



Product Series Code	<b>AL</b>	Brand	<b>MOTTO</b>
File Version	<b>AL-V2</b>	Editor	<b>Jack</b>
Established Date	<b>2000.05.23</b>	Description	<b>Axial Lead Inductor Choke</b>
Latest Edit Date	<b>2010.11.26</b>	Pages	<b>1</b>

### Features & Application:

- \* Axial lead for through hole board facility
- \* Fit for power line & signal line circuit
- \* To help you go pass the CE/FCC standard.
- \* PC / IA / IPC / RF...etc.

### Part No Example:

AL 0204 - 180 K  
1 2 3 4

- 1.MOTTO TYPE : AL
- 2.Dimension : Length-Width
- 3.Inductance : 180=18uH
- 4.Tolerance: K 10% (J 5%; K 10%; M 20%)

### Test Equipment :

- \* HP4284A,HP42841A- L,IDC,Q,RDC
- \* HP8753D NETWORK ANALYZER- SRF

Standard Atmospheric Conditions:

Ambient Temp:20+/-15°C

Relative Humidity:65+/-20%

If there may be any doubt on the result, measurement shall be made within the following limits:

Ambient Temp:25+/-5°C

Relative Humidity:75+/-10%

### Operating & Storage Condition:

OPERATING TEMP:-40~+85°C

STORAGE TEMP:-40~+85°C

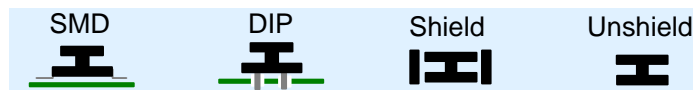
STORAGE LIFE TIME: 12 MONTH @25°C , RH 65%

### Attention & Caution:

Please avoid following matters:

- \* Splashing water or salt water
- \* Toxic Gas (Hydrogen sulfide, Sulfurous acid, Chlorine, Ammonia)
- \* Vibrations or shocks which exceed the specified condition
- \* Dew condenses
- \* Please be careful for the stress to this product by board flexure or something after the mounting.

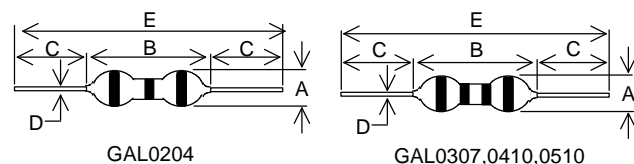
### Product Structure



### 2005 RoHS Compliant - SGS Certified Result

鉛 Pb	鎘 Cd	汞 Hg	六價鉻 Cr+6	溴化聯苯 PBB	溴化聯苯 醚PBDE
<1000ppm	ND	ND	ND	ND	ND

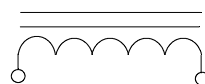
### Dimensions: [mm]



### Normal Form & Short Form

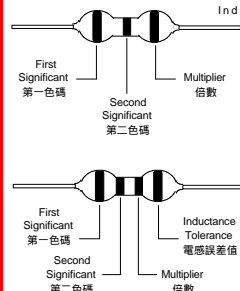
	∅ A(max)	B(max)	C(+/-3.0)	D(+/-0.05)	E(+/-1.5)
AL0204	2.8	5.0	29.5	0.50	62.5
AL0307	3.0	7.0	28.0	0.50	62.5
AL0410	4.0	10.0	26.0	0.65	62.5
AL0510	5.0	10.0	26.0	0.65	62.5
ALS0204	2.8	5.0	16.0	0.50	36.5
ALS0307	3.0	7.0	15.0	0.50	36.5
ALS0410	4.0	10.0	14.0	0.65	36.5
ALS0510	5.0	10.0	14.0	0.65	36.5

### SCHEMATIC:



### Marking Expression: 色碼依下列算法計之.....

For inductance meaning:  
 [(1st dot x10)+2 nd dot ]x10 3 rd dot=nH  
 for example:  
 GAL0204PS-220J Color Significant=紅 1st 紅 2nd 橙 3rd  
 Inductance= [ (紅 2) x 10 + (紅 2) ] x (橙) 10x100  
 =22x1000=22000nH  
 22000 ÷ 1000 = 22uH



Color Codes 色碼	First Significant 第一色碼	Second Significant 第二色碼	Multiplier 倍數	Inductance Tolerance(%)
Black 黑	0	0	1	-
Brown 棕	1	1	10	-
Red 紅	2	2	100	-
Orange 橙	3	3	-	-
Yellow 黃	4	4	-	-
Green 綠	5	5	-	-
Blue 藍	6	6	-	-
Violet 紫	7	7	-	-
Gray 灰	8	8	-	-
White 白	9	9	-	-
Black(M) 黑	-	-	-	+/-20
Gold(J) 金	-	-	0.1	+/-5





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Latest Edit Date	2010.11.26	Pages	2

MOTTO PART NO.	Inductance (L)( $\mu$ H)	IDC mA. (Max)	DCR ohm (Max.)	Test Freq. (MHz)	SRF(MHz) (Min)	Q (min)
AL□0204-R10□	0.10	700	0.180	25.2	300	35
AL□0204-R12□	0.12	660	0.200	25.2	300	35
AL□0204-R15□	0.15	620	0.220	25.2	300	35
AL□0204-R18□	0.18	600	0.240	25.2	300	35
AL□0204-R22□	0.22	400	0.400	25.2	150	35
AL□0204-R27□	0.27	380	0.430	25.2	150	35
AL□0204-R33□	0.33	370	0.480	25.2	150	35
AL□0204-R39□	0.39	350	0.510	25.2	150	35
AL□0204-R47□	0.47	330	0.560	25.2	150	35
AL□0204-R56□	0.56	320	0.610	25.2	150	35
AL□0204-R68□	0.68	310	0.670	25.2	150	35
AL□0204-R82□	0.82	290	0.740	25.2	150	35
AL□0204-1R0□	1.00	270	0.800	25.2	150	35
AL□0204-1R2□	1.20	260	0.900	7.96	110	40
AL□0204-1R5□	1.50	250	1.000	7.96	70	40
AL□0204-1R8□	1.80	240	1.100	7.96	60	40
AL□0204-2R2□	2.20	230	1.200	7.96	45	40
AL□0204-2R7□	2.70	220	1.300	7.96	40	40
AL□0204-3R3□	3.30	210	1.400	7.96	38	40
AL□0204-3R9□	3.90	200	1.500	7.96	36	40
AL□0204-4R7□	4.70	190	1.700	7.96	32	40
AL□0204-5R6□	5.60	180	1.900	7.96	30	40
AL□0204-6R8□	6.80	175	2.000	7.96	28	40
AL□0204-8R2□	8.20	165	2.200	7.96	26	40
AL□0204-100□	10.00	160	2.500	7.96	24	40
AL□0204-120□	12.00	150	2.500	2.52	22	40
AL□0204-150□	15.00	145	2.800	2.52	20	40
AL□0204-180□	18.00	140	3.100	2.52	18	40
AL□0204-220□	22.00	100	3.400	25.2	17	40
AL□0204-270□	27.00	80	4.300	25.2	16	40
AL□0204-330□	33.00	75	4.700	25.2	14	40
AL□0204-390□	39.00	74	5.200	25.2	13	40
AL□0204-470□	47.00	70	5.800	25.2	12	40
AL□0204-560□	56.00	68	6.400	25.2	11	40
AL□0204-680□	68.00	64	7.200	25.2	10	40
AL□0204-820□	82.00	46	11.000	25.2	9.5	40
AL□0204-101□	100.00	44	12.000	25.2	9.0	40
AL□0204-121□	120.00	42	13.000	0.796	8.0	40
AL□0204-151□	150.00	39	16.000	0.796	6.0	40
AL□0204-181□	180.00	37	18.000	0.796	5.0	40
AL□0204-221□	220.00	35	20.000	0.796	5.0	40
AL□0204-271□	270.00	25	25.000	0.796	4.6	40
AL□0204-331□	330.00	25	30.000	0.796	4.2	40
AL□0204-391□	390.00	25	34.000	0.796	3.8	40
AL□0204-471□	470.00	24	38.000	0.796	3.5	40
AL□0204-561□	560.00	24	42.000	0.796	3.2	40
AL□0204-681□	680.00	24	46.000	0.796	2.0	40
AL□0204-821□	820.00	22	48.000	0.796	2.0	40
AL□0204-102□	1000.00	22	50.000	0.796	1.5	40

Inductance drop: 10% typ. at IDC.

□=J 5%, K 10%, M 20%





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Latest Edit Date	2010.11.26	Pages	3

MOTTO PART NO.	Inductance (L)( $\mu$ H)	IDC mA. (Max)	DCR ohm (Max.)	Test Freq. (MHz)	SRF(MHz) (Min)	Q (min)
AL□0307-R10□	0.10	1400	0.060	25.2	480	40
AL □0307-R12□	0.12	1350	0.060	25.2	450	40
AL□0307-R15□	0.15	1270	0.070	25.2	420	40
AL□0307-R18□	0.18	1200	0.070	25.2	400	40
AL □0307-R22□	0.22	1150	0.080	25.2	380	40
AL □0307-R27□	0.27	1110	0.085	25.2	360	40
AL□0307-R33□	0.33	1110	0.095	25.2	350	40
AL □0307-R39□	0.39	1000	0.100	25.2	320	40
AL□0307-R47□	0.47	1000	0.110	25.2	300	40
AL □0307-R56□	0.56	950	0.120	25.2	280	40
AL □0307-R68□	0.68	900	0.130	25.2	250	40
AL□0307-R82□	0.82	900	0.140	25.2	200	40
AL □0307-1R0□	1.00	815	0.150	25.2	180	40
AL □0307-1R2□	1.20	740	0.180	7.96	165	40
AL □0307-1R5□	1.50	700	0.200	7.96	150	40
AL □0307-1R8□	1.80	655	0.230	7.96	125	50
AL □0307-2R2□	2.20	630	0.250	7.96	110	50
AL □0307-2R7□	2.70	595	0.280	7.96	95	50
AL □0307-3R3□	3.30	575	0.300	7.96	70	50
AL □0307-3R9□	3.90	555	0.320	7.96	65	50
AL □0307-4R7□	4.70	530	0.350	7.96	50	50
AL □0307-5R6□	5.60	500	0.400	7.96	40	50
AL □0307-6R8□	6.80	470	0.450	7.96	30	50
AL □0307-8R2□	8.20	425	0.560	7.96	28	50
AL □0307-100□	10.00	370	0.750	7.96	22	50
AL □0307-120□	12.00	350	0.800	2.52	20	50
AL □0307-150□	15.00	335	0.930	2.52	16	50
AL □0307-180□	18.00	315	1.000	2.52	15	50
AL □0307-220□	22.00	285	1.200	2.52	13	50
AL □0307-270□	27.00	270	1.800	2.52	11	50
AL □0307-330□	33.00	255	2.100	2.52	10	50
AL □0307-390□	39.00	240	2.300	2.52	9.5	50
AL □0307-470□	47.00	205	2.600	2.52	8.5	50
AL □0307-560□	56.00	195	2.900	2.52	7.5	50
AL □0307-680□	68.00	185	3.300	2.52	6.5	50
AL □0307-820□	82.00	175	3.800	2.52	6.0	50
AL □0307-101□	100.00	165	4.200	2.52	5.5	50
AL □0307-121□	120.00	160	4.700	0.796	5.4	60
AL □0307-151□	150.00	150	5.400	0.796	4.7	60
AL □0307-181□	180.00	140	6.000	0.796	4.3	60
AL □0307-221□	220.00	130	7.000	0.796	4.0	60
AL □0307-271□	270.00	120	7.700	0.796	3.7	60
AL □0307-331□	330.00	100	11.100	0.796	3.4	60
AL □0307-391□	390.00	95	12.600	0.796	2.8	60
AL □0307-471□	470.00	90	14.000	0.796	2.5	60
AL □0307-561□	560.00	85	15.500	0.796	2.3	60
AL □0307-681□	680.00	75	25.300	0.796	2.0	60
AL □0307-821□	820.00	65	27.500	0.796	1.5	60
AL □0307-102□	1000.00	60	31.400	0.796	1.2	50

Inductance drop: 10% typ. at IDC.

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Latest Edit Date	2010.11.26	Pages	4

MOTTO PART NO.	Inductance (L)( $\mu$ H)	IDC mA. (Max)	DCR ohm (Max.)	Test Freq. (MHz)	SRF(MHz) (Min)	Q (min)
AL□0410-R10□	0.10	1700	0.060	25.2	480	25
AL□0410-R12□	0.12	1640	0.060	25.2	450	25
AL□0410-R15□	0.15	1560	0.070	25.2	420	25
AL□0410-R18□	0.18	1480	0.070	25.2	400	25
AL□0410-R22□	0.22	1400	0.080	25.2	380	25
AL□0410-R27□	0.27	1320	0.090	25.2	340	25
AL□0410-R33□	0.33	1280	0.100	25.2	300	25
AL□0410-R39□	0.39	1200	0.120	25.2	280	25
AL□0410-R47□	0.47	1150	0.130	25.2	250	25
AL□0410-R56□	0.56	1100	0.140	25.2	230	25
AL□0410-R68□	0.68	1030	0.150	25.2	210	25
AL□0410-R82□	0.82	980	0.160	25.2	172	45
AL□0410-1R0□	1.00	920	0.170	25.2	157	45
AL□0410-1R2□	1.20	880	0.180	7.96	144	50
AL□0410-1R5□	1.50	830	0.200	7.96	131	50
AL□0410-1R8□	1.80	790	0.220	7.96	121	55
AL□0410-2R2□	2.20	750	0.240	7.96	110	55
AL□0410-2R7□	2.70	720	0.250	7.96	100	60
AL□0410-3R3□	3.30	670	0.300	7.96	94	65
AL□0410-3R9□	3.90	640	0.350	7.96	86	65
AL□0410-4R7□	4.70	620	0.400	7.96	80	70
AL□0410-5R6□	5.60	590	0.450	7.96	74	70
AL□0410-6R8□	6.80	550	0.500	7.96	68	75
AL□0410-8R2□	8.20	530	0.600	7.96	53	80
AL□0410-100□	10.00	500	0.650	7.96	45	80
AL□0410-120□	12.00	480	0.700	2.52	34	75
AL□0410-150□	15.00	460	0.750	2.52	20	70
AL□0410-180□	18.00	430	0.800	2.52	14	65
AL□0410-220□	22.00	410	0.900	2.52	9.9	50
AL□0410-270□	27.00	390	1.000	2.52	7.6	55
AL□0410-330□	33.00	370	1.100	2.52	6.3	55
AL□0410-390□	39.00	350	1.200	2.52	6.3	50
AL□0410-470□	47.00	340	1.300	2.52	6.3	45
AL□0410-560□	56.00	320	1.500	2.52	6.2	40
AL□0410-680□	68.00	305	1.800	2.52	5.7	40
AL□0410-820□	82.00	290	2.000	2.52	5.3	35
AL□0410-101□	100.00	275	2.500	2.52	4.8	30
AL□0410-121□	120.00	185	3.000	0.796	3.8	70
AL□0410-151□	150.00	175	4.200	0.796	3.5	70
AL□0410-181□	180.00	165	4.600	0.796	3.3	70
AL□0410-221□	220.00	155	5.100	0.796	3.0	70
AL□0410-271□	270.00	145	6.000	0.796	2.8	65
AL□0410-331□	330.00	137	6.500	0.796	2.6	65
AL□0410-391□	390.00	133	7.500	0.796	2.4	65
AL□0410-471□	470.00	126	8.500	0.796	2.2	60
AL□0410-561□	560.00	120	9.500	0.796	2.1	60
AL□0410-681□	680.00	113	12.000	0.796	1.9	55
AL□0410-821□	820.00	105	14.000	0.796	1.8	55
AL□0410-102□	1000.00	85	20.000	0.796	1.4	50

Inductance drop: 10% typ. at IDC.

□=J 5%, K 10%, M 20%





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Latest Edit Date	2010.11.26	Pages	5

MOTTO PART NO.	Inductance (L)(m H)	IDC mA. (Max)	DCR ohm (Max.)	F (KHz) for "Q"	F (KHz) for "L"	Q (min)
AL□0510-122□	1.20	120	14.50	252	1.0	60
AL□0510-152□	1.50	120	16.50	252	1.0	60
AL□0510-182□	1.80	120	19.00	252	1.0	60
AL□0510-222□	2.20	120	27.50	252	1.0	60
AL□0510-272□	2.70	60	40.00	252	1.0	60
AL□0510-332□	3.30	60	50.00	252	1.0	50
AL□0510-392□	3.90	60	53.00	252	1.0	50
AL□0510-472□	4.70	60	60.00	252	1.0	50
AL□0510-562□	5.60	60	64.00	252	1.0	50
AL□0510-682□	6.80	60	73.00	252	1.0	50
AL□0510-822□	8.20	60	80.00	252	1.0	30
AL□0510-103□	10.00	30	132.00	79.6	1.0	25
AL□0510-123□	12.00	30	143.00	79.6	1.0	25
AL□0510-153□	15.00	30	166.00	79.6	1.0	25
AL□0510-183□	18.00	30	185.00	79.6	1.0	25
AL□0510-223□	22.00	15	330.00	79.6	1.0	20
AL□0510-273□	27.00	15	370.00	79.6	1.0	20
AL□0510-303□	30.00	15	390.00	79.6	1.0	20
AL□0510-333□	33.00	15	426.00	79.6	1.0	20
AL□0510-393□	39.00	15	473.00	79.6	1.0	20

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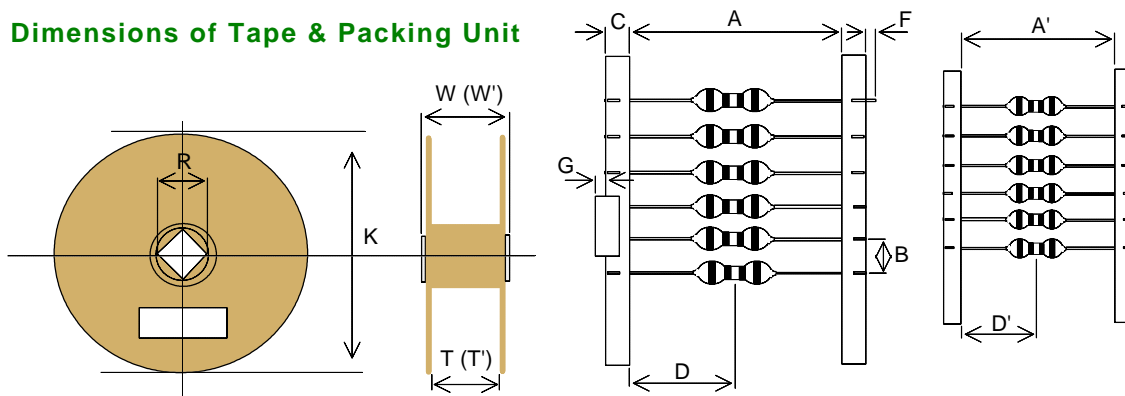
NO	ITEM	TEST CONDITIONS	Sample Qty/pcs	Spec	Test Day Time	Modify Day	Result																
1	Dimension 本體相關呎吋	Actual Size ...	10	Meet Spec	2001/05/12 ~2001/05/12		ok																
2	Thermal Shock (Temperature Cycle) 溫度循環試驗	Temperature:-20 ° C/ +85 ° C kept stabilized for 30 minutes each Cycle: 100 Cycles(power off)	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/18		ok																
3	Humidity Resistance 耐濕試驗	Humidity: 90% ~ 95% RH Temperature: 40 ± 2 ° C Test Time: 120 ± 2 Hours	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/18		ok																
4	High Temperature 耐熱試驗	Temperature: 85 ± 2 ° C Humidity: 20% Testing Time: 120 ± 2 Hours	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/18		ok																
5	Low Temperature 耐寒試驗	Temperature: -20 ± 2 ° C Time: 120 ± 2 Hours	10	Elec. no variation Appearance	2001/05/12 ~ 2001/05/18		ok																
6	Temperature and Humidity Cycle 溫/濕度循環試驗	<table border="1"> <thead> <tr> <th>Step</th> <th>Temp</th> <th>Humidity</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25 ± 2 ° C</td> <td>95~100%RH</td> <td>3.0Hr</td> </tr> <tr> <td>2</td> <td>55 ± 2 ° C</td> <td>95~96%RH</td> <td>9.5Hr</td> </tr> <tr> <td>3</td> <td>25 ± 2 ° C</td> <td>95~100%RH</td> <td>9.5Hr</td> </tr> </tbody> </table>	Step	Temp	Humidity	Time	1	25 ± 2 ° C	95~100%RH	3.0Hr	2	55 ± 2 ° C	95~96%RH	9.5Hr	3	25 ± 2 ° C	95~100%RH	9.5Hr	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/19		ok
Step	Temp	Humidity	Time																				
1	25 ± 2 ° C	95~100%RH	3.0Hr																				
2	55 ± 2 ° C	95~96%RH	9.5Hr																				
3	25 ± 2 ° C	95~100%RH	9.5Hr																				
7	Vibration 振動性試驗	Frequency: 10Hz~55Hz Amplitude: 1.5mm Direction: X,Y,Z Time: 2 Hours each	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/12		ok																
8	Soldering Heat Resistance 耐熱 焊性試驗	Preheat:120 ~ 150 ° C (6 sec) Solder:H63A(eutectic solder) Solder Temp.: 260 ± 5 ° C Flux: Rosin Dip time: 10 ± 1 seconds	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/12		ok																
9	High-Voltage 高壓電擊試驗	100 V DC between core & winding	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/12		ok																
10	ORT:on going reliability test 負載電氣試驗	Elec loading & spec test... base on Spec for approval	10	Elec. no variation Appearance no deformation	2001/05/12 ~ 2001/05/12		ok																





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### Dimensions of Tape & Packing Unit



#### (A) Dimensions of Tape & Reel

Sym.	Dimensions	Sym.	Dimensions	Sym.	Dimensions
A	52.00+/-1.50	E	0.00+/-0.50	T'	45.00+/-0.50
A'	26.00+/-1.50	F	1.00 (max)	W	76.00+/-0.50
B	5.00+/-0.50	G	1.00 (max)	W'	50.00+/-0.50
C	6.00+/-1.00	K	335.00+/-0.50		
D	26.00+/-0.50	R	15.00+/-0.50		
D'	13.00+/-0.50	T	71.00+/-0.50		

#### (B) Packing Unit for Reel

Item	AL0204	AL0307	AL0410	AL0510
Q' TY/Reel	5,000 PCS	5,000 PCS	5,000 PCS	3,000 PCS
GW/Reel (Approx.)	1.4 Kgm	1.6 Kgm	2.0 Kgm	3.0 Kgm
Q' TY/CTN.	25,000 PCS	25,000 PCS	25,000 PCS	15,000 PCS
NW/CTN. (Approx.)	7.0 Kgm	8.0 Kgm	10.0 Kgm	15.0 Kgm
GW/CTN. (Approx.)	8.0 Kgm	9.0 Kgm	11.0 Kgm	16.0 Kgm
Carton Size (mm)	397x397x479	397x397x479	397x397x479	397x397x479

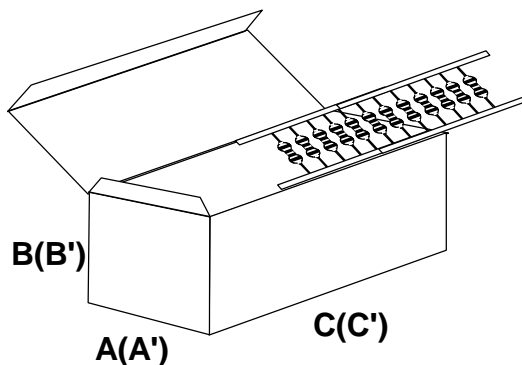






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### Dimensions of Box & Packing Unit



#### Packaging Specification

##### (A) Dimensions Of Ammo Box

Sym.	Dimensions	Sym.	Dimensions	Sym.	Dimensions
A	74.00+/-0.30	B	108.00+/-0.30	C	260.00+/-0.30
A'	48.00+/-0.30	B'	105.00+/-0.30	C'	255.00+/-0.30

##### (B) Packing Unit for Ammo Box

Item	AL0204	AL0307	AL0410	AL0510
Q' TY/Ammo Box	3,000 PCS	3,000 PCS	2,000 PCS	1,000 PCS
GW/Box (Approx.)	0.8 Kgm	0.9 Kgm	1.0 Kgm	0.7 Kgm
Q' TY/CTN.	30,000 PCS	30,000 PCS	20,000 PCS	10,000 PCS
NW/CTN. (Approx.)	6.0 Kgm	7.0 Kgm	8.0 Kgm	5.0 Kgm
GW/CTN. (Approx.)	8.0 Kgm	9.0 Kgm	10.0 Kgm	7.0 Kgm
Carton Size (mm)	438x295x270	438x295x270	438x295x270	438x295x270

##### (C) Packing Unit for Bulk

Item	AL0204	AL0307	AL0410	AL0510
Q' TY/Bag	1,000 PCS	1,000 PCS	1,000 PCS	500 PCS
GW/Bag (Approx.)	0.1 Kgm	0.15 Kgm	1.3 Kgm	0.3 Kgm

