Designation: D3636 – 13a$^{\varepsilon 1}$

Standard Practice for Sampling and Judging Quality of Solid Electrical Insulating Materials[1]

This standard is issued under the fixed designation D3636; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—Changes were made editorially in April 2014.

1. Scope*

1.1 This practice covers procedures for obtaining data pertaining to the quality of a lot of electrical insulating material and for making a judgement whether the lot meets the requirements of a material specification.

1.2 This practice is not intended to define a producer's internal quality control procedures but is designed to determine the acceptability of all, or some portion, of a quantity of electrical insulating material that is available for inspection by the user of the material.

1.3 This practice is intended to be used in conjunction with an existing material specification that specifies property characteristic limits, acceptable quality level (AQL), standard test methods, and specific sampling instructions.

1.4 In the absence of a specification as described in 1.3, use this practice as a guide, after establishment of agreed-upon property characteristics, limits, AQL, standard test methods, and specific sampling instructions.

1.5 It is intended that this be a practice for inspection by attributes.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E300 Practice for Sampling Industrial Chemicals

2.2 *Military Standard:*

MIL-STD-105E Sampling Procedures and Tables for Inspection by Attributes[3]

ANSI/ASQ Z1.4, MIL-STD-1916 Department of Defense Preferred Methods for Acceptance of Product

2.3 *Other Document:*

ANSI/ASQC A2 -1987[4]

3. Terminology

3.1 *Definitions:*

3.1.1 *acceptance number, n*—the maximum allowable number of nonconformities for a given AQL and sample size (lot-sample size).

3.1.2 *acceptable quality level (AQL), n*—the maximum percent nonconforming which, for purposes of sampling inspection, is considered satisfactory as a process average.

3.1.3 *critical property, n*—a quantitatively measurable characteristic which is absolutely necessary to be met if a material or product is to provide satisfactory performance for the intended use.

3.1.3.1 *Discussion*—In some situations, specification requirements coincide with customer usage requirements. In other situations, they may not coincide, being either more or less stringent. More stringent sampling (for example, smaller AQL values) is usually used for measurement of characteristics which are considered critical. The selection of sampling plans is independent of whether the term *defect* or *nonconformity* is appropriate.

3.1.4 *defect, n*—a departure of a quality characteristic from its intended level, or state, that occurs with a severity sufficient to cause an associated product or service not to satisfy intended normal, or reasonably foreseeable, usage requirements.

3.1.4.1 *Discussion*—The terms *defect* and *nonconformity* and their derivatives are used somewhat interchangeably in the historical and current literature. *Nonconformity* objectively

[1] This practice is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.94 on Editorial.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

***A Summary of Changes section appears at the end of this standard**

describes the comparison of test results to specification requirements, while the term *defect* has a connotation of predicting the failure of a product or service to perform its intended function in use. Since this latter connotation is often unintended, the term *nonconformity* is preferred in full consensus standards. The selection of any sample plan is independent of whether the term *defect* or *nonconformity* is appropriate.

The term *defect* may be appropriate for specifications mutually agreed upon by a producer and a user where specific use conditions are clearly understood. Even in these cases however, use the term *defect* with caution and consider substituting the term *nonconformity*.

For additional comments, see ANSI/ASQC A2-1987 that also states: "When a quality characteristic of a product or service is "evaluated" in terms of conformance to specification requirements, the use of the term *nonconformity* is appropriate."

3.1.5 *group AQL*—the AQL assigned to a group of material properties.

3.1.5.1 *Discussion*—See 5.2 for additional information about the meaning of AQL.

3.1.6 *lot, n*—an entity of electrical insulating material or product which, insofar as is practicable, consists of a single type, grade, class, size, or composition that was manufactured under essentially the same conditions and is available to the user for sampling at one time.

3.1.7 *lot number, n*—the number used by a producer to identify an entity of electrical insulating material or product.

3.1.8 *major property, n*—a quantitatively measurable characteristic which, if not met, is likely to seriously impair the performance of a material or product for the intended use.

3.1.8.1 *Discussion*—In some situations, specification requirements coincide with customer usage requirements. In other situations, they may not coincide, being either more or less stringent. More stringent sampling (for example, smaller AQL values) is usually used for measurement of characteristics that are considered important. The selection of sampling plans is independent of whether the term *defect* or *nonconformity* is appropriate.

3.1.9 *minor property, n*—a characteristic which, if not met, is not likely to materially reduce the performance of a material or product for the intended use.

3.1.9.1 *Discussion*—In some situations, specification requirements coincide with customer usage requirements. In other situations, they may not coincide, being either more or less stringent. More stringent sampling (for example, smaller AQL values) is usually used for measurement of characteristics that are considered important. The selection of sampling plans is independent of whether the term *defect* or *nonconformity* is appropriate.

3.1.10 *nonconforming unit, n*—a unit of product containing at least one nonconformity.

3.1.11 *nonconformities per hundred units, n*—a calculated ratio of nonconforming units to the number of units inspected, the quotient being multiplied by 100 (See 3.1.13.)

3.1.12 *nonconformity, n*—a departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause a test result not to meet a specification requirement.

3.1.13 *percent nonconforming, n*—a calculated ratio of nonconforming units to the number of units inspected, the quotient being multiplied by 100.

3.1.14 *rejection number, n*—the minimum number of nonconformities for a given AQL and sample size (lot-sample size) which will subject a lot to rejection.

3.1.15 *sample, n*—one or more units of product taken from a lot without regard to the quality of the unit. (Also often termed lot sample).

3.1.16 *sample size, n*—the number of units of product taken to make up the sample.

3.1.16.1 *Discussion*—This standard uses only lot sample sizes and not lot sizes since the discriminatory power of any sampling plan is independent essentially of the size of the lot. The sample size selected by the user for a given acceptable quality level (AQL) is optional depending upon the degree of protection desired by the user against the acceptance of nonconforming lots.

3.1.17 *test measurement, n*—a quantitative expression of one value determined for a property of interest by a single application of a specified test procedure.

3.1.18 *test result, n*—the value that expresses the level of a property of the test unit.

3.1.18.1 *Discussion*—A test result is sometimes a single test measurement but usually a test result is computed from several test measurements.

3.1.19 *test specimen, n*—a portion of a test unit upon which one or more test measurements are made.

3.1.20 *test unit, n*—a fraction of a unit of product from which one or more test specimens are taken for each property.

3.1.20.1 *Discussion*—If the unit of product is of insufficient size to meet the requirements of a testing method: (*1*) sample adjacent units of product and aggregate units of product for the test unit or, (*2*) obtain a test unit of sufficient size, and representative of the unit of product, from the producer.

3.1.21 *unit of product, n*—an entity of electrical insulating material or product for inspection to determine its classification as conforming or non-conforming.

3.1.21.1 *Discussion*—A unit of product is established by the user and may or may not be the same as a unit of purchase, supply, production, or shipment. Some examples of a unit of product are:

Bag	Case	Reel
Barrel	Container	Roll
Bin	Cop	Sheet
Bobbin	Drum	Skid
Box	Length	Spool
Bundle	Pad	Tank
Car	Pail	Tank compartment
Carton	Pallet	Truckload

4. Summary of Practice

4.1 Instructions are given for obtaining a sample from which specimens are then taken for testing. The test data are

compared to the material specification and a judgement is then made as to whether the material meets the requirements of said material specification.

4.2 This practice has been modeled after MIL-STD-105E.

4.3 In those cases where MIL-STD-105E is determined to be unacceptable for a specific application or purpose and a form of C=0 sampling is required instead, it is permissible to alternatively apply ANSI/ASQ Z1.4, MIL-STD-1916, or a similar sampling plan.

5. Procedure

5.1 *General Considerations:*

5.1.1 Assemble the lot of electrical insulating material so that a lot sample is obtained in a manner that will minimize bias in the selection of the units of product that will be inspected. A scheme that offers a good chance of minimizing bias is the assignment of numbers to each unit of product and then using a table of random numbers to select those units of product from which test units are taken.

5.1.2 For a lot of electrical insulating material that is in bulk form (for example, a tank car of powdered resin) take the lot sample from the unit of product in accordance with Practice E300.

5.1.3 Take the material to be removed from any unit of product in a random manner. When it is impracticable to meet this requirement (for example, in the case of long lengths of material wound onto rolls or large, thick, heavy sheets packed on pallets or skids), economy will dictate the removal of material from the end of a roll, or the top of a pile, etc. in which cases the selection cannot be described as "random."

5.1.4 Take the necessary amount of material from the test unit so as to meet the specimen requirements of the various test methods that will be used to evaluate the material.

5.1.5 Refer to the material specification for the allowable maximum elapsed time between the assembly of the lot for inspection and the disposition of the lot. If the material specification (or other pertinent document) does not cover this matter, the maximum allowable time is 30 calendar days.

5.1.6 Exercise care to protect the electrical insulating material contained in the test unit from which specimens are to be prepared. An example of this protection is packaging in metal foil or glass containers so as to prevent or minimize contamination of the material from the effects of the environment to which such material is subjected between sampling and testing.

5.1.7 Test units assembled as described above shall be deemed to be representative of the lot of material being inspected. Disposition of the lot, or portions thereof will be based upon the data generated from these test units unless otherwise agreed upon between the user and the producer.

5.2 *Establishing Acceptable Quality Levels:*

5.2.1 Acceptable quality levels (AQL's) for each critical, major, and minor property shall be as mutually agreed upon by the producer and the user. It is also acceptable to establish group AQL's for given groups of properties. Disclose these AQL's in a purchase order, material specification, or in some other document. This standard is not intended to impose limits upon the risks acceptable to either the user or the producer.

5.2.2 When a user designates some specific value of AQL for a single nonconformity, it indicates that the user's acceptance sampling plan will accept the great majority of the lots submitted by the producer if the process average level of percent nonconforming in the lots is no greater than the designated value of AQL. The preceding statement is also true for a group AQL value designated for a group of nonconformities.

5.2.2.1 The sampling plans of this standard are so arranged that the probability of acceptance, at the designated AQL value, depends upon the sample size. For a given AQL, the probability of acceptance will be generally higher for large sample sizes than for small sample sizes. The AQL alone does not describe the user protection for individual lots, but more directly relates to what a user might expect from a series of lots. Refer to the operating characteristic curve to determine what protection the user will have for a specific AQL.

5.2.3 The designation of an AQL shall not imply that a producer has the right to knowingly supply any nonconforming unit of product.

5.2.4 The values of AQL listed in the accompanying tables (see Section Appendix X1) are known as preferred AQL's. If any AQL is designated other than a preferred AQL, these tables are not applicable.

5.3 *Sampling Plan Selection:*

5.3.1 Use the designated AQL and the sample size code letter from Table 1 to select a sampling plan from Tables 2-22. When no sampling plan is available for a given combination of AQL and code letter, the table directs the user to a different code letter. Use the sample size given by the new code letter, not the original code letter.

5.3.1.1 It is possible this procedure will lead to different sample sizes for different classes of nonconformities. In such cases the user of the electrical insulating material shall designate and authorize, for all classes of nonconformities, the selection and use of the code letter corresponding to the largest sample size derived.

5.3.1.2 As an alternative to a single sampling plan with an acceptance number of 0, use the plan with an acceptance number of 1 with its correspondingly larger sample size for a designated AQL (where available) when designated and approved by the user.

5.3.2 *Types of Sampling Plans*—Three types of sampling plans: single, double, and multiple are given in Table 2, Table 3, and Table 4, respectively. When several types of plans are available for a given AQL and code letter, use any one. A decision as to type of plan, either single, double, or multiple, when available for a given AQL and code letter, will usually be based upon the comparison between the administrative difficulty and the average sample sizes of the available plans. The average sample size of multiple plans is less than for double (except in the case corresponding to single acceptance number 1) and both of these are always less than a single sample size. Usually the administrative difficulty for single sampling and the cost per unit of the sample are less than for double or multiple.

TABLE 1 Sample Size Code Letters *(See 5.4)*

Lot or Batch Size			Special Inspection Levels				General Inspection Levels		
			S-1	S-2	S-3	S-4	I	II	III
2	to	8	A	A	A	A	A	A	B
9	to	15	A	A	A	A	A	B	C
16	to	25	A	A	B	B	B	C	D
26	to	50	A	B	B	C	C	D	E
51	to	90	B	B	C	C	C	E	F
91	to	150	B	B	C	D	D	F	G
151	to	280	B	C	D	E	E	G	H
281	to	500	B	C	D	E	F	H	J
501	to	1200	C	C	E	F	G	J	K
1201	to	3200	C	D	E	G	H	K	L
3201	to	10 000	C	D	F	G	J	L	M
10 001	to	35 000	C	D	F	H	K	M	N
35 001	to	150 000	D	E	G	J	L	N	P
150 001	to	500 000	D	E	G	J	M	P	Q
500 001	and	over	D	E	H	K	N	Q	R

5.3.3 *Single Sampling Plans*—From any lot, inspect that number of units which equals the sample size given by the plan.

5.3.3.1 Consider any lot acceptable if the number of nonconformities found in the sample is equal to, or less than, the acceptance number.

5.3.3.2 Consider any lot rejectable if the number of nonconformities found in the sample is equal to, or greater than, the rejection number.

5.3.4 *Double Sampling Plans*—From any lot, inspect that number of units which equals the sample size given by the plan.

5.3.4.1 Consider any lot acceptable if the number of nonconformities found in the first sample is equal to, or less than, the first acceptance number.

5.3.4.2 Consider any lot rejectable if the number of nonconformities found in the first sample is equal to, or greater than, the first rejection number.

5.3.4.3 If the number of nonconformities in the first sample lies between the first acceptance and rejection numbers, inspect a second sample of the size given by the plan.

5.3.4.4 Accumulate the number of nonconformities found in the first and the second samples.

5.3.4.5 Consider any lot acceptable if the cumulative number of nonconformities found in the sample is equal to, or less than, the second acceptance number.

5.3.4.6 Consider any lot rejectable if the cumulative number of nonconformities found in the sample is equal to, or greater than, the second rejection number.

5.3.5 *Multiple Sampling Plans*—Use the procedure of 5.3.4 for multiple sampling plans but the number of successive samples required to reach a decision will be more than two.

5.3.6 *Special Procedure for Reduced Inspection*—Under reduced inspection, it is acceptable for the sampling procedure to terminate without either acceptance or rejection criteria having been met. In these circumstances, the lot will be considered acceptable, but normal inspection will be reinstated starting with the next lot which is submitted to the user.

5.4 *Inspection Levels:*

5.4.1 The inspection level determines the relationship between the lot size and the sample size. The inspection level to be used for any particular requirement will be prescribed by the user. Three inspection levels: I, II, and III, are given in Table 1 for general use. Unless otherwise specified, Inspection Level II shall be used. Use Inspection Level I when less discrimination is needed, or use Level III for greater discrimination. Four additional special levels: S-1, S-2, S-3 and S-4, are given in the same table for use where relatively small sample sizes are necessary and large sampling risks can or must be tolerated.

NOTE 1—In the designation of inspection levels S-1 to S-4, exercise care to avoid AQLs inconsistent with these inspection levels.

5.4.2 *Code Letters*—Sample sizes are designated by code letters. Use Table 1 to find the applicable code letter for the particular lot size and the prescribed inspection level.

5.4.3 *Initiation of Inspection*—Use normal inspection at the start of inspection unless otherwise directed by the user.

5.4.4 *Continuation of Inspection*—Continue normal, tightened, or reduced inspection unchanged for each class of nonconformities on successive lots except where the switching procedures described in 5.4.5 to 5.4.5.4 require change.

5.4.5 *Switching Procedures*—Apply switching procedures in 5.4.5.1 to 5.4.5.4 independently to each class of nonconformity.

5.4.5.1 *Normal to Tightened*—When normal inspection is in effect, institute tightened inspection when two out of five consecutive lots have been rejected after original inspection. Do not count among the five any lots that were resubmitted for inspection (see also 6.4).

5.4.5.2 *Tightened to Normal*—When tightened inspection is in effect, institute normal inspection after five consecutive lots have been considered acceptable after original inspection.

5.4.5.3 *Normal to Reduced*—When normal inspection is in effect, institute reduced inspection only if conformance with each of the four following criteria exists: (*1*) The preceding 10 lots (or more, as indicated by the note to Table 5) have been on normal inspection and none have been rejected after original inspection. (*2*) The total number of nonconformities in the

TABLE 2 A Single Sampling Plans For Normal Inspection (Master Table) *(See 5.3.1 and 5.3.2)*

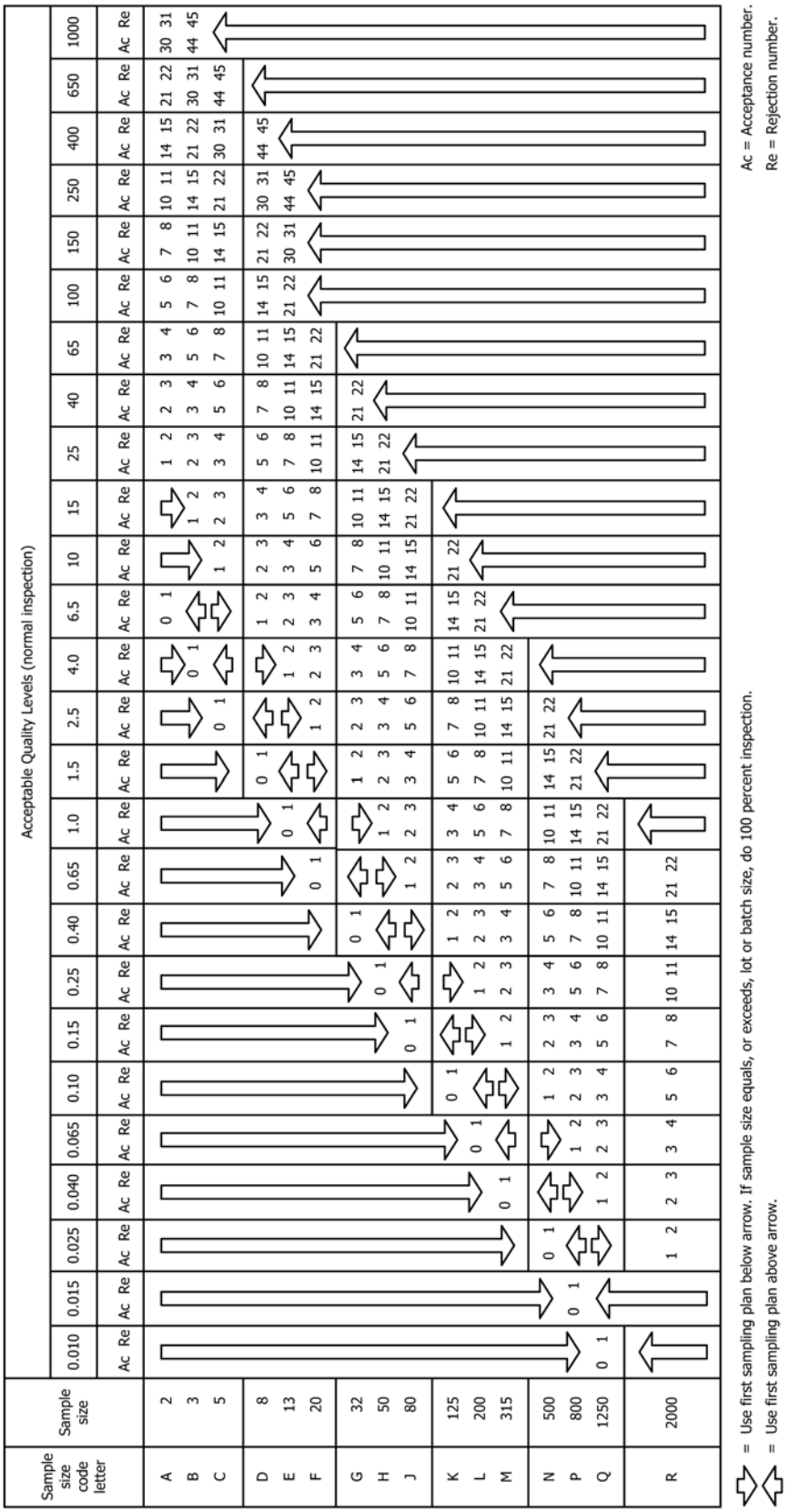


TABLE 2 B Single Sampling Plans for Tightened Inspection (Master Table) *(See 8.4 and 8.5) (continued)*

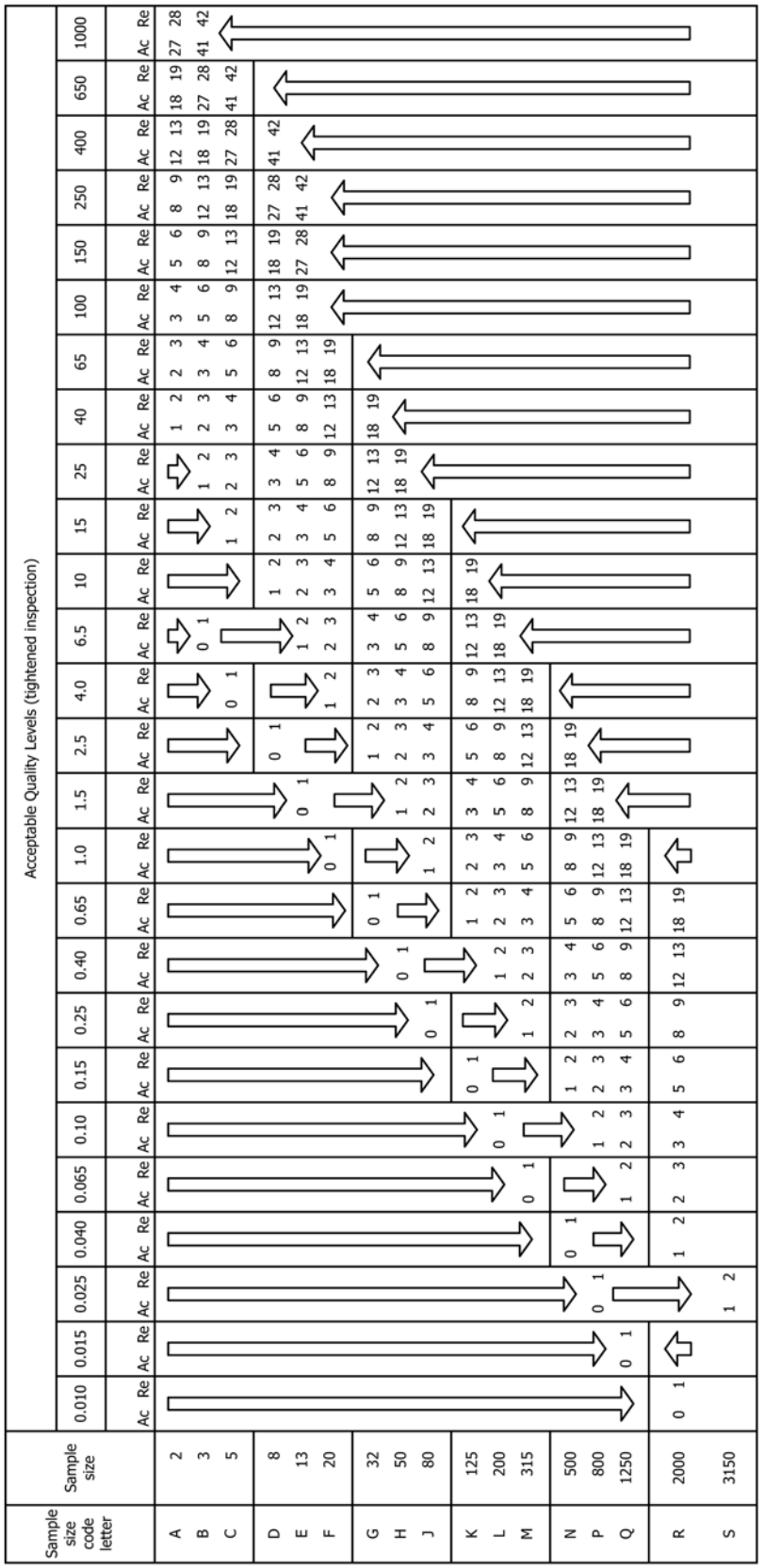


TABLE 2 C Single Sampling Plans for Reduced Inspection (Master Table) *(See 5.3.1 and 5.3.2) (continued)*

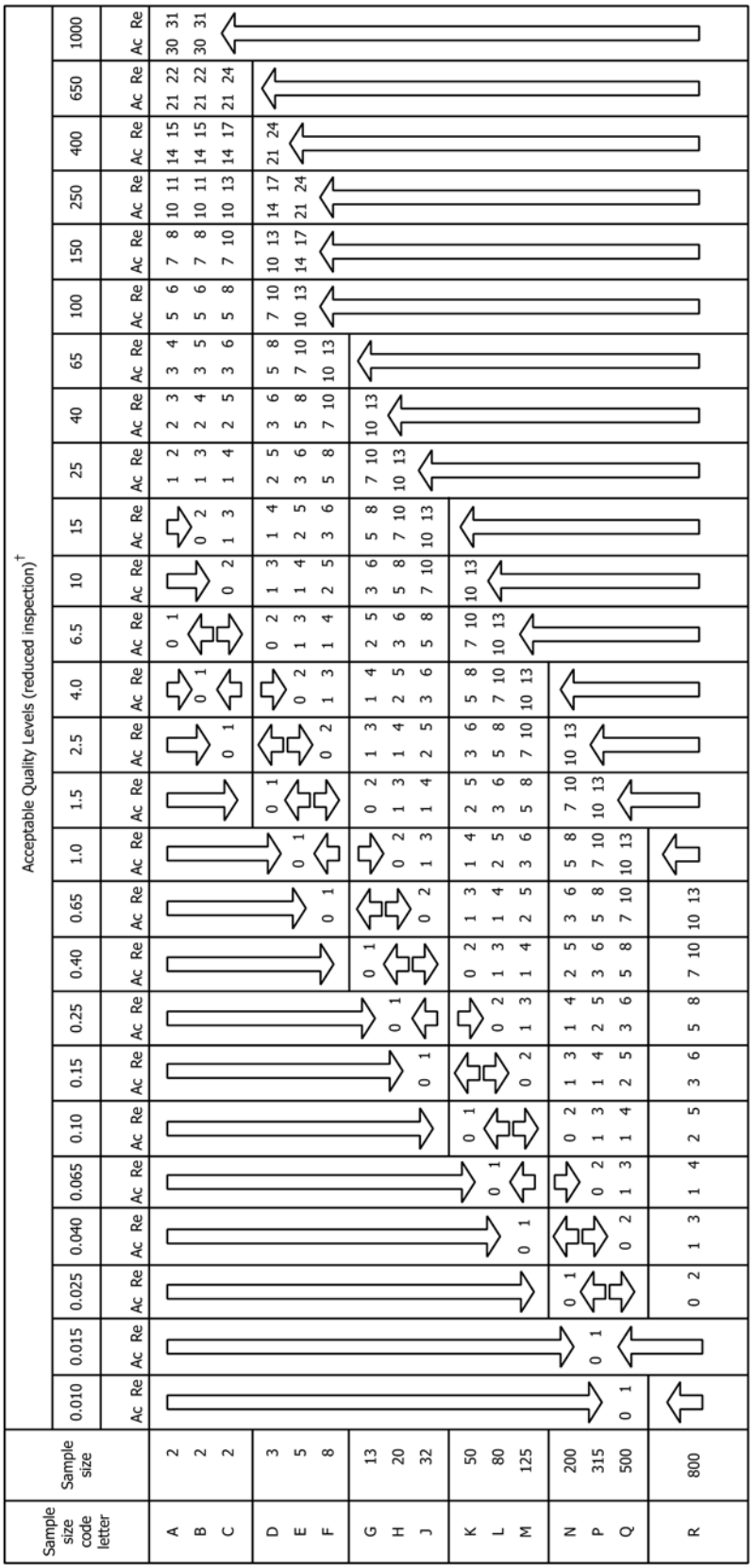


TABLE 3 A Double Sampling Plans for Normal Inspection (Master Table) *(See 8.4 and 8.5)*

Sample size code letter	Sample	Sample size	Cumulative sample size	Acceptable Quality Levels (normal inspection)																										
				0.010	0.015	0.025	0.040	0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65	100	150	250	400	650	1000
				Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re
A				⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	*
B	First	2	2																	0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31	31 57
	Second	2	4																	1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57	
C	First	3	3																0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31		
	Second	3	6																1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57		
D	First	5	5															0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31			
	Second	5	10															1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57			
E	First	8	8														0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31				
	Second	8	16														1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57				
F	First	13	13													0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31					
	Second	13	26													1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57					
G	First	20	20												0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31						
	Second	20	40												1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57						
H	First	32	32											0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31							
	Second	32	64											1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57							
J	First	50	50										0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31								
	Second	50	100										1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57								
K	First	80	80									0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31									
	Second	80	160									1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57									
L	First	125	125								0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31										
	Second	125	250								1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57										
M	First	200	200							0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31											
	Second	200	400							1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57											
N	First	315	315						0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31												
	Second	315	630						1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57												
P	First	500	500					0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31													
	Second	500	1000					1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57													
Q	First	800	800				0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31														
	Second	800	1600				1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57														
R	First	1250	1250			0 2	0 3	1 4	2 5	3 7	5 9	7 11	11 16	17 22	25 31															
	Second	1250	2500			1 2	3 4	4 5	6 7	8 9	12 13	18 19	26 27	37 38	56 57															

⇩ = Use first sampling plan below arrow. If sample size equals or exceeds lot or batch size, do 100 percent inspection.

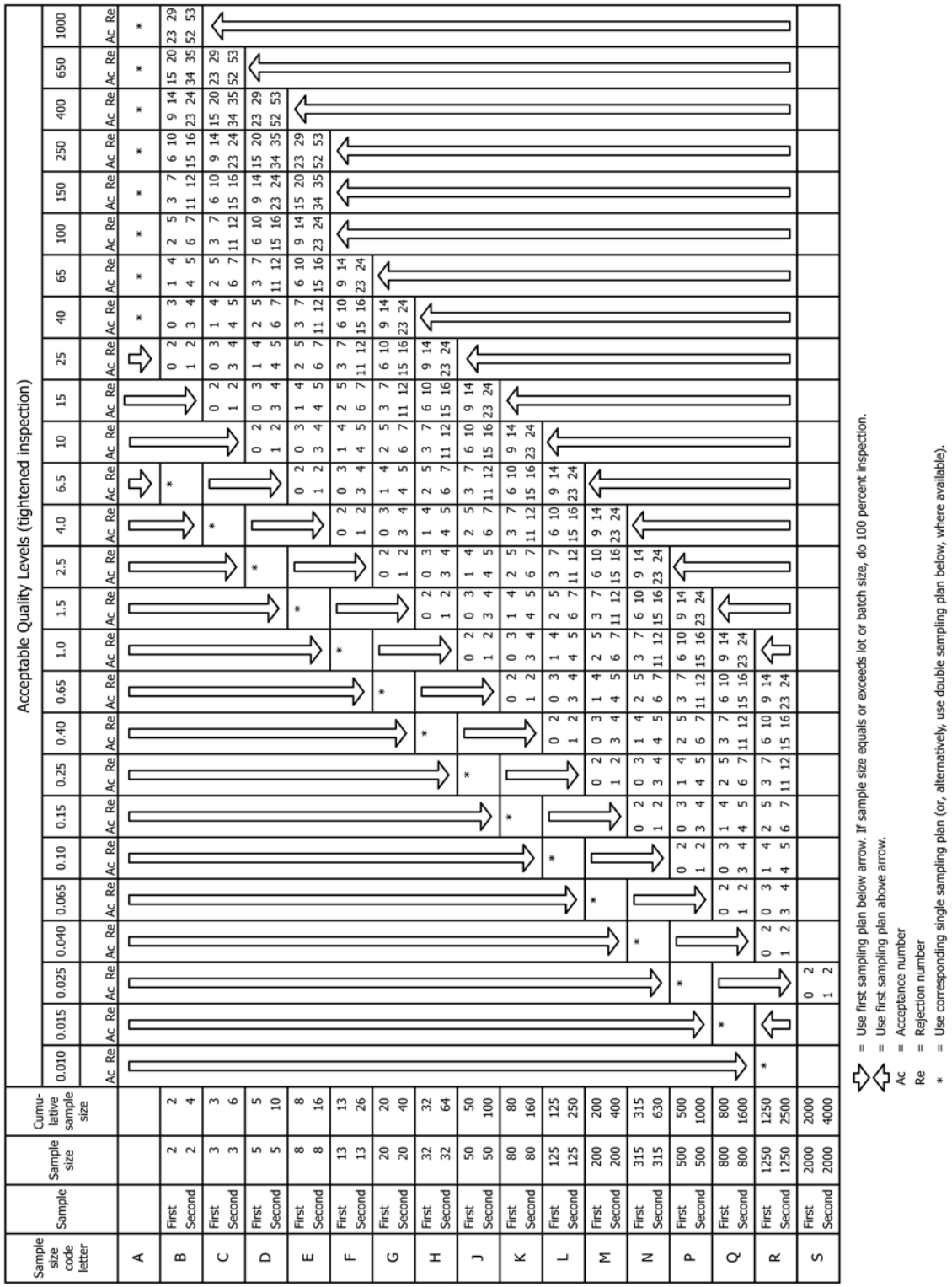
⇧ = Use first sampling plan above arrow.

Ac = Acceptance number

Re = Rejection number

* = Use corresponding single sampling plan (or alternatively, use double sampling plan below, where available).

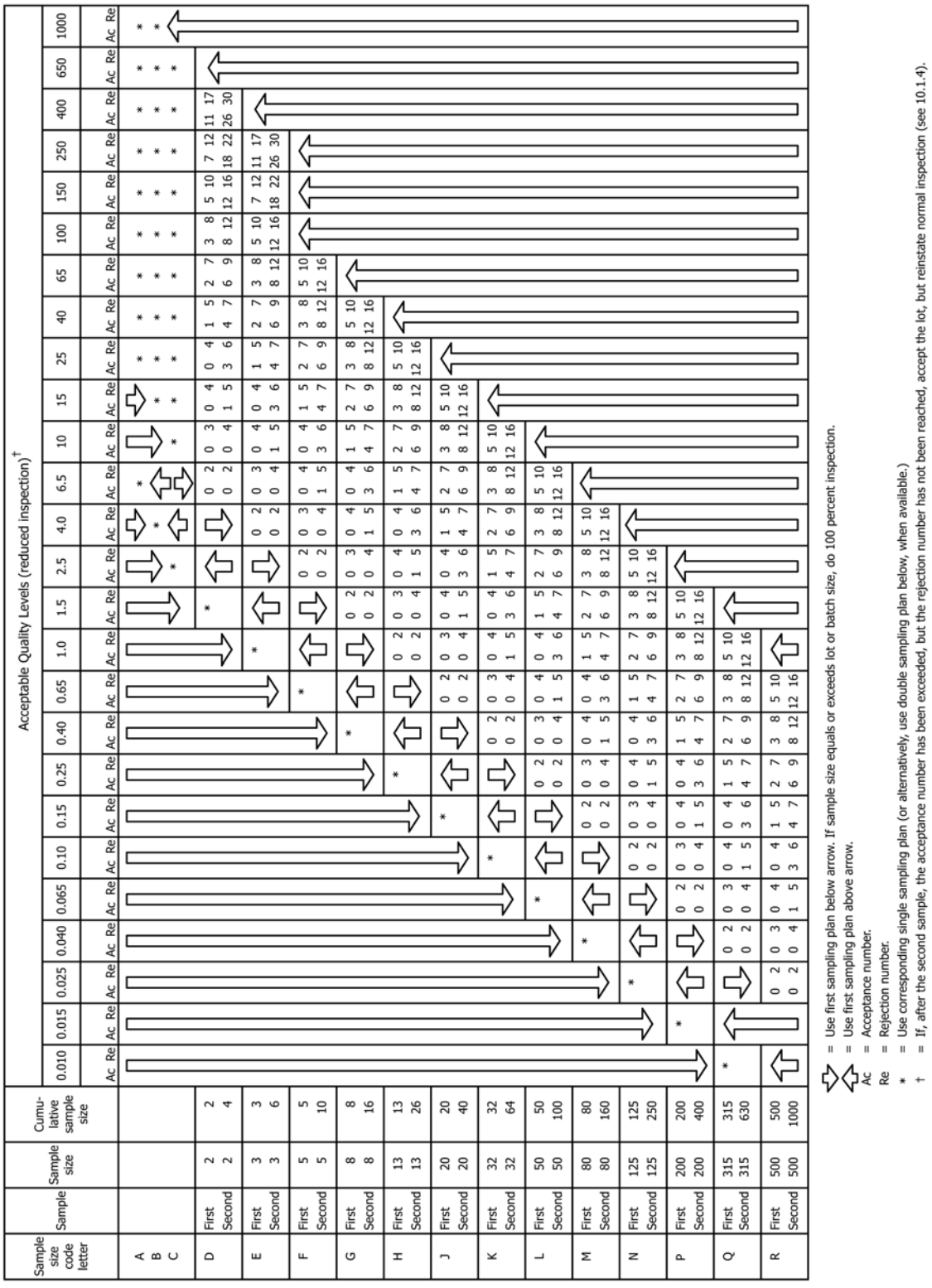
TABLE 3 B Double Sampling Plans for Tightened Inspection (Master Table) *(See 8.4 and 8.5) (continued)*



samples from the preceding ten lots (or such other number as indicated by 1 > above) is equal to, or less than, the applicable number given in Table 5. If double or multiple sampling is in use, include all samples inspected, not "first" samples only. (*3*) Production is at a steady rate. (*4*) Reduced inspection is considered desirable by the user.

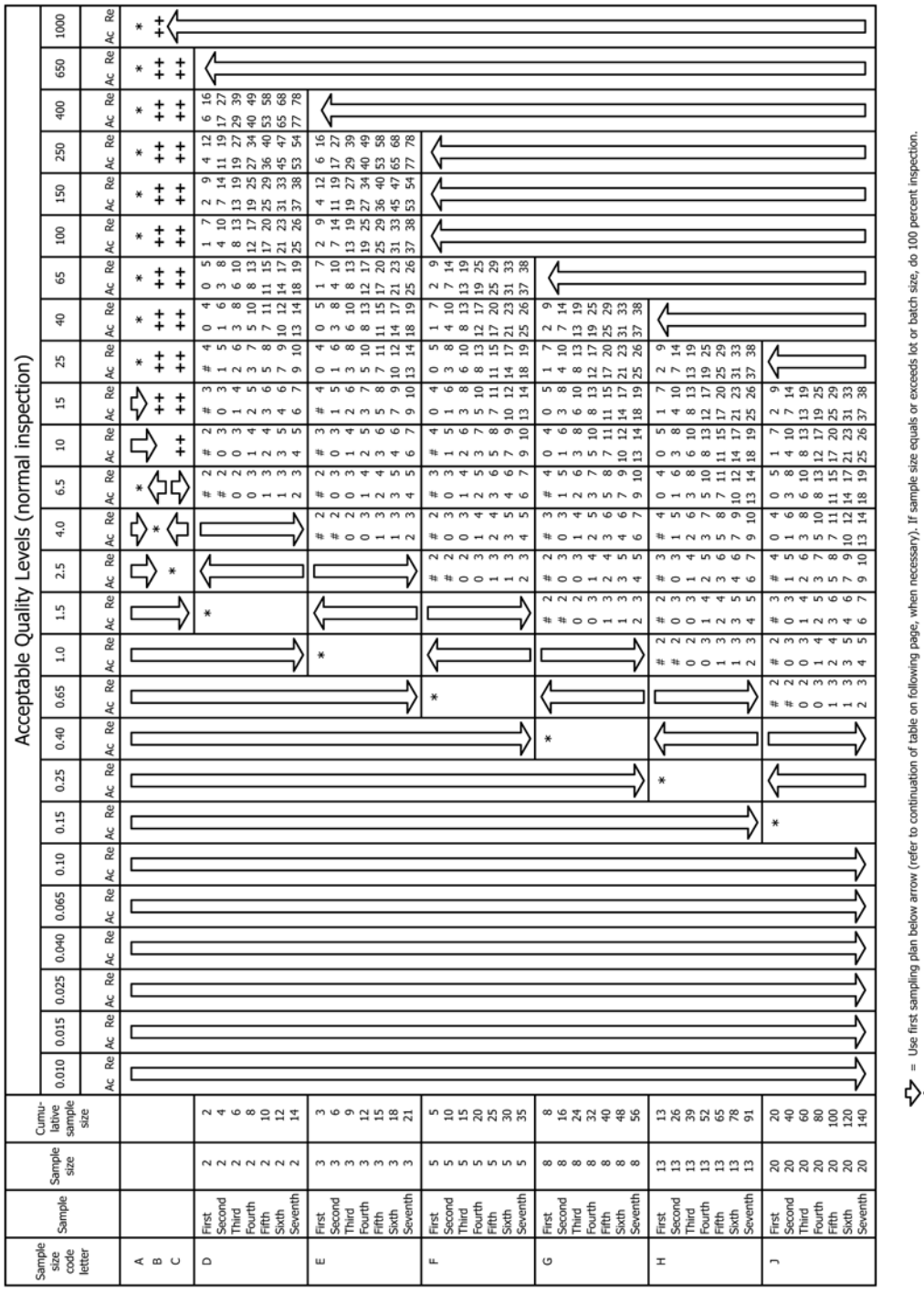
5.4.5.4 *Reduced to Normal*—When reduced inspection is in effect institute normal if any one of the following occur after

TABLE 3 C Double Sampling Plans for Reduced Inspection (Master Table) *(continued)*



original inspection: (*1*) Any lot is rejected. (*2*) Any lot is considered acceptable under the procedures of 5.3.6. (*3*) Production becomes irregular or delayed. (*4*) Other conditions warrant institution of normal inspection.

TABLE 4 A Multiple Sampling Plans for Normal Inspection (Master Table) *(See 8.4 and 8.5)*

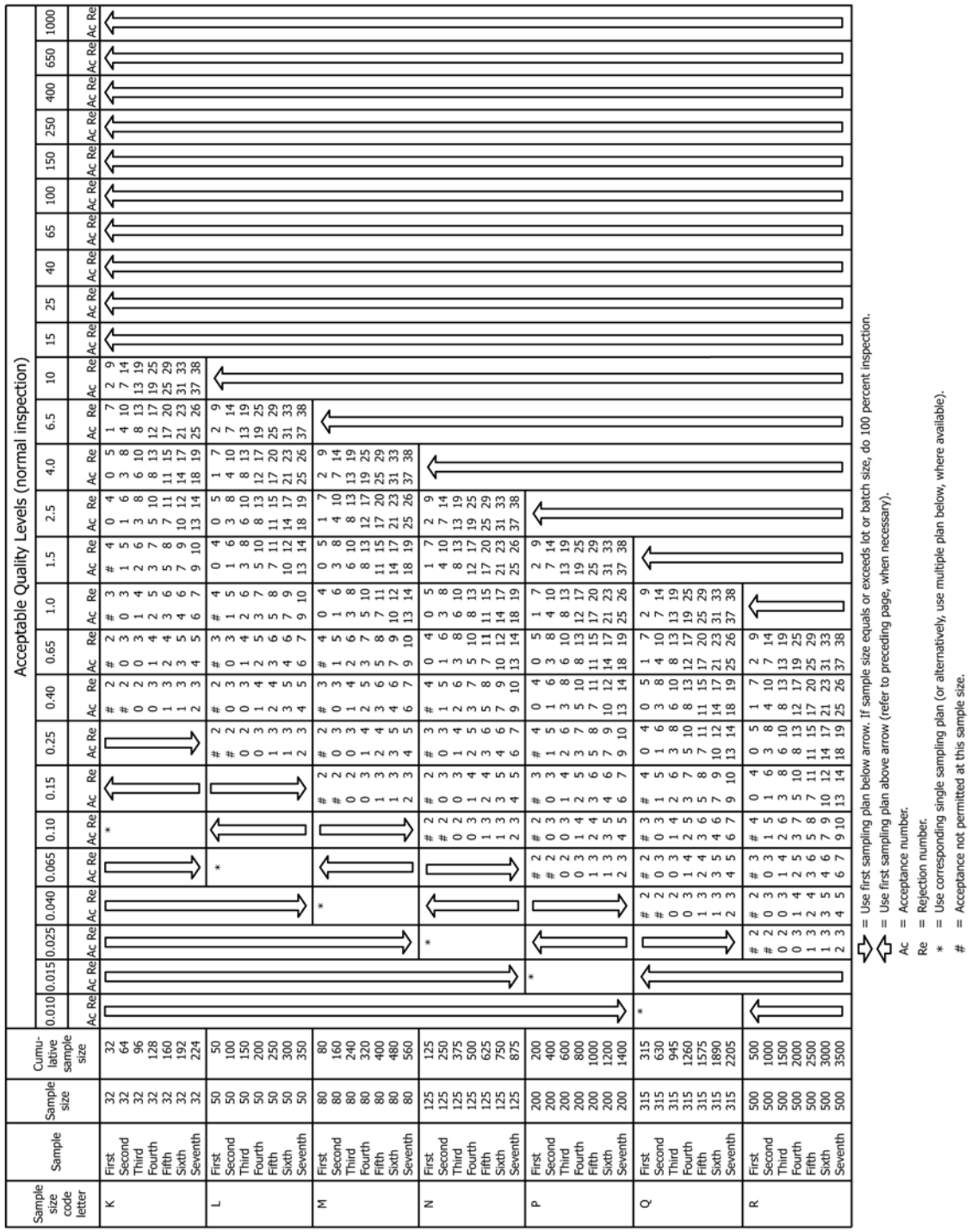


5.4.6 *Discontinuation of Inspection*—In the event that ten consecutive lots (or other number as designated by the user) remain on tightened inspection, discontinue the inspection and acceptance of material under the provisions of this standard pending action by the producer to improve the quality of submitted material.

6. Judging Lot Quality

6.1 Determine the acceptance (or rejection) of a lot by comparing the requirements set forth in the material specification compared to the test results and other information obtained

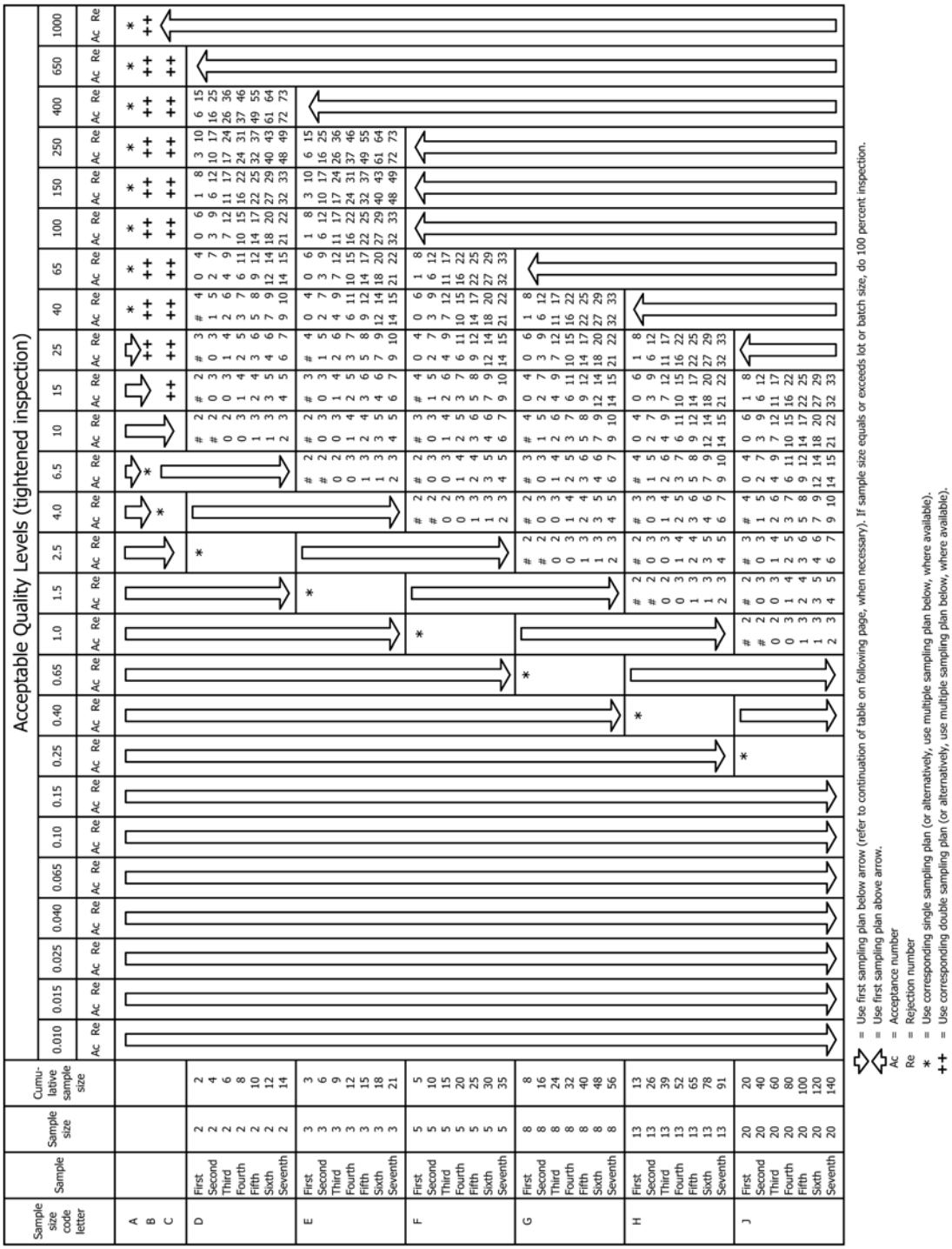
TABLE 4 A Multiple Sampling Plans for Normal Inspection (Master Table) *(Continued)* *(See 8.4 and 8.5) (continued)*



by the use of a sampling plan (or plans) associated with the designated AQL (or AQL's).

6.2 The user reserves the right to reject any unit of product found to be nonconforming during inspection. That rejected unit of product need not be one of the units of product comprising the lot sample. The user reserves the right to reject that unit regardless of the disposition of the lot as a whole. It is also acceptable for such rejected units of product to be repaired or corrected and resubmitted for inspection with the approval of, and in the manner specified by, the user.

TABLE 4 B Multiple Sampling Plans for Tightened Inspection (Master Table) *(See 8.4 and 8.5) (continued)*



6.3 For cases of evaluating material or product for critical properties or characteristics, the user is allowed at his discretion to inspect every unit of product for critical properties or characteristics. When a nonconformity is found for any critical property or characteristic, the user shall be permitted to reject the entire lot.

6.4 If a lot has been found unacceptable, it shall not be permitted to be submitted for re-inspection unless all units of product in the lot have been examined and tested and all nonconforming units of product have been either removed therefrom or the nonconformities have been corrected. Only the user determines whether: (*1*) normal or tightened inspection

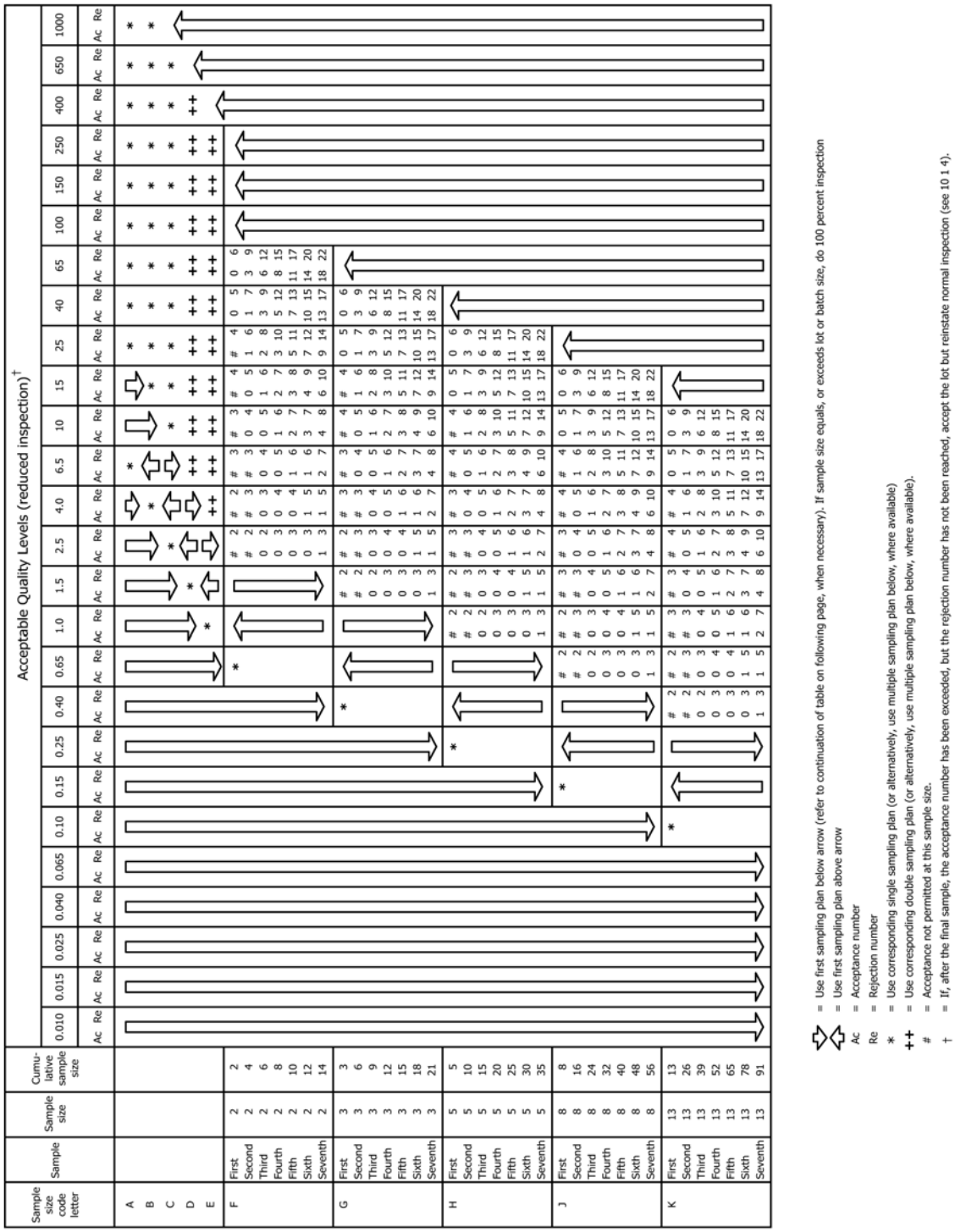
TABLE 4 B Multiple Sampling Plans for Tightened Inspection (Master Table) *(Continued)* *(See 8.4 and 8.5) (continued)*

Acceptable Quality Levels (tightened inspection)

Sample size code letter	Sample	Sample size	Cumulative sample size	0.010	0.015	0.025	0.040	0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65	100	150	250	400	650	1000
				Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re
K	First	32	32	↓	↓	↓	↓	↓	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	32	64										# 2	0 3	0 3	1 5	2 7	3 9	6 12										
	Third	32	96										0 2	0 3	1 4	2 6	4 9	7 12	11 17										
	Fourth	32	128										0 3	1 4	2 5	3 7	6 11	10 15	16 22										
	Fifth	32	160										1 3	2 4	3 6	5 8	9 12	14 17	22 25										
	Sixth	32	192										1 3	3 5	4 6	7 9	12 14	18 20	27 29										
	Seventh	32	224										2 3	4 5	6 7	9 10	14 15	21 22	32 33										
L	First	50	50	↓	↓	↓	↓	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	50	100									# 2	0 3	0 3	1 5	2 7	3 9	6 12											
	Third	50	150									0 2	0 3	1 4	2 6	4 9	7 12	11 17											
	Fourth	50	200									0 3	1 4	2 5	3 7	6 11	10 15	16 22											
	Fifth	50	250									1 3	2 4	3 6	5 8	9 12	14 17	22 25											
	Sixth	50	300									1 3	3 5	4 6	7 9	12 14	18 20	27 29											
	Seventh	50	350									2 3	4 5	6 7	9 10	14 15	21 22	32 33											
M	First	80	80	↓	↓	↓	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	80	160								# 2	0 3	0 3	1 5	2 7	3 9	6 12												
	Third	80	240								0 2	0 3	1 4	2 6	4 9	7 12	11 17												
	Fourth	80	320								0 3	1 4	2 5	3 7	6 11	10 15	16 22												
	Fifth	80	400								1 3	2 4	3 6	5 8	9 12	14 17	22 25												
	Sixth	80	480								1 3	3 5	4 6	7 9	12 14	18 20	27 29												
	Seventh	80	560								2 3	4 5	6 7	9 10	14 15	21 22	32 33												
N	First	125	125	↓	↓	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	125	250							# 2	0 3	0 3	1 5	2 7	3 9	6 12													
	Third	125	375							0 2	0 3	1 4	2 6	4 9	7 12	11 17													
	Fourth	125	500							0 3	1 4	2 5	3 7	6 11	10 15	16 22													
	Fifth	125	625							1 3	2 4	3 6	5 8	9 12	14 17	22 25													
	Sixth	125	750							1 3	3 5	4 6	7 9	12 14	18 20	27 29													
	Seventh	125	875							2 3	4 5	6 7	9 10	14 15	21 22	32 33													
P	First	200	200	↓	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	200	400						# 2	0 3	0 3	1 5	2 7	3 9	6 12														
	Third	200	600						0 2	0 3	1 4	2 6	4 9	7 12	11 17														
	Fourth	200	800						0 3	1 4	2 5	3 7	6 11	10 15	16 22														
	Fifth	200	1000						1 3	2 4	3 6	5 8	9 12	14 17	22 25														
	Sixth	200	1200						1 3	3 5	4 6	7 9	12 14	18 20	27 29														
	Seventh	200	1400						2 3	4 5	6 7	9 10	14 15	21 22	32 33														
Q	First	315	315	↓	*	↓	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	315	630					# 2	0 3	0 3	1 5	2 7	3 9	6 12															
	Third	315	945					0 2	0 3	1 4	2 6	4 9	7 12	11 17															
	Fourth	315	1260					0 3	1 4	2 5	3 7	6 11	10 15	16 22															
	Fifth	315	1575					1 3	2 4	3 6	5 8	9 12	14 17	22 25															
	Sixth	315	1890					1 3	3 5	4 6	7 9	12 14	18 20	27 29															
	Seventh	315	2205					2 3	4 5	6 7	9 10	14 15	21 22	32 33															
R	First	500	500	*	↑	↓	# 2	# 2	# 3	# 4	0 4	0 6	1 8	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Second	500	1000				# 2	0 3	0 3	1 5	2 7	3 9	6 12																
	Third	500	1500				0 2	0 3	1 4	2 6	4 9	7 12	11 17																
	Fourth	500	2000				0 3	1 4	2 5	3 7	6 11	10 15	16 22																
	Fifth	500	2500				1 3	2 4	3 6	5 8	9 12	14 17	22 25																
	Sixth	500	3000				1 3	3 5	4 6	7 9	12 14	18 20	27 29																
	Seventh	500	3500				2 3	4 5	6 7	9 10	14 15	21 22	32 33																
S	First	800	800			# 2																							
	Second	800	1600			# 2																							
	Third	800	2400			0 2																							
	Fourth	800	3200			0 3																							
	Fifth	800	4000			1 3																							
	Sixth	800	4800			1 3																							
	Seventh	800	5600			2 3																							

↓ = Use first sampling plan below arrow. If sample size equals or exceeds lot or batch size, do 100 percent inspection.
↑ = Use first sampling plan above arrow. (refer to preceding page, when necessary).
Ac = Acceptance number
Re = Rejection number
* = Use corresponding single sampling plan (or alternatively, use multiple sampling plan below, where available).
# = Acceptance not permitted at this sample size.

TABLE 4 C Multiple Sampling Plans for Reduced Inspection (Master Table) *(See 8.4 and 8.5) (continued)*



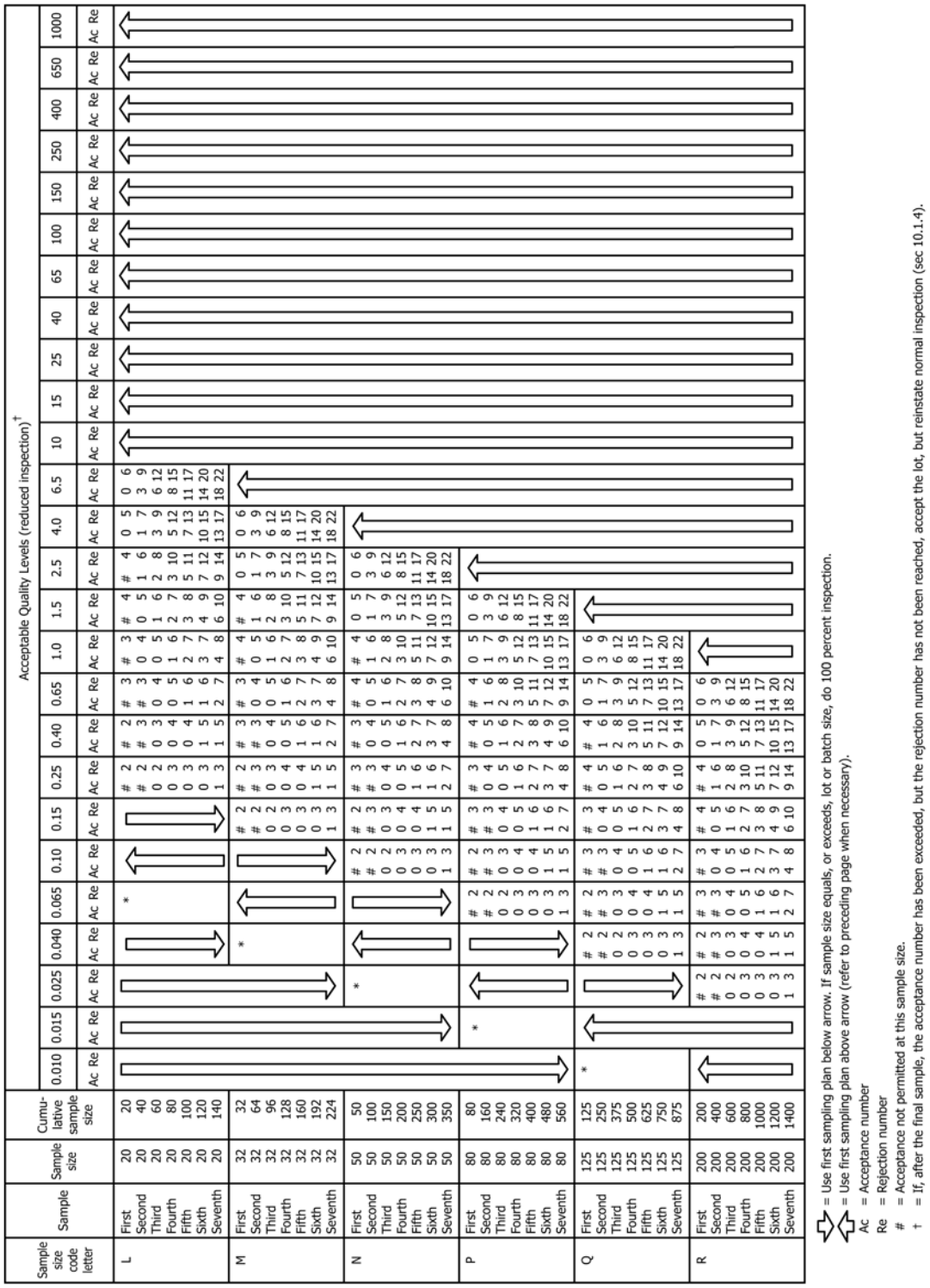
is applied during this reinspection, and whether (*2*) all, or particular, types and classes of nonconformities are included in the reinspection.

7. Disposition of the Lot

7.1 If the lot-sample fails to meet the requirements for acceptability as set forth in the material specification, the entire lot shall be subject to rejection and the user shall notify the producer immediately.

7.2 The user shall have the prerogative to waive requirements with respect to the sampling plans, conducting of tests, applicable property specified limits, resampling and lot rejection.

TABLE 4 C Multiple Sampling Plans for Reduced Inspection (Master Table) *(Continued)* *(See 8.4 and 8.5) (continued)*



8. Sampling Tables

8.1 These sampling tables have been adapted from MIL-STD-105E. The following discussion and references are provided to supplement the user's knowledge of this standard.

8.2 To choose a sampling plan one must know the lot size, the inspection level, the AQL, and the type of sampling to be used which is either single, double, or multiple sampling.

8.2.1 Lot size is the total number of units of product in a lot.

TABLE 5 Limit Numbers for Reduced Inspection

NOTE 1—Denotes that the number of sample units from the last ten lots or batches is not sufficient for reduced inspection for this AQL. In this instance, more than ten lots or batches may be used for the calculation, provided that the lots or batches used are the most recent ones in sequence, that they have all been on normal inspection, and that none has been rejected while on original inspection.

Number of Sample Units From Last 10 Lots or Batches	Acceptable Quality Level																									
	0.010	0.015	0.025	0.040	0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25	40	65	100	150	250	400	650	1000
20–29	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0	0	2	4	8	14	22	40	68	115	181
30–49	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0	0	1	3	7	13	22	36	63	105	178	277
50–79	·	·	·	·	·	·	·	·	·	·	·	·	·	0	0	2	3	7	14	25	40	63	110	181	301	
80–129	·	·	·	·	·	·	·	·	·	·	·	·	0	0	2	4	7	14	24	42	68	105	181	297		
130–199	·	·	·	·	·	·	·	·	·	·	·	0	0	2	4	7	13	25	42	72	115	177	301	490		
200–319	·	·	·	·	·	·	·	·	·	·	0	0	2	4	8	14	22	40	68	115	181	277	471			
320–499	·	·	·	·	·	·	·	·	·	0	0	1	4	8	14	24	39	68	113	189						
500–799	·	·	·	·	·	·	·	·	0	0	2	3	7	14	25	40	63	110	181							
800–1249	·	·	·	·	·	·	·	0	0	2	4	7	14	24	42	68	105	181								
1250–1999	·	·	·	·	·	·	0	0	2	1	7	13	26	40	69	110	169									
2000–3149	·	·	·	·	·	0	0	2	4	8	14	22	40	68	115	181										
3150–4999	·	·	·	·	0	0	1	4	8	14	24	38	67	111	186											
5000–7999	·	·	·	0	0	2	3	7	14	25	40	63	110	181												
8000–12 499	·	·	0	0	2	4	7	14	24	42	68	105	181													
12 500–19 999	·	0	0	2	4	7	13	24	40	69	110	169														
20 000–31 499	0	0	2	4	8	14	22	40	68	115	181															
31 500–49 999	0	1	4	8	14	24	38	67	111	186																
500 000 & Over	2	3	7	14	25	40	63	110	181	301																

8.2.2 To define the inspection level, see 5.4.1.

8.2.3 The AQL is found in the material specification, purchase order, or other pertinent document. See also 5.2.2.

8.2.4 Types of sampling are discussed in 5.3.2.

8.3 Given the lot size and inspection level (generally Level II unless noted otherwise) a sample size code letter can be found in Table 1.

8.4 The AQL and the sample size code letter is then used to obtain the sampling plan from Table 2, Table 3, and Table 4, which are for single, double or multiple plans, respectively. Generally, a single sampling plan would be used. The sub-Tables 2, 3, and 4 denote the severity of inspection depending upon the quality of previously submitted lots. The levels of severity are noted as normal, tightened and reduced and are listed in Tables sub B, C and D, respectively. The initial sampling plan is generally obtained from the A (normal inspection) Tables. Paragraph 5.4.5 contains rules for switching inspection procedures. It is acceptable to reduce the inspection level when the quality of submitted lots is consistently good, and to tighten it when lots are of poor quality.

8.5 Tables 6-22 portray the sampling plans for each sample size code letter. In addition, each Table includes the respective Operating Characteristic Curves and tabulated values for each AQL. These curves show the percent of lots likely to be accepted by each sampling plan depending upon the quality of submitted lots. This is also known as the probability of acceptance.

8.6 Note that all tabular AQL values less than or equal to 10 are expressed in percent nonconforming whereas AQL values greater than 10 are expressed as nonconformities per hundred units.

8.7 A list of references (**1** to **2**)[5] appears at the end of this standard. It is intended to provide the reader with more specific

[5] The boldface numbers in parentheses refer to a list of references appended to this practice.

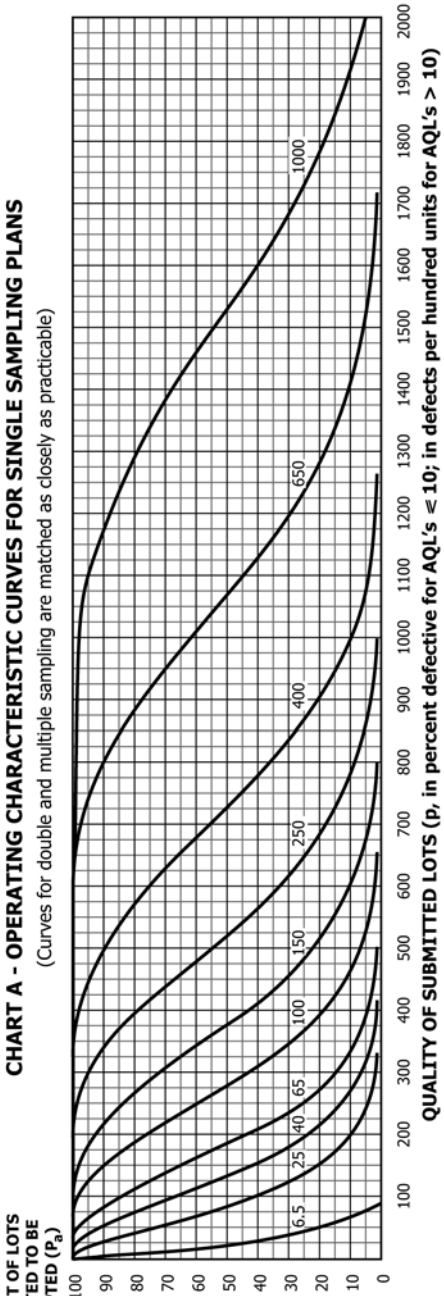
TABLE 6 Sample Size Code Letter A

TABLE X-A — Tables for sample size code letter: A

A

CHART A - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)



QUALITY OF SUBMITTED LOTS (p, in percent defective for AQL's ⩽ 10; in defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-A-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																
	6.5	6.5	25	40	65	100	150	X	250	X	400	X	650	X	1000		
	p (in percent defective)	p (in defects per hundred units)															
99.0	0.501	0.51	7.45	21.6	41.2	89.2	145	175	239	305	374	517	629	859	907		
95.0	2.53	2.56	17.8	40.9	68.3	131	199	235	308	385	462	622	745	995	1122		
90.0	5.13	5.25	26.6	55.1	87.3	158	230	272	351	432	515	684	812	1073	1206		
75.0	13.4	14.4	48.1	86.8	127	211	298	342	431	521	612	795	934	1314	1354		
50.0	29.3	34.7	83.9	134	184	284	383	433	533	633	733	933	1083	1383	1533		
25.0	50.0	69.3	135	196	256	371	484	540	651	761	870	1082	1248	1568	1728		
10.0	68.4	115	195	256	334	464	589	650	770	889	1006	1238	1409	1748	1916		
5.0	77.6	150	237	325	388	526	657	722	848	972	1094	1334	1512	1862	2035		
1.0	90.0	230	332	420	502	655	800	870	1007	1141	1272	1529	1718	2088	2270		
	X	X	40	65	100	150	X	250	X	400	X	650	X	1000	X		
	Acceptable Quality Levels (tightened inspection)																

Note: Binomial distribution used for percent defective computations; Poisson for defects per hundred units.

information and actual situations of application. Although the referenced works cite MIL-STD-105E, the references are also applicable to this practice.

9. Keywords

9.1 acceptable quality level (AQL); critical property; electrical insulation; inspection; major property; minor property; nonconformity; nonconforming; quality judgment; sampling; test measurement; test result

TABLE 6 Sample Size Code Letter A *(continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																				Cumulative Sample Size
		Less than 6.5		6.5		×		10		15		25		40		65		100		150		×		250		×		400		×		650		×		1000		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	2	∇		0	1							1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	27	28	30	31	2
Double		∇		·		Use Letter D		Use Letter C		Use Letter B		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		(·)		
Multiple		∇		·								·		·		·		·		·		·		·		·		·		·		·		·		·		
		Less than 10		×		10		15		25		40		65		100		150		×		250		×		400		×		650		×		1000		×		
		Acceptable Quality Levels (tightened inspection)																																				

∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter D).
(·) = Use double sampling plan above (or alternatively use letter B).

TABLE 7 Sample Size Code Letter B

B

TABLE X-B—Tables for sample size code letter: B

CHART B - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-B-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																		
	4.0	4.0	15	25	40	65	100	X	150	X	250	X	400	X	650	X	1000
	p (in percent defective)	p (in defects per hundred units)															
99.0	0.33	0.34	4.97	14.5	27.4	59.5	96.9	117	159	203	249	345	419	573	651	947	1029
95.0	1.70	1.71	11.8	27.3	45.5	87.1	133	157	206	256	308	415	496	663	748	1065	1152
90.0	3.45	3.50	17.7	36.7	58.2	106	155	181	234	288	343	456	541	716	804	1131	1222
75.0	9.14	9.60	32.0	57.6	84.5	141	199	228	287	347	408	530	623	809	903	1249	1344
50.0	20.6	23.1	55.9	89.1	122	189	256	289	356	422	489	622	722	922	1022	1389	1489
25.0	37.0	46.2	89.8	131	170	247	323	360	434	507	580	724	832	1046	1152	1539	1644
10.0	53.6	76.8	130	177	223	309	392	433	514	593	671	825	939	1165	1277	1683	1793
5.0	63.2	99.9	158	210	258	350	438	481	565	648	730	890	1008	1241	1356	1773	1886
1.0	78.4	154	221	280	335	437	533	580	672	761	848	1019	1145	1392	1513	1951	2069
	6.5	6.5	25	40	65	100	X	150	X	250	X	400	X	650	X	1000	X
	Acceptable Quality Levels (tightened inspection)																

Note: Binomial distribution used for percent defective computations; Poisson for defective per hundred units.

TABLE 7 Sample Size Code Letter B *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																								Cumulative Sample Size
		Less than 4.0		4.0		6.5		×		10		15		25		40		65		100		×		150		×		250		×		400		×		650		×		1000		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	3	∇		0	1	Use Letter A		Use Letter D		Use Letter C		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	27	28	30	31	41	42	44	45	3
Double	2 4	∇		·								0 1	2 2	0 3	3 4	1 4	4 5	2 6	5 7	3 8	7 9	3 11	7 12	5 12	9 13	6 15	10 16	7 18	11 19	9 23	14 24	11 26	16 27	15 34	20 35	17 37	22 38	23 52	29 53	25 56	31 57	2 4
Multiple		∇		·								≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		≠		
		Less than 6.5		6.5		×		10		15		25		40		65		100		×		150		×		250		×		400		×		650		×		1000		×		
		Acceptable Quality Levels (tightened inspection)																																							

∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter E).
≠ = Use double sampling plan above (or alternatively use letter B).

TABLE 8 Sample Size Code Letter C

C

TABLE X-C—Tables for sample size code letter: C

CHART C - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

QUALITY OF SUBMITTED LOTS (p, in percent defective for AQL's ≤ 10; is defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-C-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																			
	2.5	10	2.5	10	15	25	40	65	X	100	X	150	X	250	X	400	X	650		
	p (in percent defective)		p (in defects per hundred units)																	
99.0	0.20	3.28	0.20	2.89	8.72	16.5	35.7	58.1	70.1	95.4	122	150	207	251	344	391	568	618		
95.0	1.02	7.63	1.03	7.10	16.4	27.3	52.3	79.6	93.9	123	154	185	249	298	398	449	639	691		
90.0	2.09	11.2	2.10	10.6	22.0	34.9	63.0	93.1	109	140	173	206	273	325	429	482	679	733		
75.0	5.59	19.4	5.76	19.2	34.5	50.7	84.4	119	137	172	208	245	318	374	485	542	749	806		
50.0	12.9	31.4	13.9	33.6	53.5	73.4	103	153	173	213	253	293	373	433	553	613	833	893		
25.0	24.2	45.4	27.7	53.9	73.4	102	148	194	216	260	304	348	435	499	627	691	923	987		
10.0	36.9	58.4	46.1	77.8	106	134	186	235	260	308	356	403	495	564	699	766	1010	1076		
5.0	45.1	65.8	59.9	94.9	126	155	210	263	289	339	389	438	534	605	745	814	1064	1131		
1.0	60.2	77.8	92.1	135	168	201	262	320	348	403	456	509	612	687	835	908	1171	1241		
	4.0	X	4.0	15	25	40	65	X	100	X	150	X	250	X	400	X	650	X		
	Acceptable Quality Levels (tightened inspection)																			

Note: Binomial distribution used for percent defective computations; Poisson for defects per hundred units.

TABLE 8 Sample Size Code Letter C *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																						Cumulative Sample Size
		Less than 2.5	2.5	4.0	×	6.5	10	15	25	40	65	×	100	×	150	×	250	×	400	×	650	1000	
		Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re		
Single	5	∇	0 1	Use	Use	Use	1 2	2 3	3 4	5 6	7 8	8 9	10 11	12 13	14 15	18 19	21 22	27 28	30 31	41 42	44 45	Use		5
Double	3 6	∇	·	Letter B	Letter E	Letter D	0 2 1 2	0 3 3 4	1 4 4 5	2 5 6 7	3 7 8 9	3 7 11 12	5 9 12 13	6 10 15 16	7 11 18 19	9 14 23 24	11 16 26 27	15 20 34 35	17 22 37 38	23 29 52 53	25 31 56 57	Letter B		3 6
Multiple		∇	·				≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠				
		Less than 4.0	6.5	×	10	15	25	40	65	100	×	150	×	250	×	400	×	650	×	1000		×		
		Acceptable Quality Levels (tightened inspection)																						

∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter F).
≠ = Use double sampling plan above (or alternatively use letter D).

TABLE 9 Sample Size Code Letter D

D

TABLE X-D—Tables for sample size code letter: D

CHART D - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

QUALITY OF SUBMITTED LOTS (p, in percent defective for AQL's ≤ 10; in defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-D-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																			
	1.5	6.5	10	1.5	6.5	10	15	25	40	65	100	150	250	400						
	p (in percent defective)			p (in defects per hundred units)																
99.0	0.13	2.00	6.00	0.13	1.86	5.45	10.3	22.3	36.3	43.8	59.6	76.2	93.5	129	157	215	244	355	386	
95.0	0.64	4.64	11.1	0.64	4.44	10.2	17.1	32.7	49.8	58.7	77.1	96.1	116	156	186	249	281	399	432	
90.0	1.31	6.88	14.7	1.31	6.65	13.8	21.8	39.4	58.2	67.9	87.8	108	129	171	203	268	301	424	458	
75.0	3.53	12.1	22.1	3.60	12.0	21.6	31.7	52.7	74.5	85.5	108	130	153	199	234	303	339	468	504	
50.0	8.30	20.1	32.1	8.66	21.0	33.4	45.9	70.9	95.9	108	133	158	183	233	271	346	383	521	558	
25.0	15.9	30.3	43.3	17.3	33.7	49.0	63.9	92.8	121	135	163	190	218	272	312	392	432	577	617	
10.0	25.0	40.6	53.9	28.8	48.6	66.5	83.5	116	147	162	193	222	252	309	352	437	478	631	672	
5.0	31.2	47.1	59.9	37.5	59.3	78.7	96.9	131	164	180	212	243	274	334	378	465	509	665	707	
1.0	43.8	58.8	70.7	57.6	83.0	105	126	164	200	218	252	285	318	382	429	522	568	732	776	
	2.5	10	X	2.5	10	15	25	40	X	65	X	100	X	150	X	250	X	400	X	
	Acceptable Quality Levels (tightened inspection)																			

TABLE 9 Sample Size Code Letter D *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																										Cumulative Sample Size
		Less than 1.5	1.5	2.5	×	4.0	6.5	10	15	25	40	×	65	×	100	×	150	×	250	×	400	Higher than 400	
		Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	
Single	8	∇	0 1	Use Letter C	Use Letter F	Use Letter E	1 2	2 3	3 4	5 6	7 8	8 9	10 11	12 13	14 15	18 19	21 22	27 28	30 31	41 42	44 45	Δ	8
Double	5 10	∇	·				0 2 1 2	0 3 3 4	1 4 4 5	2 5 6 7	3 7 8 9	3 7 11 12	5 9 12 13	6 10 15 16	7 11 18 19	9 14 23 24	11 16 26 27	15 20 34 35	17 22 37 38	23 29 52 53	25 31 56 57	Δ	5 10
Multiple	2 4 6 8 10 12 14	∇	·				# 2 # 2 0 2 0 3 1 3 1 3 2 3	# 2 0 3 0 3 1 4 2 4 3 5 4 5	# 3 0 3 1 4 2 5 3 6 4 6 6 7	# 4 1 5 2 6 3 7 5 8 7 9 9 10	0 4 1 6 3 8 5 10 7 11 10 12 13 14	0 4 2 7 4 9 6 11 9 12 12 14 14 15	0 5 3 8 6 10 8 13 11 15 14 17 18 19	0 6 3 9 7 12 10 15 14 17 18 20 21 22	1 7 4 10 8 13 12 17 17 20 21 23 25 26	1 8 6 12 11 17 16 22 22 25 27 29 32 33	2 9 7 14 13 19 19 25 25 29 31 33 37 38	3 10 10 17 17 24 24 31 32 37 40 43 48 49	4 12 11 19 19 27 27 34 36 40 45 47 53 54	6 15 16 25 26 36 37 46 49 55 61 64 72 73	6 16 17 27 29 39 40 49 53 58 65 68 77 78	Δ	2 4 6 8 10 12 14
		Less than 2.5	2.5	×	4.0	6.5	10	15	25	40	×	65	×	100	×	150	×	250	×	400	×	Higher than 400	
		Acceptable Quality Levels (tightened inspection)																					

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter G).
= Acceptance not permitted at this sample size.

TABLE 10 Sample Size Code Letter E

TABLE X-E—Tables for sample size code letter: E

CHART E - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

QUALITY OF SUBMITTED LOTS (p, is percent defective for AQL's ≤ 10; in defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-E-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																			
	1.0	4.0	6.5	10	1.0	4.0	6.5	10	15	25	X	40	X	65	X	100	X	150	X	250
	p (in percent defective)				p (in defects per hundred units)															
99.0	0.077	1.19	3.63	7.00	0.078	1.15	3.35	6.33	13.7	22.4	27.0	36.7	46.9	57.5	79.6	96.7	132	150	219	238
95.0	0.394	2.81	6.63	11.3	0.395	2.73	6.29	10.5	20.1	30.6	36.1	47.5	59.2	71.1	95.7	115	153	173	246	266
90.0	0.807	4.16	8.80	14.2	0.808	4.09	8.48	13.4	24.2	35.8	41.8	54.0	66.5	79.2	106	125	165	185	261	282
75.0	2.19	7.41	13.4	19.9	2.22	7.39	13.3	19.5	32.5	45.8	52.6	66.3	80.2	94.1	122	144	187	208	288	310
50.0	5.19	12.6	20.0	27.5	5.33	12.9	20.6	28.2	43.6	59.0	66.7	82.1	97.5	113	144	168	213	236	321	344
25.0	10.1	19.4	28.0	36.2	10.7	20.7	30.2	39.3	57.1	74.5	83.1	100	117	134	167	192	241	266	355	379
10.0	16.2	26.8	36.0	44.4	17.7	29.9	40.9	51.4	71.3	90.5	100	119	137	155	190	217	269	295	388	414
5.0	29.6	31.6	41.0	49.5	23.0	36.5	48.4	59.6	80.9	101	111	130	150	168	205	233	286	313	409	435
1.0	29.8	41.5	50.6	58.7	35.4	51.1	64.7	77.3	101	123	134	155	176	196	235	264	321	349	450	477
	1.5	6.5	10	X	1.5	6.5	10	15	25	X	40	X	65	X	100	X	150	X	250	X
	Acceptable Quality Levels (tightened inspection)																			

Note: Binomial distribution used for percent defective computations; Poisson for defects per hundred units.

TABLE 10 Sample Size Code Letter E *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																						Cumulative Sample Size
		Less than 1.0	1.0	1.5	×	2.5	4.0	6.5	10	15	25	×	40	×	65	×	100	×	150	×	250	Higher than 250	
		Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	
Single	13	∇	0 1	Use Letter D	Use Letter G	Use Letter F	1 2	2 3	3 4	5 6	7 8	8 9	10 11	12 13	14 15	18 19	21 22	27 28	30 31	41 42	44 45	Δ	13
Double	8 16	∇	·				0 2 1 2	0 3 3 4	1 4 4 5	2 5 6 7	3 7 8 9	3 7 11 12	5 9 12 13	6 10 15 16	7 11 18 19	9 14 23 24	11 16 26 27	15 20 34 35	17 22 37 38	23 29 52 53	25 31 56 57	Δ	8 16
Multiple	3 6 9 12 15 18 21	∇	·				# 2 # 2 0 2 0 3 1 3 1 3 2 3	# 2 0 3 0 3 1 4 2 4 3 5 4 5	# 3 0 3 1 4 2 5 3 6 4 6 6 7	# 4 1 5 2 6 3 7 5 8 7 9 9 10	0 4 1 6 3 8 5 10 7 11 10 12 13 14	0 4 2 7 4 9 6 11 9 12 12 14 14 15	0 5 3 8 6 10 8 13 11 15 14 17 18 19	0 6 3 9 7 12 10 15 14 17 18 20 21 22	1 7 4 10 8 13 12 17 17 20 21 23 25 26	1 8 6 12 11 17 16 22 22 25 27 29 32 33	2 9 7 14 13 19 19 25 25 29 31 33 37 38	3 10 10 17 17 24 24 31 32 37 40 43 48 49	4 12 11 19 19 27 27 34 36 40 45 47 53 54	6 15 16 25 26 36 37 46 49 55 61 64 72 73	6 16 17 27 29 39 40 49 53 58 65 68 77 78	Δ	3 6 9 12 15 18 21
		Less than 1.5	1.5	×	2.5	4.0	6.5	10	15	25	×	40	×	65	×	100	×	150	×	250	×	Higher than 250	
		Acceptable Quality Levels (tightened inspection)																					

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter H).
= Acceptance not permitted at this sample size.

TABLE 11 Sample Size Code Letter F

T

TABLE X-F—Tables for sample size code letter: F

CHART F - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-F-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																		
	0.65	2.5	4.0	6.5	10	0.65	2.5	4.0	6.5	10	15	✕	25	✕	40	✕	65
	p (in percent defective)					p (in defects per hundred units)											
99.0	0.050	0.75	2.25	4.31	9.75	0.051	0.75	2.18	4.12	8.92	14.5	17.5	23.9	30.5	37.4	51.7	62.9
95.0	0.256	1.80	4.22	7.13	14.0	0.257	1.78	4.09	6.83	13.1	19.9	23.5	30.8	38.5	46.2	62.2	74.5
90.0	0.525	2.69	5.64	9.03	16.6	0.527	2.66	5.51	8.73	15.8	23.3	27.2	35.1	43.2	51.5	68.4	81.2
75.0	1.43	4.81	8.70	12.8	21.6	1.44	4.81	8.68	12.7	21.1	29.8	34.2	43.1	52.1	61.2	79.5	93.4
50.0	3.41	8.25	13.1	18.1	27.9	3.47	8.39	13.4	18.4	28.4	38.3	43.3	53.3	63.3	73.3	93.3	108
25.0	6.70	12.9	18.7	24.2	34.8	6.93	13.5	19.6	25.5	37.1	48.4	54.0	65.1	76.1	87.0	109	125
10.0	10.9	18.1	24.5	30.4	41.5	11.5	19.5	26.6	33.4	46.4	58.9	65.0	77.0	88.9	101	124	141
5.0	13.9	21.6	28.3	34.4	45.6	15.0	23.7	31.5	35.8	52.6	65.7	72.2	84.8	97.2	109	133	151
1.0	20.6	28.9	35.6	42.0	53.4	23.0	33.2	42.0	50.2	65.5	80.0	87.0	101	114	127	153	172
	1.0	4.0	6.5	10	✕	1.0	4.0	6.5	10	15	✕	25	✕	40	✕	65	✕
	Acceptable Quality Levels (tightened inspection)																

Note: Binomial distribution used for percent defective computations; Poisson for defects per hundred units.

TABLE 11 Sample Size Code Letter F *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																														Cumulative Sample Size
		Less than 0.65		0.65		1.0		×		1.5		2.5		4.0		6.5		10		15		×		25		×		40		×		65		Higher than 65		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	20	∇		0	1	Use Letter E		Use Letter H		Use Letter G		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		20
Double	13 26	∇		·								0 1	2 2	0 3	3 4	1 4	4 5	2 6	5 7	3 8	7 9	3 11	7 12	5 12	9 13	6 15	10 16	7 18	11 19	9 23	14 24	11 26	16 27	Δ		13 26
Multiple	5 10 15 20 25 30 35	∇		·								# # 0 0 1 1 2	2 2 2 3 3 3 3	# 0 0 1 2 3 4	2 3 3 4 4 5 5	# 0 1 2 3 3 4	3 3 4 5 6 6 7	# 1 2 3 5 7 9	4 5 6 7 8 9 10	0 1 3 5 7 10 13	4 6 8 10 11 12 14	0 2 4 6 9 12 14	4 7 9 11 12 14 15	0 3 6 8 11 14 18	5 8 10 13 15 17 19	0 3 7 10 14 18 21	6 9 12 15 17 20 22	1 4 6 8 12 17 21 25	7 10 13 17 20 23 26	1 6 11 16 22 25 27 32	8 12 17 22 25 29 33 33	2 7 13 19 25 25 31 37	9 14 19 25 29 33 38	Δ		5 10 15 20 25 30 35
		Less than 1.0		1.0		×		1.5		2.5		4.0		6.5		10		15		×		25		×		40		×		65		×		Higher than 65		
		Acceptable Quality Levels (tightened inspection)																																

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter J).
= Acceptance not permitted at this sample size.

TABLE 12 Sample Size Code Letter G

G

TABLE X-G—Tables for sample size code letter: G

CHART G - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-G-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																	
	0.40	1.5	2.5	4.0	6.5	10	0.40	1.5	2.5	4.0	6.5	10	X	15	X	25	X	40
	p (in percent defective)						p (in defects per hundred units)											
99.0	0.032	0.475	1.38	2.63	5.94	9.75	0.032	0.466	1.36	2.57	5.57	9.08	11.0	14.9	19.1	23.4	32.3	39.3
95.0	0.161	1.13	2.59	4.39	8.50	13.1	0.160	1.10	2.55	4.26	8.16	12.4	14.7	19.3	24.0	28.9	38.9	46.5
90.0	0.329	1.67	3.50	5.56	10.2	15.1	0.328	1.66	3.44	5.45	9.85	14.6	17.0	21.9	27.0	32.2	42.7	50.8
75.0	0.895	3.01	5.42	7.98	13.4	19.0	0.900	3.00	5.39	7.92	13.2	18.6	21.4	26.9	32.6	38.2	49.7	58.4
50.0	2.14	5.19	8.27	11.4	17.5	23.7	2.16	5.24	8.35	11.5	17.7	24.0	27.1	33.3	39.6	45.8	58.3	67.7
25.0	4.23	8.19	11.9	15.4	22.3	29.0	4.33	8.41	12.3	16.0	23.2	30.3	33.8	40.7	47.6	54.4	67.9	78.0
10.0	6.94	11.6	15.8	19.7	27.1	34.1	7.19	12.2	16.6	20.9	29.0	36.8	40.6	48.1	55.6	62.9	77.4	88.1
5.0	8.94	14.0	18.4	22.5	30.1	37.2	9.36	14.8	19.7	24.2	32.9	41.1	45.1	53.0	60.8	68.4	83.4	94.5
1.0	13.5	19.0	23.7	28.0	35.9	43.3	14.4	20.7	26.3	31.4	41.0	50.0	54.4	63.0	71.3	79.5	95.6	107
	0.65	2.5	4.0	6.5	10	X	0.65	2.5	4.0	6.5	10	X	15	X	25	X	40	X
	Acceptable Quality Levels (tightened inspection)																	

Note: Binomial distribution used for percent defective computations; Poisson for defects per hundred units.

TABLE 12 Sample Size Code Letter G *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																								Cumulative Sample Size
		Less than 0.40		0.40		0.65		×		1.0		1.5		2.5		4.0		6.5		10		×		15		×		25		×		40		Higher than 40		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	32	∇		0	1	Use Letter F		Use Letter J		Use Letter H		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		32
Double	20	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		20
	40											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			40
Multiple	8	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9	Δ		8
	16											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			16
	24											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			24
	32											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25			32
	40											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			40
	48											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			48
	56											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			56
		Less than 0.65		0.65		×		1.0		1.5		2.5		4.0		6.5		10		×		15		×		25		×		40		×		Higher than 40		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter K).
= Acceptance not permitted at this sample size.

TABLE 13 Sample Size Code Letter H

H

TABLE X-H—Tables for sample size code letter: H

CHART H - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-H-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																			
	0.25	1.0	1.5	2.5	4.0	6.5	X	10	0.25	1.0	1.5	2.5	4.0	6.5	X	10	X	15	X	25
	p (in percent defective)								p (in defects per hundred units)											
99.0	0.020	0.306	0.888	1.69	3.66	6.06	7.41	11.1	0.020	0.298	0.872	1.65	3.57	5.81	7.01	9.54	12.2	15.0	20.7	25.1
95.0	0.103	0.712	1.66	2.77	5.34	8.20	9.74	12.9	0.103	0.710	1.64	2.73	5.23	7.96	9.39	12.3	15.4	18.5	24.9	29.8
90.0	0.210	1.07	2.23	3.54	6.42	9.53	11.2	14.5	0.210	1.06	2.20	3.49	6.30	9.31	10.9	14.0	17.3	20.6	27.3	32.5
75.0	0.574	1.92	3.46	5.09	8.51	12.0	13.8	17.5	0.576	1.92	3.45	5.07	8.44	11.9	13.7	17.2	20.8	24.5	31.8	37.4
50.0	1.38	3.33	5.31	7.30	11.3	15.2	17.2	21.2	1.39	3.36	5.35	7.34	11.3	15.3	17.3	21.6	25.3	29.3	37.3	43.3
25.0	2.74	5.30	7.70	10.0	14.5	18.8	21.0	25.2	2.77	5.39	7.84	10.2	14.8	19.4	21.6	26.0	30.4	34.8	43.5	49.9
10.0	4.50	7.56	10.3	12.9	17.8	22.4	24.7	29.1	4.61	7.78	10.6	13.4	18.6	23.5	26.0	30.8	35.6	40.3	49.5	56.4
5.0	5.82	9.13	12.1	14.8	19.9	24.7	27.0	31.6	5.99	9.49	12.6	15.5	21.0	26.3	28.9	33.9	38.9	43.8	53.4	60.5
1.0	8.80	12.5	15.9	18.8	24.3	29.2	31.7	36.3	9.21	13.3	16.8	20.1	26.2	32.0	34.8	40.3	45.6	50.9	61.1	68.7
	0.40	1.5	2.5	4.0	6.5	X	10	X	0.40	1.5	2.5	4.0	6.5	X	10	X	15	X	25	X
	Acceptable Quality Levels (tightened inspection)																			

Note: Binominal distribution used for percent defective computations; Poisson for defects per hundred units.

TABLE 13 Sample Size Code Letter H *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																												Cumulative Sample Size
		Less than 0.25		0.25		0.40		×		0.65		1.0		1.5		2.5		4.0		6.5		×		10		×		15		×		25		Higher than 65		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	50	∇		0	1	Use Letter G		Use Letter K		Use Letter J		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		50
Double	32	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		32
	64											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			64
Multiple	13	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9	Δ		13
	26											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			26
	39											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			39
	52											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25			52
	65											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			65
	78											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			78
	91											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			91
		Less than 0.40		0.40		×		0.65		1.0		1.5		2.5		4.0		6.5		×		10		×		15		×		25		×		Higher than 25		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter L).
= Acceptance not permitted at this sample size.

TABLE 14 Sample Size Code Letter J

J

TABLE X-J—Tables for sample size code letter: J

CHART J - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-J-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)																								
	0.15	0.65	1.0	1.5	2.5	4.0	X	6.5	X	10	0.15	0.65	1.0	1.5	2.5	4.0	X	6.5	X	10	X	15
	p (in percent defective)										p (in defects per hundred units)											
99.0	0.013	0.188	0.550	1.05	2.30	3.72	4.50	6.13	7.88	9.25	0.013	0.186	0.545	1.03	2.23	3.63	4.38	5.96	7.62	9.35	12.9	15.7
95.0	0.064	0.444	1.03	1.73	3.32	5.06	5.98	7.91	9.89	11.9	0.064	0.444	1.02	1.71	3.27	4.98	5.87	7.71	9.61	11.6	15.6	18.6
90.0	0.132	0.666	1.38	2.20	3.98	5.91	6.91	8.95	11.0	13.2	0.131	0.665	1.38	2.18	3.94	5.82	6.79	8.78	10.8	12.9	17.1	20.3
75.0	0.359	1.202	2.16	3.18	5.30	7.50	8.62	10.9	13.2	15.5	0.360	1.20	2.16	3.17	5.27	7.45	8.55	10.8	13.0	15.3	19.9	23.4
50.0	0.863	2.09	3.33	4.57	7.06	9.55	10.8	13.3	15.8	18.3	0.866	2.10	3.34	4.59	7.09	9.59	10.8	13.3	15.8	18.3	23.3	27.1
25.0	1.72	3.33	4.84	6.31	9.14	11.9	13.3	16.0	18.6	21.3	1.73	3.37	4.90	6.39	9.28	12.1	13.5	16.3	19.0	21.8	27.2	31.2
10.0	2.84	4.78	6.52	8.16	11.3	14.2	15.7	18.6	21.4	24.2	2.88	4.86	5.65	8.35	11.6	14.7	16.2	19.3	22.2	25.2	30.9	35.2
5.0	3.68	5.80	7.66	9.39	12.7	15.8	17.3	20.3	23.2	26.0	3.75	5.93	7.87	9.69	13.1	16.4	18.0	21.2	24.3	27.4	33.4	37.8
1.0	5.59	8.00	10.1	12.0	15.6	18.9	20.5	23.6	26.5	29.5	5.76	8.30	10.5	12.6	16.4	20.0	21.8	25.2	28.5	31.8	38.2	42.9
	0.25	1.0	1.5	2.5	4.0	X	6.5	X	10	X	0.25	1.0	1.5	2.5	4.0	X	6.5	X	10	X	15	X
	Acceptable Quality Levels (tightened inspection)																					

Note: All values given in above table based on Poisson distribution as an approximation to the binomial.

TABLE 14 Sample Size Code Letter J *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																												Cumulative Sample Size
		Less than 0.15		0.15		0.25		×		0.40		0.65		1.0		1.5		2.5		4.0		×		6.5		×		10		×		15		Higher than 15		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	80	∇		0	1	Use Letter H		Use Letter L		Use Letter K		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		80
Double	50	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		50
	100											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			100
Multiple	20	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9	Δ		20
	40											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			40
	60											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			60
	80											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25			80
	100											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			100
	120											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			120
	140											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			140
		Less than 0.25		0.25		×		0.40		0.65		1.0		1.5		2.5		4.0		×		6.5		×		10		×		15		×		Higher than 15		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter M).
= Acceptance not permitted at this sample size.

TABLE 15 Sample Size Code Letter K

K

TABLE X-K — Tables for sample size code letter: K

CHART K - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

QUALITY OF SUBMITTED LOTS (p, in percent defective for AQL's ≤ 10; in defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-K-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.10	0.40	0.65	1.0	1.5	2.5	X	4.0	X	6.5	X	10	
	p (in percent defective or defects per hundred units)												
99.0	0.0081	0.119	0.349	0.658	1.43	2.33	2.81	3.82	4.88	5.98	8.28	10.1	
96.0	0.0410	0.284	0.654	1.09	2.09	3.19	3.76	4.94	6.15	7.40	9.95	11.9	
90.0	0.0840	0.426	0.882	1.40	2.52	3.73	4.35	5.62	6.92	8.24	10.9	13.0	
75.0	0.230	0.769	1.382	2.03	3.38	4.77	5.47	6.90	8.34	9.79	12.7	14.9	
50.0	0.554	1.34	2.14	2.94	4.54	6.14	6.94	8.53	10.1	11.7	14.9	17.3	
25.0	1.11	2.15	3.14	4.09	5.94	7.75	8.64	10.4	12.2	13.9	17.4	20.0	
10.0	1.84	3.11	4.26	5.35	7.42	9.42	10.4	12.3	14.2	16.1	19.8	22.5	
5.0	2.40	3.80	5.04	6.20	8.41	10.5	11.5	13.6	15.6	17.5	21.4	24.2	
1.0	3.68	5.31	6.73	8.04	10.5	12.8	18.3	16.1	18.3	20.4	24.5	27.5	
	0.15	0.65	1.0	1.5	2.5	X	4.0	X	6.5	X	10	X	
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 15 Sample Size Code Letter K *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																														Cumulative Sample Size
		Less than 0.10		0.10		0.15		×		0.25		0.40		0.65		1.0		1.5		2.5		×		4.0		×		6.5		×		10		Higher than 10		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	125	∇		0	1	Use Letter J		Use Letter M		Use Letter L		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		125
Double	80	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		80
	160											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			160
Multiple	32	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9	Δ		32
	64											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			64
	96											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			96
	128											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25			128
	160											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			160
	192											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			192
	224											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			224
		Less than 0.15		0.15		×		0.25		0.40		0.65		1.0		1.5		2.5		×		4.0		×		6.5		×		10		×		Higher than 10		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter N).
= Acceptance not permitted at this sample size.

TABLE 16 Sample Size Code Letter L

TABLE X-L — Tables for sample size code letter: L

CHART L - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-L-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.065	0.25	0.40	0.65	1.0	1.5	X	2.5	X	4.0	X	6.5	
	p (in percent defective or defects per hundred units)												
99.0	0.0051	0.075	0.218	0.412	0.893	1.45	1.75	2.39	3.05	3.74	5.17	6.29	
95.0	0.0256	0.178	0.409	0.683	1.31	1.99	2.35	3.09	3.85	4.62	6.22	7.45	
90.0	0.0525	0.266	0.551	0.873	1.58	2.33	2.72	3.51	4.32	5.15	6.84	8.12	
75.0	0.144	0.481	0.864	1.27	2.11	2.90	3.42	4.31	5.21	6.12	7.95	9.34	
50.0	0.347	0.839	1.34	1.84	2.84	3.84	4.33	5.33	6.33	7.33	9.33	10.8	
25.0	0.693	1.35	1.96	2.56	3.71	4.84	5.40	6.51	7.61	8.70	10.9	12.5	
10.0	1.15	1.95	2.66	3.34	4.64	5.89	6.50	7.70	8.89	10.1	12.4	14.1	
5.0	1.50	2.37	3.15	3.88	5.26	6.57	7.22	8.48	9.72	10.9	13.3	15.1	
1.0	2.30	3.32	4.20	5.02	6.55	8.00	8.70	10.1	11.4	12.7	15.3	17.2	
	0.10	0.40	0.65	1.0	1.5	X	2.5	X	4.0	X	6.5	X	
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 16 Sample Size Code Letter L *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																												Cumulative Sample Size
		Less than 0.065		0.065		0.10		×		0.15		0.25		0.40		0.65		1.0		1.5		×		2.5		×		4.0		×		6.5		Higher than 6.5		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	200	∇		0	1	Use Letter K		Use Letter N		Use Letter M		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		200
Double	125	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		125
	250											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			250
Multiple	50	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9	Δ		50
	100											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			100
	150											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			150
	200											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25			200
	250											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			250
	300											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			300
	350											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			350
		Less than 0.10		0.10		×		0.15		0.25		0.40		0.65		1.0		1.5		×		2.5		×		4.0		×		6.5		×		Higher than 6.5		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter P).
= Acceptance not permitted at this sample size.

TABLE 17 Sample Size Code Letter M

M

TABLE X-M — Tables for sample size code letter: M

CHART M - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-M-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.040	0.15	0.25	0.40	0.65	1.0	X	1.5	X	2.5	X	4.0	
	p (in percent defective or in defects per hundred units)												
99.0	0.0032	0.047	0.138	0.261	0.566	0.922	1.11	1.51	1.94	2.38	3.28	3.99	
95.0	0.0163	0.112	0.259	0.433	0.829	1.26	1.49	1.96	2.44	2.94	3.95	4.73	
90.0	0.0333	0.165	0.349	0.533	1.00	1.48	1.72	2.23	2.75	3.27	4.34	5.16	
75.0	0.0914	0.305	0.548	0.804	1.34	1.89	2.17	2.74	3.31	3.89	5.06	5.93	
50.0	0.220	0.532	0.845	1.17	1.80	2.43	2.75	3.39	4.02	4.66	5.93	6.88	
25.0	0.440	0.854	1.24	1.62	2.36	3.07	3.43	4.13	4.83	5.52	6.90	7.92	
10.0	0.731	1.23	1.69	2.12	2.94	3.74	4.13	4.89	5.65	6.39	7.86	8.95	
5.0	0.951	1.51	2.00	2.46	3.34	4.17	4.58	5.38	6.17	6.95	8.47	9.60	
1.0	1.46	2.11	2.67	3.19	4.16	5.08	5.53	6.40	7.25	8.08	9.71	10.9	
	0.065	0.25	0.40	0.65	1.0	X	1.5	X	2.5	X	4.0	X	
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 17 Sample Size Code Letter M *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																								Cumulative Sample Size
		Less than 0.040		0.040		0.065		×		0.10		0.15		0.25		0.40		0.65		1.0		×		1.5		×		2.5		×		4.0		Higher than 4.0		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	315	∇		0	1	Use Letter L		Use Letter P		Use Letter N		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		315
Double	200	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		200
	400											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			400
Multiple	80	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9			80
	160											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			160
	240											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			240
	320											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25	Δ		320
	400											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			400
	480											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			480
	560											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			560
		Less than 0.065		0.065		×		0.10		0.15		0.25		0.40		0.65		1.0		×		1.5		×		2.5		×		4.0		×		Higher than 4.0		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter Q).
= Acceptance not permitted at this sample size.

TABLE 18 Sample Size Code Letter N

N

TABLE X-N — Tables for sample size code letter: N

CHART N - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-N-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.025	0.10	0.15	0.25	0.40	0.65	X	1.0	X	1.5	X	2.5	
	p (in percent defective or in defects per hundred units)												
99.0	0.0020	0.030	0.067	0.165	0.357	0.581	0.701	0.954	1.22	1.50	2.07	2.51	
95.0	0.0103	0.071	0.164	0.273	0.523	0.796	0.939	1.23	1.54	1.85	2.49	2.98	
90.0	0.0210	0.106	0.220	0.349	0.630	0.931	1.09	1.40	1.73	2.06	2.73	3.25	
75.0	0.0576	0.192	0.345	0.507	0.844	1.19	1.37	1.72	2.08	2.45	3.18	3.74	
50.0	0.139	0.336	0.535	0.734	1.13	1.53	1.73	2.13	2.53	2.93	3.73	4.33	
25.0	0.277	0.539	0.784	1.02	1.48	1.94	2.16	2.60	3.04	3.48	4.35	4.99	
10.0	0.461	0.278	1.06	1.34	1.86	2.35	2.60	3.08	3.56	4.03	4.95	5.64	
5.0	0.599	0.949	1.26	1.55	2.10	2.63	2.89	3.39	3.89	4.38	5.34	6.03	
1.0	0.921	1.328	1.68	2.01	2.62	3.20	3.48	4.03	4.56	5.09	6.12	6.87	
	0.040	0.15	0.25	0.40	0.65	X	1.0	X	1.5	X	2.5	X	
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 18 Sample Size Code Letter N *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																												Cumulative Sample Size
		Less than 0.025		0.025		0.040		×		0.065		0.10		0.15		0.25		0.40		0.65		×		1.0		×		1.5		×		2.5		Higher than 2.5		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	500	∇		0	1	Use Letter M		Use Letter Q		Use Letter P		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		500
Double	315	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		315
	630											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			630
Multiple	125	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9			125
	250											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			250
	375											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			375
	500											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25	Δ		500
	625											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			625
	750											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			750
	875											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			875
		Less than 0.040		0.040		×		0.065		0.10		0.15		0.25		0.40		0.65		×		1.0		×		1.5		×		2.5		×		Higher than 2.5		
		Acceptable Quality Levels (tightened inspection)																																		

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above (or alternatively use letter R).
= Acceptance not permitted at this sample size.

TABLE 19 Sample Size Code Letter P

P

TABLE X-P — Tables for sample size code letter: P

CHART P - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

QUALITY OF SUBMITTED LOTS (p, in percent defective for AQL's ≤ 10; in defects per hundred units for AQL's > 10)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-P-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.015	0.065	0.10	0.15	0.25	0.40	X	0.65	X	1.0	X	1.5
	p (in percent defective or defects per hundred units)												
99.0	0.0013	0.0186	0.055	0.103	0.223	0.363	0.438	0.596	0.762	0.935	1.29	1.57
95.0	0.0064	0.0444	0.102	0.171	0.327	0.498	0.587	0.771	0.961	1.16	1.56	1.86
90.0	0.0131	0.0665	0.138	0.218	0.394	0.582	0.679	0.878	1.08	1.29	1.71	2.03
75.0	0.0350	0.120	0.216	0.317	0.527	0.745	0.855	1.08	1.30	1.53	1.99	2.34
50.0	0.0866	0.210	0.334	0.459	0.709	0.959	1.08	1.33	1.58	1.83	2.33	2.71
25.0	0.173	0.337	0.490	0.639	0.928	1.21	1.35	1.63	1.50	2.18	2.72	3.12
10.0	0.288	0.486	0.665	0.835	1.16	1.47	1.62	1.93	2.22	2.52	3.09	3.52
5.0	0.375	0.593	0.787	0.969	1.31	1.64	1.80	2.12	2.43	2.74	3.34	3.78
1.0	0.576	0.830	1.05	1.26	1.64	2.00	2.18	2.52	2.85	3.18	3.82	4.29
	0.025	0.10	0.15	0.25	0.40	X	0.65	X	1.0	X	1.5	X
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 19 Sample Size Code Letter P *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																														Cumulative Sample Size
		Less than 0.010		0.015		0.025		×		0.040		0.065		0.10		0.15		0.25		0.40		×		0.65		×		1.0		×		1.5		Higher than 1.5		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	800	∇		0	1	Use Letter M		Use Letter Q		Use Letter P		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		800
Double	500	∇		·								0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		500
	1000											1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			1000
Multiple	200	∇		·								#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9			200
	400											#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			400
	600											0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			600
	800											0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25	Δ		800
	1000											1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			1000
	1200											1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			1200
	1400											2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			1400
		Less than 0.025		0.025		×		0.040		0.065		0.10		0.15		0.25		0.40		×		0.65		×		1.0		×		1.5		×		Higher than 1.5		
		Acceptable Quality Levels (tightened inspection)																																	

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above.
= Acceptance not permitted at this sample size.

TABLE 20 Sample Size Code Letter Q

Q

TABLE X-Q — Tables for sample size code letter: Q

CHART Q - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-Q-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)												
	0.010	0.040	0.065	0.10	0.15	0.25	X	0.40	X	0.65	X	1.0	
	p (in percent defective or defects per hundred units)												
99.0	0.00081	0.0119	0.0349	0.0656	0.143	0.232	0.281	0.382	0.488	0.598	0.828	1.01	
95.0	0.00410	0.0284	0.0654	0.109	0.209	0.318	0.376	0.494	0.615	0.740	0.995	1.19	
90.0	0.00840	0.0426	0.0882	0.140	0.252	0.372	0.435	0.562	0.692	0.824	1.09	1.30	
75.0	0.0230	0.0769	0.138	0.203	0.338	0.476	0.547	0.690	0.834	0.979	1.27	1.49	
50.0	0.0554	0.134	0.214	0.294	0.454	0.614	0.694	0.853	1.01	1.17	1.49	1.73	
25.0	0.111	0.215	0.314	0.409	0.594	0.775	0.864	1.04	1.22	1.39	1.74	2.00	
10.0	0.184	0.310	0.426	0.534	0.742	0.942	1.04	1.23	1.42	1.61	1.98	2.25	
5.0	0.240	0.380	0.504	0.620	0.841	1.05	1.15	1.36	1.56	1.75	2.14	2.42	
1.0	0.368	0.531	0.672	0.804	1.05	1.28	1.83	1.61	1.83	2.04	2.45	2.75	
	0.015	0.065	0.10	0.15	0.25	X	0.40	X	0.65	X	1.0	X	
	Acceptable Quality Levels (tightened inspection)												

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 20 Sample Size Code Letter Q *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																								Cumulative Sample Size
		×		0.010		0.015	×		0.025		0.040		0.065		0.10		0.15		0.25		×		0.40		×		0.65		×		1.0		Higher than 1.0		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	1250	Use Letter R		0	1	Use Letter M	Use Letter Q		Use Letter P		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		1250
Double	800			·							0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14	11	16	Δ		800
	1600										1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24	26	27			1600
Multiple	315										#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8	2	9			315
	630										#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12	7	14			630
	945										0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17	13	19			945
	1260			·							0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22	19	25	Δ		1260
	1575										1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25	25	29			1575
	1890										1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29	31	33			1890
	2205										2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33	37	38			2205
		0.010		0.015		×	0.025		0.040		0.065		0.10		0.15		0.25		×		0.40		×		0.65		×		1.0		×		Higher than 1.0		
		Acceptable Quality Levels (tightened inspection)																																

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above.
= Acceptance not permitted at this sample size.

TABLE 21 Sample Size Code Letter R

R

TABLE X-R — Tables for sample size code letter: R

CHART R - OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

(Curves for double and multiple sampling are matched as closely as practicable)

Note: Figures on curves are Acceptable Quality Levels (AQL's) for normal inspection.

TABLE X-R-1 - TABULATED VALUES FOR OPERATING CHARACTERISTIC CURVES FOR SINGLE SAMPLING PLANS

P_a	Acceptable Quality Levels (normal inspection)										
	0.025	0.040	0.065	0.10	0.15	X	0.25	X	0.40	X	0.65
	p (in percent defective or defects per hundred units)										
99.0	0.0074	0.0218	0.0412	0.0892	0.145	0.175	0.239	0.305	0.374	0.517	0.629
95.0	0.0178	0.0409	0.0683	0.131	0.199	0.235	0.309	0.385	0.462	0.622	0.745
90.0	0.0266	0.0551	0.0873	0.158	0.233	0.272	0.351	0.432	0.515	0.684	0.812
75.0	0.0481	0.0868	0.127	0.211	0.298	0.342	0.431	0.521	0.612	0.795	0.934
50.0	0.0839	0.134	0.184	0.284	0.384	0.433	0.533	0.633	0.733	0.933	1.08
25.0	0.135	0.196	0.256	0.371	0.484	0.540	0.651	0.761	0.870	1.09	1.25
10.0	0.195	0.266	0.334	0.464	0.589	0.650	0.770	0.889	1.01	1.24	1.41
5.0	0.237	0.315	0.388	0.526	0.657	0.722	0.848	0.972	1.09	1.33	1.51
1.0	0.332	0.420	0.502	0.655	0.800	0.870	1.02	1.14	1.27	1.53	1.72
	0.040	0.065	0.10	0.15	X	0.25	X	0.40	X	0.65	X
	Acceptable Quality Levels (tightened inspection)										

Note: All values given in above table based on Poisson distribution as an approximation to the Binomial.

TABLE 21 Sample Size Code Letter R *(continued) (continued)*

Type of Sampling Plan	Cumulative Sample Size	Acceptable Quality Levels (normal inspection)																												Cumulative Sample Size
		×		0.010		0.015		×		0.025		0.040		0.065		0.10		0.15		×		0.25		×		0.40		×		0.65		Higher than 0.65		
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	
Single	2000	0	1	Use Letter Q		Use Letter P		Use Letter S		1	2	2	3	3	4	5	6	7	8	8	9	10	11	12	13	14	15	18	19	21	22	Δ		2000
Double	800									0	2	0	3	1	4	2	5	3	7	3	7	5	9	6	10	7	11	9	14			Δ		800
	1600									1	2	3	4	4	5	6	7	8	9	11	12	12	13	15	16	18	19	23	24					1600
Multiple	500									#	2	#	2	#	3	#	4	0	4	0	4	0	5	0	6	1	7	1	8					500
	1000									#	2	0	3	0	3	1	5	1	6	2	7	3	8	3	9	4	10	6	12					1000
	1500									0	2	0	3	1	4	2	6	3	8	4	9	6	10	7	12	8	13	11	17					1500
	2000									0	3	1	4	2	5	3	7	5	10	6	11	8	13	10	15	12	17	16	22			Δ		2000
	2500									1	3	2	4	3	6	5	8	7	11	9	12	11	15	14	17	17	20	22	25					2500
	3000									1	3	3	5	4	6	7	9	10	12	12	14	14	17	18	20	21	23	27	29					3000
	3500									2	3	4	5	6	7	9	10	13	14	14	15	18	19	21	22	25	26	32	33					3500
		0.010		0.015		×		0.025		0.040		0.065		0.10		0.15		×		0.25		×		0.40		×		0.65		×		Higher than 0.65		
		Acceptable Quality Levels (tightened inspection)																															

Δ = Use next preceding sample size code letter for which acceptance and rejection numbers are available.
∇ = Use next subsequent sample size code letter for which acceptance and rejection numbers are available.
Ac = Acceptance number
Re = Rejection number
· = Use single sampling plan above.
= Acceptance not permitted at this sample size.

TABLE 22 Sample Size Code Letter S

Type of sampling plan	Cumulative sample size	Acceptable Quality Level (normal inspection) ×	
		Ac	Re
Single	3150	1	2
Double	2000	0	2
	4000	1	2
Multiple	800	#	2
	1600	#	2
	2400	0	2
	3200	0	3
	4000	1	3
	4800	1	3
	5600	2	3
		0.025	
		Acceptable Quality Level (tightened inspection)	

Ac = Acceptance number
Re = Rejection number
# = Acceptance not permitted at this sample size.

APPENDIX

(Nonmandatory Information)

X1. DATA AND INFORMATION GENERATED AS A RESULT OF INSPECTION AND TESTING

X1.1 Inasmuch as the promulgation and dissemination of knowledge is a worthy goal, the data and other pertinent information regarding the quality of any given lot of electrical insulating material should be made available to the producer of the material upon completion of the evaluation of the lot.

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SUMMARY OF CHANGES

Committee D09 has identified the location of selected changes to this practice since the last issue, D3636 – 00, that may impact the use of this practice. (Approved June 1, 2006)

(*1*) Revised Sections 1, 3, 5, 6, and 8.
(*2*) Moved old Section 8 into Appendix X1 and renumbered subsequent sections.

Committee D09 has identified the location of selected changes to this practice since the last issue, D3636 – 11, that may impact the use of this practice. (Approved January 1, 2013)

(*1*) Tables 1–22 modified.

Committee D09 has identified the location of selected changes to this practice since the last issue, D3636 – 13, that may impact the use of this practice. (Approved March 1, 2013)

(*1*) Revised Military Standards in 2.2, 4.2, 8.1, and 8.7. (*2*) Added Section 4.3.