

Specification

Part No.	InduSTance 1 (Ω)	Percent Tolerance	RDC ² Max (Ω)	IDC Max (MA)
FBM 0402 ST 060 S	6 @ 100 MHZ	S	0.05	500
FBM 0402 ST 100 S	10 @ 100 MHZ	S	0.05	500
FBM 0402 ST 400 S	40 @ 100 MHZ	S	0.30	300
FBM 0402 ST 800 S	80 @ 100 MHZ	S	0.40	200
FBM 0402 ST 121 S	120 @ 100 MHZ	S	0.50	200
FBM 0402 ST 241 S	240 @ 100 MHZ	S	0.50	200
FBM 0402 ST 481 S	480 @ 100 MHZ	S	0.80	100
FBM 0402 ST 601 S	600 @ 100 MHZ	S	1.00	100
FBM 0603 ST 110 S	11 @ 100 MHZ	S	0.05	500
FBM 0603 ST 190 S	19 @ 100 MHZ	S	0.08	500
FBM 0603 ST 300 S	30 @ 100 MHZ	S	0.10	400
FBM 0603 ST 400 S	40 @ 100 MHZ	S	0.10	400
FBM 0603 ST 600 S	60 @ 100 MHZ	S	0.10	300
FBM 0603 ST 800 S	80 @ 100 MHZ	S	0.15	300
FBM 0603 ST 121 S	120 @ 100 MHZ	S	0.25	300
FBM 0603 ST 221 S	220 @ 100 MHZ	S	0.30	200
FBM 0603 ST 301 S	300 @ 100 MHZ	S	0.40	200
FBM 0603 ST 451 S	450 @ 100 MHZ	S	0.50	200
FBM 0603 ST 601 S	600 @ 100 MHZ	S	0.50	200
FBM 0603 ST 751 S	750 @ 100 MHZ	S	0.70	200
FBM 0603 ST 102 S	1000 @ 100 MHZ	S	0.70	200
FBM 0603 ST 152 S	1500 @ 100 MHZ	S	1.00	50
FBM 0603 ST 222 S	2200 @ 100 MHZ	S	1.20	50
FBM 0805 ST 070 S	7 @ 100 MHZ	S	0.10	600
FBM 0805 ST 090 S	9 @ 100 MHZ	S	0.10	600
FBM 0805 ST 110 S	11 @ 100 MHZ	S	0.10	600
FBM 0805 ST 170 S	17 @ 100 MHZ	S	0.10	600
FBM 0805 ST 320 S	32 @ 100 MHZ	S	0.10	600
FBM 0805 ST 600 S	60 @ 100 MHZ	S	0.15	500
FBM 0805 ST 700 S	70 @ 100 MHZ	S	0.15	500
FBM 0805 ST 800 S	80 @ 100 MHZ	S	0.15	500
FBM 0805 ST 121 S	120 @ 100 MHZ	S	0.25	300
FBM 0805 ST 151 S	150 @ 100 MHZ	S	0.25	300
FBM 0805 ST 221 S	220 @ 100 MHZ	S	0.30	300
FBM 0805 ST 301 S	300 @ 100 MHZ	S	0.30	300
FBM 0805 ST 401 S	400 @ 100 MHZ	S	0.30	300
FBM 0805 ST 501 S	500 @ 100 MHZ	S	0.40	300

1. InduSTance is measured in HP-4286A LCR meter with HP-16192 fixture.

4. RDC is measured in HP-4338B milliohmeter.
5. For 15 °C Rise.

Specification

Part No.	InduSTance 1 (Ω)	Percent Tolerance	RDC ² Max (Ω)	IDC Max (MA)
FBM 0805 ST 601 S	600 @ 100 MHZ	S	0.40	300
FBM 0805 ST 751 S	750 @ 100 MHZ	S	0.50	200
FBM 0805 ST 102 S	1000 @ 100 MHZ	S	0.50	200
FBM 0805 ST 152 S	1500 @ 100 MHZ	S	0.60	200
FBM 0805 ST 202 S	2000 @ 100 MHZ	S	0.80	100
FBM 0805 ST 222 S	2200 @ 100 MHZ	S	1.00	100
FBM 1206 ST 190 S	19 @ 100 MHZ	S	0.05	600
FBM 1206 ST 260 S	26 @ 100 MHZ	S	0.05	600
FBM 1206 ST 320 S	32 @ 100 MHZ	S	0.05	600
FBM 1206 ST 500 S	50 @ 100 MHZ	S	0.10	500
FBM 1206 ST 600 S	60 @ 100 MHZ	S	0.10	500
FBM 1206 ST 700 S	70 @ 100 MHZ	S	0.10	500
FBM 1206 ST 900 S	90 @ 100 MHZ	S	0.15	500
FBM 1206 ST 121 S	120 @ 100 MHZ	S	0.15	500
FBM 1206 ST 151 S	150 @ 100 MHZ	S	0.15	500
FBM 1206 ST 201 S	200 @ 100 MHZ	S	0.20	400
FBM 1206 ST 401 S	400 @ 100 MHZ	S	0.20	400
FBM 1206 ST 501 S	500 @ 100 MHZ	S	0.20	400
FBM 1206 ST 601 S	600 @ 100 MHZ	S	0.30	400
FBM 1206 ST 102 S	1000 @ 100 MHZ	S	0.40	200
FBM 1206 ST 122 S	1200 @ 100 MHZ	S	0.40	200
FBM 1206 ST 152 S	1500 @ 100 MHZ	S	0.45	200
FBM 1206 ST 202 S	2000 @ 100 MHZ	S	0.60	200
FBM 1210 ST 320 S	32 @ 100 MHZ	S	0.20	500
FBM 1210 ST 600 S	60 @ 100 MHZ	S	0.20	500
FBM 1806 ST 900 S	90 @ 100 MHZ	S	0.20	500
FBM 1806 ST 500 S	50 @ 100 MHZ	S	0.20	600
FBM 1806 ST 600 S	60 @ 100 MHZ	S	0.20	600
FBM 1806 ST 800 S	80 @ 100 MHZ	S	0.20	600
FBM 1806 ST 101 S	100 @ 100 MHZ	S	0.30	500
FBM 1806 ST 151 S	150 @ 100 MHZ	S	0.30	500
FBM 1806 ST 171 S	170 @ 100 MHZ	S	0.30	500
FBM 1812 ST 700 S	70 @ 100 MHZ	S	0.30	500
FBM 1812 ST 121 S	120 @ 100 MHZ	S	0.30	500

1. InduSTance is measured in HP-4286A LCR meter
with HP-16192 fixture.

4. RDC is measured in HP-4338B milliohmmeter.
5. For 15 °C Rise.

Specification

Part No.	InduSTance 1 (Ω)	Percent Tolerance	RDC ² Max (Ω)	IDC Max (MA)
FBM 0603 PT 110 S	11 @ 100 MHZ	S	0.02	4000
FBM 0603 PT 250 S	25 @ 100 MHZ	S	0.03	3000
FBM 0603 PT 400 S	40 @ 100 MHZ	S	0.04	3000
FBM 0603 PT 600 S	60 @ 100 MHZ	S	0.04	3000
FBM 0603 PT 121 S	120 @ 100 MHZ	S	0.05	2500
FBM 0603 PT 301 S	300 @ 100 MHZ	S	0.10	2000
FBM 0603 PT 501 S	500 @ 100 MHZ	S	0.15	1500
FBM 0603 PT 601 S	600 @ 100 MHZ	S	0.20	1000
FBM 0603 PT 102 S	1000 @ 100 MHZ	S	0.25	800
FBM 0805 PT 110 S	11 @ 100 MHZ	S	0.01	6000
FBM 0805 PT 170 S	17 @ 100 MHZ	S	0.02	5000
FBM 0805 PT 30 S	30 @ 100 MHZ	S	0.02	4000
FBM 0805 PT 500 S	50 @ 100 MHZ	S	0.03	3000
FBM 0805 PT 600 S	60 @ 100 MHZ	S	0.03	3000
FBM 0805 PT 800 S	80 @ 100 MHZ	S	0.04	3000
FBM 0805 PT 121 S	120 @ 100 MHZ	S	0.04	3000
FBM 0805 PT 201 S	200 @ 100 MHZ	S	0.05	2500
FBM 0805 PT 301 S	300 @ 100 MHZ	S	0.08	2000
FBM 0805 PT 601 S	600 @ 100 MHZ	S	0.10	2000
FBM 0805 PT 102 S	1000 @ 100 MHZ	S	0.12	1500
FBM 1206 PT 190 S	19 @ 100 MHZ	S	0.02	6000
FBM 1206 PT 320 S	32 @ 100 MHZ	S	0.02	4000
FBM 1206 PT 600 S	60 @ 100 MHZ	S	0.02	4000
FBM 1206 PT 800 S	80 @ 100 MHZ	S	0.03	3000
FBM 1206 PT 101 S	100 @ 100 MHZ	S	0.03	2500
FBM 1206 PT 301 S	300 @ 100 MHZ	S	0.06	2000
FBM 1206 PT 601 S	600 @ 100 MHZ	S	0.10	1800
FBM 1206 PT 102 S	1000 @ 100 MHZ	S	0.15	1200
FBM 1206 PT 122 S	1200 @ 100 MHZ	S	0.18	1000
FBM 1206 PT 152 S	1500 @ 100 MHZ	S	0.20	800
FBM 1210 PT 600 S	60 @ 100 MHZ	S	0.03	4000
FBM 1210 PT 900 S	90 @ 100 MHZ	S	0.03	3000
FBM 1806 PT 500 S	50 @ 100 MHZ	S	0.02	6000
FBM 1806 PT 600 S	60 @ 100 MHZ	S	0.02	5000
FBM 1806 PT 800 S	80 @ 100 MHZ	S	0.03	4000
FBM 1806 PT 151 S	150 @ 100 MHZ	S	0.10	2000
FBM 1812 PT 700 S	70 @ 100 MHZ	S	0.03	6000
FBM 1812 PT 121 S	120 @ 100 MHZ	S	0.03	4000

1. InduSTance is measured in HP-4286A LCR meter with HP-16192 fixture.

4. RDC is measured in HP-4338B milliohmmeter.

5. For 15 °C Rise.

Specification

Part No.	Impedance ¹ ()	Percent Tolerance	RDC ² Max ()	IDC Max (MA)
FBM 0603 NT 060 S	6 @ 100 MHZ	S	0.05	500
FBM 0603 NT 100 S	10 @ 100 MHZ	S	0.07	400
FBM 0603 NT 400 S	40 @ 100 MHZ	S	0.30	300
FBM 0603 NT 600 S	60 @ 100 MHZ	S	0.30	300
FBM 0603 NT 800 S	80 @ 100 MHZ	S	0.40	300
FBM 0603 NT 121 S	120 @ 100 MHZ	S	0.40	300
FBM 0603 NT 241 S	240 @ 100 MHZ	S	0.40	200
FBM 0603 NT 301 S	300 @ 100 MHZ	S	0.50	200
FBM 0603 NT 481 S	480 @ 100 MHZ	S	0.60	150
FBM 0603 NT 601 S	600 @ 100 MHZ	S	0.60	100
FBM 0603 NT 102 S	1000 @ 100 MHZ	S	0.70	100
FBM 0805 NT 060 S	6 @ 100 MHZ	S	0.07	800
FBM 0805 NT 110 S	11 @ 100 MHZ	S	0.10	700
FBM 0805 NT 260 S	26 @ 100 MHZ	S	0.20	600
FBM 0805 NT 320 S	32 @ 100 MHZ	S	0.20	600
FBM 0805 NT 600 S	60 @ 100 MHZ	S	0.30	500
FBM 0805 NT 750 S	75 @ 100 MHZ	S	0.30	500
FBM 0805 NT 900 S	90 @ 100 MHZ	S	0.30	500
FBM 0805 NT 121 S	120 @ 100 MHZ	S	0.40	400
FBM 0805 NT 151 S	150 @ 100 MHZ	S	0.40	400
FBM 0805 NT 171 S	170 @ 100 MHZ	S	0.50	400
FBM 0805 NT 221 S	220 @ 100 MHZ	S	0.50	300
FBM 0805 NT 301 S	300 @ 100 MHZ	S	0.50	300
FBM 0805 NT 401 S	400 @ 100 MHZ	S	0.50	300
FBM 0805 NT 501 S	500 @ 100 MHZ	S	0.50	200
FBM 0805 NT 601 S	600 @ 100 MHZ	S	0.50	200
FBM 0805 NT 102 S	1000 @ 100 MHZ	S	0.60	100
FBM 0805 NT 122 S	1200 @ 100 MHZ	S	0.70	100
FBM 0805 NT 152 S	1500 @ 100 MHZ	S	0.70	100
FBM 0805 NT 222 S	2200 @ 100 MHZ	S	0.75	100
FBM 1206 NT 320 S	32 @ 100 MHZ	S	0.20	600
FBM 1206 NT 600 S	60 @ 100 MHZ	S	0.30	500
FBM 1206 NT 800 S	80 @ 100 MHZ	S	0.30	500
FBM 1206 NT 900 S	90 @ 100 MHZ	S	0.30	500
FBM 1206 NT 121 S	120 @ 100 MHZ	S	0.40	400
FBM 1206 NT 151 S	150 @ 100 MHZ	S	0.40	400
FBM 1206 NT 201 S	200 @ 100 MHZ	S	0.50	300
FBM 1206 NT 221 S	220 @ 100 MHZ	S	0.50	300
FBM 1206 NT 351 S	350 @ 100 MHZ	S	0.60	300
FBM 1206 NT 401 S	400 @ 100 MHZ	S	0.60	300
FBM 1206 NT 601 S	600 @ 100 MHZ	S	0.70	300
FBM 1206 NT 122 S	1200 @ 100 MHZ	S	1.00	200
FBM 1206 NT 152 S	1500 @ 100 MHZ	S	1.20	150

1. InduSTance is measured in HP-4286A LCR meter with HP-16192 fixture.

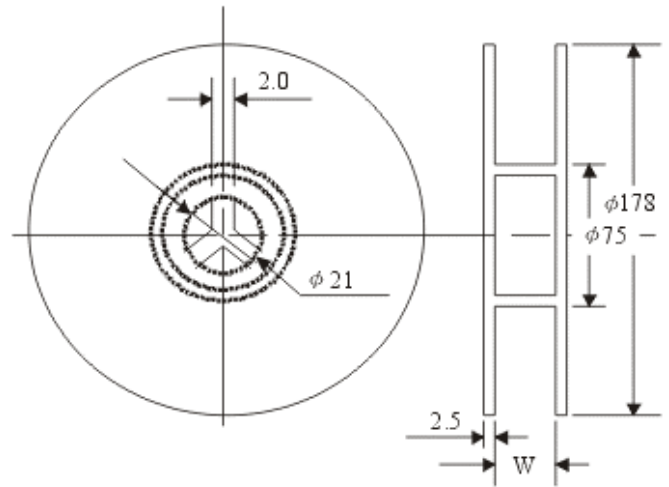
4. RDC is measured in HP-4338B millohmmeter.
5. For 15 °C Rise.

PACKING INFORMATION

Packing Quantity

TYPE	Chip Thickness	PCS / REEL
FBM 0402	0.50 mm	10,000
FBM 0603	0.80 mm	4,000
FBM 0805	0.90 mm	4,000
FBM 1206	1.10 mm	3,000
FBM 1206	1.60 mm	2,000
FBM 1210	1.30 mm	2,500
FBM 1806	1.60 mm	2,000
FBM 1812	1.50 mm	1,000

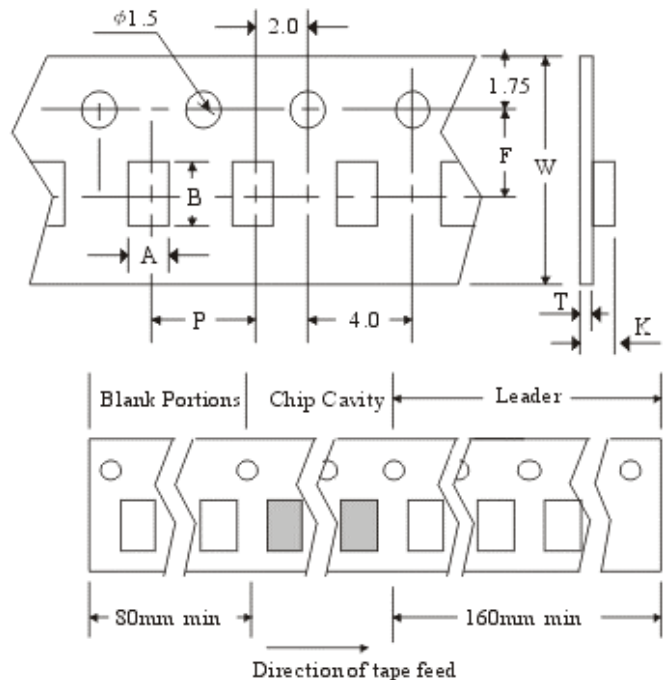
Reel Dimensions



Tape Dimensions (unit:m/m)

TYPE	Chip Cavity		Insert Pitch		Tape Thickness		Tape Width
	A	B	P	F	K	T	
FBM 0402	0.65	1.15	2.00	3.50	0.70	0.00	8.00
FBM 0603	1.00	1.80	4.00	3.50	1.05	0.00	8.00
FBM 0805	1.55	2.30	4.00	3.50	1.15	0.20	8.00
FBM 1206	1.95	3.55	4.00	3.50	1.30	0.20	8.00
FBM 1206	1.95	3.65	4.00	3.50	1.90	0.20	8.00
FBM 1210	2.80	3.40	4.00	3.50	1.65	0.20	8.00
FBM 1806	1.95	4.95	4.00	5.50	1.90	0.30	12.00
FBM 1812	3.65	4.95	8.00	5.50	1.80	0.30	12.00

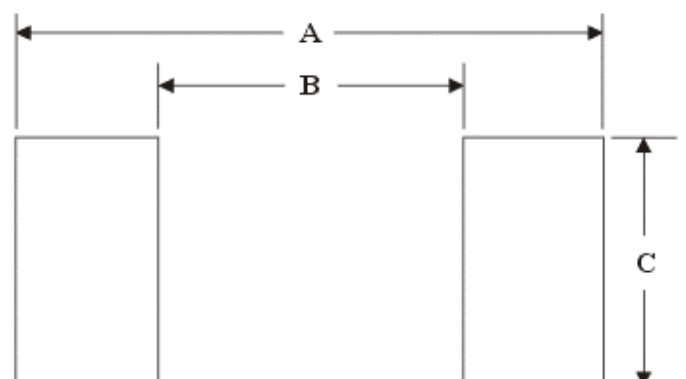
Tape Dimensions



Tattern dimensions (unit: m/m)

TYPE	A	B	C
FBM 0402	1.60	0.40	0.50
FBM 0603	2.10	1.00	0.80
FBM 0805	2.60	1.20	0.90
FBM 1206	4.30	2.00	1.60
FBM 1210	4.30	2.00	1.30
FBM 1806	6.00	3.00	1.60
FBM 1812	6.00	3.00	1.50

Recommended Pattern



1. Scope

This specification applies to fixed inductors of the following types used in electronic equipment :

- Ceramic Type : For lower inductance with high Q factor at high frequency and stable circuit requirement.
- Ferrite Type : For higher inductance at lower frequency circuit requirement and also for all types of chip beads.

2. Construction

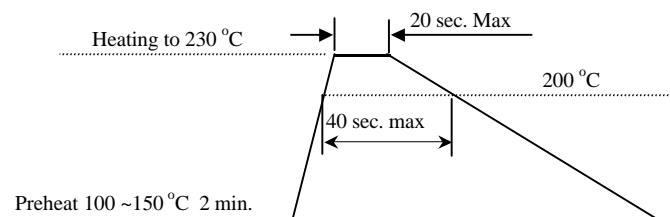
- Configuration & Dimension : Please refer to the attached figures and tables.
- Terminals : SPI series shall consist of copper followed by solder plating.
SWI series shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating.
SMI/FBM series shall consist of Ag followed by Nickel, then solder plating.
SCI/SAI series shall consist of copper wire followed by solder plating.

3. Operating Temperature Range

Operating Temperature Range is the scope of ambient temperature at which the inductor can be operated continuously at rated current.

- Temp. Range : - 40 °C to + 85 °C

4. Recommended Soldering Conditions



5 Characteristics

Standard Atmospheric Conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows :

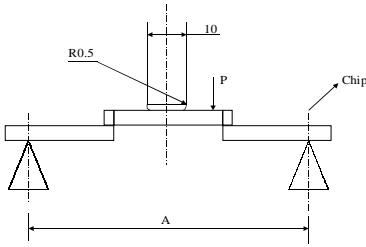
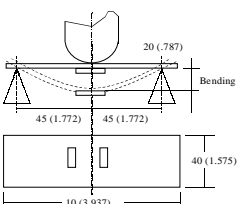
- Ambient Temperature : 25 °C (20 °C) ± 2 °C
- Relative Humidity : 60% to 70%
- Air Pressure : 86 Kpa to 106 Kpa

**CHIP INDUCTOR
CHIP BEAD**

RELIABILITY SPECIFICATION

	ITEM	CONDITION	SPECIFICATION
	Inductance/ Impedance and Tolerance	Measuring Frequency : As shown in Product Table	Within Specified Tolerance
	Quality Factor	Measuring Temperature : + 25 °C	
Electrical Characteristics	Insulation Resistance	Measured at 100V DC between component terminals and center of case.	1000 megaohms minimum
	Dielectric Withstanding Voltage	Measured at 500V AC between component terminals and center of case for a maximum of 1 minute.	No damage occurs when the test voltage is applied.
	Temperature Coefficient of Inductance (TCL)	Over - 40 °C to + 85°C at frequency specified in Product Table.	+ 25 to + 500 ppm / °C TCL = $\frac{L1 - L2}{L1(T1-T2)} \times 10^6$ (ppm / °C)
	Component Adhesion (Push Test)	Components shall be reflow soldered onto a P. C. Board (230 °C ± 5°C for 20 seconds). Then a dynamometer force gauge shall be applied to any side of the component.	Components must withstand a minimum force of 1 Kg for Pt/Ag termination and 2 Kg for Mo/Mn termination without any failure of the termination to component attachment.
Machemical Characteristics	Drop Test	Components shall be dropped two times on the concrete floor or the vinyl tile from 1M naturally.	Change In Inductance/Impedance: SPI/SWI: Within ± 5% or ± 0.3nH Others: Within ± 20%
	Thermal Shock Test	Each cycle shall consist of 30 minutes at -25 °C followed by 30 minutes at +85 °C with a 20-second maximum transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: SPI/SWI: Within ± 10% Others: Within ± 30% Change In Appearance: Without distinct damage

RELIABILITY SPECIFICATION

	ITEM	CONDITION	SPECIFICATION
Endurance Characteristics	Solderability	Dip pads in flux and then in a solder pot (63Sn / 37Pb) at 230 °C ± 5°C for 5 seconds.	A minimum of 95% of the metalized area must be covered with solder.
	Resistance to Soldering Heat	Dip components into flux and then into a solder pot containing 63Sn / 37Pb at 260 °C ± 5 °C for 5 ± 1 seconds.	Change In L / Z (Inductance / Impedance): SPI / SWI Series: Within ± 5% or ± 0.3nH Other Series: Within ± 20%
	Vibration (Random)	Components shall be randomly vibrated at amplitude of 1.5mm and frequency of 10 - 55 Hz: 0.04 G / Hz for a minimum of 15 minutes per axis for each of the three axes.	
	Cold Temperature Storage	Components shall be stored at temperature of -40 °C ± 2 °C for 1000 ± 48 hours. Then components shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	
	High Temperature Storage	Components shall be stored at temperature of +85 °C ± 2 °C for 1000 ± 48 hours. Then components shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	Change In Q: SPI/SWI: Within ± 10% Others: Within ± 30% Change In Appearance: Without distinct damage
	Moisture Resistance	Components shall be stored in the chamber at 45 °C at 90 - 95 R. H. for 240 hours. Then components are to be tested after 2 hours at room temperature.	Components shall not have a shorted or open winding.
	High Temperature with Loaded	Components shall be stored in the chamber at +85 °C for 1000 hours with rated current applied. Components shall be tested at the beginning of test at 500 hours and 1000 hours. Then components are to be tested after 1 hour at room temperature.	
	Bending Strength		Components shall not be damaged by the forces conditions applied on the test specified as follows: Chip Size: 0402: >1Kg 0603/0805: >3Kg 1206/1210: >6Kg 1816/1812: >8Kg
	Flexure Strength		No Mechanical Damages.