTEM (SD=1.0 IN.)

	SMALL	MEDIUM	LARGE	EXTRA LARGE
DESIGN MINIMUM	14.0	14.9	15.7	16.6
SIZE MEAN	15.7	16.5	17.4	18.2
DESIGN MAXIMUM	17.3	18.1	19.0	19.8

SIX SIZE SYSTEM (SD=1.0 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG
DESIGN MINIMUM	14.2	13.9	15.3	15.0	16.4	16.1
SIZE MEAN	15.9	15.6	16.9	16.7	18.0	17.8
DESIGN MAXIMUM	17.5	17.2	18.6	18.3	19.7	19.4

EIGHT SIZE SYSTEM (SD=1.0 IN.)

	SMALL REGULAR	SMALL LONG	MEDIUM REGULAR	MEDIUM LONG	LARGE REGULAR	LARGE LONG	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.1	13.9	15.0	14.7	15.9	15.6	16.7	16.5
SIZE MEAN	15.7	15.5	16.6	16.4	17.5	17.3	18.4	18.1
DESIGN MAXIMUM	17.4	17.1	18.3	18.0	19.1	18.9	20.0	19.8

TWELVE SIZE SYSTEM (SD=1.0 IN.)

	SMALL SHORT	SMALL REGULAR	SMALL LONG	MEDIUM SHORT	MEDIUM REGULAR	MEDIUM LONG	LARGE SHORT	LARGE REGULAR	LARGE LONG	X-LARGE SHORT	X-LARGE REGULAR	X-LARGE LONG
DESIGN MINIMUM	14.1	14.0	13.8	15.0	14.8	14.7	15.9	15.7	15.5	16.8	16.6	16.4
SIZE MEAN	15.8	15.6	15.4	16.7	16.5	16.3	17.5	17.4	17.2	18.4	18.2	18.0
DESIGN MAXIMUM	17.4	17.2	17.0	18.3	18.1	17.9	19.2	19.0	18.8	20.0	19.9	19.7

SECTION V

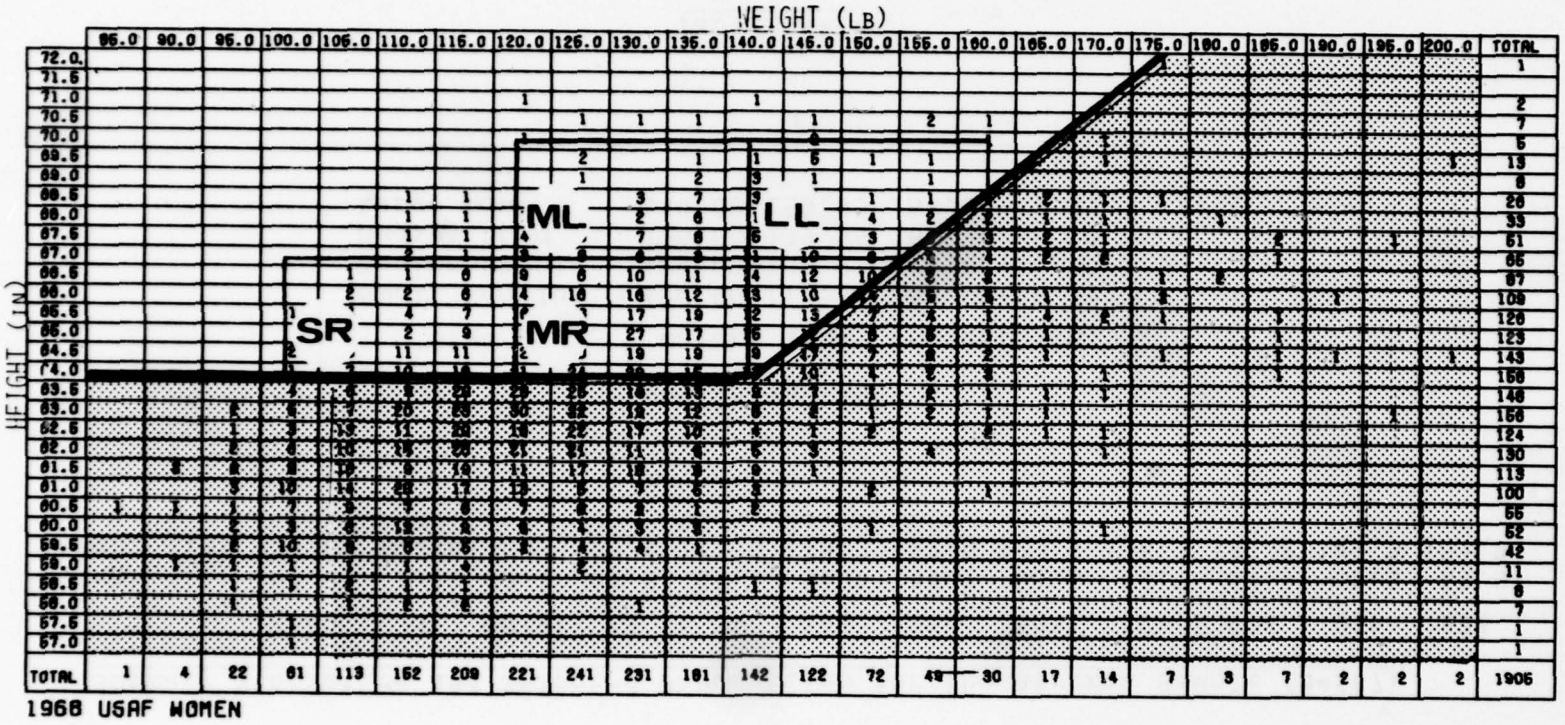
A HEIGHT/WEIGHT PROGRAM FOR A WOMEN'S AIRCREW POPULATION

Presented in this section is a sizing program developed to accommodate a subgroup of Air Force women whose height and weight measurements meet criteria for flying personnel. Under ideal conditions, sizing programs are based on an analysis of body size data obtained from a sample derived from the specific population to be fitted. However, this is not always possible or even altogether necessary and, in this case, women fliers do not yet exist in sufficient numbers to constitute a valid sample. Thus the "aircrew" subjects on which this sizing program is based are not, in fact, fliers, but women drawn from a larger pool of USAF personnel whose height and weight dimensions meet current flying standards. Because this group is considerably more homogeneous than the larger USAF population, four sizes are sufficient to meet the foreseeable needs for protective garments.

Table 9 is a bivariate table of the total USAF women's survey population with the subgroup of qualified aircrew delineated on the upper left. Summary statistics for the aircrew sample along with size categories and a suggested tariff appear in Table 10. Sizing data for 58 dimensions are given on the pages following.

TABLE 9

BIVARIATE DISTRIBUTION ILLUSTRATING FOUR-SIZE HEIGHT/WEIGHT PROGRAM FOR WOMEN'S AIRCREW



HEIGHT (IN)	85.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0	TOTAL
72.0																			1						1
71.5																									
71.0								1				1													2
70.5									1	1	1		1		2	1									7
70.0													0			1		1							5
69.5									2		1	1	5	1	1			1						1	13
69.0									1		2	3	1		1										8
68.5						1	1			3	7	9		1	1		2	1	1						26
68.0						1	1			2	6	11		4	2	1	1			1					33
67.5						1	1			7	8	6		3	3	2	1	1			2		1		51
67.0						2	1			6	5	11		6	4	1	1	2			1				65
66.5					1	1	0			10	11	14		12	10	2	2		1	1					87
66.0					2	2	6			16	12	13		10	5	3	1	1			1				109
65.5						4	7			17	19	12		13	7	2	1	1	2						126
65.0						2	9			27	17	16		8	6	1	1				1				129
64.5						11	11			19	19	9		7	2	2	1		1		1	1		1	143
64.0														4	2	2		1			1				158
63.5														1	1	1	1	1							148
63.0														1	2	1							1		156
62.5														2		2	1	1							124
62.0															1			1							130
61.5																									113
61.0														1		1									100
60.5																									65
60.0														1				1							52
59.5																									42
59.0																									11
58.5																									8
58.0																									7
57.5																									1
57.0																									1
TOTAL	1	4	22	61	113	152	209	221	241	291	181	142	122	72	48	30	17	14	7	3	7	2	2	2	1905

TABLE 10

SIZE CATEGORIES AND TARIFF FOR FOUR-SIZE HEIGHT/WEIGHT PROGRAM FOR WOMEN'S AIRCREW

Summary Statistics and Selected Percentiles for the Aircrew Sample (n=587)

	Mean	SD	CV(%)	1%	5%	10%	25%	50%	75%	90%	95%	99%
Height (in)	64.84	1.38	2.1	63.9	64.1	64.3	64.7	65.6	66.7	67.9	68.5	69.5
Weight (lb)	129.07	10.75	8.3	103.4	111.0	115.2	122.0	129.2	136.1	142.8	147.3	157.9

Size Categories

Size	Weight (lb)	Height (in)
Small Regular	100.00-119.99	64.00-66.99
Medium Regular	120.00-139.99	64.00-66.99
Medium Long	120.00-139.99	67.00-69.99
Large Long	140.00-159.99	67.00-69.99

Tariff (%)

Small Regular	Medium Regular	Medium Long	Large Long
16.7	61.3	11.6	10.4

FOUR-SIZE HEIGHT/WEIGHT PROGRAM
USAF AIRCREW

VARIABLE NO. 3 CERVICALE HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
56.60	1.31	2.3	54.5	54.8	55.0	55.6	56.4	57.5	58.4	59.0	60.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	54.7	54.8	57.5	57.6
SIZE MEAN	56.2	56.3	58.9	59.0
DESIGN MAXIMUM	57.7	57.8	60.4	60.5

(SD= .9 IN.)

VARIABLE NO. 4 ACROMIAL HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
53.64	1.38	2.6	51.1	51.7	52.0	52.6	53.5	54.6	55.6	56.2	56.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	51.6	51.8	54.3	54.5
SIZE MEAN	53.2	53.4	55.9	56.0
DESIGN MAXIMUM	54.8	54.9	57.5	57.6

(SD= .9 IN.)

VARIABLE NO. 5 SUPRASTERNALE HGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
53.68	1.28	2.4	51.5	51.9	52.1	52.7	53.5	54.5	55.5	56.1	57.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	51.8	52.0	54.5	54.6
SIZE MEAN	53.3	53.4	55.9	56.0
DESIGN MAXIMUM	54.7	54.8	57.3	57.4

(SD= .9 IN.)

VARIABLE NO. 6 CHEST HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
48.25	1.41	2.9	45.4	46.1	46.5	47.2	48.1	49.2	50.2	50.8	51.8

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	46.3	46.2	48.7	48.6
SIZE MEAN	48.1	48.0	50.4	50.3
DESIGN MAXIMUM	49.8	49.7	52.2	52.0

(SD=1.0 IN.)

VARIABLE NO. 7 WAIST HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
40.85	1.22	3.0	38.3	39.0	39.3	39.9	40.8	41.7	42.5	43.0	43.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	39.1	39.1	41.1	41.2
SIZE MEAN	40.6	40.6	42.7	42.7
DESIGN MAXIMUM	42.1	42.2	44.2	44.2

(SD= .9 IN.)

VARIABLE NO. 8 ABDOMINAL EXT HGT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
38.07	1.22	3.2	35.6	36.2	36.5	37.2	38.0	38.9	39.7	40.2	41.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	36.3	36.2	38.3	38.1
SIZE MEAN	37.9	37.8	39.9	39.7
DESIGN MAXIMUM	39.5	39.4	41.5	41.3

(SD=1.0 IN.)

VARIABLE NO. 9 TROCHANTERIC HGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.75	1.25	3.7	31.1	31.8	32.2	32.9	33.7	34.6	35.4	35.9	36.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	31.9	31.9	33.7	33.7
SIZE MEAN	33.5	33.6	35.4	35.4
DESIGN MAXIMUM	35.2	35.2	37.1	37.1

(SD=1.0 IN.)

VARIABLE NO. 10 BUTTOCK HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.56	1.20	3.6	30.7	31.7	32.1	32.7	33.5	34.3	35.2	35.7	36.4

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	31.6	31.7	33.4	33.5
SIZE MEAN	33.3	33.3	35.1	35.1
DESIGN MAXIMUM	35.0	35.0	36.7	36.8

(SD=1.0 IN.)

VARIABLE NO. 11 CROTCH HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
30.48	1.17	3.9	28.0	28.7	29.1	29.7	30.4	31.3	32.1	32.6	33.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	28.7	28.7	30.4	30.4
SIZE MEAN	30.4	30.3	32.0	32.0
DESIGN MAXIMUM	32.0	31.9	33.6	33.6

(SD=1.0 IN.)

VARIABLE NO. 12 GLUTEAL FURROW HGT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
29.77	1.17	3.9	27.0	27.9	28.3	29.0	29.7	30.6	31.3	31.8	32.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	28.1	27.9	29.7	29.5
SIZE MEAN	29.8	29.6	31.3	31.1
DESIGN MAXIMUM	31.4	31.2	33.0	32.8

(SD=1.0 IN.)

VARIABLE NO. 13 TIBIALE HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
17.17	.76	4.4	15.6	16.0	16.2	16.6	17.1	17.7	18.2	18.5	19.1

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	16.0	16.0	16.9	16.9
SIZE MEAN	17.1	17.1	18.0	18.0
DESIGN MAXIMUM	18.1	18.1	19.0	19.0

(SD= .6 IN.)

VARIABLE NO. 14 ANKLE HEIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
4.52	.56	2.3	3.5	3.7	3.8	4.1	4.5	4.9	5.3	5.5	5.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	3.7	3.7	3.9	3.9
SIZE MEAN	4.5	4.5	4.7	4.7
DESIGN MAXIMUM	5.4	5.4	5.6	5.6

(SD= .5 IN.)

VARIABLE NO. 15 LAT"L MALLEOLUS HT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
2.74	.21	7.6	2.3	2.4	2.5	2.6	2.8	2.9	3.0	3.1	3.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	2.4	2.4	2.5	2.5
SIZE MEAN	2.7	2.7	2.9	2.9
DESIGN MAXIMUM	3.1	3.1	3.2	3.2

(SD= .2 IN.)

VARIABLE NO. 16 NECK CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.32	.59	4.4	12.0	12.3	12.6	12.9	13.3	13.7	14.1	14.3	14.8

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	12.0	12.4	12.5	12.9
SIZE MEAN	12.9	13.4	13.4	13.8
DESIGN MAXIMUM	13.8	14.3	14.3	14.7

(SD= .6 IN.)

VARIABLE NO. 17 SCYE CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.64	.72	4.9	13.0	13.5	13.7	14.1	14.6	15.1	15.6	15.9	16.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	12.8	13.7	13.6	14.5
SIZE MEAN	13.8	14.7	14.6	15.5
DESIGN MAXIMUM	14.8	15.7	15.6	16.5

(SD= .6 IN.)

VARIABLE NO. 18 AXILLARY ARM CIRC

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.61	.69	6.5	9.1	9.5	9.7	10.1	10.6	11.1	11.5	11.8	12.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	8.6	9.7	9.3	10.4
SIZE MEAN	9.6	10.7	10.3	11.4
DESIGN MAXIMUM	10.6	11.7	11.3	12.4

(SD= .6 IN.)

VARIABLE NO. 19 BICEPS C, FLEXED

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.88	.67	6.8	8.4	8.8	9.0	9.4	9.9	10.3	10.7	11.0	11.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	8.4	9.5	9.1	10.2
SIZE MEAN	9.4	10.5	10.0	11.1
DESIGN MAXIMUM	10.3	11.4	11.0	12.1

(SD= .6 IN.)

VARIABLE NO. 20 ELBOW CIRC, FLEXED

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.78	.64	5.9	9.4	9.7	9.9	10.3	10.8	11.2	11.6	11.9	12.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	9.4	9.8	9.9	10.3
SIZE MEAN	10.3	10.8	10.9	11.3
DESIGN MAXIMUM	11.3	11.7	11.8	12.3

(SD= .6 IN.)

VARIABLE NO. 21 FOREARM C, FLEXED

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.83	.50	5.1	8.6	9.0	9.2	9.5	9.8	10.1	10.5	10.6	11.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	8.6	9.2	9.1	9.7
SIZE MEAN	9.2	9.9	9.7	10.4
DESIGN MAXIMUM	9.9	10.5	10.4	11.0

(SD= .4 IN.)

VARIABLE NO. 22 WRIST CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
5.95	.25	4.2	5.3	5.5	5.6	5.8	5.9	6.1	6.3	6.4	6.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	5.4	5.6	5.6	5.8
SIZE MEAN	5.8	5.9	6.0	6.2
DESIGN MAXIMUM	6.1	6.3	6.4	6.6

(SD= .2 IN.)

VARIABLE NO. 23 CHEST CIRC AT SCYE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.04	1.48	4.5	29.6	30.8	31.3	32.0	32.9	34.0	35.0	35.6	36.6

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	28.9	31.1	30.6	32.7
SIZE MEAN	31.1	33.2	32.7	34.9
DESIGN MAXIMUM	33.2	35.3	34.8	37.0

(SD=1.3 IN.)

VARIABLE NO. 24 BUST CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
35.07	1.62	4.6	31.3	32.5	33.1	34.0	35.0	36.1	37.2	37.9	39.4

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	30.4	32.9	32.2	34.7
SIZE MEAN	32.8	35.3	34.6	37.1
DESIGN MAXIMUM	35.2	37.7	37.1	39.6

(SD=1.5 IN.)

VARIABLE NO. 25 SHOULDER CIRCUMFER

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
39.50	1.57	4.0	36.4	37.1	37.5	38.4	39.4	40.5	41.6	42.2	43.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	35.3	37.5	37.1	39.4
SIZE MEAN	37.4	39.6	39.2	41.5
DESIGN MAXIMUM	39.5	41.7	41.3	43.5

(SD=1.3 IN.)

VARIABLE NO. 26 CHEST C BELOW BUST

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
29.14	1.50	5.2	25.9	26.7	27.2	28.1	29.1	30.1	31.1	31.8	33.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	25.1	27.2	26.7	28.8
SIZE MEAN	27.2	29.3	28.8	30.9
DESIGN MAXIMUM	29.4	31.4	31.0	33.0

(SD=1.3 IN.)

VARIABLE NO. 27 WAIST CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
26.25	1.51	5.7	23.2	23.9	24.3	25.2	26.2	27.2	28.1	28.8	30.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	21.7	24.2	23.6	26.0
SIZE MEAN	24.0	26.4	25.8	28.3
DESIGN MAXIMUM	26.2	28.7	28.1	30.5

(SD=1.4 IN.)

VARIABLE NO. 28 ABDOMINAL EXT CIRC

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
33.40	2.11	6.3	28.8	29.8	30.5	32.0	33.5	34.8	35.9	36.7	38.4

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	27.3	30.5	29.6	32.8
SIZE MEAN	30.4	33.6	32.7	35.9
DESIGN MAXIMUM	33.6	36.8	35.9	39.1

(SD=1.9 IN.)

VARIABLE NO. 29 HIP CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
37.52	1.73	4.6	33.6	34.7	35.3	36.3	37.5	38.6	39.7	40.3	41.6

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	32.7	35.4	35.0	37.7
SIZE MEAN	34.9	37.6	37.2	39.9
DESIGN MAXIMUM	37.1	39.8	39.3	42.1
(SD=1.3 IN.)				

VARIABLE NO. 30 BUTTOCK CIRC, SIT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
39.38	1.65	4.2	35.6	36.7	37.3	38.3	39.3	40.4	41.4	42.2	43.8

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	34.6	37.4	37.0	39.8
SIZE MEAN	36.7	39.5	39.1	41.9
DESIGN MAXIMUM	38.8	41.6	41.2	44.0
(SD=1.3 IN.)				

VARIABLE NO. 31 UPPER THIGH CIRCUM

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
21.69	1.28	5.9	18.7	19.5	19.9	20.8	21.7	22.6	23.3	23.7	24.6

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	18.2	20.1	19.6	21.6
SIZE MEAN	19.9	21.8	21.3	23.2
DESIGN MAXIMUM	21.5	23.5	22.9	24.9
(SD=1.0 IN.)				

VARIABLE NO. 32 KNEE CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.35	.70	4.9	12.6	13.2	13.5	13.9	14.4	14.8	15.3	15.5	15.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	12.5	13.4	13.3	14.3
SIZE MEAN	13.5	14.4	14.3	15.2
DESIGN MAXIMUM	14.4	15.3	15.2	16.2

(SD= .6 IN.)

VARIABLE NO. 33 CALF CIRCUM, RIGHT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.42	.75	5.6	11.8	12.2	12.5	12.9	13.4	13.9	14.4	14.7	15.1

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	11.5	12.4	12.3	13.2
SIZE MEAN	12.6	13.5	13.3	14.2
DESIGN MAXIMUM	13.6	14.5	14.3	15.2

(SD= .6 IN.)

VARIABLE NO. 34 ANKLE CIRCUMFERENCE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.36	.44	5.3	7.4	7.6	7.8	8.1	8.4	8.7	8.9	9.1	9.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	7.3	7.7	7.7	8.1
SIZE MEAN	8.0	8.4	8.4	8.7
DESIGN MAXIMUM	8.7	9.1	9.1	9.4

(SD= .4 IN.)

VARIABLE NO. 35 VERTICAL TRUNK CIR

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
61.64	1.97	3.2	57.3	58.3	59.0	60.2	61.6	63.0	64.2	64.9	66.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	56.8	58.8	59.8	61.9
SIZE MEAN	59.5	61.6	62.6	64.7
DESIGN MAXIMUM	62.3	64.4	65.3	67.4

(SD=1.7 IN.)

VARIABLE NO. 36 VERTICAL TRK C,SIT

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
60.12	1.93	3.2	55.7	57.0	57.7	58.8	60.1	61.4	62.6	63.3	64.4

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	55.7	57.3	58.7	60.3
SIZE MEAN	58.4	60.0	61.3	63.0
DESIGN MAXIMUM	61.1	62.7	64.0	65.7

(SD=1.6 IN.)

VARIABLE NO. 37 SHOULDER LENGTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
5.90	.39	6.6	4.9	5.2	5.4	5.6	5.9	6.1	6.4	6.6	6.8

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	5.2	5.2	5.4	5.5
SIZE MEAN	5.8	5.9	6.0	6.1
DESIGN MAXIMUM	6.4	6.5	6.6	6.7

(SD= .4 IN.)

VARIABLE NO. 38 NECK-BUST POINT L

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
10.06	.65	6.5	8.4	8.9	9.2	9.6	10.1	10.5	10.9	11.1	11.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	8.5	9.0	9.0	9.5
SIZE MEAN	9.5	10.1	10.0	10.6
DESIGN MAXIMUM	10.6	11.1	11.1	11.6

(SD= .6 IN.)

VARIABLE NO. 39 STRAP LENGTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
25.75	1.29	5.0	22.8	23.6	24.1	24.8	25.7	26.6	27.4	27.9	28.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	22.5	23.8	23.7	25.0
SIZE MEAN	24.6	25.8	25.7	27.0
DESIGN MAXIMUM	26.6	27.8	27.8	29.0

(SD=1.2 IN.)

VARIABLE NO. 40 ANTERIOR WAIST LTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.43	.71	5.3	11.8	12.3	12.5	12.9	13.4	13.9	14.3	14.6	15.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	12.0	12.3	12.6	12.9
SIZE MEAN	13.1	13.4	13.7	14.0
DESIGN MAXIMUM	14.2	14.5	14.8	15.1

(SD= .7 IN.)

VARIABLE NO. 41 WAIST BACK

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.37	.76	4.7	14.6	15.1	15.4	15.8	16.3	16.9	17.4	17.7	18.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	15.1	15.1	15.8	15.7
SIZE MEAN	16.3	16.3	17.0	17.0
DESIGN MAXIMUM	17.5	17.5	18.2	18.2

(SD= .7 IN.)

VARIABLE NO. 42 SPINE-TO-SCYE LGTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.07	.53	6.6	6.9	7.3	7.4	7.7	8.0	8.4	8.8	9.0	9.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	7.0	7.3	7.3	7.6
SIZE MEAN	7.8	8.1	8.1	8.4
DESIGN MAXIMUM	8.6	8.9	8.9	9.2

(SD= .5 IN.)

VARIABLE NO. 43 SPINE-TO-ELBOW LTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
21.45	.80	3.7	19.8	20.2	20.4	20.9	21.4	22.0	22.5	22.8	23.4

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	19.9	20.3	20.9	21.2
SIZE MEAN	21.1	21.4	22.0	22.4
DESIGN MAXIMUM	22.2	22.5	23.2	23.5

(SD= .7 IN.)

VARIABLE NO. 44 SPINE-TO-WRIST LTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
32.09	1.05	3.3	30.0	30.5	30.8	31.3	32.0	32.7	33.4	33.9	34.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	30.2	30.5	31.6	31.9
SIZE MEAN	31.6	32.0	33.0	33.4
DESIGN MAXIMUM	33.1	33.4	34.5	34.8

(SD= .9 IN.)

VARIABLE NO. 45 SLEEVE INSEAM

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
18.00	.78	4.3	16.4	16.8	17.0	17.4	17.9	18.5	19.0	19.3	19.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	16.8	16.7	17.6	17.5
SIZE MEAN	18.0	17.9	18.8	18.7
DESIGN MAXIMUM	19.2	19.1	20.0	19.9

(SD= .7 IN.)

VARIABLE NO. 46 ACROMION-RADIALE L

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
12.58	.52	4.1	11.4	11.7	11.9	12.2	12.6	12.9	13.2	13.4	14.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	11.7	11.8	12.3	12.4
SIZE MEAN	12.5	12.5	13.1	13.1
DESIGN MAXIMUM	13.2	13.3	13.9	13.9

(SD= .5 IN.)

VARIABLE NO. 47 RADIALE-STYLION L

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.51	.47	4.9	8.5	8.8	8.9	9.2	9.5	9.8	10.1	10.4	10.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	8.7	8.8	9.2	9.2
SIZE MEAN	9.4	9.5	9.9	9.9
DESIGN MAXIMUM	10.1	10.2	10.6	10.6

(SD= .4 IN.)

VARIABLE NO. 48 BIACROMIAL BREADTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
14.31	.62	4.3	12.8	13.3	13.5	13.9	14.3	14.7	15.1	15.3	15.8

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	13.1	13.4	13.6	13.9
SIZE MEAN	14.0	14.3	14.5	14.8
DESIGN MAXIMUM	14.9	15.2	15.4	15.7

(SD= .6 IN.)

VARIABLE NO. 49 BIDELTOID BREADTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.46	.75	4.5	14.6	15.3	15.5	16.0	16.4	17.0	17.4	17.7	18.2

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	14.5	15.5	15.3	16.3
SIZE MEAN	15.5	16.5	16.3	17.3
DESIGN MAXIMUM	16.5	17.5	17.3	18.3

(SD= .6 IN.)

VARIABLE NO. 50 BUST PT-BUST PT BR

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
7.26	.51	7.1	6.0	6.4	6.6	6.9	7.2	7.6	7.9	8.2	8.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	6.0	6.5	6.4	6.8
SIZE MEAN	6.8	7.3	7.2	7.7
DESIGN MAXIMUM	7.7	8.1	8.0	8.5

(SD= .5 IN.)

VARIABLE NO. 51 CHEST BREADTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
11.00	.64	5.8	9.6	10.0	10.2	10.6	11.0	11.4	11.8	12.1	12.6

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	9.4	10.1	10.0	10.7
SIZE MEAN	10.3	11.0	10.9	11.6
DESIGN MAXIMUM	11.3	12.0	11.9	12.6

(SD= .6 IN.)

VARIABLE NO. 52 WAIST BREADTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.49	.60	6.3	8.1	8.5	8.7	9.1	9.5	9.9	10.3	10.6	11.0

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	7.9	8.7	8.6	9.3
SIZE MEAN	8.8	9.5	9.4	10.2
DESIGN MAXIMUM	9.7	10.4	10.3	11.1

(SD= .5 IN.)

VARIABLE NO. 53 HIP BREADTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.80	.69	5.0	12.2	12.7	12.9	13.3	13.8	14.2	14.7	14.9	15.6

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	12.0	12.8	12.7	13.6
SIZE MEAN	13.0	13.8	13.7	14.6
DESIGN MAXIMUM	14.0	14.8	14.7	15.6

(SD= .6 IN.)

VARIABLE NO. 54 CHEST DEPTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
9.20	.60	6.5	7.9	8.2	8.4	8.8	9.2	9.6	10.0	10.2	10.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	7.6	8.4	8.2	9.0
SIZE MEAN	8.5	9.3	9.1	9.9
DESIGN MAXIMUM	9.4	10.2	10.0	10.8

(SD= .5 IN.)

VARIABLE NO. 55 WAIST DEPTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
6.61	.45	6.7	5.6	5.9	6.0	6.3	6.6	6.9	7.1	7.3	7.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	5.2	5.9	5.7	6.4
SIZE MEAN	6.0	6.7	6.4	7.1
DESIGN MAXIMUM	6.7	7.4	7.2	7.9

(SD= .5 IN.)

VARIABLE NO. 56 ABDOMINAL EXT DPTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.10	.57	7.0	6.8	7.2	7.4	7.7	8.1	8.5	8.8	9.1	9.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	6.3	7.3	7.0	7.9
SIZE MEAN	7.2	8.2	7.9	8.8
DESIGN MAXIMUM	8.1	9.1	8.8	9.7

(SD= .5 IN.)

VARIABLE NO. 57 BUTTOCK DEPTH

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
8.24	.51	6.2	7.1	7.4	7.6	7.9	8.2	8.6	8.9	9.1	9.5

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	6.7	7.6	7.3	8.1
SIZE MEAN	7.5	8.3	8.1	8.9
DESIGN MAXIMUM	8.3	9.1	8.8	9.6

(SD= .5 IN.)

VARIABLE NO. 58 INTERSCYE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
13.76	.90	6.5	11.6	12.2	12.6	13.1	13.8	14.4	14.9	15.2	15.7

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	11.7	12.4	12.3	13.0
SIZE MEAN	13.1	13.8	13.6	14.3
DESIGN MAXIMUM	14.5	15.2	15.0	15.7

(SD= .8 IN.)

VARIABLE NO. 59 INTERSCYE, MAXIMUM

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
19.63	1.22	6.2	16.4	17.6	18.1	18.9	19.7	20.4	21.1	21.6	22.3

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	17.0	17.8	17.9	18.7
SIZE MEAN	18.8	19.6	19.8	20.6
DESIGN MAXIMUM	20.6	21.4	21.6	22.4

(SD=1.1 IN.)

VARIABLE NO. 60 BACK CURVATURE

MEAN	SD	CV	1%	5%	10%	25%	50%	75%	90%	95%	99%
16.53	1.03	6.3	14.2	14.9	15.2	15.8	16.5	17.2	17.9	18.3	18.9

	SMALL REGULAR	MEDIUM REGULAR	MEDIUM LONG	LARGE LONG
DESIGN MINIMUM	14.0	15.0	14.8	15.8
SIZE MEAN	15.6	16.6	16.4	17.4
DESIGN MAXIMUM	17.3	18.3	18.1	19.0

(SD=1.0 IN.)

SECTION VI

SELECTION OF THE APPROPRIATE SIZING PROGRAM

The goal of any sizing program is to achieve a good fit for maximum numbers of people with the minimum number of sizes. To this end, we offer the highly cost-effective four- and six-size systems and, at the other end of the spectrum, the better-fitting eight- and 12-size schemes. It goes without saying that less than four sizes could not reasonably be expected to cover a population which spans 120 pound differences in weight and 15 inch differences in height. On the other hand, while one could expand considerably beyond 12 sizes using more and more discrete categories of height and weight, both statistics and experience show that, in fact, the increase in the number of sizes much beyond 12 has limited usefulness in terms of improved fit and significant penalties in terms of cost and logistics. Decreased sizing benefits from increases in size categories occur because of the less than perfect relationships between the key sizing dimensions and all the other dimensional variables built into a garment. That is, a size for every inch of height (instead of every three inches) and every 10 pounds of weight (instead of every 20 pounds) would not necessarily improve the quality of the fit at waist or ankle.

It will be noted by readers studying the four sizing programs that weight categories are very similar for all of them. Only the six-size program deviates somewhat from the 20-pound increments used in the others. The factor which chiefly differentiates the four systems is an increasing variation in height increments associated with each of the weight categories. This occurs because girths and other fleshy body dimensions highly correlated with weight are somewhat flexible and deformable and, in addition, are not expected to be snugly fitted by a large variety of protective garments. Height related dimensions, on the other hand, are much more inflexible. Thus, trousers, in most cases, are not expected to conform to the contours of the leg; many materials will provide some "give" around hips or thigh. By comparison, a trouser leg can be too short but even a half-inch too long means it will be stepped on; a half-inch too little in a crotch measurement can be untenable.

Given the impetus toward the least number of sizes as a constant, the selection of an appropriate sizing system will depend largely on two factors: the need for a close fit, and the adjustability built into the garment.

Since the design values for a given dimension are likely to fall near the upper or lower limits of each size range (as explained in Section II), it is incumbent upon the designer to study the ranges given for the dimensions of importance and decide whether the smaller or larger persons in the size range will be functionally fitted by a waist height or neck circumference

considerably at variance with their body sizes. Considering the bust circumference of a garment, for example, the designer may consult the data presented in the four-size system. The design value for bust circumference for this garment would be based on measurements found in the upper right-hand sections of each size category so as to accommodate the largest persons in that group. The question to be answered by the designer is whether a garment cut for a bust circumference of some 37.4 inches ("medium" in the four-size system) could also be worn by persons with bust circumferences of 32.7 inches (represented by data in the lower left-hand area of the size category). Naturally, it would be somewhat large for such persons, but would it work? It is up to the designer to decide which variables are the dimensions of importance. In some cases girths will be more significant than heights; in other garments, close fit around the neck, wrists and ankles will assume importance. Often, the designer will wish to focus on sitting dimensions to achieve an optimum fit in a garment chiefly worn by a seated operator.

In general, loose protective garments designed to cover other clothing, such as disposable chemical defense coveralls or exposure suits, which can be cut generously, are candidates for the four- and six-size program. For most other items where closer conformity to body size is required, an eight- or 12-size program will probably be the system of choice. In the case of flight garments, of course, the designer will probably elect to use the four-size "aircrew" program; since it was devised for a relatively homogeneous population, four sizes in this program offer as close a fit for that group as 12 sizes would for the total USAF population.

Adjustability will play a major role in the choice of sizing systems. Ways of designing adjustability into garments are limited only by the inventiveness of designers; traditionally they include lacing, inflatable bladders, elastic encircling waist, wrist or ankle girths and alternate fasteners. Even the type of material used will have some effect on the fit tolerances of the garment. In the case of one RAF chemical defnese undergarment, arms and legs were cut at maximum length and designed to be sheared off by individual wearers to provide a "custom" fit. Such a feature might be sufficient to reduce the need from six to four sizes for a comparable disposable protective USAF garment.

Selection of an appropriate sizing program, then, is based on the designer's understanding of how closely the end item must fit and, alternatively, how much leeway can be allowed without compromising the garment's protective capacity or the wearer's functioning. It will be based on his knowledge of the adjustability of the garment and the range of body sizes such adjustment will accommodate. And, finally, it will depend on a careful study of the sizing program itself with a discriminating eye toward within-a-size variability for dimensions of importance.

APPENDIX

DEFINITION OF TERMS

Abdominal extension: the maximum anterior protrusion of the abdomen.

Abduct: to move away from the axis of the body or one of its parts.

Acromiale: the most lateral point of the lateral edge of the spine of the shoulder blade; the tip of the shoulder.

Ankle landmark: a mark placed on the medial side of the ankle at its minimum circumference.

Anterior: pertaining to the front of the body; opposed to posterior.

Axilla: the armpit.

Biceps: the large muscle on the anterior surface of the upper arm.

Bustpoint: the most anterior protrusion of the right bra pocket.

Buttock landmark: a mark placed on the maximum posterior protrusion of the right buttock.

Calf landmark: a mark placed on the medial side of the calf at the level of its maximum circumference.

Cervicale: the protrusion of the spinal column at the base of the neck caused by the tip of the spine of the seventh cervical vertebra.

Deltoid landmark: a mark placed on the most lateral protrusion of the large muscle on the lateral border of the upper arm in the shoulder region.

Distal: the end of a body segment farthest from the head; opposite to proximal.

Femur: the thigh bone.

Forearm landmark: a mark placed on the medial side of the forearm six mm distal to the crotch of the elbow; the mark is placed when the subject's upper arm is horizontal, her elbow flexed at 90 degrees and her fist tightly clenched.

Gluteal furrow: the furrow at the juncture of the buttock and the thigh.

DEFINITION OF TERMS
(Continued)

Hip landmark: A mark placed on the hip nine inches below the waist landmark.

Inferior: below in relation to another structure; lower.

Interscye: see Scye.

Knee landmark: a horizontal mark is placed midway between the upper and lower borders of the patella (kneecap).

Lateral: lying near or towards the sides of the body; opposed to medial.

Lateral malleolus: the lateral bony protrusion of the ankle.

Medial: lying near or toward the midline of the body; opposed to lateral.

Midaxillary: the center of the armpit.

Midshoulder: a point half the distance between the neck and acromiale (tip of the shoulder).

Neck landmarks: anterior, lateral and posterior marks are placed along the top edge of a loop drawn over the subject's head and tightened around the neck at the neck-shoulder juncture; the loop is adjusted so that the plane formed is perpendicular to the long axis of the neck.

Patella: the kneecap.

Posterior: pertaining to the back of the body; opposed to anterior.

Proximal: the end of a body segment nearest the head; opposed to distal.

Radiale: the uppermost point on the lateral margin of the proximal end of the radius; elbow.

Radius: the forearm bone on the thumb side of the arm.

Scye: a tailoring term designating the armhole of a garment; scye landmarks are a series of marks drawn at the axillary folds formed by the juncture of the arms and trunk on the anterior and posterior sides of the body.

Stylion: the most distal point of the radius; wrist.

DEFINITION OF TERMS
(Continued)

Suprasternale: the lowest point in the notch in the upper edge of the breastbone.

Tibiale: the uppermost point of the medial margin of the tibia (shinbone).

Trochanterion: the tip of the bony lateral protrusion of the proximal end of the femur.

Ulna: one of the bones of the forearm on the little finger side.

Waist landmarks: marks placed on the anterior, posterior and lateral sides of a narrow elastic belt which the subject is asked to place at her "normal" waist level; the belt is adjusted if necessary to lie in a horizontal plane.

Wrist landmark: see Stylion.

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