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QA 1.0-1 REV A
Determining Your Sample Size
Per ANSI ASQ Z1.4 AQL Table
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EFFECTIVE: 9/30/2021

1. LOT SIZE

On the far left of the first side of the ANSI Z1.4 table, you will see a section for "lot size", referring to your total order quantity. Lot size is your starting point for using the ANSI Z1.4 table, represented by a range of order quantities expressed in units.

This part of using the AQL sampling plan tables is easy— simply choose the lot size range containing your total order quantity. For instance, let us say you have an order quantity of 300 parts. You would use the lot size range of 281 to 500 units.

CODE LETTERS

Table I—Sample size code letters

(See 9.2 and 9.3)

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	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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2. INSPECTION LEVEL

To the right of the lot sizes, you will see the ANSI Z1.4 table is further divided into two categories, "general inspection levels" and "special inspection levels". The inspection level you choose is a critical determinant of your ANSI sampling plan and the scope of your product inspection. **PTI Technologies requires inspection level II for the sample inspection report per QA19A.**

CODE LETTERS

Table I—Sample size code letters

(See 9.2 and 9.3)

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	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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3. SAMPLE SIZE AND CODE LETTERS

After determining your lot size and inspection level, you are ready to find your sample size. Sample sizes are represented by code letters on the first part of the ANSI Z1.4 table. By following the row of your lot size to your chosen inspection level II, you will see a corresponding code letter listed. If your order lot, batch size is 300 parts. You can see your code letter would be "H"

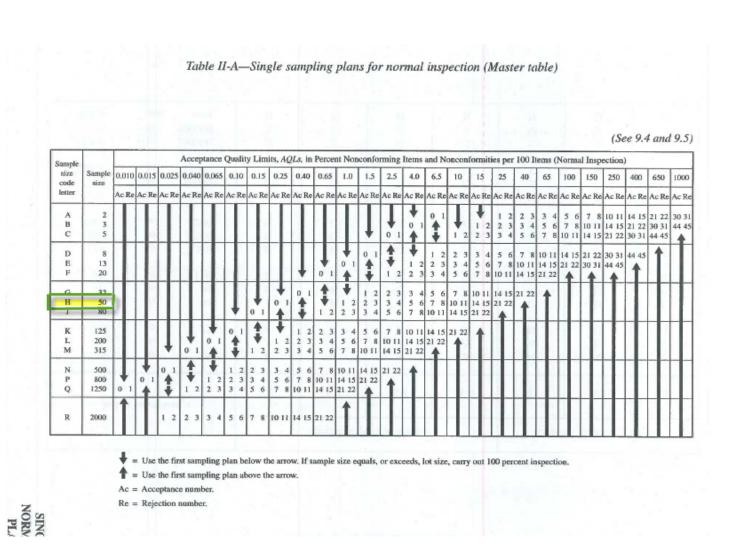CODE LETTERS

Table I—Sample size code letters

(See 9.2 and 9.3)

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	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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The second part of the AQL sampling tables then lists the sample size, or the number of units to pull for inspection, next to the corresponding code letter. For H, your initial sample size will be 50 units. This is just a starting point.

Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

Acceptance Quality Limits, AQLs, in Percent Nonconforming Items and Nonconformities per 100 Items (Normal Inspection). Values shown are Ac Re (Ac = Acceptance number, Re = Rejection number).

Sample size code letter	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
A	2																↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31
B	3															↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45
C	5														↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45	↑
D	8													↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45	↑	↑
E	13												↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45	↑		
F	20											↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45	↑			
G	32										↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑						
H	50									↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑							
J	80								↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑								
K	125							↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑									
L	200						↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑										
M	315					↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑											
N	500				↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑												
P	800			↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑													
Q	1250		↓	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑														
R	2000	↑	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	↑															

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

↑ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

SINGLE SAMPLING PLANS FOR NORMAL INSPECTION

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You will notice there are also arrows pointing up or down for certain sample sizes under each of the acceptable quality levels. These arrows indicate where you should use a different sample size based on your tolerance for defects, or your AQL, rather than your lot size.

The sample size determined by your lot size can sometimes be too large or too small for your AQL. You may require a larger sample size if you choose a relatively low AQL, for instance. The lower your tolerance for defects, the more units you will need to inspect to reasonably predict the average quality of the total order. **In addition, if the appropriate sample size equals or exceeds your lot size, you will inspect 100 percent of the order**.

A large sample size is often redundant for large lot sizes if you have a higher tolerance for quality defects. You can get the same confidence in results from inspecting a smaller sample size, which will be less time consuming and less expensive. In these cases, follow the arrows to the appropriate sample size and use this one for your inspection. Shown in example 1.

Returning to the above example, **PTI requires an AQL of 0.65 for major defects**. You will need to use a sample size of 80 units (coded as J), instead of the 50-unit sample size corresponding to H, as shown by the downward arrow.
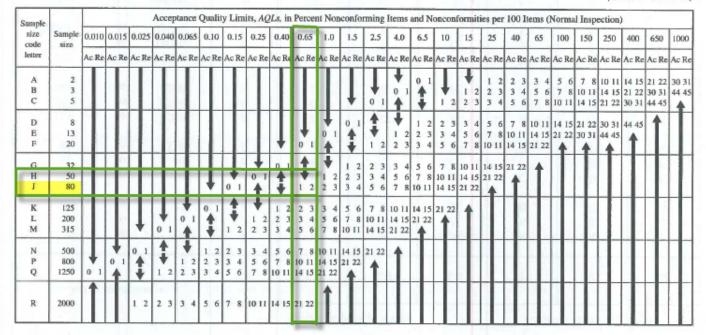
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Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

Sample size code letter	Sample size	Acceptance Quality Limits, AQLs, in Percent Nonconforming Items and Nonconformities per 100 Items (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
A	2													0 1				1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	
B	3												0 1				1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45	
C	5											0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45			
D	8									0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45					
E	13								0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45						
F	20								0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22									
G	32							0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22									
H	50							0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22										
J	80						0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22											
K	125				0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22												
L	200			0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22													
M	315			0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22														
N	500		0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22															
P	800	0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																
Q	1250	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																	
R	2000		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																	

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

↑ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

SINGLE

5. ACCEPTANCE POINTS AND REJECTION POINTS

Your chosen AQL for each type of defect will determine a corresponding acceptance point and rejection point. PTI requires a zero reject acceptance be used, if any part does not meet requirements, the entire lot must be rejected and screened

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Example 1

In this example, we will use a lot or batch size of 200. In this instance, your code letter will be "G"

CODE
LETTERS

Table I—Sample size code letters

(See 9.2 and 9.3)

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	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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Looking at table II, you will see your starting sample size is 32

Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

Sample size code letter	Sample size	Acceptance Quality Limits, AQLs, in Percent Nonconforming Items and Nonconformities per 100 Items (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
A	2													0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31		
B	3												0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45		
C	5											0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45			
D	8									0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45					
E	13								0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22	30 31	44 45						
F	20							0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22									
G	32						0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22										
H	50					0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22											
J	80				0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22												
K	125			0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22													
L	200		0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22														
M	315	0 1			1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22															
N	500		0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22															
P	800	0 1		1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																
Q	1250	0 1	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																	
R	2000	1 2	2 3	3 4	5 6	7 8	10 11	14 15	21 22																		

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

↑ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

SINGLE

Since our required AQL is, .65 you will see in this column an arrow pointing <u>up</u>. This is telling us the sample size of 32 pieces is too large per the AQL. You will move up to the next sample size. Here you will see our sample size is now 20.

Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

↑ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

SINGLE

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Example 2

In this example, we will use a lot or batch size of 18. In this instance, your code letter will be "C"

Table I—Sample size code letters

(See 9.2 and 9.3)

CODE LETTERS			Special inspection levels				General inspection levels		
Lot or batch size			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	10000	C	D	F	G	J	L	M
10001	to	35000	C	D	F	H	K	M	N
35001	to	150000	D	E	G	J	L	N	P
150001	to	500000	D	E	G	J	M	P	Q
500001	and	over	D	E	H	K	N	Q	R

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Our starting sample size is 5.

Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

↑ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

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Since our required AQL is, .65 you will see in this column an arrow pointing <u>down</u>. This is telling us the sample size of 5 pieces is too small per the AQL. You will move down to the next sample size. Here you will see our sample size is now 20. Since our lot, size is only 18 the whole lot will need to be inspected

Table II-A—Single sampling plans for normal inspection (Master table)

(See 9.4 and 9.5)

▼ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.

▲ = Use the first sampling plan above the arrow.

Ac = Acceptance number.

Re = Rejection number.

SINGLE