

## 规格承认书

### Specification For Approval

客户名称:

(Customer Name)

产品名称:

(Product Name)

客户料号:

(Customer part number)

科尼盛料号:

(KNSCHA number)

型号规格:

(Specifications)

日期:

DATE

电解电容

Aluminum Electrolytic Capacitor

DHG400M156H160S1AA

E/C 400V/15 $\mu$ F 10\*16mm 105°C KNSCHA SHG 5000H  
P:5.0mm  $\pm$ 20% 咖啡白

2025.10.20

| 制 造<br>Manufacture |                 |
|--------------------|-----------------|
| 核 准<br>APPROVAL    | 制 作<br>PREPARED |
| 王师                 | 张优美             |

| 客户承认栏<br>CUSTOMER APPROVED |                |                 |
|----------------------------|----------------|-----------------|
| 核 准<br>APPROVED            | 确 认<br>CHECKED | 经 办<br>DESIGNED |
|                            |                |                 |

**广东科尼盛电子科技有限公司**

**KNSCHA ELECTRONICS CO.,LIMITED.**

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| 广东科尼盛电子科技有限公司<br>KNSCHA ELECTRONICS CO.,LIMITED |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |
|-------------------------------------------------|--------|--------------|---------------|--------------|----------|---------------------------------------|-----------------------|----------------------|-------------------------------|----------------------------------------------|--------|
| 一、部品规格特征表                                       |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |
| NO                                              | Series | CAP<br>(μ F) | WV<br>(V. DC) | Size<br>(mm) | CAP<br>% | Operating<br>Temperature<br>Range (℃) | DF%<br>(120Hz<br>25℃) | LC<br>(3min)<br>(uA) | ESR(Ω, MAX<br>25℃<br>/100KHz) | Max Ripple<br>Curent<br>(mA@105℃<br>/100KHz) | 寿命 (H) |
| 1                                               | SHG    | 15           | 400           | 10*16        | ±20      | -25~105                               | 20                    | 180                  | /                             | 278                                          | 5000   |
|                                                 |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |
|                                                 |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |
| 注明：无卤产品                                         |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |
|                                                 |        |              |               |              |          |                                       |                       |                      |                               |                                              |        |

1. 适用标准(TEST STANDARD):

JIS C 5141 - 1991 电子机器用固定非固体电解质电解电容器  
JIS C 5102 电子机器用固定电容器试验方法  
GB 5993-91 电子设备用固定电容器 第四部分：分规范：固体和非固体电解质铝电容器

2. 适用范围（Adapt Range）：

本产品规格书适用于广东科尼盛电子科技有限公司铝电解电容器。  
This product specification is adapted to Aluminum Electrolytic Capacitors produced by KNSCHA ELECTRONICS CO.,LIMITED.

3. 使用温度范围(Operating Temperature Range):

6.3~100WV: -40~+105℃ 160~450WV: -25~+105℃

4. 浪涌电压(Surge Voltage):

|               |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
|---------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| 工作电压 (V)      | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| Rated voltage |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
| 浪涌电压 (V)      | 8   | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 | 500 |
| Surge voltage |     |    |    |    |    |    |    |     |     |     |     |     |     |     |

5. 损耗(Dissipation Factor): (25℃,120Hz)

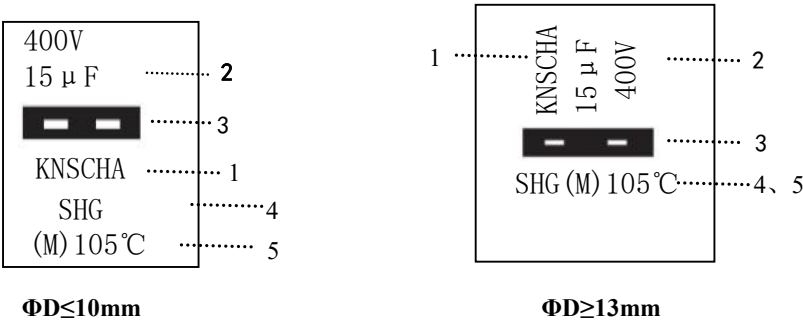
|                |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
|----------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| 工作电压 (V)       | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| Rated voltage  |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
| 损耗角正切值         | 22  | 20 | 16 | 14 | 12 | 10 | 9  | 8   | 15  | 15  | 15  | 20  | 20  | 20  |
| D.F.(Tan%) Max |     |    |    |    |    |    |    |     |     |     |     |     |     |     |

注：当标准容量每大于1000 μ F时，每增加1000 μ F损耗角正切值相应增加2%。

6. 漏电流(DC Leakage Current)

施加额定电压3分钟后测试 (After 3 minutes application of rated working voltage)  
6.3 ~ 100WV I≤0.01CV 或3.0(μA) , (at 25℃)  
160 ~ 450WV I≤0.03CV(μA) , (at 25℃)

7. 胶管标识示意图(Marking):

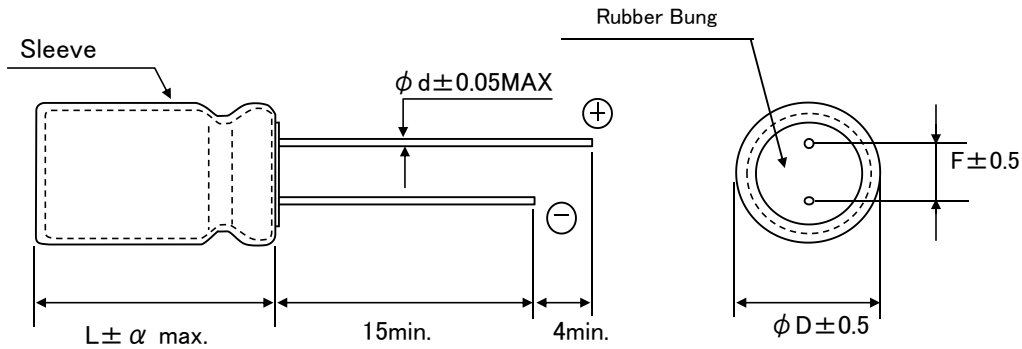


NO. 代表内容 Item

- 1 科尼盛公司商标(Logo)
- 2 电容器规格（额定电压和容量）Capacitance and Rated Vlotage
- 3 负极表示带 Polarity bar
- 4 产品系列(Series)
- 5 容量范围与工作最高温度(Capacitance Tolerance and Operating Temperature Range )

8. 外形图（Dimensions）：

单位：mm



| $\Phi D$ | L  | F | $\alpha$ | $\Phi d$ |
|----------|----|---|----------|----------|
| 10       | 16 | 5 | 1.5      | 0.6      |

9. 纹波电流系数（Multiplier for ripple current）：

频率系数 Frequency Coefficients

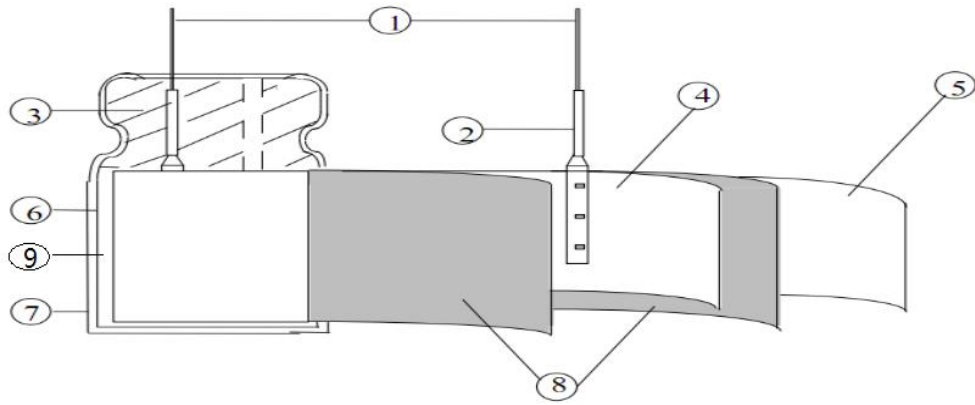
| Frequency (HZ)           | 50/60 | 100/120 | 1K   | 10K  | 100K |
|--------------------------|-------|---------|------|------|------|
| CAP( $\mu F$ )           |       |         |      |      |      |
| $CAP \leq 330$           | 0.35  | 0.5     | 0.75 | 0.85 | 1    |
| $330 \leq CAP \leq 1500$ | 0.45  | 0.65    | 0.85 | 0.90 | 1    |
| $CAP \geq 1500$          | 0.53  | 0.75    | 0.90 | 0.95 | 1    |

温度系数 temperature coefficients

| Temperature( $^{\circ}C$ ) | $\leq 50$ | 65   | 75   | 85  | 95  | 105 |
|----------------------------|-----------|------|------|-----|-----|-----|
| Multiplier                 | 1.9       | 1.75 | 1.57 | 1.4 | 1.2 | 1.0 |

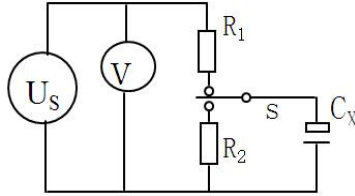
10. 构造图及材料表 (Frame drawing and Material list):

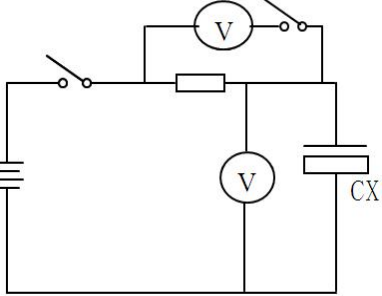
10.1、构造图(Frame drawing)



10.2、材料表 (Material table)

| NO. | 构成部件<br>Component            | 材质<br>Material                          | 备注<br>Remarks |
|-----|------------------------------|-----------------------------------------|---------------|
| 1   | 引出线<br>Lead line             | 铝+CP线<br>Aluminum + Cpwire              |               |
| 2   | 端子<br>Terminal               | 铝<br>Aluminum wire                      |               |
| 3   | 胶塞<br>Rubber                 | 合成橡胶<br>Synthetic rubber                |               |
| 4   | 正极箔<br>Al Foil(+)            | 铝<br>Aluminum                           |               |
| 5   | 负极箔<br>Al Foil(-)            | 铝<br>Aluminum                           |               |
| 6   | 铝壳<br>Case                   | 铝<br>Aluminum case                      |               |
| 7   | 套管<br>Sleeve                 | PET                                     |               |
| 8   | 电解纸<br>Separator             | 电解电容器纸<br>Electrolytic capacitors paper |               |
| 9   | 工作电解液<br>Working electrolyte | 乙二醇等<br>Ethanediol                      |               |

| NO   | 项 目<br>Items                                        | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 规 格<br>Specifications                                                                                                                                                              |
|------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.1 | 最大允许纹波电流<br>Maximum permissible ripple current      | 温度 Temperature: $105 \pm 2^{\circ}\text{C}$<br>纹波:100KHz正弦交流实际电流值+交流电压峰值 $\leq$ 标准电压<br>Ripple frequency:<br>The maximum sinusoidal alternating current of a freefrequency specified below at which the capacitor can be operated continuously,Where DC.Voltage+peak ripple voltage $\leq$ Rated voltage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Refer to table                                                                                                                                                                     |
| 11.2 | 浪涌电压<br>Surge Voltage                               | 在下面规定的温度下，通过指定的浪涌电压，6.0分钟（充电30秒，放电5分30秒）为一循环，往返1000回合，常温常湿下放置1-2小时达到热平衡状态测定满足。<br>The capacitor shall be subjected to 1000 cycles at a temperature specified below,each consisting of a charge period of $30 \pm 5\text{s}$ , followed by a discharge period of approx 5min.30s.And the capacitor shall be stored 1-2hours under standard atmospheric conditions to obtain thermal stability,after which measurement shall be made.<br>应加电压：见4项<br>Test voltage:see 4<br>温度： $15 \sim 30^{\circ}\text{C}$<br>Test Temperature: $15 \sim 30^{\circ}\text{C}$<br>测试回路 Measurement circuit<br> R1:串联保护电阻 ( $1\text{k}\Omega$ )<br>Protective series resistor( $1\text{k}\Omega$ )<br>V:直流电压表 DC Voltage<br>R2:放电电阻 Discharge resistor( $1\text{k}\Omega$ )<br>S:切换开关 Switch<br>Cx:待测电容器 Test Capacitor | 漏电流：不超过规定值<br>Leakage Current: Not more than the specified value<br>容量变化：初始值的 $\pm 15\%$ 以内<br>Capacitance change:Within $\pm 15\%$ of theinitial valueinitial value<br>损失角：不超过规定值 |
| 11.3 | 静电容量<br>(允许偏差)<br>Capacitance<br>(Tolerance)        | 测试频率：120Hz<br>Measuring frequency:120Hz<br>测试电压：0.5Vrms or less<br>measuring voltage:0.5Vrms or less<br>DC bias voltage: $+1.5 \sim 2.0\text{ V DC}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 静电容量允许偏差，<br>+20%-20%Capacitance tolerance+20%-20%                                                                                                                                 |
| 11.4 | 损耗角正切值<br>( $\text{tg}\delta$ )<br>Tangant of angle | 测试条件与静电容量相同<br>Measurement shall be made under the same conditions as those given for the measurement of capacitance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 见5项<br>Refer to table 5.                                                                                                                                                           |

| NO   | 项 目<br>Items           | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 规 格<br>Specifications            |
|------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 11.5 | 漏电流<br>Leakage Current | <p>电容器接<math>1000\pm10\Omega</math>的保护电阻施加电压1分钟后的测试电流。</p> <p>The rated voltage shall be applied across the capacitor and its protective resistor which shall be <math>1000\pm10\Omega</math>.The leakage Current shall then be measured after an electrication period of 1min.The leakage current shall be calculated by the following equation.</p> <p>漏电流： <math>(I) = E/R_s</math></p> <p>Leakage current:</p> <p>E:直流电压表的电压值<br/>Voltage measured with DC voltmeter</p> <p><math>R_s</math>:标准电阻的电阻值<br/>Resistance of the protective resistor</p> <p>测定电路 measurement circuit</p>  <p>电压将下法 (voltage drop method)</p> <p><math>R_s</math>:标准电阻的电阻值 (<math>1000\pm100\Omega</math>)<br/>protective resistor</p> <p>直流电压表或电子电压表<br/>DC voltmeter or electronic voltmeter</p> <p>S1:开关 switch</p> <p>S2:电压表保护用变换开关<br/>protective switch for a voltmeter</p> <p>CX:待测电容器 test capacitor</p> | <p>见6项<br/>Refer to table 6.</p> |

| NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 项 目<br>Items                                              | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                 |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------|------------------------------|--------------|--------------------------------------------|----------------------------------------|------------------------|--------------------------------------------------|---------|---|-------|-------|---|------|---------|---|-------|-------|
| 11.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 高低温特性<br>Characteristic<br>at High and low<br>temperature | 电容器根据下表的次序处理<br><br>The capacitor shall subjected in turn to the procedures specified below.                                                                                                                                                                                                                                                      |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | <table><tr><td>阶 段<br/>Step</td><td>温 度<br/>Temperature</td><td>时 间<br/>Times</td></tr><tr><td>1</td><td>20±2℃</td><td>热平衡状态</td></tr><tr><td>2</td><td>-40(-25)℃</td><td>*2hours</td></tr><tr><td>3</td><td>20±2℃</td><td>热平衡状态</td></tr><tr><td>4</td><td>105℃</td><td>*2hours</td></tr><tr><td>5</td><td>20±2℃</td><td>热平衡状态</td></tr></table> | 阶 段<br>Step               | 温 度<br>Temperature                         | 时 间<br>Times                 | 1            | 20±2℃                                      | 热平衡状态                                  | 2                      | -40(-25)℃                                        | *2hours | 3 | 20±2℃ | 热平衡状态 | 4 | 105℃ | *2hours | 5 | 20±2℃ | 热平衡状态 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 阶 段<br>Step                                                                                                                                                                                                                                                                                                                                       | 温 度<br>Temperature        | 时 间<br>Times                               |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 1                                                                                                                                                                                                                                                                                                                                                 | 20±2℃                     | 热平衡状态                                      |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 2                                                                                                                                                                                                                                                                                                                                                 | -40(-25)℃                 | *2hours                                    |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 3                                                                                                                                                                                                                                                                                                                                                 | 20±2℃                     | 热平衡状态                                      |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 4                                                                                                                                                                                                                                                                                                                                                 | 105℃                      | *2hours                                    |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | 5                                                                                                                                                                                                                                                                                                                                                 | 20±2℃                     | 热平衡状态                                      |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | * 电容器放置在每一温度下，待阻抗或电容量稳定后方可测试。                                                                                                                                                                                                                                                                                                                     |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                           | * The capacitor should be stored at rech temperature until measured temperature impedance or capacitance are stabilized.                                                                                                                                                                                                                          |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| <table><tr><td rowspan="2">阶段2<br/>Step2</td><td>阻抗比（对阶段1）<br/>Impedance ratio</td><td>见9.10项<br/>refer to No9.10</td></tr><tr><td>静电容量变化率<br/>（对阶段1）<br/>change in capacitance</td><td>静电-20～+20%<br/>within-20～+20%</td></tr><tr><td rowspan="2">阶段4<br/>Step4</td><td>静电容量变化率<br/>（对阶段1）<br/>change in capacitance</td><td>静电-20～+20%<br/>within-20～+20% of step 1</td></tr><tr><td>漏电流<br/>Leakage Current</td><td>规定值5倍以下<br/>Less than 500% of the specified value</td></tr></table> | 阶段2<br>Step2                                              | 阻抗比（对阶段1）<br>Impedance ratio                                                                                                                                                                                                                                                                                                                      | 见9.10项<br>refer to No9.10 | 静电容量变化率<br>（对阶段1）<br>change in capacitance | 静电-20～+20%<br>within-20～+20% | 阶段4<br>Step4 | 静电容量变化率<br>（对阶段1）<br>change in capacitance | 静电-20～+20%<br>within-20～+20% of step 1 | 漏电流<br>Leakage Current | 规定值5倍以下<br>Less than 500% of the specified value |         |   |       |       |   |      |         |   |       |       |
| 阶段2<br>Step2                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           | 阻抗比（对阶段1）<br>Impedance ratio                                                                                                                                                                                                                                                                                                                      | 见9.10项<br>refer to No9.10 |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 静电容量变化率<br>（对阶段1）<br>change in capacitance                | 静电-20～+20%<br>within-20～+20%                                                                                                                                                                                                                                                                                                                      |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| 阶段4<br>Step4                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 静电容量变化率<br>（对阶段1）<br>change in capacitance                | 静电-20～+20%<br>within-20～+20% of step 1                                                                                                                                                                                                                                                                                                            |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 漏电流<br>Leakage Current                                    | 规定值5倍以下<br>Less than 500% of the specified value                                                                                                                                                                                                                                                                                                  |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| 阶段1：测定容量，损耗和阻抗值。                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| Step1:Capacitance,Dissipation Factor and impedance shall be measured.                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| 阶段2：放置2小时后，达到热平衡状态再测。                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| Step2:After the capacitor being stored for 2 hours,capacitance, Dissipation Factor and impedance shall be Measured.The measurement shall be made at thermal stability.                                                                                                                                                                                                                                                                                                                     |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| 阶段4：放置2小时后，达到热平衡状态测测。                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |
| Setp4:After the capacitor being stored for 2 hours,Capacitance, Dissipation Factor and impedance shall be Measured.The measurement shall be made at thermal stability.                                                                                                                                                                                                                                                                                                                     |                                                           |                                                                                                                                                                                                                                                                                                                                                   |                           |                                            |                              |              |                                            |                                        |                        |                                                  |         |   |       |       |   |      |         |   |       |       |

| NO                                      | 项 目<br>Items            | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 规格              |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
|-----------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|---------------------|--------------------|-----------------------------------|------------------|-------------------------------------|----------------|---------------------------------------|-----------------|-----------------------------------------|--------------------|----------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Specifications  |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| 11.7                                    | 压力释放<br>Pressure relief | <p>一、交流试验 A.C.test</p> <p>施加电压值：Applied voltage</p> <p>交流电压不超过0.7倍的额定直流电压或250VAC以下</p> <p>A.C.voltage not exceeding 0.7times the rated</p> <p>Direct voltage or 250V AC whichever is</p> <p>the lower.</p> <p>频率：Frequency:50Hz或60Hz</p> <p>串联电阻参照下表 Series resistor refer to</p> <p>the table below.</p> <table><tr><td>Capacitance</td><td>Series resistor</td></tr><tr><td><math>C\leq1\mu\text{F}</math></td><td><math>1000\pm100\Omega</math></td></tr><tr><td><math>1\mu\text{F}&lt;C\leq10\mu\text{F}</math></td><td><math>100\pm10\Omega</math></td></tr><tr><td><math>10\mu\text{F}&lt;C\leq100\mu\text{F}</math></td><td><math>10\pm1\Omega</math></td></tr><tr><td><math>100\mu\text{F}&lt;C\leq1000\mu\text{F}</math></td><td><math>1\pm0.1\Omega</math></td></tr><tr><td><math>1000\mu\text{F}&lt;C\leq10000\mu\text{F}</math></td><td><math>0.1\pm0.01\Omega</math></td></tr><tr><td><math>10000\mu\text{F}&lt;C</math></td><td>/</td></tr></table> <p>*电阻相当于试验频率阻抗的 1/2</p> <p>Resistance is equivalent to a half of</p> <p>Impedance by test frequency.</p> <p>二、直流试验 D.C.test</p> <p>施加同额定电压相等的反向电压。</p> <p>Reversed polarity D.C.rated voltage shall</p> <p>be applied to the capacitor.</p> <p>注：1、该规定适用于铝壳直径6mm以上的电容器。</p> <p>2、试验开始30Min后。防爆装置不动作时，</p> <p>停止试验。</p> <p>Note:</p> <p>1.This requirement applies to capacitors</p> <p>with a diameter of 6mm or more.</p> <p>2.When the pressure relief device dose</p> <p>not open even 30minutes after commencement</p> <p>of this test,the test may be ended.</p> | Capacitance     | Series resistor | $C\leq1\mu\text{F}$ | $1000\pm100\Omega$ | $1\mu\text{F}<C\leq10\mu\text{F}$ | $100\pm10\Omega$ | $10\mu\text{F}<C\leq100\mu\text{F}$ | $10\pm1\Omega$ | $100\mu\text{F}<C\leq1000\mu\text{F}$ | $1\pm0.1\Omega$ | $1000\mu\text{F}<C\leq10000\mu\text{F}$ | $0.1\pm0.01\Omega$ | $10000\mu\text{F}<C$ | / | <p>防爆装置打开时，无</p> <p>燃烧、无爆炸或铝壳</p> <p>和封口材料的分离。</p> <p>The pressure relief</p> <p>device shall open in</p> <p>such a way as to avoid</p> <p>any danger of fire or</p> <p>explosion of Capacitor</p> <p>elements.</p> |
|                                         |                         | Capacitance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Series resistor |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $C\leq1\mu\text{F}$                     | $1000\pm100\Omega$      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $1\mu\text{F}<C\leq10\mu\text{F}$       | $100\pm10\Omega$        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $10\mu\text{F}<C\leq100\mu\text{F}$     | $10\pm1\Omega$          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $100\mu\text{F}<C\leq1000\mu\text{F}$   | $1\pm0.1\Omega$         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $1000\mu\text{F}<C\leq10000\mu\text{F}$ | $0.1\pm0.01\Omega$      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
| $10000\mu\text{F}<C$                    | /                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |
|                                         |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                 |                     |                    |                                   |                  |                                     |                |                                       |                 |                                         |                    |                      |   |                                                                                                                                                                                                                     |

| NO    | 项 目<br>Items         | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 规 格<br>Specifications                                                                                                                                                                                                                 |
|-------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.8  | 高温负荷<br>Load life    | <p>在105±2℃的恒温箱内，电容器施加最大允许纹波电流，施加直流电压和交流电压的峰值的和要等于额定电压，时间 5000 +24 小时，试验结束后，在标准状态下放置16小时进行测试。</p> <p>The capacitor shall be placed in a circulating air oven at an ambient temperature of 105±2℃. It must not be subjected to direct radiation from heating elements. DC voltage and the rated ripple current shown in table shall be applied for a period of 5000 +24 hours, The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitor. It shall be subjected to standard atmospheric for 16 hours, after which measurement shall be made.</p> | <p>漏电流：不超过规定值<br/>Leakage current: ≤<br/>Initial specified value</p> <p>容量变化率：初测值的±20%以内<br/>Capacitance change: within ±20% of</p> <p>Initial value<br/>损耗角正切：不超过规定值的2倍<br/>Dissipation factor: ≤200% of initial specified value</p> |
| 11.9  | 高温储存<br>Shelf life   | <p>温度 Temp: 105±2℃<br/>时间 Time: 1000+36 小时<br/>电压处理：在常温下电容器串联保护电阻（1KΩ），加额定施加额定电压30分钟后在放电，常温放置24-48小时后测量<br/>Condition: The DC rated voltage shall be applied across the capacitor and its protective resistor (1kΩ) for 1 minutes, The capacitor shall then be stored under standard Atmospheric Conditions for 24-48 hours.</p> <p>漏电流：施加额定电压一分钟，常温下测试，I ≤ 2倍的规定值。<br/>Leakage current: rated voltage for one minute<br/>I ≤ applied the provisions of twice the value of</p>                                                                                                             | <p>漏电流：施加额定电压一分钟 I ≤ 2倍的规定值。</p> <p>容量变化率：初测值的±20%以内<br/>Capacitance change: within ±20% of</p> <p>Initial value<br/>损耗角正切：不超过规定值的2倍<br/>Dissipation factor: ≤200% of initial specified value</p>                                     |
| 11.10 | 可焊性<br>Solderability | <p>浸渍时间<br/>Solder presstime: 2±0.5s<br/>焊接温度<br/>Solder temperature: 235±5℃</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>浸渍面积90%以上附着<br/>At least 90% of<br/>Circumferential surface of the dipped portion of termination shall be covered with new solder</p>                                                                                              |

| NO    | 项 目<br>Items                            | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                  | 规 格<br>Specifications                                                                                                                                                                                                                                                                     |
|-------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.11 | 耐焊接热<br>Resistance to<br>soldering heat | 温度：350±10℃<br>Test Temperature:350±10℃<br>时间：3.5±0.5s<br>Test time:3.5±0.5s                                                                                                                                                                                                                                                                        | 漏电流：不超过规定值<br>Leakage current: Not more<br>than the specified value<br>电容量变化：初测值的±10%以内<br>Capacitance Change :<br>within±10% of the<br>initial value<br>损耗角正切：不超过规定值<br>Dissipation Factor: Not More<br>than the specified value<br>外观：无明显异常<br>Appearance: No remarkable<br>abnormality |
| 11.12 | 耐湿性<br>Resistance of<br>damp heat       | 温度：40±2℃<br>Test Temperature:40±2℃<br>湿度：90-95%Rh<br>Relative Humidity:90-95%Rh<br>时间：240±8hrs<br>Test time:240±8hrs<br>试验后常温放置24-48小时<br>To expose in the atmospheric<br>condition for 24to 48 hours<br>after completion of test                                                                                                                  | 漏电流：不超过规定值<br>Leakage current: Not more<br>than the specified value<br>电容量变化：初测值的±10%以内<br>Capacitance Change :<br>within±10% of the<br>initial value<br>损耗角正切：不超过规定值<br>Dissipation Factor: Not More<br>than the specified value<br>外观：无明显异常<br>Appearance: No remarkable<br>abnormality |
| 11.13 | 耐振性<br>Resistance to<br>vibration       | 频率：10-55-10Hz/分<br>Frequency: From 10 to 55 Hz and<br>return to 10 Hz,shall be transferred<br>in 1 Min Total Amplitude:1.5mm<br><br>条件：X.Y.Z 方向各2小时<br>Direction and duration of vibration :<br>3 orthogonal directions mutually<br>each for 2 hours Total 6 hours.<br><br>静电容量变化：初始值的±5%以内<br>Capacitance change: Within ±5% of the initial value | 静电容量测试时无接触不良，断线及短路，端子无机械损伤。<br>Capacitance:During the<br>test,measured value to<br>be stabilized(when<br>measured several times<br>within 30 min before<br>completion of test)<br>Appearance:No<br>remarkable abnormality<br><br>外观：无明显异常<br>Appearance: No remarkable<br>abnormality     |

| NO    | 项 目<br>Items                                                                                        | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 规 格<br>Specifications                                |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|-------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------|------|-------------|---------|----------------|-----------|----------|------|-----|-----------|---|---------|-----------|----|------------|----|------------|--|--|----|-----|-----|-------------|---------|-------------|-----------|----------|------|-----|-----------|-----|--------|-----------|---|--------|------------|----|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.14 | 耐溶剂性<br>Resisting<br>Solvent                                                                        | 溶剂：异丙醇<br>Solvent:Isopropylalcohol<br>温度：20-25℃<br>Temperature:20-25℃<br>时间：30±5s<br>Time:30±5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 外观：无明显异常<br>Appearance: No remarkable<br>abnormality |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
| 11.15 | 端子强度<br>Terminal<br>Strength<br>拉伸度<br>Tensile<br>test<br>intensity<br>弯曲强度<br>winding<br>intensity | <table><tr><td>线径</td><td>拉伸力</td><td>维持时间</td></tr><tr><td>Diameter of</td><td>Tensile</td><td rowspan="3">continued time</td></tr><tr><td>terminnal</td><td>Strength</td></tr><tr><td>(mm)</td><td>(N)</td></tr><tr><td>0.3&lt;d≤0.5</td><td>5</td><td rowspan="3">10±1sec</td></tr><tr><td>0.5&lt;d≤0.8</td><td>10</td></tr><tr><td>0.5&lt;d≤1.25</td><td>20</td></tr><tr><td colspan="3">2回合 2bends</td></tr><tr><td>线径</td><td>弯曲力</td><td>锥质量</td></tr><tr><td>Diameter of</td><td>Tensile</td><td rowspan="3">Awl quality</td></tr><tr><td>terminnal</td><td>Strength</td></tr><tr><td>(mm)</td><td>(N)</td></tr><tr><td>0.3&lt;d≤0.5</td><td>2.5</td><td>0.75kg</td></tr><tr><td>0.5&lt;d≤0.8</td><td>5</td><td>0.51kg</td></tr><tr><td>0.5&lt;d≤1.25</td><td>10</td><td>1.0kg</td></tr></table> | 线径                                                   | 拉伸力            | 维持时间 | Diameter of | Tensile | continued time | terminnal | Strength | (mm) | (N) | 0.3<d≤0.5 | 5 | 10±1sec | 0.5<d≤0.8 | 10 | 0.5<d≤1.25 | 20 | 2回合 2bends |  |  | 线径 | 弯曲力 | 锥质量 | Diameter of | Tensile | Awl quality | terminnal | Strength | (mm) | (N) | 0.3<d≤0.5 | 2.5 | 0.75kg | 0.5<d≤0.8 | 5 | 0.51kg | 0.5<d≤1.25 | 10 | 1.0kg | 测定静电容量时，无接触<br>不良，开路和短路现象，<br>另外无机械损伤和端子损<br>伤。<br><br>When the capacitance<br>is measured,there shall<br>be no intermittent<br><br>contacts or open-or<br>short-circuiting.<br><br>There shall be no such<br>mechanical damage as<br>termin |
|       |                                                                                                     | 线径                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 拉伸力                                                  | 维持时间           |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | Diameter of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tensile                                              | continued time |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | terminnal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Strength                                             |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | (N)                                                  |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.3<d≤0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5                                                    | 10±1sec        |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.5<d≤0.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                   |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.5<d≤1.25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 20                                                   |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 2回合 2bends                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                      |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 线径                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 弯曲力                                                  | 锥质量            |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | Diameter of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tensile                                              | Awl quality    |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | terminnal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Strength                                             |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | (N)                                                  |                |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.3<d≤0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2.5                                                  | 0.75kg         |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.5<d≤0.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5                                                    | 0.51kg         |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |
|       |                                                                                                     | 0.5<d≤1.25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10                                                   | 1.0kg          |      |             |         |                |           |          |      |     |           |   |         |           |    |            |    |            |  |  |    |     |     |             |         |             |           |          |      |     |           |     |        |           |   |        |            |    |       |                                                                                                                                                                                                                                              |

**STANDARD NUMBER**

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| D | X | Z | 1 | 0 | 0 | M | 2 | 2 | 7  | H  | 2  | 0  | 0  | S  | 1  | A  | A  |

[illegible]