FOLLOW-UP SERVICE PROCEDURE
(TYPE L)

STRINGS, DECORATIVE LIGHTING
(DGZZ,DGZZ7)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

752086 (Party Site)
Applicant: ZHUHAI FUYU LIGHTING CO LTD
(100609-635) Floor 2, South Factory Building
Transportation General Company
No 49, Guangxin Road, Pingsha Town
Zhuhai
Guangdong 519050 CHINA

752086 (Party Site)
Listee: SAME AS APPLICANT
(100609-635)

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: http://www.ul.com/fus. Manufacturers without Internet access may obtain the current version of this document from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of this document or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at http://www.ul.com/aboutul/locations/, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Listee/Classified Co. in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s) and any Listee/Classified Co. will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here: http://services.ul.com/fus-service-terms. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

It is the responsibility of the Listee/Classified Co. to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

This Follow-Up Service Procedure contains information for the use of the above Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Manufacturer with the understanding that it will be returned upon request and is not to be copied in whole or in part.

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the above named Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

Bruce A. Mahrenholz
Director
Conformity Assessment Programs (CPO)
UL LLC

LOCATION

752086 (Party Site)
(100609-635) ZHUHAI FUYU LIGHTING CO LTD
Floor 2, South Factory Building
Transportation General Company
No 49, Guangxin Road, Pingsha Town
Zhuhai
Guangdong 519050 CHINA
Factory ID: None
UL Contracting Party for above site is: UL GmbH

ISSUED: 2018-06-15

STANDARDIZED APPENDIX PAGES

SUBJECT 588

Strings, Decorative Lighting (DGZZ, DGZZ7)

STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

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APPENDIX A - FIELD ENGINEER'S RESPONSIBILITIES AND INSTRUCTIONS FOR EXAMINATION OF THE PRODUCT

GENERAL

The Field Engineer’s general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, “UL Mark Surveillance Requirements”, and is available through UL’s secure customer portal MyHome@UL.com and/or through UL’s internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Engineer.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

When a product does not comply with the Follow-Up Service Procedure require that the manufacturer implement appropriate action as outlined in the “UL Variation Notice and Corrective Action Requirements” document.

CONSTRUCTION CONSIDERATIONS

The Field Engineer is required to examine production bearing, or intended to bear, the UL Mark or Markings, to determine compliance with the requirements in Appendix D, as well as the following requirement:

1. During each visit to the factory, the UL Field Engineer shall see the entire lot of decorative strings that bear or are intended to bear the Certification Mark and shall then select random samples for inspection. The number of samples selected from each lot size shall be in accordance with the Sample Selection Guide for Visual Inspection (Table 1).

2. For sampling purposes, the UL Field Engineer shall consider a lot to be composed of products of a single type and construction (e.g.: Miniature Series) manufactured during the same production run and shift.

3. If the final disposition of a lot noted in note (5) below is a rejection of the lot, the manufacturer may make a thorough review of the lot, removing all units that do not comply with the requirements, after which the remainder of the lot may be resubmitted as a "Rejected lot, culled for resubmittal" and subjected to the criteria in Table 1. If this "Rejected lot, culled for resubmittal" results in a final disposition of rejection, the "Rejected lot, culled for resubmittal" may not be resubmitted again, and use of Listing Marks is prohibited on the "Rejected lot, culled for resubmittal". Inspection of conforming features from the original lot need not be repeated.

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SAMPLE SELECTION GUIDE FOR VISUAL INSPECTION – TABLE 1

		Total Number of Nonconforming Units (1) in 1st Sample				Total Number of Nonconforming units 1st and 2nd Samples (5)	
Lot Size	Size of 1st Sample	Accept Lot (2)	Select 2nd Lot (3)	Reject Lot (4)	Size of 2nd Sample	Accept	Reject
1-1200	12	0	-	1	-		-
1201-35,000	32	0	1	2	32	0-1	2+
35,001-500,000	50	0	1-2	3	50	0-3	4+
500,000+	80	1	2-3	4	80	0-4	5+

Notes:

(1) A "Nonconforming Unit" is defined as any one string that has one or more items not in compliance with one or more requirements contained in this Procedure. In other words, one string containing more than one defect shall be counted as one nonconforming unit.

(2) If the number of nonconforming units in the first sample is less than or equal to the number under "Accept Lot", the lot shall be accepted without further sampling.

(3) If the number of nonconforming units in the first sample is equal to the number under "Select 2nd Sample", a second sample equal in size to the 1st Sample shall be selected

(4) If the number of nonconforming units in the first sample is equal to or greater than the number under "Reject Lot", the lot shall be rejected without selecting a 2nd sample.

(5) Where a second sample has been selected, the total number of nonconforming units from the first and second samples is to be determined and compared with the information under "Total No. of Nonconforming Units, 1st and 2nd Sample, Accept/Reject". Final disposition of a lot where a Second Sample has been selected shall conform with this accept/reject criteria.

4. After examining the manufacturer's decorative lighting strings for compliance with the Procedure, other features are to be carefully checked regardless of the type or style of the individual components used in the fabrication or assembly of these lighting strings. These include, but are not limited to the following:

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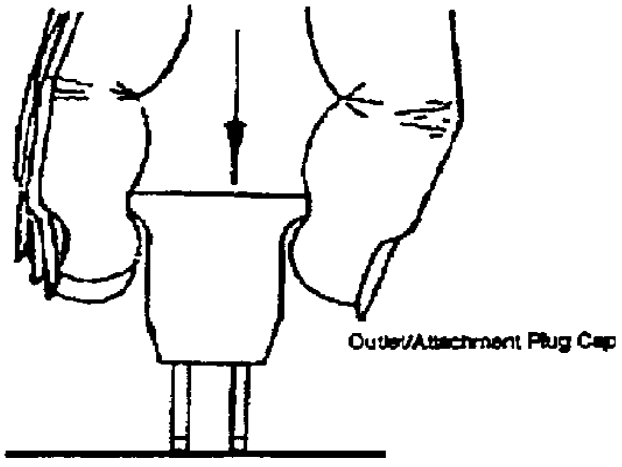
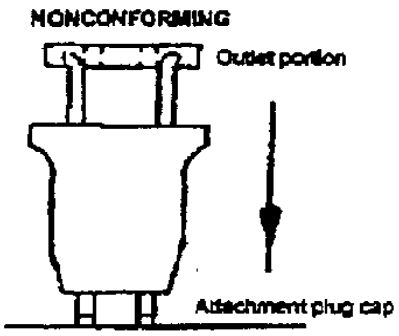
a. Insulation - Determine that the manufacturer has instituted an effective visual production-line inspection program that checks for adequacy of insulation on the assembly. Special emphasis should be placed on examination of the lampholders, current taps, attachment plugs, and cord connectors to determine that there is no exposure of bare conductors at the point at which the insulated leads leave the components. This condition may be caused by excessive wire or cord stripping, and is found when the wire or leads are flexed or when a moderate pull is applied between the leads and the fittings.

b. Contact Positioning – For Screw Type Lampholders - Verify that the manufacturer's inspection personnel are checking to see that the center and side contacts of each lampholder are properly positioned so as not to interfere with the proper lamping. The side and center contacts shall be supported or restrained such that they cannot be positioned to contact each other or such that the lamp screw base causes a short circuit when a lamp is installed.

c. Blade Securement – For attachment plugs and current taps – Check the construction carefully to verify that the blades are secured properly. Several samples of each type should be checked to ensure that the blades cannot be dislodged by axial pressure applied to the blades, such as would be exerted on the blades when being plugged into an outlet receptacle. The check should be performed by gripping the sides of the plug body and pushing the blades against a solid, flat surface.





d. Sharp Edges - Strings employing push-in type midget-base lampholders (push-in lamp as opposed to the screw-base type) should be checked to verify that there are no sharp edges (such as excessive flash on molded parts), either on the lamp or on the lampholder, which could cut the user during lamp replacement.

e. Contact Securement - Push-in type lampholders are to be tested to verify that pushing the leads at the point of entry, will not result in contacts loosening or becoming dislodged. The lampholder should be placed on a surface with the leads sticking up such that they can be pushed downward towards the top of the lampholder.

5. COMPONENTS:

a. Lampholders - Parallel-connected lampholders shall be wired to connect all screwshells to the grounded (neutral) conductor. Intermediate and candelabra screw lampholders shall be Recognized/Unlisted Component Seasonal Use Lampholders (DGZE2,3) as described in the Procedure.

b. For push-in type lampholders intended for use in series-connected lighting strings - If the manufacturer does not have the capability of molding lampholders within their facility, a subscriber to UL's Fabricated Parts Program (QMMY2) shall be used to mold the lampholders.

c. Lamps - All candelabra and intermediate base lamps, inclusive of "bubble lights", shall be Classified/Unlisted Component Decorative Lamps (DGXO, DGXO3).

d. Accessories - Such items packaged with the product shall be specifically described in the Procedure.

e. Outlet Devices - An outlet device (cord connector or current tap) on a string that is provided with a polarized attachment plug shall be polarized. The conductor connected to the screw shells of the lampholders shall be connected to the identified (wider) blade of the attachment plug and the identified (longer) slot of the outlet device. If the attachment plug of a string is not polarized, the outlet device (cord connector or current tap) shall not be polarized.

f. Examine samples of all lampholder designs employed by the manufacturer in parallel-connected lighting strings to verify that the center contact of each lampholder and the overcurrent protection device are connected to the ungrounded supply circuit conductor (narrow blade) of the attachment plug/current tap and to the narrow slot of the cord connector, if provided.

6. MARKINGS:

a. Markings - Information required shall be legibly marked on the product, in the manner and minimum height, and on a material as specified in the Procedure. If a manufacturer wishes to use alternate wording that they believe is equivalent to a required marking, they should submit this request to the Conformity Assessment Services Department at the Responsible office for the file for inclusion in their Procedure.

b. Packaging - There shall be no marking in the instruction manual, on the carton or package that is, or could be construed to be, in conflict with or an extension of the use covered in the instruction manual or Procedure.

c. Assembly Instructions - The UL Field Engineer shall review the assembly instructions, and shall be satisfied that they are both clearly described and complete by occasionally witnessing the assembly of typical samples.

7. CERTIFICATION MARKS:

a. The Certification/Listing Marks (labels) for decorative lighting strings shall be an adhesive back "flag" type Holographic Listing Mark. The Mark is wrapped once around, and adheres to the cord and the ends of the Mark adhere to each other and project as a flag.

b. Marks for decorative lighting strings restricted to indoor use include the words "For Indoor Use Only", and have the UL symbol and the word "LISTED"/”CERTIFIED” printed in green ink on a holographic background.

c. Marks for decorative lighting strings intended for both indoor and outdoor use shall be marked, "For Indoor and Outdoor Use", and have the UL symbol and the word "LISTED"/”CERTIFIED” printed in red ink on a holographic background.

d. Only one Certification Mark is to be applied to each decorative lighting string and located so as to be readily visible.

e. Partially completed decorative lighting strings (those still to have, required markings, lamps or other features as described in the Procedure added at another location) are to bear a combination type bulk "Decorative Sub-Assembly" Certification Mark on the box or carton in which they are contained. The number of pieces shown on the Certification Mark shall correspond to the contents of the box or carton.

f. The use of "Decorative Sub-Assembly" Certification Marks by a manufacturer will be acceptable only when specifically authorized in this Follow-Up Service Procedure.

g. Both standard and combination labels are available, however, the "Decorative Sub-Assembly" labels are available only in the combination type. All Certification Marks are to be obtained through orders placed with UL.

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8. INSTRUCTIONS FOR AUDITING THE INCOMING INSPECTION OF LAMPS

a. Each shipment of lamps (except those covered as Classified/Unlisted Component Decorative Lamps (DGXO, DGXO3)) must be made available to the UL Field Engineer for audit. From any one of the inspection lots which have passed the Manufacturer's Incoming Inspection outlined in Appendix D - INSTRUCTIONS FOR INCOMING INSPECTION OF LAMPS, the UL Field Engineer shall select a random sampling as indicated in Table 3 of Appendix D. If the manufacturer uses lamps of several different types of construction, the UL Field Engineer need sample only one lot per shipment. On subsequent shipments, the UL Field Engineer should attempt to select samples from a lot containing lamps of a type that has not been previously audited. This should continue until all types have been sampled, at which time, the sequence may be repeated.

b. Having selected the required number of lamps indicated in Table 3 of Appendix D, the UL Field Engineer shall, as appropriate for the type of lamps chosen have the manufacturer perform the Maximum Lamp Wattage Test as described in Appendix D - Section IV. Acceptance of the lot shall be as outlined in Appendix D -Section IV. Any nonconformance shall be noted on a Variation Notice.

c. If the lot is rejected, lamps from that lot shall not be shipped with Certified strings until the lot has been resubmitted and accepted - see Paragraph E below. Furthermore, regardless of whether that lot is accepted on resubmission, the UL Field Engineer shall examine a second lot from the same shipment using the same procedures outlined above. If all the remaining lots have been released along with Certified strings and there are no lamps available for auditing, a Variation Notice describing the situation shall be immediately issued.

d. If the audit of the second lot results in rejection of that lot, no lamps from that shipment shall be shipped with Listed strings, pending corrective action by the manufacturer determined to be acceptable by a UL Engineer at the Responsible Office. If the remaining lamps have already been released with Certified strings, a Variation Notice describing the situation shall be immediately issued.

e. A rejected lot, or lots from a rejected shipment, may be resubmitted for inspection following the procedure outlined in Appendix D - Section IV.

9. INSTRUCTIONS FOR BULK LABELED STRINGS

a. Bulk labeled strings bear the "Decorative Sub-Assembly-For Further Processing Required" label and are incomplete in certain features as follows:

1) Lamps need to be added
2) Markings need to be added
3) Strings need to be packaged
4) Other features as described in the Procedure.

Coverage for manufacturing and finishing bulk labeled strings shall be specifically described in both Procedures, including the extent to which they are incomplete and what actions are necessary to finish them. If not, then the use of the Mark should not be authorized.

b. Strings to which the manufacturer applies bulk labels shall be subjected to the complete test program as required by these pages including all 100% testing and sample testing.

c. For end-use manufacturers completing the strings, the 100% production line tests and sampled tests need not be repeated. However, the visual inspection under "General Considerations" shall be conducted.

d. Strings to which the manufacturer applies bulk labels are subject to sample selection and Follow-Up Testing.

10. ACCESS TO MOLDING OPERATION

For Lighting Strings employing push-in series-connected lampholders.

If the manufacturer does not have molding capabilities, a molder covered under the Recognized Component Fabricated Parts (QMMY2) Program must provide the lampholders. The lampholders received from the Recognized Molder shall be properly marked on the smallest shipping unit with the Molders name or File Number and the material used to mold the lampholders.

When the manufacturer does any molding at their facility the UL Field Engineer Representative shall also have access to the records required below. The manufacturer shall mark the smallest unit cartons or bags containing the lampholders in a manner such that the UL Field Engineer Representative can trace the origin of each lampholder to a specific batch.

The manufacturer shall keep records for each batch of lampholders molded, in accordance with the requirements below.

The records shall be thorough, so that the UL Field Engineer Representative may determine the material used to mold the lampholders. All of the following items are to be covered:

a) The records shall indicate the base material. The manufacturer may not blend resins unless specifically stated in the Procedure.

b) The records shall include the amount of regrind used. Thermoplastic regrind shall not exceed 25 percent by weight unless specifically described in the Procedure. UL does not authorize the use of thermoset regrind.

c) The material used for the lampholders shall not include recycled plastics, color concentrates, flame retardants, or mold release lubricants unless specifically described in the Procedure.

The records described above shall be maintained for at least six months from the date of production. However, if a discrepancy is uncovered, the manufacturer shall discuss the error with the responsible individual. If necessary, the manufacturer shall correct the error in the records. To prevent recurrence of the error, the error shall be documented on a Variation Notice, and the UL Field Engineer shall pay particular attention to this area during future inspections.

If the records are not complete, or UL no longer has access to the molding operation, the UL Field Engineer Representative shall issue a Variation Notice so that the procedure in place at the factory used by the manufacturer will be modified accordingly.

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APPENDIX B - INSTRUCTIONS FOR FIELD ENGINEER'S SAMPLE SELECTION

FIELD ENGINEER

Certain products covered by this Procedure employ constructions or materials requiring Follow-Up Tests at UL. The Field Engineer shall select samples in accordance with Appendix B, Table-2, Sample Selection Guide.

The Field Engineer is responsible for selecting the quantity of samples at the stated frequency for Follow-Up testing in accordance with the Sample Selection criteria noted above.

Samples shall be identified and tagged using a Sample Tag. Samples Tags shall include the voltage and current ratings of the lamps, and the material designation and manufacturer of the lampholders as applicable to the sample submitted. These samples shall be identified as **"Two Strike Program Samples"** in the database before the Model Number and on the UL sample tag.

The samples shall be mailed **by the Field Engineer** directly to the Test Office(s) as designated on the specific service profile.

SAMPLE SELECTION GUIDE

TABLE 2

Type of Product	**Number of Samples**	**Sample Selection Frequency**
Series Connected Lighting Strings	4 Complete Strings	Monthly*
Each shape, electrical rating (current and voltage) color of lamp with shunts employed in a push-in or midget screw-base lampholder, including its associated lampholder	5 Lamps	Twice a year - Preferably March or June
Series and Series-Parallel Connected Strings that use Bubble-Type Lights (Samples of complete string not required) other than Decorative Lamps (DGXO)	15 Complete Lamp Assemblies	Twice a year - Preferably March or June

* For those manufacturers that are on the No-Strike List on the UL website, https://industries.ul.com/news/bulletin-decorative-lighting-strings the sample selection frequency shall be reduced to twice a year.

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Also note that for any routine sample selection in this category, the Field Engineer should also delay the sample selection of the second set of samples until after Field Engineer has received notification of the test results from the first set of samples selected unless the manufacturer's production schedule indicates that their production will be completed prior to the end of the production season. In this case, please make an effort to select the second set of samples before the end of the production run.

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APPENDIX C - INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

GENERAL

The samples forwarded by the Field Engineer to UL in accordance with Appendix B shall be subjected to the applicable tests described below. References to the Standard apply to the current edition of the Standard.

The selected series or series-parallel connected Lighting String samples shown in Table 2, Appendix B shall be subjected to the following tests:

FLAMMABILITY OF LAMPHOLDERS TEST

Method

Each of the ten samples (five conditioned, five unconditioned) shall be subjected to the Small Scale Flame Test in accordance with UL 588 and UL 1694.

Basic for Acceptability

Each of the ten lampholders shall conform to the requirements in the Referenced Standards.

CASCADE LAMP BURNOUT SIMULATION TEST

Method

One previously untested string shall be subjected to the Cascade Lamp Burnout Simulation Test as described in UL588, the Standard for Seasonal and Holiday Decorative Products.

Basis for Acceptability

The test results shall conform to the requirements in the Referenced Standard.

LAMPHOLDER PLASTIC IDENTIFICATION TESTS

Method

A sample of the lampholder material shall be subjected to the plastic identification tests consisting of Infrared Analysis (IR) Thermographic Analysis (TGA) and Differential Scanning Calorimetry (DSC).

Basis for Acceptability

The material used in the lampholder shall compare favorably to the plastic material described in this Procedure.

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PHYSICAL PROPERTIES TESTS OF INSULATION – UNAGED AND AFTER AGING

Method

Six wire samples of suitable length taken from a representative series-connected Decorative Lighting String shall be subjected to the test as described in UL62 and UL1581.

Basis of Acceptability

The test results shall conform to the requirements in the Referenced Standards.

VW-1 FLAME TEST

Method

Three wire samples of suitable length taken from a representative series-connected Decorative Lighting String shall be subjected to this test in accordance with the requirements in UL62 and UL1581.

Basis for Acceptability

The test results shall conform to the requirements in the Referenced Standards.

The samples of the lamps selected as shown in Appendix B, Table 2 shall be subjected to the following tests:

MAXIMUM LAMP WATTAGE TEST

Method

Each of the five samples shall be subjected to the Maximum Lamp Wattage Test as described in UL588, the Standard for Seasonal and Holiday Decorative Products.

Basis for Acceptability

Burnout of the filament shall occur within two (2) minutes after the calculated wattage is achieved for all samples.

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The samples of the complete Bubble Light Lamp Assemblies of the series and series-parallel connected Lighting Strings selected as shown in Appendix B Table 2, shall be subjected to the following tests:

BUBBLE LIGHT LIQUID QUALITATIVE INFRARED ANALYSIS

Method

A sample of the liquid contained in each vial (approximately 1 oz. total) shall be subjected to infrared analysis.

Basis for Acceptability

The identity of the liquid contained in the bubble lamp shall be consistent with a flammability rating of 0 or 1 in the National Fire Protection Association (NFPA) 704 Standard System for the Identification of the hazards of materials for emergency response.

CRUSH

Method

One sample shall be subjected to the Crush Test in accordance with UL588.

Basis of Acceptability

The sample shall conform to the requirements in the Referenced Standard.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

TWO STRIKE PROGRAM – FOR SERIES-CONNECTED LIGHTING STRINGS

When a series-connected string does not comply with the tests noted above, the Applicant and Manufacturer will be notified in writing of the unacceptable results.

When there is a significant unacceptable test result (one strike), the use of the UL Mark will be suspended until the appropriate corrective action is put into place and the results of a new work investigation on revised products are determined acceptable. Once the factory is again authorized to Label products, they are to be placed on increased surveillance including being placed under a Customer Corrective Action Program (CCAP) and the required number of sample sets tested under the Follow-Up Program will be doubled. A second significant nonconformance (2 strikes) within a two-year period will result in the company’s withdrawal as a Subscriber to UL’s Listing Service for Decorative Lighting Strings (DGZZ, DGZZ7).

If within a two-year period, test results are entirely satisfactory, the facility will be placed back on the normal testing frequency.

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FOR ALL OTHER PRODUCTS SELECTED

For all other nonconforming test results, the manufacturer would be placed on hold lot status and additional samples will be requested for testing. If acceptable results are obtained then the nonconformance is cleared and the held shipment may be released. If unacceptable results are obtained, the shipment shall remain on hold until the nonconformance is addressed and additional samples selected comply with the requirements.

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APPENDIX D - MANUFACTURER' S RESPONSIBILITIES, CONSTRUCTION CONSIDERATIONS, AND REQUIREMENTS FOR FACTORY TESTS

The Follow-Up Service Procedure covering the product is loaned to the manufacturer and constitutes the basis on which the product is judged for compliance with the applicable requirements.

MANUFACTURER' S RESPONSIBILITIES

GENERAL

The Manufacturer’s general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, “UL Mark Surveillance Requirements”, and is available through UL’s secure customer portal MyHome@UL.com and/or through UL’s internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Engineer.

CONSTRUCTION CONSIDERATIONS

The manufacturer shall verify compliance with the applicable descriptions and requirements contained in this Procedure. Consideration shall also be given to the general requirements described below, which also apply to products covered in this Procedure. It is the manufacturers responsibility to assure that production complies with these requirements. Non-specified plastic materials may not be substituted for Procedure described materials.

MANUFACTURER’S 100% PRODUCTION-LINE TEST PROGRAM

NOTE: The following Dielectric Voltage-Withstand Test, Lamping Operation Test, and Verification of Polarity Test are required to be performed by manufacturers of strings, inclusive of bulk Listed Decorative Sub-Assemblies. Manufacturers who complete the bulk Listed Decorative Subassemblies need not repeat these tests on completed strings.

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DIELECTRIC VOLTAGE-WITHSTAND TEST

GENERAL

The manufacturer shall subject 100% of production of all products to a routine Production-Line Dielectric Voltage-Withstand Test in accordance with UL Requirements for Dielectric Voltage Withstand (Test Equipment) Used for UL/C-UL/ULC Mark Follow-Up Services which is available through UL's secure customer portal MyHome@UL.com and/or through UL's internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Engineer.

Each parallel-connected string, including all connected components, shall be submitted to the application of an ac potential at a frequency within the range of 40 – 70 hertz between live parts of opposite polarity. The test potential and length of time of application shall be as indicated in either Method I or Method II below. The test shall be conducted prior to lamping.

Method I

The test potential shall be 1200 volts for 1 second.

Method II

The test potential shall be 1000 volts for 1 minute.

Basis for Acceptability

Each parallel-connected string shall withstand the applied potential without evidence of dielectric breakdown.

LAMPING OPERATION TEST

Each lampholder of a lighting string shall be completely lamped and tested by the manufacturer. If any lamp does not light, the string shall be considered nonconforming and shall be reworked or have the Certification Mark removed. In place of lamping, the manufacturer may use an alternate method of testing each lampholder that produces results equivalent to actual lamping. The equivalence of alternate test methods is to be determined by UL and, if acceptable, the alternate test method shall be described in this Procedure.

VERIFICATION OF POLARITY TEST

The manufacturer will verify that each lighting string described in this Procedure as having a polarized plug is constructed with a polarized attachment plug such that the grounded supply conductor (wide blade) of a two wire type is connected to the screw shell contact of the lampholder and to the wide slot of any load fitting, if employed. The ungrounded (narrow blade) of a two-wire type

is to be connected to the overcurrent protective device.

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The manufacturer shall conduct, as a routine production-line test on 100% of factory production, a Continuity Test to verify that there is electrical continuity between the grounded (wide blade) of the attachment plug cap and the screw shell contact of each lampholder, and to the wide slot of any load fitting, if employed.

The continuity shall be determined by the use of an indicating device either audible or visual, such as an ohmmeter or a battery-and-buzzer combination.

Alternatively, continuity may be verified between the ungrounded supply circuit conductor of the attachment plug and the part of the product intended to be connected to the ungrounded conductor (for example, the center contact of the lampholder and narrow contact of any load fitting).

MANUFACTURER'S PERIODIC PRODUCTION-LINE TEST PROGRAM

A set of three units of each type of string and associated fittings is to be selected from each production lot and subjected to all of the tests shown in items A-D, below. A production lot is considered to be composed of products of a single type and construction (e.g.: Miniature Series) manufactured during the same production run and shift.

If acceptable results are obtained on all three units in the set of samples, the lot is acceptable. If there is one nonconforming unit in the set of samples, select a second set of three additional units from the same lot and subject them to the entire test sequence again.

If there is more than one nonconforming unit in the first set of samples, or if there are one or more nonconforming units in the second set of samples, the lot is rejected and may not be shipped bearing the UL Certification Mark.

A. STRAIN-RELIEF TESTS

For Connections to Attachment Plugs, Cord Connectors, and Current Taps

Method

The connection of a pair of wires or the conductors of a cord, to a fitting, by means other than binding-screw terminals, shall withstand a straight pull applied to the cord (or pair of wires) of 30 pounds (13.6 kilograms) in an assembly of No. 18 AWG or larger conductors and 20 pounds (9.1 kilograms) if the conductors are smaller than No. 18 AWG. With the fitting securely supported, the specified pull is to be applied by suspending a weight for 1 minute from the cord or wires in a direction perpendicular to the plane of the cord-entry hole. One fitting from each string selected is to be tested.

Basis for Acceptability

If any conductor or wire is detached from the terminal to which it was connected, the results of the test are nonconforming.

STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

For Parallel-Connected Strings

Method

If the connection of a pair of wires or the conductors of a cord to the lampholder is by means of pin terminals and an associated cap or pressure plate, the connection shall be capable of withstanding a straight and right angle pull applied to the cord (or pair or wires) of 20 pounds (9.1 kilograms) for No. 18 AWG or larger conductors, and 8 pounds (3.6 kilograms) for No. 20 AWG conductors.

Three samples from each string are to be tested with the lampholder securely supported and the specified pull applied by suspending a weight for 1 minute from the cord (or pair of wires) in the same direction as the cord leaves the lampholder. The test is to be repeated on three new samples from the same string with the weight applied in a direction perpendicular to the cap or pressure plate.

Basis for Acceptability

If any conductor is displaced more than 1/16 inch (1.6 mm) from the point at which it is connected to the pin, the results of the test are nonconforming.

Secureness of Leads Test For Series-Connected and Series-Parallel Connected Strings

Method

Three sample lampholders from each string are to be tested. The lampholder is to be securely held in a manner that does not additionally support the conductor connection. A pull of 8 lbs (3.6 kg) is to be applied gradually to each conductor individually and maintained for 1 minute. If the string employs two lead and three lead lampholders, three samples of each lampholder shall be tested.

Basis for Acceptability

No portion of the conductor shall become exposed as a result of the pull. A conductor is considered to be exposed if the end of the conductor insulation does not enter the plane of the conductor entry opening before, during, or after the pull. Breakage of the conductor is not acceptable.

B. RELIABILITY OF CONDUCTOR CONNECTIONS TEST (Conducted on the connections to attachment plugs, cord-connectors, and current taps of each string):

Method

If the conductors of a flexible cord or wire are assembled to the blades or contacts of the fitting prior to the assembly of the blades or contacts in the device, each connection shall withstand for 1 minute, without breaking, before assembly in the device, a pull of 20 pounds (9.1 kilograms) if the conductor is No. 18 AWG or larger and a pull of 8 pounds (3.6 kilograms) if the conductor is smaller than No. 18 AWG.

STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

Basis for Acceptability

The conductor shall not separate from the blade or contact.

C. SECURITY OF BLADES TEST (Conducted on the attachment plugs and current taps of each string):

Method

If the blades and/or pin of the attachment plug or current tap are not rigidly fixed to the cap prior to their being connected to the conductors of the cord, each blade and pin, and the parallel blades tested together, shall be capable of withstanding a straight pull of 20 pounds (9.1 kilograms) for 2 minutes without loosening. The device is to be wired in the intended manner and then supported on a horizontal steel plate with the blades and pin projecting downward through a hole having a diameter just large enough for the blades and pin to pass through it. A 20-pound (9.1-kilogram) weight is to be supported by each blade or pin in succession, and then by the two blades tested together.

Basis for Acceptability

The blades when measured 2 minutes after removal of the weight, shall not have moved more than 3/32-inch (2.4 mm).

D. SECURITY OF INSULATION TEST (Conducted on attachment plugs, cord connectors, and current taps; one test per string):

Method

Unless the conductor insulation is secured by a knot in the cord or by other equivalent positive means, the assembly shall be capable of withstanding a pull of 15 pounds (6.8 kilograms) for conductors No. 20 AWG or larger and 10 pounds (4.5 kilograms) for conductors smaller than No. 20 AWG, as described in the following paragraph.

The device is to be wired as intended with at least a 6-inch (152 mm) length of the flexible cord or wires. The insulation on each conductor is to be slit, parallel to the conductor, for a short distance at a point approximately 1-inch (25.4 mm) from its entry into the device. All strands of the conductor and the separator (if any) are to be severed at the slit portion. With the device securely held by its blades, a direct pull as indicated above is to be applied for 2 minutes to the free end of the cord or wires.

If the insulation breaks prior to completion of the 2 minute time period, the sample is to be examined immediately for compliance. The test does not have to be repeated. Note: If the sample complies with the Basis for Acceptability, then this is not a nonconformance.

STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

Basis for Acceptability

Detachment of the insulation from the holding means within the device, or exposure of the conductors at the entry to the device, is a nonconforming result.

INSTRUCTIONS FOR INCOMING INSPECTION OF LAMPS

The manufacturer shall separate all incoming shipments of lamps (except those covered as Classified Decorative Lamps (DGXO, DGXO3)) into inspection lots consisting of a maximum of 250,000 lamps per lot, which shall be sampled according to Table 3 and subjected to Maximum Lamp Wattage Test.

SAMPLE SELECTION GUIDE
TABLE 3

	Number of Nonconformances in the First Set			2nd Set Size	Number of Nonconformances in First and Second Sets Combined	
Sample Size	Accept Lot	Select 2nd Set	Reject Lot		Accept Lot	Reject Lot
50	0	1 or 2	3	50	3	4

MIDGET BASE PUSH-IN TYPE INCANDESCENT LAMPS

From each inspection lot, select fifty (50) lamps and subject them to the Maximum Lamp Wattage Test described below.

Maximum Lamp Wattage Test:

Method

Lamps containing shunts employed in a push-in or miniature or midget screw lampholder shall not be capable of dissipating a wattage equal to 1.1 times the minimum diameter (d) in millimeters of the lamp in the location of the filament or 3.0 times the area of the outside glass bulb surface in square centimeters (see Figure 4 below), whichever is less, for more than 2 minutes.

The lamps shall be inserted in the intended lampholder and connected in series with a variable a-c voltage supply in conjunction with a wattmeter. The wattage drawn shall be gradually increased so that the calculated wattage is reached within 60 seconds.

Basis for Acceptability

Burnout of the filament shall occur within 2 minutes after the calculated wattage is achieved.

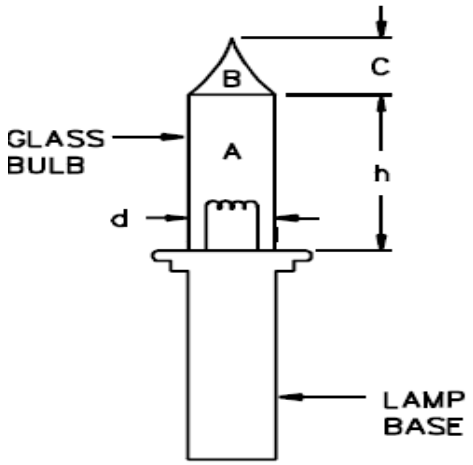
STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

FIGURE 4
DETERMINATION OF SURFACE AREA OF LAMP

Surface area =surface area A plus surface area B

$$\text{Surface area } A = 2\pi \frac{d}{2} h$$

$$\text{Surface area } B = \pi \frac{d}{2} \sqrt{\left(\frac{d}{2}\right)^2 + C^2}$$



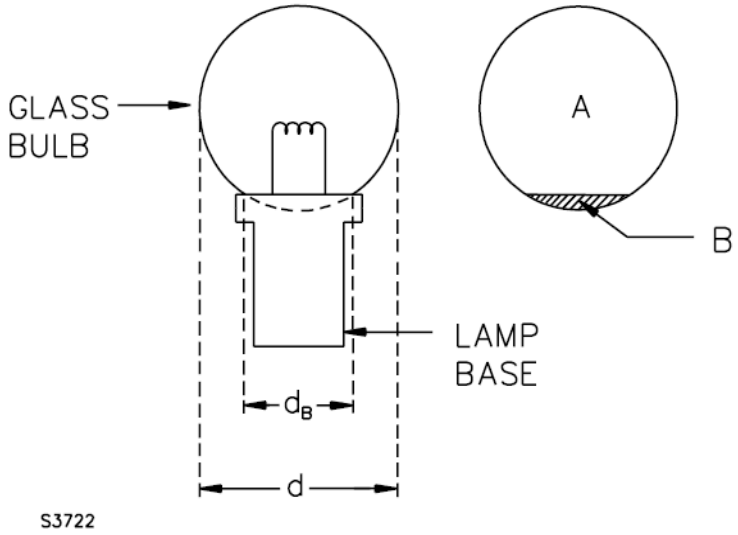
For a globe-shaped lamp, the surface area is to be calculated as follows:

Total surface area = surface area A minus surface area B

$$\text{Surface area } A = 4\pi \left(\frac{d}{2}\right)^2$$

$$\text{Surface area } B = 2\pi \left[\left(\frac{d}{2}\right)^2 - r\left(\frac{d}{2}\right)\right]$$

Figure SA4.2
Determination of surface area of globe-shaped lamp



$$r = \sqrt{\left(\frac{d}{2}\right)^2 - \left(\frac{d_B}{2}\right)^2}$$

STRINGS, DECORATIVE LIGHTING (DGZZ, DGZZ7)

Procedure in case of nonconformance

For each test performed as part of the manufacturer's incoming inspection, if acceptable results are obtained the lot may be shipped with Certified lighting strings. If there are one or two nonconforming results in the sample, select a second set of fifty lamps and subject them to the test once again.

If more than two lamps are nonconforming in the first set, or if there are four or more total nonconforming lamps in the first and second set, the lot is rejected and may not be shipped with Listed lighting strings.

MARKET SURVEILLANCE

As part of the Follow-Up Service Program, UL Representatives will obtain samples of Lighting Strings in the marketplace. These samples will be subjected to the applicable tests (such as physical properties tests of insulation aged and after aging, and the VW-1 flame test) described in Appendix C. The “Procedure in the event of a nonconformance” described under Appendix C also applies to the test results for the Market Surveillance samples.

INDEX

USL – Indicates certification to US requirements.
CNL – Indicates certification to Canadian requirements.

DECORATIVE LIGHTING STRINGS (DGZZ)

VI. MANUFACTURER'S DIELECTRIC VOLTAGE-WITHSTAND TEST EQUIPMENT:

The equipment specified below has been examined and found to be acceptable for use by this manufacturer in conducting the Production-Line Dielectric Voltage-Withstand Test.

Manufacturer	Model/Cat. No.

DECORATIVE LIGHTING STRINGS (DGZZ)

Basis for Acceptability

Detachment of the insulation from the holding means within the device, or exposure of the conductors at the entry to the device, is considered to be a nonconforming result.

E. DOWNWARD BURNING RATE TEST (Conducted on Shades, Diffusers, and Decorative Parts; one Test per Material):

Method

A shade, diffuser, or structural or decorative part (including fabrics, clothing, synthetic hair, etc.), is to be supported on a noncombustible surface in a draft-free location with the specimen oriented so as to place one of the major surfaces of the part in a substantially vertical plane. The uppermost edge or surface is then to be ignited through the use of any convenient ignition source such as an ordinary paper book match or lighter. In the case of a molded form or figure not having an exposed edge, it may be necessary to cut a slit or opening in the desired ignition area. Once the part has ignited, the ignition flame is to be removed and the vertical downward burning rate is to be determined.

If the decorative part consists of a combination of two or more materials, the burning rate is to be determined on the combination unless it is determined that each material, when tested by itself, complies with the maximum acceptable burning rate.

Basis for Acceptability

The vertical downward burning rate shall not exceed 4 in. (102 mm) per minute as determined by the following formula:

$$DBR = \frac{L_1 - L_2 \text{ in inches or mm}}{\text{Duration of flaming in seconds}} \times 60 \frac{\text{sec}}{\text{min}}$$

Where:

DBR is the Downward Burning Rate in in./min or mm/min
L_1 is the length of the specimen before test in in. or mm
L_2 is the length of the specimen after test in in. or mm

DECORATIVE LIGHTING STRINGS (DGZZ7)

UL Representative:

Randomly selected samples of series-connected lighting strings Certified for Canada (DGZZ7) described in the procedure shall be selected once per year for testing to be conducted on the plug and cord connector. The batch number of the decorative outfits that are being utilized at the time the samples are selected is the batch number of the lighting strings that are to be forwarded to the Melville Office for testing. Please refer to the table below for sample selection requirements.

Testing at UL:

Plug and Cord Connector Testing:

Plugs and cord connectors shall be subject to the following tests in accordance with CSA C22.2 No. 37-14.

TEST	Clause	Quantity
Fuseholder Temperature Test (For Plugs Only)	5.10.4	6
Strain Relief Test For Wiring Devices	5.11.2	1
Conductor Secureness Test	5.11.3	1
Insulation Secureness Test	5.11.5	1

DECORATIVE LIGHTING STRINGS (DGZZ7)

UL Representative:

Randomly selected samples of parallel-connected lighting strings Certified for Canada (DGZZ7) described in the procedure shall be selected once per year for testing to be conducted on any attachment plug, cord connector, and flexible cord that is CSA Certified only. The batch number of the decorative outfits that are being utilized at the time the samples are selected is the batch number of the lighting strings that are to be forwarded to the Melville Office for testing. Please refer below for sample selection requirements.

Testing at UL:

Strain Relief Test for wiring devices:

One of the two samples shall be subjected to the Strain Relief Test for Wiring Devices, CSA C22.2 No. 37-17, Clause 5.11.2.

Note to CAS and Field staff: The above tests and samples are not required when the component is also UL Listed or R/C; they are required only for those components that bear only a CSA Certification Mark.

CERTIFICATE OF COMPLIANCE

Certificate Number	20190415-E465949
Report Reference	E465949-20160315
Issue Date	2019-APRIL-15
Issued to:	ZHUHAI FUYU LIGHTING CO LTD Floor 2, South Factory Building Transportation General Company No 49, Guangxin Road, Pingsha Town Zhuhai Guangdong 519050 CHINA
This certificate confirms that representative samples of	STRINGS, DECORATIVE LIGHTING See Addendum Page
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 588, Seasonal and Holiday Decorative Products CSA C22.2 No. 37-14, Decorative Lighting Product
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20190415-E465949
Report Reference	E465949-20160315
Issue Date	2019-APRIL-15

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Decorative Lighting Strings, Models LEHD Series; Models:
LEHDSH 025 10/1, 11/1, 12/1, 13/1, 14/1, 15/1,
16/1, 17/1, 18/1, 19/1, 20/1, 21/1, 22/1,
23/1, 24/1, 25/1, 26/1, 27/1, 28/1, 29/1,
30/1, 31/1, 32/1, 33/1, 34/1, 35/1, 36/1,
37/1, 38/1, 39/1, 40/1, 41/1, 42/1, 43/1,
44/1, 45/1, 46/1, 47/1, 48/1, 49/1, 50/1
LEHDSH 025 20/2, 22/2, 24/2, 26/2, 28/2, 30/2,
32/2, 34/2, 36/2, 38/2, 40/2, 42/2, 44/2,
46/2, 48/2, 50/2, 52/2, 54/2, 56/2, 58/2,
60/2, 62/2, 64/2, 66/2, 68/2, 70/2, 72/2,
74/2, 76/2, 78/2, 80/2, 82/2, 84/2, 86/2,
88/2, 90/2, 92/2, 94/2, 96/2, 98/2, 100/2
LEHDSH 025 30/3, 33/3, 36/3, 39/3, 42/3, 45/3,
48/3, 51/3, 54/3, 57/3, 60/3, 63/3, 66/3,
69/3, 72/3, 75/3, 78/3, 81/3, 84/3, 87/3,
90/3, 93/3, 96/3, 99/3, 102/3, 105/3, 108/3,
111/3, 114/3, 117/3, 120/3, 123/3, 126/3,
129/3, 132/3, 135/3, 138/3, 141/3, 144/3,
147/3, 150/3
LEHDSH 025 40/4, 44/4, 48/4, 52/4, 56/4, 60/4,
64/4, 68/4, 72/4, 76/4, 80/4, 84/4, 88/4,
92/4, 96/4, 100/4, 104/4, 108/4, 112/4,
116/4, 120/4, 124/4, 128/4, 132/4, 136/4,
140/4, 144/4, 148/4, 152/4, 156/4, 160/4,
164/4, 168/4, 172/4, 176/4, 180/4, 184/4,
188/4, 192/4, 196/4, 200/4
LEHDSH 025 50/5, 55/5, 60/5, 65/5, 70/5, 75/5,
80/5, 85/5, 90/5, 95/5, 100/5, 105/5, 110/5,
115/5, 120/5, 125/5, 130/5, 135/5, 140/5,
145/5, 150/5, 155/5, 160/5, 165/5, 170/5,
175/5, 180/5, 185/5, 190/5, 195/5, 200/5,
205/5, 210/5, 215/5, 220/5, 225/5, 230/5,
235/5, 240/5, 245/5, 250/5
LEHDSH 025 60/6, 66/6, 72/6, 78/6, 84/6, 90/6,
96/6, 102/6, 108/6, 114/6, 120/6, 126/6,
132/6, 138/6, 144/6, 150/6, 156/6, 162/6,
168/6, 174/6, 180/6, 186/6, 192/6, 198/6,
204/6, 210/6, 216/6, 222/6, 228/6, 234/6,
240/6, 246/6, 252/6, 258/6, 264/6, 270/6,
276/6, 282/6, 288/6, 294/6, 300/6

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20190415-E465949
Report Reference	E465949-20160315
Issue Date	2019-APRIL-15

LEHDSH 025 70/7, 77/7, 84/7, 91/7, 98/7, 105/7,
112/7, 119/7, 126/7, 133/7, 140/7, 147/7,
154/7, 161/7, 168/7, 175/7, 182/7, 189/7,
196/7, 203/7, 210/7, 217/7, 224/7, 231/7,
238/7, 245/7, 252/7, 259/7, 266/7, 273/7,
280/7, 287/7, 294/7, 301/7, 308/7, 315/7,
322/7, 329/7, 336/7, 343/7, 350/7
LEHDSH 025 80/8, 88/8, 96/8, 104/8, 112/8,
120/8, 128/8, 136/8, 144/8, 152/8, 160/8,
168/8, 176/8, 184/8, 192/8, 200/8, 208/8,
216/8, 224/8, 232/8, 240/8, 248/8, 256/8,
264/8, 272/8, 280/8, 288/8, 296/8, 304/8,
312/8, 320/8, 328/8, 336/8, 344/8, 352/8,
360/8, 368/8, 376/8, 384/8, 392/8, 400/8
LEHDSH 025 90/9, 99/9, 108/9, 117/9, 126/9,
135/9, 144/9, 153/9, 162/9, 171/9, 180/9,
189/9, 198/9, 207/9, 216/9, 225/9, 234/9,
243/9, 252/9, 261/9, 270/9, 279/9, 288/9,
297/9, 306/9, 315/9, 324/9, 333/9, 342/9,
351/9, 360/9, 369/9, 378/9, 387/9, 396/9,
405/9, 414/9, 423/9, 432/9, 441/9, 450/9
LEHDSH 025 100/10, 110/10, 120/10, 130/10,
140/10, 150/10, 160/10, 170/10, 180/10,
190/10, 200/10, 210/10, 220/10, 230/10,
240/10, 250/10, 260/10, 270/10, 280/10,
290/10, 300/10, 310/10, 320/10, 330/10,
340/10, 350/10, 360/10, 370/10, 380/10,
390/10, 400/10, 410/10, 420/10, 430/10,
440/10, 450/10, 460/10, 470/10, 480/10,
490/10, 500/10

1. Where “SH-025” may be replaced by decorative cover cat. no. listed in Table A or blank for the string not employed with decorative cover (5 OD LED).
2. “LEHD” may be replaced by “LEHDK” or “LEHDZ”.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20190415-E465949
Report Reference	E465949-20160315
Issue Date	2019-APRIL-15

Decorative Lighting Strings Models LEHR Series; Models:
LEHRSH 025 10/1, 11/1, 12/1, 13/1, 14/1, 15/1,
16/1, 17/1, 18/1, 19/1, 20/1, 21/1, 22/1,
23/1, 24/1, 25/1, 26/1, 27/1, 28/1, 29/1,
30/1, 31/1, 32/1, 33/1, 34/1, 35/1, 36/1,
37/1, 38/1, 39/1, 40/1, 41/1, 42/1, 43/1,
44/1, 45/1, 46/1, 47/1, 48/1, 49/1, 50/1
LEHRSH 025 20/2, 22/2, 24/2, 26/2, 28/2, 30/2,
32/2, 34/2, 36/2, 38/2, 40/2, 42/2, 44/2,
46/2, 48/2, 50/2, 52/2, 54/2, 56/2, 58/2,
60/2, 62/2, 64/2, 66/2, 68/2, 70/2, 72/2,
74/2, 76/2, 78/2, 80/2, 82/2, 84/2, 86/2,
88/2, 90/2, 92/2, 94/2, 96/2, 98/2, 100/2
LEHRSH 025 30/3, 33/3, 36/3, 39/3, 42/3, 45/3,
48/3, 51/3, 54/3, 57/3, 60/3, 63/3, 66/3,
69/3, 72/3, 75/3, 78/3, 81/3, 84/3, 87/3,
90/3, 93/3, 96/3, 99/3, 102/3, 105/3, 108/3,
111/3, 114/3, 117/3, 120/3, 123/3, 126/3,
129/3, 132/3, 135/3, 138/3, 141/3, 144/3,
147/3, 150/3
LEHRSH 025 40/4, 44/4, 48/4, 52/4, 56/4, 60/4,
64/4, 68/4, 72/4, 76/4, 80/4, 84/4, 88/4,
92/4, 96/4, 100/4, 104/4, 108/4, 112/4,
116/4, 120/4, 124/4, 128/4, 132/4, 136/4,
140/4, 144/4, 148/4, 152/4, 156/4, 160/4,
164/4, 168/4, 172/4, 176/4, 180/4, 184/4,
188/4, 192/4, 196/4, 200/4
LEHRSH 025 50/5, 55/5, 60/5, 65/5, 70/5, 75/5,
80/5, 85/5, 90/5, 95/5, 100/5, 105/5, 110/5,
115/5, 120/5, 125/5, 130/5, 135/5, 140/5,
145/5, 150/5, 155/5, 160/5, 165/5, 170/5,
175/5, 180/5, 185/5, 190/5, 195/5, 200/5,
205/5, 210/5, 215/5, 220/5, 225/5, 230/5,
235/5, 240/5, 245/5, 250/5
LEHRSH 025 60/6, 66/6, 72/6, 78/6, 84/6, 90/6,
96/6, 102/6, 108/6, 114/6, 120/6, 126/6,
132/6, 138/6, 144/6, 150/6, 156/6, 162/6,
168/6, 174/6, 180/6, 186/6, 192/6, 198/6,
204/6, 210/6, 216/6, 222/6, 228/6, 234/6,
240/6, 246/6, 252/6, 258/6, 264/6, 270/6,
276/6, 282/6, 288/6, 294/6, 300/6

1. Where “SH-025” may be replaced by decorative cover cat. no. listed in Table A or blank for the string not employed with decorative cover (5 OD LED).

Bruce Mahrenholz, Director North American Certification Program

UL LLC

File E465949
Project 4787314428

Issued: March 15, 2016
Revised: April 10, 2019

REPORT

on

DECORATIVE LIGHTING STRINGS

ZHUHAI FUYU LIGHTING CO LTD
Zhongshan, Guangdong, China

DESCRIPTION

PRODUCT COVERED:

Decorative Lighting Strings, Models LEHD Series in Table 1 and LEHR Series in Table 2, for Indoor and Outdoor Use.

See Nomenclature and Electrical Ratings for detailed model designation.

ELECTRICAL RATINGS:

120 V, 60 Hz. See Tables 1 and 2 for ratings.

*TECHNICAL CONSIDERATIONS (NOT FOR FIELD **ENGINEER'S** USE):

These products comply with the Standard of Underwriters Laboratories Inc. for Seasonal and Holiday Decorative Products (UL 588), Nineteenth Edition, and with description on the following pages.

NOMENCLATURE:

For series, series-parallel connected strings:

Model:

LEHD	K	SH-025	20	/	2
A	B	C	D		E

Where:

A =	Series name: LEHD when non-rectified line fitting is employed (Table 1); LEHR when rectified line fitting is employed (Table 2)
B =*	May be "K", "Z" or blank. "K" represents LEHD Models employed with DGWU2 flasher control unit, not for use with LEHR Series; "Z" represents LEHD Models employed with in-line rectifier assembly, not for use with LEHR Series; blank represents LEHD Models employed without flasher control unit and in-line rectifier and LEHR Models.
C =*	Cat. No. of decorative cover or blank for string not employed with cover (5 OD LED).
D =*	No. of lamps.
E =	No. of series-parallel circuits.

MODEL DIFFERENCE

Model No.	Lampholder Type	Description
LEHD series	UL-S097/UL-S098	Basic type lampholder
	UL-S287/UL-S288	Identical to basic type lampholder except for an integral hook provided on lampholder's outer surface.
	UL-S328/UL-S429	Identical to basic type lampholder except for thinker outer surface and an integral protrusion on **lampholder's** bottom rim.
	UL-S172/UL-S173	Identical to basic type lampholder except for an integral tap provided on lampholder's outer surface and an integral clip provided on lamp base.
	UL-S369/UL-S370	Identical to basic type except for lampholder with provisions and an integral hook provided on lampholder's outer surface.
	UL-S352/UL-S353	Identical to basic type except for an integral hook and C7/C9 provision provided on lampholder's outer surface.

CONSTRUCTION DETAILS:

Spacing:

A min. of 1.6 mm is maintained through air or over surface between live parts of opposite polarity, between live and dead-metal parts, and between live parts and an accessible metal enclosure.

Replacement Fuse:

Each string shall be provided with a minimum of one (1) replacement Listed fuse rated 3 A, 125 V of the same type provided in the attachment plug or current tap fuseholder when fuse is replaceable.

Replacement Lamps:

Each string shall be provided with two (2) spare lamps for each type of lamp provided. The spare lamps shall be of the same type as provided in the product.

MARKINGS:

The height of lettering of the required markings shall be as follows:

a) Upper case letters shall not be less than 1/12 inch (2.1 mm) in height.
b) Lower case letters shall not be less than 1/16 inch (1.6 mm) in height.
c) The words "CAUTION" and "WARNING" shall be in letters not less than 3/16 inch (4.8 mm) in height.

The required markings shall be legible and shall comply with the following:

The marking shall be indelibly stamped or printed black on a white R/C (PGIS2) that complies with UL 817 flag-type tag with adhesive back.

Product Markings - A fuseholder, fused attachment plug, fused current tap, or other device which contains a replaceable fuse or fuses, shall be permanently marked on the device with the following: "Use only 125-volt fuse, ____ amp. max." The blank shall be filled in with the correct fuse current rating.

Cord Tag Markings - Markings located on a tag as described below may continue on the second side of the tag, such that when the first side is read completely, the tag is to be turned over to read the remainder of the marking. At the end of the markings on the first side of the tag, the tag shall be marked: "See other side." Before the remainder of the required markings on the second side of the tag, the tag shall be marked: "Continued from other side." The word "CAUTION" may appear only once at the beginning of the marking, followed by a numbered list.

The markings specified below shall be located on a tag attached to the product within 6 inches (152.4 mm) of the **exit** of the attachment plug, current tap, direct plug-in unit, or power inlet.

a) The Listee’s name and/or File Number;
b) A distinctive catalog number;
c) The input voltage, either as "120 V" or "120 Volts";
d) The input current in "A" or "Amps";
e) The rated input power in "W" or "Watts";
f) The rated frequency in "Hz" or "Hertz"; and
g) The month and year of manufacture.

See Ill. 1 for the wording and layout of the Cord Tag. The cord tag shall have the correct Model Number, Input Current and Power Rating, Lamp Voltage, Lamp Wattage and Date Code.

For products employed with a cord connector, the lighting string shall be marked within 3 inches of the cord connector with the markings indicated in Ill. 1, Cord Tag #SE1.

PACKAGING MARKINGS:

Each individual carton or container in which a product is packaged shall be marked, where readily visible without opening the package with the following or the equivalent:

"For Indoor and Outdoor Use", "Indoor and Outdoor Use" or "Indoor and Outdoor" when the product is intended for indoor and outdoor use.

The location of the Markings shall comply with one of the following:

a) When packaged in a carton, the Marking shall appear on the outside front cover.
b) When packaged in a bag, the Marking shall appear on two opposing sides of the bag. If the bag is opaque the letters shall be printed on a high contrast background. If the bag is transparent, the letters shall be printed in black on a white opaque background.
c) When packaged in a bag attached to a piece of cardboard, the Marking shall appear on both sides of the cardboard.
d) When packaged in a transparent polymeric covering attached to cardboard, the Marking shall appear on the front of the package, on the cardboard.

The height of lettering of the above required Markings shall be as follows:

a) Upper case letters shall not be less than 1/12 inch (2.1 mm) in height.
b) Lower case letters shall not be less than 1/16 inch (1.6 mm) in height.

The required Markings shall be legible and the letters shall be on a high contrast background except when packaged in a transparent bag, in which case, the letters shall be printed in black on a white opaque background.

The required Marking shall be durable, legible, and permanent. A Marking shall be considered permanent if it is indelibly stamped or printed on the packaging or on a pressure sensitive adhesive-backed label.

INSTRUCTION MANUAL:

The height of the lettering in the text and illustrations of the instructions specified below shall be as follows:

a) Upper case letter shall not be less than 1/12 inch (2.1 mm) in height.
b) Lower case letters shall not be less than 1/16 inch (1.6 mm) in height.
c) The phrases "IMPORTANT SAFETY INSTRUCTIONS," "READ AND FOLLOW ALL SAFETY INSTRUCTIONS" and "SAVE THESE INSTRUCTIONS" shall be in letters not less than 3/16 inch (4.8 mm) in height.

The items may be numbered. The phrases "READ AND FOLLOW ALL SAFETY INSTRUCTIONS" and "SAVE THESE INSTRUCTIONS" shall be first and last, respectively, in a list of items. Other important safety instruction items considered appropriate by the manufacturer may be inserted.

The following instructions shall be provided on a stuffer sheet, on the outside surface of the carton of the product or in an instruction manual of the product:

See Ill. 2 for the wording and layout of the Instruction Manual. The Instruction Manual shall have the correct model number and lamp replacement ratings.

The following wording shall not be provided with products not provided with a cord connector:

"If connecting to a lighting string that does not have a Wattage (W) rating {found on the tag within 6 inches of the plug} calculate the wattage as follows: Multiply the current (___ A) which is on the flag-type tag by 120."

"For Example: Lighting string is rated 120 V, 60 Hz, 0.1 Amps. 0.1 X 120 = 12 Watts
Add the wattage of each light string together for a total of 216 Watts or less. (Do not exceed 216 Watts)"

LAMPS RATINGS:

R/C DGWU2, manufactured by MLS Co., Ltd. (E315476)

Series	Lamp Color	Current Rating, mA	Lamp Voltage, V	Lamp Wattage, W
3mm Round Flangeless Series, M-3C; 3mm Concave Flangeless Series, M-3Z; 5mm Round Flangeless Series, M-5C; 5mm Concave Flangeless Series, M-5Z	Red, Yellow, Orange	20	2.2	0.044
	Blue, White, Green, Pink, Purple, Warm White, Violet	20	3.2	0.068

ELECTRICAL RATINGS:

120 V, 60 Hz.

*

Table 1 – LEHD, LEHDK, LEHDZ Series (non-rectified plug)

Model No.	Input Current Rating, A	Input Wattage, W
LEHDSH-025-10/1, -11/1, -12/1, -13/1, -14/1, -15/1, -16/1, -17/1, -18/1, -19/1, -20/1, -21/1, -22/1, -23/1, -24/1, -25/1, -26/1, -27/1, -28/1, -29/1, -30/1, -31/1, -32/1, -33/1, -34/1, -35/1, -36/1, -37/1, -38/1, -39/1, -40/1, -41/1, -42/1, -43/1, -44/1, -45/1, -46/1, -47/1, -48/1, -49/1, **-50/1, -51/1, -52/1, -53/1, -54/1, -55/1**	0.02	2.4
LEHDSH-025-20/2, -22/2, -24/2, -26/2, -28/2, -30/2, -32/2, -34/2, -36/2, -38/2, -40/2, -42/2, -44/2, -46/2, -48/2, -50/2, -52/2, -54/2, -56/2, -58/2, -60/2, -62/2, -64/2, -66/2, -68/2, -70/2, -72/2, -74/2, -76/2, -78/2, -80/2, -82/2, -84/2, -86/2, -88/2, -90/2, -92/2, -94/2, -96/2, -98/2, -100/2, **-102/1, -104/1, -106/1, -108/1, -110/1**	0.04	4.8
LEHDSH-025-30/3, -33/3, -36/3, -39/3, -42/3, -45/3, -48/3, -51/3, -54/3, -57/3, -60/3, -63/3, -66/3, -69/3, -72/3, -75/3, -78/3, -81/3, -84/3, -87/3, -90/3, -93/3, -96/3, -99/3, -102/3, -105/3, -108/3, -111/3, -114/3, -117/3, -120/3, -123/3, -126/3, -129/3, -132/3, -135/3, -138/3, -141/3, -144/3, -147/3, -150/3, **-153/3, -156/3, -159/3, -162/3, -165/3**	0.06	7.2

Table 1 (CONT'D) – LEHD, LEHDK, LEHDZ Series (non-rectified plug)

Model No.	Input Current Rating, A	Input Wattage, W
LEHDSH-025-40/4, -44/4, -48/4, -52/4, -56/4, -60/4, -64/4, -68/4, -72/4, -76/4, -80/4, -84/4, -88/4, -92/4, -96/4, -100/4, -104/4, -108/4, -112/4, -116/4, -120/4, -124/4, -128/4, -132/4, -136/4, -140/4, -144/4, -148/4, -152/4, -156/4, -160/4, -164/4, -168/4, -172/4, -176/4, -180/4, -184/4, -188/4, -192/4, -196/4, -200/4, **-204/4, -208/4, -212/4, -216/4, -220/4**	0.08	9.6
LEHDSH-025-50/5, -55/5, -60/5, -65/5, -70/5, -75/5, -80/5, -85/5, -90/5, -95/5, -100/5, -105/5, -110/5, -115/5, -120/5, -125/5, -130/5, -135/5, -140/5, -145/5, -150/5, -155/5, -160/5, -165/5, -170/5, -175/5, -180/5, -185/5, -190/5, -195/5, -200/5, -205/5, -210/5, -215/5, -220/5, -225/5, -230/5, -235/5, -240/5, -245/5, -250/5, **-255/5, -260/5, -265/5, -270/5, -275/5**	0.1	12
LEHDSH-025-60/6, -66/6, -72/6, -78/6, -84/6, -90/6, -96/6, -102/6, -108/6, -114/6, -120/6, -126/6, -132/6, -138/6, -144/6, -150/6, -156/6, -162/6, -168/6, -174/6, -180/6, -186/6, -192/6, -198/6, -204/6, -210/6, -216/6, -222/6, -228/6, -234/6, -240/6, -246/6, -252/6, -258/6, -264/6, -270/6, -276/6, -282/6, -288/6, -294/6, -300/6, **-306/6, -312/6, -318/6, -324/6, -330/6**	0.12	14.4
LEHDSH-025-70/7, -77/7, -84/7, -91/7, -98/7, -105/7, -112/7, -119/7, -126/7, -133/7, -140/7, -147/7, -154/7, -161/7, -168/7, -175/7, -182/7, -189/7, -196/7, -203/7, -210/7, -217/7, -224/7, -231/7, -238/7, -245/7, -252/7, -259/7, -266/7, -273/7, -280/7, -287/7, -294/7, -301/7, -308/7, -315/7, -322/7, -329/7, -336/7, -343/7, -350/7, **-357/7, -364/7, -371/7, -377/7, -385/7**	0.14	16.8
LEHDSH-025-80/8, -88/8, -96/8, -104/8, -112/8, -120/8, -128/8, -136/8, -144/8, -152/8, -160/8, -168/8, -176/8, -184/8, -192/8, -200/8, -208/8, -216/8, -224/8, -232/8, -240/8, -248/8, -256/8, -264/8, -272/8, -280/8, -288/8, -296/8, -304/8, -312/8, -320/8, -328/8, -336/8, -344/8, -352/8, -360/8, -368/8, -376/8, -384/8, -392/8, -400/8, **-408/8, -416/8, -424/8, -432/8, -440/8**	0.16	19.2

Table 1 (CONT'D) – LEHD, LEHDK, LEHDZ Series (non-rectified plug)

Model No.	Input Current Rating, A	Input Wattage, W
LEHDSH-025-90/9, -99/9, -108/9, -117/9, -126/9, -135/9, -144/9, -153/9, -162/9, -171/9, -180/9, -189/9, -198/9, -207/9, -216/9, -225/9, -234/9, -243/9, -252/9, -261/9, -270/9, -279/9, -288/9, -297/9, -306/9, -315/9, -324/9, -333/9, -342/9, -351/9, -360/9, -369/9, -378/9, -387/9, -396/9, -405/9, -414/9, -423/9, -432/9, -441/9, -450/9, -4**59/9, -468/9, -477/9, -486/9, -495/9**	0.18	21.6
LEHDSH-025-100/10, -110/10, -120/10, -130/10, -140/10, -150/10, -160/10, -170/10, -180/10, -190/10, -200/10, -210/10, -220/10, -230/10, -240/10, -250/10, -260/10, -270/10, -280/10, -290/10, -300/10, -310/10, -320/10, -330/10, -340/10, -350/10, -360/10, -370/10, -380/10, -390/10, -400/10, -410/10, -420/10, -430/10, -440/10, -450/10, -460/10, -470/10, -480/10, -490/10, -500/10, **-510/10, -520/10, -530/10, -540/10, -550/10**	0.2	24

Notes: The above models may vary as follows, also see NOMENCLATURE for detailed model designation.

1. Where "SH-025" may be replaced by decorative cover cat. no. listed in Table A or blank for the string not employed with decorative cover (5 OD LED).
2. "LEHD" may be replaced by "LEHDK" or "LEHDZ".

Table 2 – LEHR Series (rectified plug)

Model No.	Input Current Rating, A	Input Wattage, W
LEHRSH-025-10/1, -11/1, -12/1, -13/1, -14/1, -15/1, -16/1, -17/1, -18/1, -19/1, -20/1, -21/1, -22/1, -23/1, -24/1, -25/1, -26/1, -27/1, -28/1, -29/1, -30/1, -31/1, -32/1, -33/1, -34/1, -35/1, -36/1, -37/1, -38/1, -39/1, -40/1, -41/1, -42/1, -43/1, -44/1, -45/1, -46/1, -47/1, -48/1, -49/1, -50/1	0.04	4.8
LEHRSH-025-20/2, -22/2, -24/2, -26/2, -28/2, -30/2, -32/2, -34/2, -36/2, -38/2, -40/2, -42/2, -44/2, -46/2, -48/2, -50/2, -52/2, -54/2, -56/2, -58/2, -60/2, -62/2, -64/2, -66/2, -68/2, -70/2, -72/2, -74/2, -76/2, -78/2, -80/2, -82/2, -84/2, -86/2, -88/2, -90/2, -92/2, -94/2, -96/2, -98/2, -100/2	0.08	9.6
LEHRSH-025-30/3, -33/3, -36/3, -39/3, -42/3, -45/3, -48/3, -51/3, -54/3, -57/3, -60/3, -63/3, -66/3, -69/3, -72/3, -75/3, -78/3, -81/3, -84/3, -87/3, -90/3, -93/3, -96/3, -99/3, -102/3, -105/3, -108/3, -111/3, -114/3, -117/3, -120/3, -123/3, -126/3, -129/3, -132/3, -135/3, -138/3, -141/3, -144/3, -147/3, -150/3	0.12	14.4
LEHRSH-025-40/4, -44/4, -48/4, -52/4, -56/4, -60/4, -64/4, -68/4, -72/4, -76/4, -80/4, -84/4, -88/4, -92/4, -96/4, -100/4, -104/4, -108/4, -112/4, -116/4, -120/4, -124/4, -128/4, -132/4, -136/4, -140/4, -144/4, -148/4, -152/4, -156/4, -160/4, -164/4, -168/4, -172/4, -176/4, -180/4, -184/4, -188/4, -192/4, -196/4, -200/4	0.16	19.2
LEHRSH-025-50/5, -55/5, -60/5, -65/5, -70/5, -75/5, -80/5, -85/5, -90/5, -95/5, -100/5, -105/5, -110/5, -115/5, -120/5, -125/5, -130/5, -135/5, -140/5, -145/5, -150/5, -155/5, -160/5, -165/5, -170/5, -175/5, -180/5, -185/5, -190/5, -195/5, -200/5, -205/5, -210/5, -215/5, -220/5, -225/5, -230/5, -235/5, -240/5, -245/5, -250/5	0.2	24.0
LEHRSH-025-60/6, -66/6, -72/6, -78/6, -84/6, -90/6, -96/6, -102/6, -108/6, -114/6, -120/6, -126/6, -132/6, -138/6, -144/6, -150/6, -156/6, -162/6, -168/6, -174/6, -180/6, -186/6, -192/6, -198/6, -204/6, -210/6, -216/6, -222/6, -228/6, -234/6, -240/6, -246/6, -252/6, -258/6, -264/6, -270/6, -276/6, -282/6, -288/6, -294/6, -300/6	0.24	28.8

Notes: The above models may vary as follows, also see NOMENCLATURE for detailed model designation.

1. Where “SH-025” may be replaced by decorative cover cat. no. listed in Table A or blank for the string not employed with decorative cover (5 OD LED).
2. **When twinkle lamps are employed with LEHR series, only M-5Z LED lamp will be used, all the LED lamps in the lighting string will have 3.2V/0.068W rating (Blue, White, Green, Pink, Purple, Warm White, Violet).**

MODEL LEHD-10/1 FOR INDOOR AND OUTDOOR USE – FIG. 1

General – Fig. 1 depicts the overall view of Model LEHD-10/1. Represents Models LEHD series covered in this section.

1. Power Supply Leads - Listed, 22 AWG, Type CXTW, rated 105°C, VW-1 wire terminating in current tap, Item 2, at one end, and cord connector, Item 3, when provided, at other end. The maximum length of lay of the twisted conductors shall not exceed an average between any two fittings, of 15 times the sum of the outside diameters of the wires, which are twisted together.

   Alternate - Listed, No. 22 AWG, Type CXTW-S, rated 105°C, VW-1, may be employed as single-wire construction. If No. 22 AWG Type CXTW wire is employed on the same lighting string, the CXTW wire shall be twisted with another CXTW or CXTW-S conductor with the maximum length of lay as described above.

2. Current Tap - DGWH2, as indicated below, non-polarized type, rated 3 A, 125 V. Provided with Listed fuses rated 3 A, 125 V.

*Cat. No.	Manufactured by	Indoor (I) or Outdoor (O) Use	
TS 22	Ting Shen Industrial Co., Ltd. (E175861)	O	

3. Cord Connector – Optional. DGWH2, as indicated below, non-polarized type, rated 3 A, 125 V.

Cat. No.	Manufactured by	Indoor (I) or Outdoor (O) Use
TS 23	Ting Shen Industrial Co., Ltd. (E175861)	O

   Alternate – (For Models LEHDK and LEHDZ series) Not provided.

4. 2-Lead Lampholder Assembly – See Fig. 2 for details.

5. 3-Lead Lampholder Assembly – See Fig. 3 for details.

6. In-line Rectifier Assembly – Optionally provided. See Fig. 4 for details.

7. Flasher Control – Optionally provided, R/C DGWU2, see below table for details.

Manufacturer	Cat. No.	Use	Wire Size (AWG) & Type	No. of Parallel Circuits	Total Current Rating, A
Grandlite Co., Ltd.	GT-P2	I/O	22, CXTW	4/3/2/1	0.6/0.6/0.4/0.2

8. 2-wire Resistor Lampholder Assembly – Optionally provided, See Fig. 5 and Table C for details.

9. Cord Tag - PGIS2 that complies with UL 817 or UL 588. The tag shall be a flag-type tag with an adhesive back, suitable for size and type of wire, and for indoor and outdoor use. The tag is to be wrapped once tightly around and adhered to CXTW wire, Item 1. The ends of the tag are to adhere to each other and project as a flag. Markings are printed in black on a white background. For required markings, letter height and location, see Construction Details, Markings.

MODEL LEHR SERIES
FOR INDOOR AND OUTDOOR USE

General – Model LEHR Series is identical to Model LEHD Series, except where indicated below.

1. Power Supply Leads – Same as Fig. 1, Item 1, including alternates. Types CXTW-S and CXTW-IS are for use only between lampholders, and shall not be provided between current tap, Item 2, and first lampholder.

2. Current Tap - DGWH2, as indicated below, non-polarized type, rated 3 A, 125 V. Provided with Listed fuses rated 3 A, 125 V.

Cat. No.	Manufactured by	Indoor (I) or Outdoor (O) Use
TS-28-2	Ting Shen Industrial Co Ltd (E175861)	O

3. Cord Connector – Not provided.

4. 2-Lead Lampholder Assembly – Same as LEHD Series, see Fig. 2 for details.

5. 3-Lead Lampholder Assembly – Same as LEHD Series, except not provided for single-circuit lighting strings. See Fig. 3 for details.

6. In-line Rectifier Assembly – Not provided.

7. Flasher Control – Not provided.

8. Cord Tag – Same as Fig. 1, Item 8.

2-WIRE LAMPHOLDER ASSEMBLY OF MODELS LEHD SERIES - FIG. 2

General – Fig. 2 depicts the overall view of 2-wire lampholder constructed for use in string Models LEHD series for indoor and outdoor use.

1. Two Lead Lampholder Husk - QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C, Min. 1.0 mm thick. See Ill. 3 for dimensions.

2. Two Lead Lamp Base - QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C. Provided for 3 mm OD LED lamp. See Ill. 4 for dimensions.

   Alternate - QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C. Provided for 5 mm OD LED lamp. See Ill. 5 for dimensions.

3. Single Wire Lampholder Contact - Two provided for each lampholder husk, each copper alloy, minimum 0.2 mm thick. Secured to lead by double crimping. 2.2 mm long for each conductor crimping, 1.1 mm long for each insulation crimping. Contacts recessed 4.6 mm and 7.2 mm from lampholder husk top rim respectively. See Ill. 6 for details.

4. LED Lamp – DGWU2, manufactured by MLS Co., Ltd. See LAMP RATINGS for details. Lamp leads bent approx. 180°C outside of base. Exposed length of lamp leads maximum 6 mm.

5. Decorative Cover – Only provided for 3 mm OD LED lamp. Formed of plastic material which complies with Downward Burning Rate Test. One provided for each LED lamp. Provided a groove around outside of cover to secure with the lamp base and could not be removed by hands. See Table A for details.

6. Resistors **– Not provided when 2-wire Resistor Lampholder Assembly employed.** Resistor leads secured to LED lamp lead by soldering after twisting. See Table B and Ill. 7 for details.

Table A

Decorative cover provided with 3 mm OD LED lamp

Cat. No. of Cover	Dimensions Exposed Outside Lamp Base, mm	Ventilating Type	ILL. No.
SH-025	13.5 OD x 31.2	Closed	26
SH-027	14.5 OD x 14.5	Closed	26
SH-057	6 OD x 20.5	Closed	26
SH-058	10.5 OD x 20.5	Closed	26
SH-066	37 x 36 x 7	Closed	26
SH-067	40 x 38.5 x 9	Closed	26
SH-077	17.5 OD x 37.5	Closed	26
SH-082	15 OD x 28.5	Closed	26
SH-083	20 x 20 x 15.5	Closed	26
SH-085	35 x 43 x 15	Closed	26
SH-086	3 OD x 3	Open	26
SH-087	39 x 39 x 15	Open	26
SH-086+SH-087	-	Open	26
SH-099	6.5 OD x 15	Closed	26
SH-093	10 OD x 11.5	Closed	26
SH-095	46 x 44 x 9	Closed	26
SH-096	30 x 29 x 14.5	Closed	26
SH-103	12 OD x 12	Closed	26
SH-115	10 OD x 18	Closed	26
SH-117	14.6 OD x 30	Closed	26
SH-124	5.5 OD x 23	Closed	26
SH-127	13.5 OD x 31.2	Closed	26
SH-130	30 x 30 x 9	Closed	26
SH-135	50 OD x 40	Closed	26
SH-137	33 OD x 60	Closed	26
SH-138	67 OD x 59	Closed	26
SH-140	90 x 60 x 12	Closed	26
SH-141	40 OD x 70	Closed	26
SH-143	49 OD x 70	Closed	26
SH-144	46 OD x 50	Closed	26
SH-146	13.5 OD x 23	Closed	26
SH-157	42 OD x 58	Closed	26
SH-158	44 OD x 64	Closed	26
SH-163	55 x 55 x 9	Closed	26
SH-173	21 OD x 21	Closed	26
SH-174	10.5 OD x 20.5	Closed	26
SH-176	6 OD x 25	Closed	26

Table A (CONT'D)

Cat. No. of Cover	Dimensions, mm	Ventilating Type	ILL. No.
SH-184	60 OD x 60	Closed	26
SH-185	61 OD x 69	Closed	26
SH-188	55 OD x 55	Closed	26
SH-191	43 OD x 60	Closed	26
SH-192	58 OD x 58	Closed	26
SH-193	53 OD x 59	Closed	26
SH-200	43 OD x 62	Closed	26
SH-204	35 OD x 9	Closed	26
SH-237	35 OD x 9	Closed	26
SH-204+SH-237	-	Closed	26
SH-207	50 x 2.5 x 15	Closed	26
SH-235	50 x 2.5 x 15	Closed	26
SH-207+ SH-235	-	Closed	26
SH-212	38 x 46 x 12	Closed	26
SH-234	15 OD x 60	Closed	26
SH-236	21 OD x 50	Closed	26
SH-241	10.5 OD x 20.5	Closed	26
SH-248	12 OD x 12	Closed	26
SH-249	17 OD x 22	Closed	26
SH-275	10 OD x 10	Closed	26
SH-276	15 OD x 15	Closed	26
SH-278	8 OD x 25	Closed	26
SH-316	8 OD x 25	Closed	26
SH-317	10.5 OD x 15	Closed	26
SH-320	12 OD x 12	Closed	26
SH-329	7 OD x 25	Closed	26
SH-274	46 OD x 50	Closed	26
SH-078	25 OD x 24	Closed	26
SH-094	17.5 OD x 33	Closed	26
SH-100	13 OD x 30	Closed	26
SH-147	25 OD x 24	Closed	26
SH-293	25 OD x 24	Closed	26

Table B

Lamp Numbers in One Circuit	Lamp Voltage, V	No. of Resistor in each single circuit	Ratings of Resistor
10, 11, 12	2.2	10	2.2K Ω, 1/6 W
	3.2	10	2.2K Ω, 1/6 W
	2.2 and 3.2	10	2.2K Ω, 1/6 W
13, 14, 15	2.2	10	2.2K Ω, 1/6 W
	3.2	9	2.2K Ω, 1/6 W
	2.2 and 3.2	9	2.2K Ω, 1/6 W
16, 17	2.2	10	2.2K Ω, 1/6 W
	3.2	8	2.2K Ω, 1/6 W
	2.2 and 3.2	8	2.2K Ω, 1/6 W
18, 19	2.2	8	2.2K Ω, 1/6 W
	3.2	8	2.2K Ω, 1/6 W
	2.2 and 3.2	8	2.2K Ω, 1/6 W
20	2.2	8	2.2K Ω, 1/6 W
	3.2	10	1.2K Ω, 1/6 W
	2.2 and 3.2	10	1.2K Ω, 1/6 W
21, 22	2.2	12	1.2K Ω, 1/6 W
	3.2	10	1.2K Ω, 1/6 W
	2.2 and 3.2	10	1.2K Ω, 1/6 W
23, 24	2.2	12	1.2K Ω, 1/6 W
	3.2	8	1.2K Ω, 1/6 W
	2.2 and 3.2	8	1.2K Ω, 1/6 W
25	2.2	10	1.2K Ω, 1/6 W
	3.2	8	1.2K Ω, 1/6 W
	2.2 and 3.2	8	1.2K Ω, 1/6 W
26, 27	2.2	10	1.2K Ω, 1/6 W
	3.2	10	1K Ω, 1/6 W
	2.2 and 3.2	10	1K Ω, 1/6 W
28, 29	2.2	10	1.2K Ω, 1/6 W
	3.2	8	1K Ω, 1/6 W
	2.2 and 3.2	8	1K Ω, 1/6 W
30, 31	2.2	10	1K Ω, 1/6 W
	3.2	10	810 Ω, 1/6 W
	2.2 and 3.2	10	810 Ω, 1/6 W

Table B (CONT'D).

Lamp Numbers in One Circuit	Lamp Voltage, V	No. of Resistor in each single circuit	Ratings of Resistor
32	2.2	10	1K Ω, 1/6 W
	3.2	8	810 Ω, 1/6 W
	2.2 and 3.2	8	810 Ω, 1/6 W
33	2.2	10	1K Ω, 1/6 W
	3.2	10	660 Ω, 1/6 W
	2.2 and 3.2	10	660 Ω, 1/6 W
34	2.2	10	1K Ω, 1/6 W
	3.2	8	660 Ω, 1/6 W
	2.2 and 3.2	8	660 Ω, 1/6 W
35	2.2	10	1K Ω, 1/6 W
	3.2	10	510 Ω, 1/6 W
	2.2 and 3.2	10	510 Ω, 1/6 W
36	2.2	10	910 Ω, 1/6 W
	3.2	10	510 Ω, 1/6 W
	2.2 and 3.2	10	510 Ω, 1/6 W
37, 38	2.2	10	910 Ω, 1/6 W
	3.2	8	510 Ω, 1/6 W
	2.2 and 3.2	8	510 Ω, 1/6 W
39	2.2	10	910 Ω, 1/6 W
	3.2	10	330 Ω, 1/6 W
	2.2 and 3.2	10	330 Ω, 1/6 W
40	2.2	10	860 Ω, 1/6 W
	3.2	10	330 Ω, 1/6 W
	2.2 and 3.2	10	330 Ω, 1/6 W
41	2.2	10	860 Ω, 1/6 W
	3.2	8	330 Ω, 1/6 W
	2.2 and 3.2	8	330 Ω, 1/6 W
42	2.2	10	860 Ω, 1/6 W
	3.2	10	100 Ω, 1/6 W
	2.2 and 3.2	10	100 Ω, 1/6 W
43	2.2	10	660 Ω, 1/6 W
	3.2	10	100 Ω, 1/6 W
	2.2 and 3.2	10	100 Ω, 1/6 W

Table B (CONT'D).

Lamp Numbers in One Circuit	Lamp Voltage, V	No. of Resistor in each single circuit	Ratings of Resistor
44	2.2	10	660 Ω, 1/6 W
	3.2	8	100 Ω, 1/6 W
	2.2 and 3.2	8	100 Ω, 1/6 W
45	2.2	10	660 Ω, 1/6 W
	3.2	10	51 Ω, 1/6 W
	2.2 and 3.2	10	51 Ω, 1/6 W
46, 47	2.2	10	510 Ω, 1/6 W
	3.2	8	51 Ω, 1/6 W
	2.2 and 3.2	8	51 Ω, 1/6 W
48	2.2	10	510 Ω, 1/6 W
	3.2	10	10 Ω, 1/6 W
	2.2 and 3.2	10	10 Ω, 1/6 W
49, 50	2.2	10	330 Ω, 1/6 W
	3.2	10	10 Ω, 1/6 W
	2.2 and 3.2	10	10 Ω, 1/6 W

3-WIRE LAMPHOLDER ASSEMBLY OF MODELS LEHD SERIES - FIG. 3

General – Fig. 3 depicts the overall view of 3-wire lampholder constructed for use in string Models LEHD series for indoor and outdoor use.

1. Three Lead Lampholder Husk – QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120 °C, Min. 1.0 mm thick. See Ill. 8 for dimensions.

2. Three Lead Lamp Base - QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C. Provided for 3 mm OD LED lamp. See Ill. 9 for dimensions.

   Alternate - QMTO2, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C. Provided for 5 mm OD LED lamp. See Ill. 10 for dimensions.

3. Single Wire Lampholder Contact – Same as Fig. 2, item 3 except for one provided. Contact recessed 7.2 mm from lampholder husk top rim.

4. Two Wire Lampholder Contact – One provided. Copper alloy, minimum 0.25 mm thick. Secured to lead by double crimping in side-by-side position. 2.2 mm long for conductor crimping, 1.4 mm long for insulation crimping. Contact recessed 4.6 mm from lampholder husk top rim. See Ill. 11 for dimensions.

5. Lamp – Same as Fig. 2, Item 4.

6. Decorative Cover – Same as Fig. 2, Item 5.

7. Resistor – Same as Fig. 2, Item 6.

FAMILY LAMPHOLDER TYPE UL-S287/UL-S288 OF MODELS LEHD SERIES

General - Family lampholder Type UL-S287/UL-S288 are identical to lampholders described in Figs. 2 and 3 respectively, except for an integral hook provided on lampholder's outer surface. See Ills. 12 and 13 for details.

FAMILY LAMPHOLDER TYPE UL-S328/UL-S429 OF MODELS LEHD SERIES

General - Family lampholder Type UL-S328/UL-S429 are identical to lampholders described in Figs. 2 and 3 respectively, except for thicker outer surface and an integral protrusion provided on lampholder's bottom rim. See Ills. 14 and 15 for details. Only provided with 5 mm OD LED lamp.

FAMILY LAMPHOLDER TYPE UL-S172/UL-S173 OF MODELS LEHD SERIES

General - Family lampholder Type UL-S172/UL-S173 are identical to lampholders described in Figs. 2 and 3 respectively, except for an integral tap provided on lampholder's outer surface and an integral clip provided on lamp base. See the following table for details.

Item	Ill. No.
2-wire lampholder	16
2-wire lamp base	17 (for 3 mm OD lamp)
	18 (for 5 mm OD lamp)
3-wire lampholder	19
3-wire lamp base	20 (for 3 mm OD lamp)
	21 (for 5 mm OD lamp)

FAMILY LAMPHOLDER TYPE UL-S369/UL-S370 OF MODELS LEHD SERIES

General - Family lampholder Type UL-S369/UL-S370 are identical to lampholders described in Figs. 2 and 3 respectively, except for lampholder with provisions and an integral hook provided on lampholder’s outer surface. See Ills. 22 and 23 for details.

FAMILY LAMPHOLDER TYPE UL-S352/UL-S353 OF MODELS LEHD SERIES

General - Family lampholder Type UL-S352/UL-S353 are identical to lampholders described in Figs. 2 and 3 respectively, except for an integral hook and C7/C9 provision provided on lampholder's outer surface. See Ills. 24 and 25 for details.

IN-LINE RECTIFIER ASSEMBLY FIG. 4

General – Fig. 4 depicts the overall view of in-line rectifier assembly. The in-line rectifier assembly is located between attachment plug and first lampholder.

1. In-line Rectifier Enclosure – Consists of two layer enclosure, Inner Enclosure and Outer Enclosure.

   Inner Enclosure: Molded of R/C (QMFZ2) PC, manufacture by Covestro Deutschland Ag [PC RESINS], Cat. No. 6557+(z)(f1), rated V-0, 115°C, Min. 3 mm thick, overall measured 18 OD by 39 mm. See ILL. 27 for detailed dimensions.

   Outer Enclosure: Molded of R/C (QMFZ2) ABS/PC, manufacture by Nan Ya Plastics (Hui Zhou) Corp Ltd., Cat. No. 5712(f1), rated V-0, 85°C, Min. 1.5 mm thick. Provided with integral strain relief at both ends, overall measured 23 OD by 63 mm. See ILL. 28 for detailed dimensions.

2. Input Leads – Listed, Type CXTW, 22 AWG. Two provided. Secured to rectifier leads by soldering after twisted then each lead completely covered with R/C YDPU2 heat shrinkable tube, rated 125°C. See ILL. 29 for details.

3. Output Leads – Listed, Type CXTW, 22 AWG. Two provided. Secured to rectifier leads by soldering after twisted then each lead completely covered with R/C YDPU2 heat shrinkable tube, rated 125°C. See ILL. 29 for details.

4. Rectifier – Type 2W10, rated 700 V rms, 2 A.

2-WIRE RESISTOR LAMPHOLDER ASSEMBLY FIG. 5
ILLS. 30-33

General – Fig. 5 shows an overall view of the 2-wire resistor lampholder assembly.

1. Top Cap - R/C (QMTO2) Plastics, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C, Min. 0.8 mm thick. See ILL. 30 for detailed dimensions. Assembled with Two-Wire Resistor Lampholder Husk by physical fit

2. Two-Wire Resistor Lampholder Husk – R/C (QMTO2) Plastics, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C, Min. 1.7 mm thick. See ILL. 31 for detailed dimensions.

3. Resistor Lamp Adaptor – R/C (QMTO2) Plastics, manufactured by SPS (Guangzhou) Ltd., Cat. No. 5508(f1), rated SC-0, 120°C. See ILL. 32 for details.

4. Single Wire Contacts - Copper or copper alloy min 80% copper. Two provided. See Ill. 33 for details.

5. Resistors – Carbon composition. Ratings and number of resistors per lighting string shall be as indicated in Table C. Fits into Resistor Lamp Adapter, Item 3, and secured by physical fit.

TABLE C Resistor Ratings of 2-wire resistor lampholder assembly

No. of Lamps Per Circuit	Lamp Voltage, V	No. of Resistor Per Circuit	Resistor Ratings
10-14	2.2	2	3600Ω, 2 W
	3.2	2	3600Ω, 2 W
	2.2 and 3.2	2	3600Ω, 2 W
15-19	2.2	2	3600Ω, 2 W
	3.2	2	3600Ω, 2 W
	2.2 and 3.2	2	3600Ω, 2 W
20-24	2.2	2	3600Ω, 2 W
	3.2	2	3600Ω, 2 W
	2.2 and 3.2	2	3600Ω, 2 W
25-26	2.2	2	3600Ω, 2 W
	3.2	1	5000Ω, 2 W
	2.2 and 3.2	1	5000Ω, 2 W
30-34	2.2	1	5000Ω, 2 W
	3.2	1	3600Ω, 2 W
	2.2 and 3.2	1	5000Ω, 2 W
35-39	2.2	1	5000Ω, 2 W
	3.2	1	1800Ω, 2 W
	2.2 and 3.2	1	1800Ω, 2 W
40-45	2.2	1	3600Ω, 2 W
	3.2	1	1000Ω, 2 W
	2.2 and 3.2	1	1000Ω, 2 W
46-49	2.2	1	3600Ω, 2 W
	3.2	1	1000Ω, 2 W
	2.2 and 3.2	1	1000Ω, 2 W
50-55	2.2	1	1000Ω, 2 W

Figure-1 Page-1

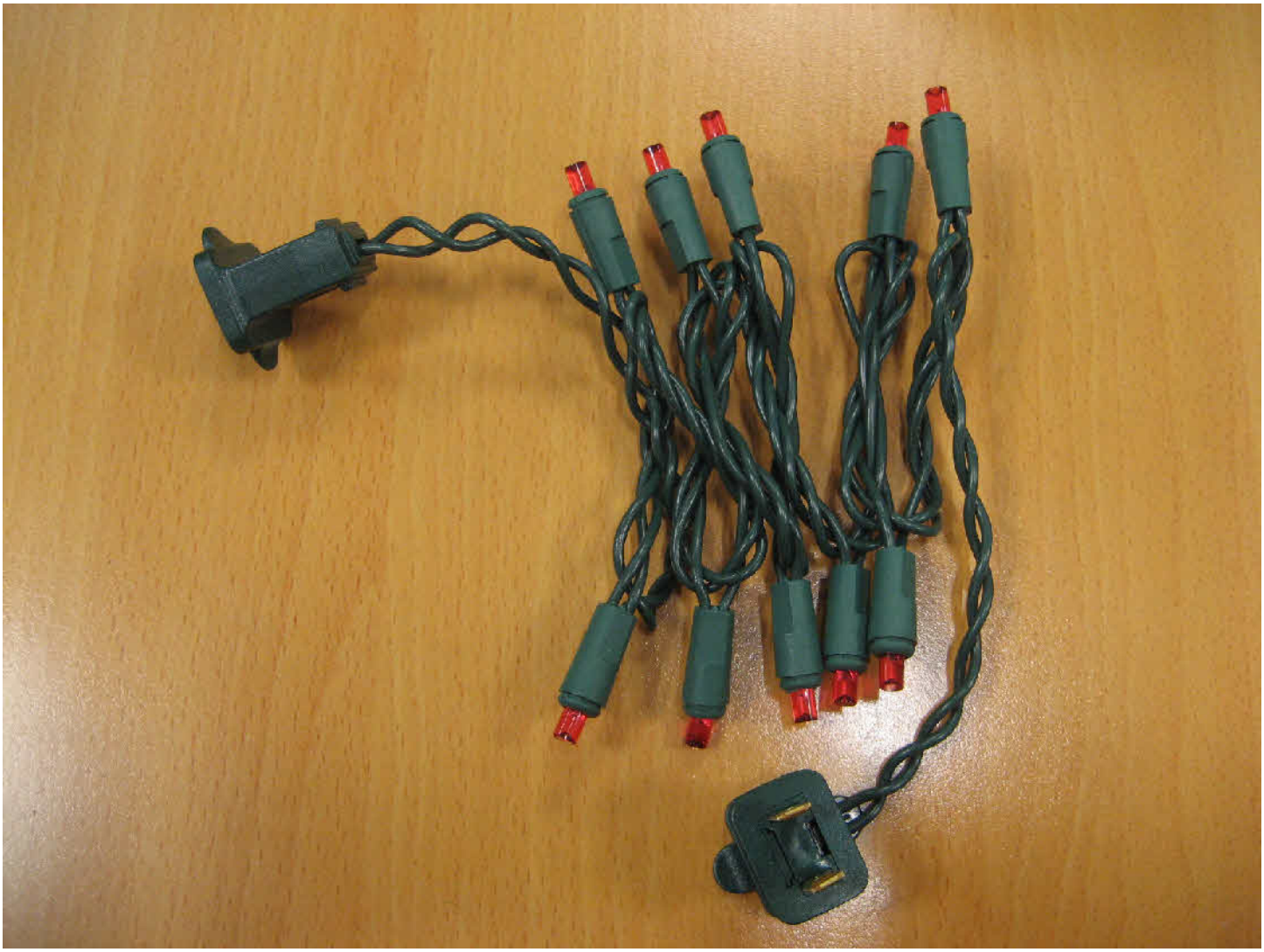


Figure-2 Page-1

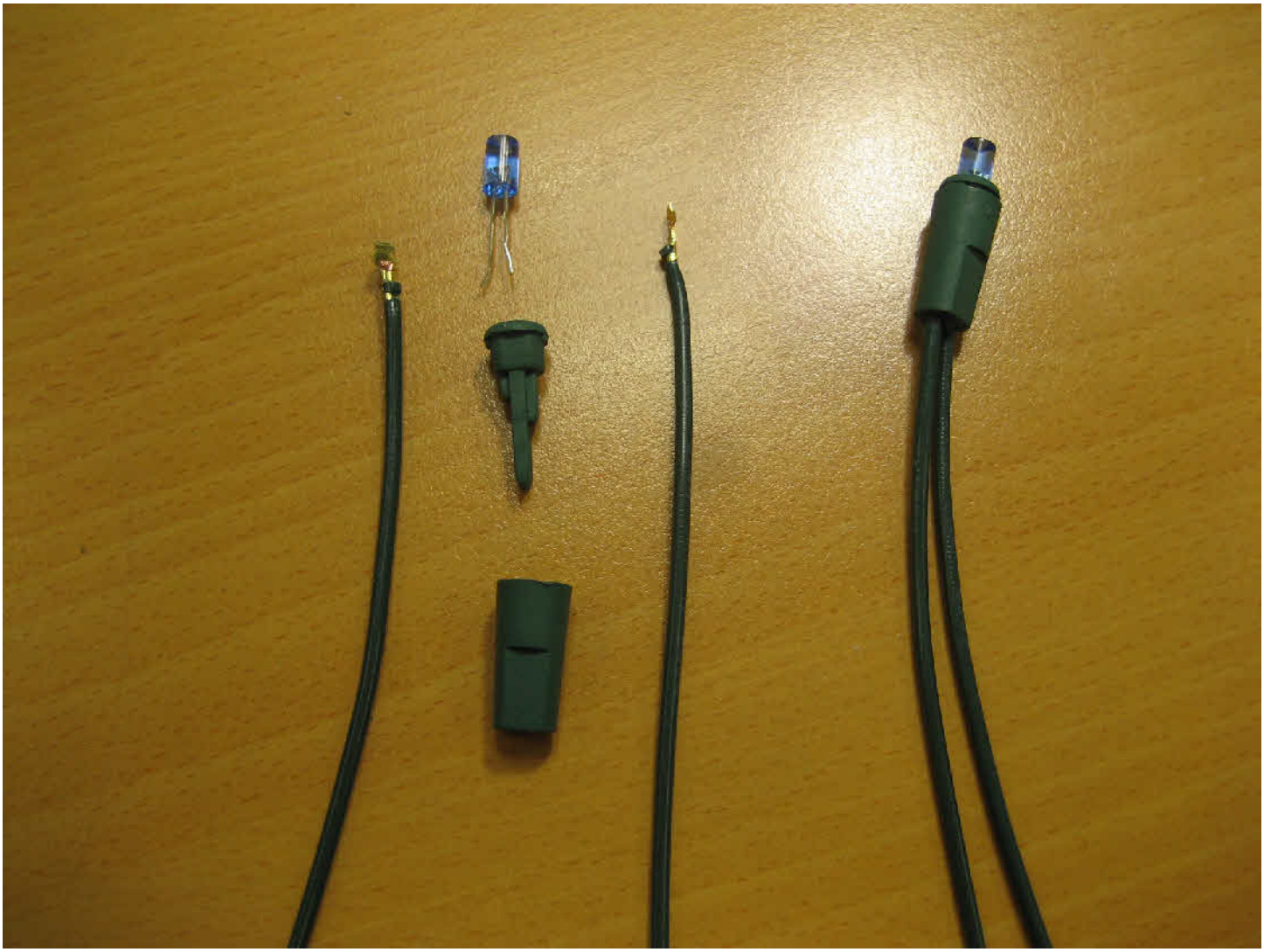


Figure-3 Page-1

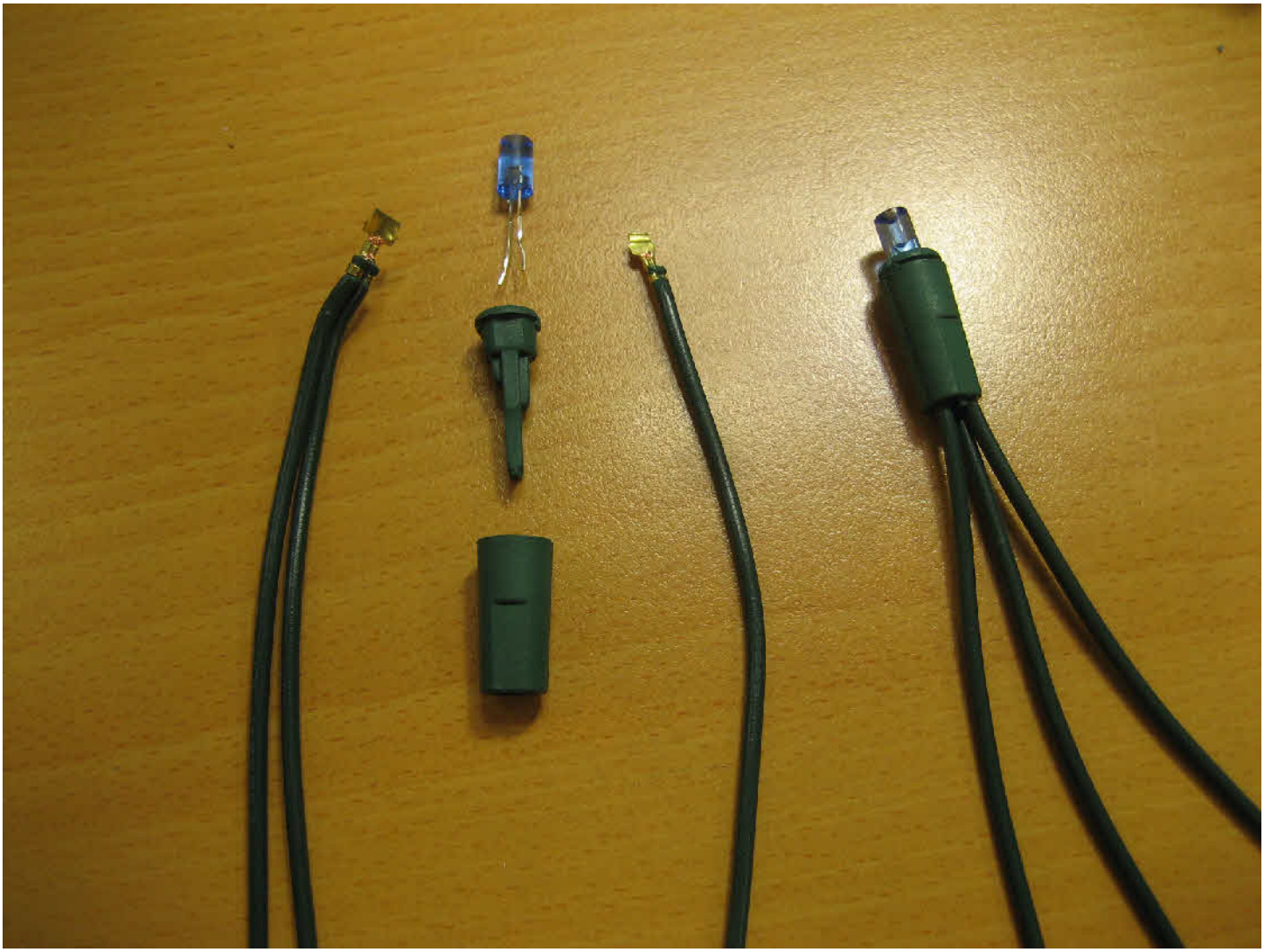


Figure-4 Page-1

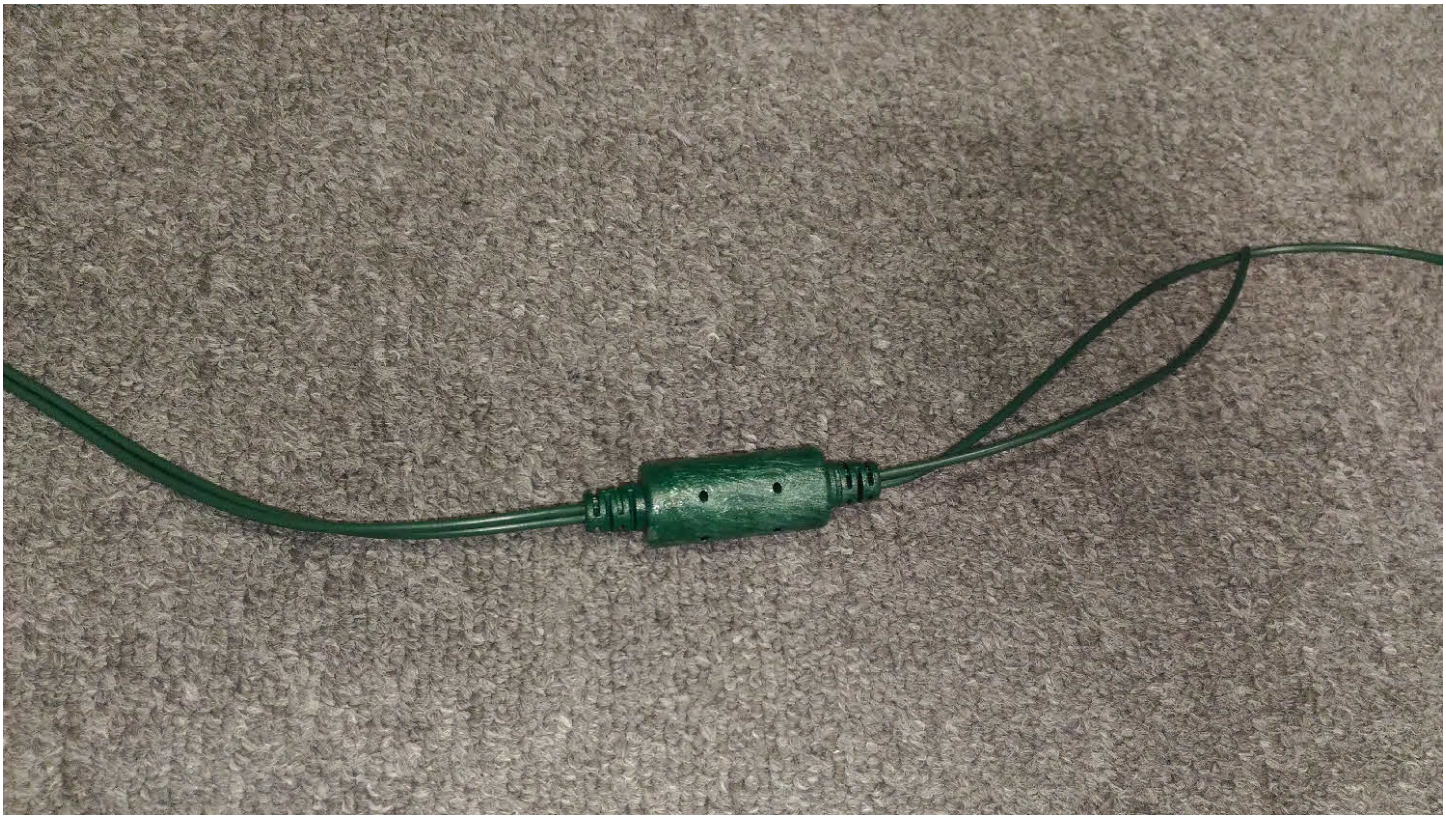


Figure-5 Page-1

Indoor and Outdoor Use – tag to be located within 6 inches (152.4 mm) of the exit of the attachment plug or current tap.

Cord Tag. # SO1 – Indoor and Outdoor Use, no shunts:

CAUTION 1. For temporary (90 days max) installation and use only. 2. For indoor and outdoor use. 3. To reduce the likelihood of excessive heat and possible damage, use only decorative lamp accessories packaged with this product. 4. Always unplug this product before installing or replacing fuses and/or lamps. See other side	Continued from other side 5. Replace lamps only with (a) volt, (b) watt spare lamps provided with this product. 6. This is a series-connected lighting string. E (c) Model (d), 120 V, 60 Hz, (e) A, (f) Watts, (g)

Cord Connector – tag to be located within 3 inches (76.2 mm) of the face of the cord connector.

Cord Tag. # SE1 – For non-polarized cord connector body:

CAUTION – This lighting string is rated (f) Watts ((e) Amps), do not overload. Connect See other side	Continued from other side other lighting strings or decorative outfits end-to-end up to a maximum of 216 Watts (1.8 Amps) total.

Notes – applies to all markings above:

1. The blank (a) shall be filled in with the voltage value of the replacement lamps.
2. The blank (b) shall be filled in with the wattage of the replacement lamps.
3. The blank (c) shall be filled in with the File No., Listee name or trademark.
4. The blank (d) shall be filled in with a distinctive catalog number.
5. The blank (e) shall be filled in with the rated input current.
6. The blank (f) shall be filled in with the rated input wattage.
7. The blank (g) shall be filled in with the date code of manufacture.
8. The wording "For temporary (90 days max) installation and use only." may be replaced by "This seasonal product is not intended for permanent installation."

Illustration-2 Page-1

IMPORTANT SAFETY INSTRUCTIONS

When using electrical products, basic precautions should always be followed including the following:

a) READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

b) Do not use seasonal products outdoors unless marked suitable for indoor and outdoor use. When products are used in outdoor applications, connect the product to a Ground Fault Circuit Interrupting (GFCI) outlet. If one is not provided, contact a qualified electrician for proper installation.

c) This seasonal use product is not intended for permanent installation or use.

d) Do not mount or place near gas or electric heaters, fireplace, candles or other similar sources of heat.

e) Do not secure the wiring of the product with staples or nails, or place on sharp hooks or nails.

f) Do not let lamps rest on the supply cord or on any wire.

g) Unplug the product when leaving the house, when retiring for the night, or if left unattended.

h) This is an electric product-not a toy! To avoid risk of fire, burns, personal injury and electric shock it should not be played with or placed where small children can reach it.

i) Do not use this product for other than its intended use.

j) Do not hang ornaments or other objects from cord, wire, or light string.

k) Do not close doors or windows on the product or extension cords as this may damage the wire insulation.

l) Do not cover the product with cloth, paper or any material not part of the product when in use.

m) This product is equipped with push-in type lamps. Do not twist lamps.

n) This product employs overload protection (fuse). A blown fuse indicates an overload or short-circuit situation. If the fuse blows, unplug the product from the outlet. Also unplug any additional strings or products that may be attached to the product. Replace the fuse as per the user servicing instructions (follow product marking for proper fuse rating) and check the product. If the replacement fuse blows, a short-circuit may be present and the product should be discarded.

o) Read and follow all instructions that are on the product or provided with the product.

SAVE THESE INSTRUCTIONS

Use and Care Instructions

a) When the product is placed on a live tree, the tree should be well maintained and fresh. Do not place on live trees in which the needles are brown or break off easily. Keep the tree holder filled with water.

b) If the product is placed on a tree, the tree should be well secured and stable.

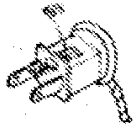
c) Before using or reusing, inspect product carefully. Discard any products that have cut, damaged, or frayed wire insulation or cords, cracks in the lampholders or enclosures, loose connections, or exposed copper wire.

d) When storing the product, carefully remove the product from wherever it is placed, including tree, branches, or bushes, to avoid any undue strain or stress on the product conductors, connections, and wires.

e) When not in use, store neatly in a cool, dry location protected from sunlight.

User Servicing Instructions

Replace the fuse.



a) Grasp plug and remove from the receptacle or other outlet device. Do not unplug by pulling on cord.

b) Open fuse cover. Slide open fuse access cover on top of attachment plug towards blades.

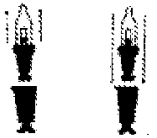
c) Remove fuse carefully.

d) Risk of fire. Replace fuse only with 3 Amp, 125 Volt fuse (provided with product).

e) Close fuse cover. Slide closed the fuse access cover on top of attachment plug.

f) Risk of fire. Do not replace attachment plug. Contains a safety device (fuse) that should not be removed. Discard product if the attachment plug is damaged.

Replace the lamp.



1. Grasp plug and remove from the receptacle or other outlet device. Do not unplug by pulling on cord.
2. Pull lamp and plastic base straight out of lampholder.
3. Replace lamp with only (a) Volt, (b) Watt, LED type lamp (provided with product).

If the new lamp base does not fit in lampholder, follow the steps below before step 3.

a) Remove the base of burned out lamp by straightening lamp leads and gently pull lamp out.

b) Thread leads of new lamp through holes in old base with one lead in each hole.

c) After lamp is fully inserted into base, bend each lead up, like other lamps in the light set so that the leads will touch the contacts inside the lampholder.

If connecting to a lighting string that does not have a Wattage (W) rating {found on the tag within 6 inches of the plug} calculate the wattage as follows: Multiply the current (___ A) which is on the flag-type tag by 120.

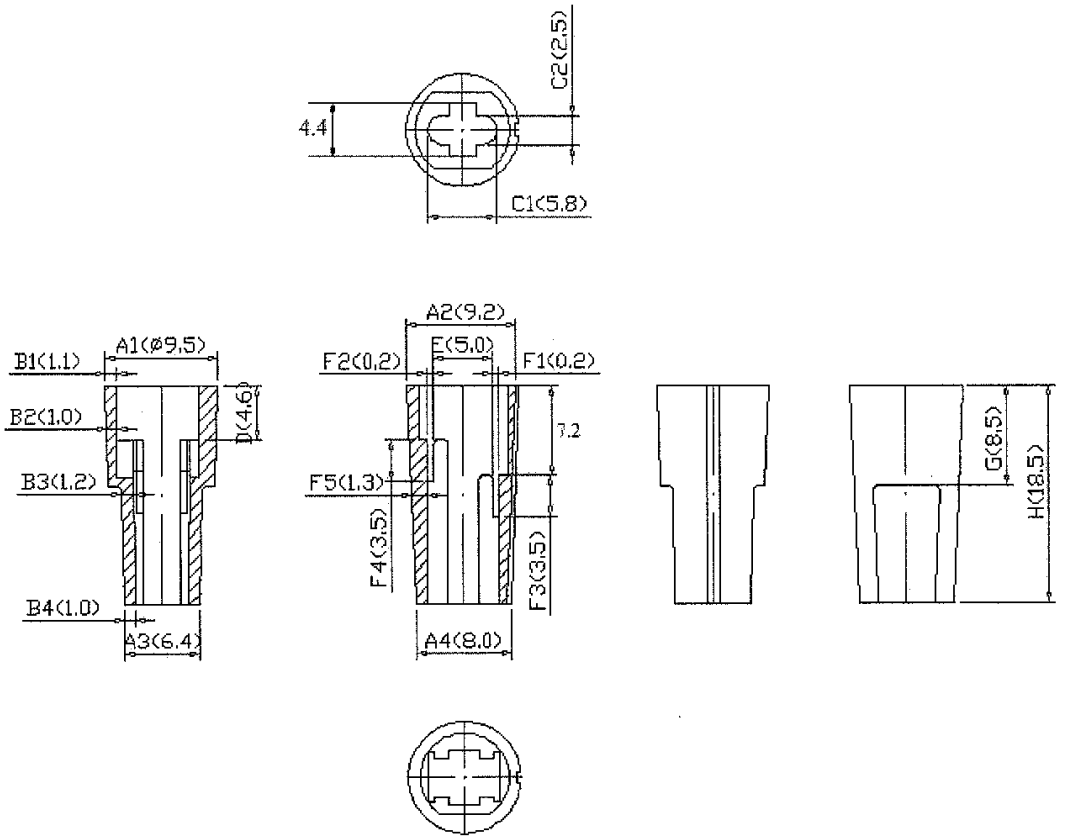
For Example: Lighting string is rated 120 V, 60 Hz, 0.2 Amps. 0.2 X 120 = 24 Watts
Add the wattage of each light string together for a total of 216 Watts or less. (Do not exceed 216 Watts)

CAUTION

1. Risk of fire. This product does not contain lamp shunts, which allow the product to operate if one lamp burns out. Replace lamps only with the spare lamps provided with this product.
2. To reduce the risk of fire and electric shock: a) Do not install on trees having needles, leaves or branch coverings of metal or materials which look like metal, and b) Do not mount or support strings in a manner that can cut or damage wire insulation.

Model No. _____

Note: The blanks (a) and (b) shall be filled in with the voltage and wattage values, respectively, of the replacement lamps.



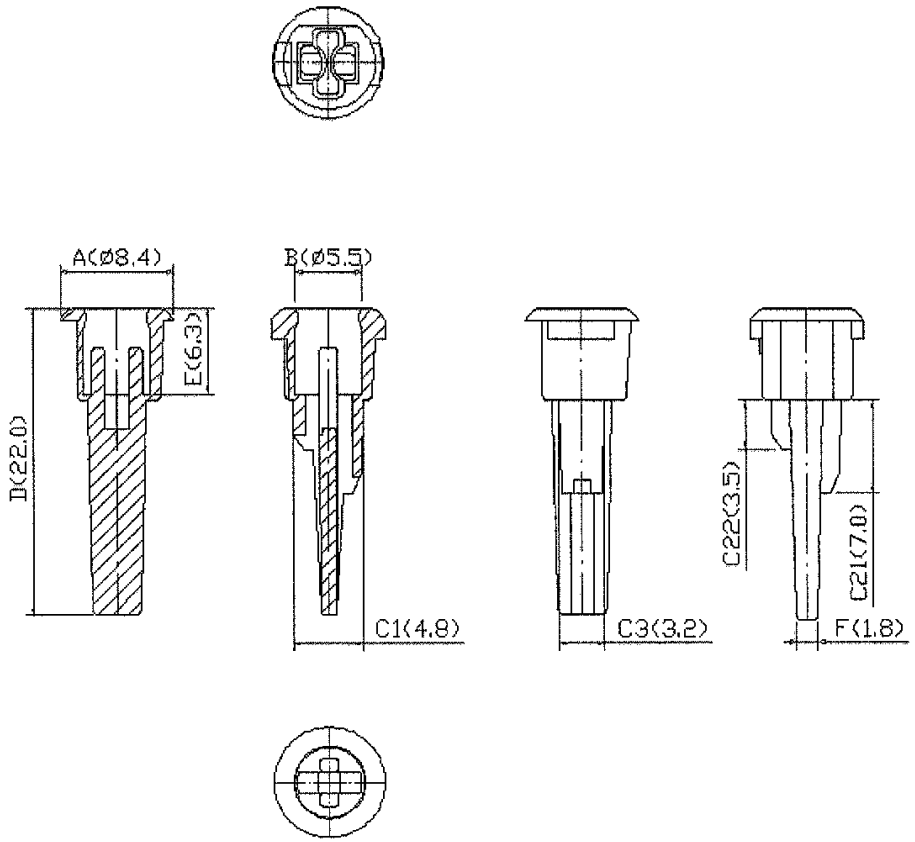
部 位	項 目	尺寸(mm)	備注
頂端外徑	A1	ø9.5	
	A2	9.2	
底部外徑	A3	6.4	
	A4	8.0	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	1.2	
末端壁厚	B4	1.0	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
溝槽寬度	F2	0.2	
溝槽長度	F3	3.5	
溝槽長度	F4	3.5	
溝槽側壁厚	F5	1.3	
頂端至外部凹入長度	G	8.5	
全 長	H	18.5	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	21/11/2008
SCALE	1:1	X	X	XX	CHECKED	
SHEET	1				APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	L&S防水式二線軟頭	DWG NO.	
		P/N NO.	



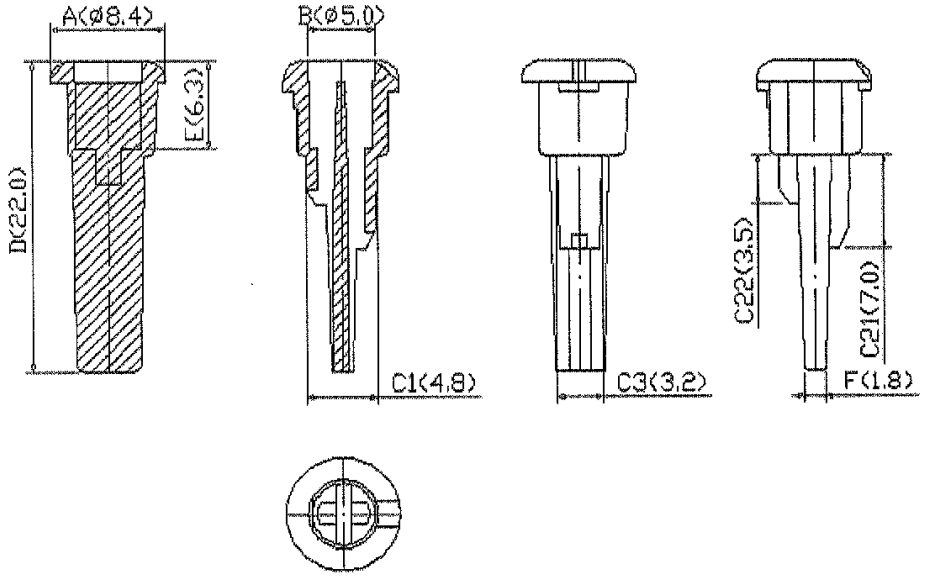
部 位	項 目	尺寸(mm)	備注
外 徑	A	ø8.4	
內 徑	B	ø5.5	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全 長	D	22.0	
燈泡插入長度	E	6.3	
出線直插寬度	F	1.8	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	05/01/2011
SCALE	1:1	X	X	XX	CHECKED	
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	LED 3φ L&S防水式二線軟芯	DWG NO.	
		P/N NO.	



部 位	項 目	尺寸(mm)	備注
外 徑	A	ø8.4	
內 徑	B	ø5.0	
與軟頭接触面詳細尺寸	C1	4.8	
接触面長	C21	7.0	
	C22	3.5	
接触面厚	C3	3.2	
全 長	D	22.0	
燈泡插入長度	E	6.3	
出線直插寬度	F	1.8	

REV	DESCRIPTION	DATE	ECN/ECO NO.

UNIT	mm	TOLERANCE			DRAW. BY	ZhangChun	23/02/2013
SCALE	1:1	X	X	XX	CHECKED	William	
SHEET	1 / 1				APPVL. BY		

CHY

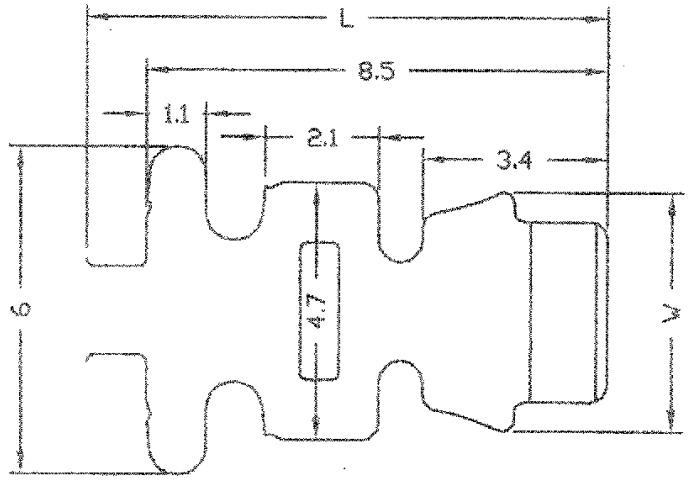
CHYI YUEN PLASTIC FACTORY.

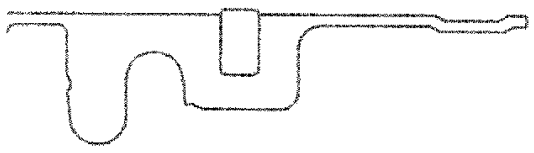
DWG NAME	LED 5Φ L&S防水式隔板二線軟芯	DWG NO.	
		P/N NO.	

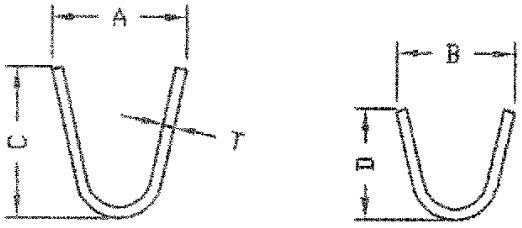
产品检验图

客户名称		产品名称	22#线4.36	产品编号	A-101

	A	B	C	D	W	T	L	
尺寸	2.50	2.30	2.6	2.10	4.36	0.20	9.6	
公差	±0.20	±0.20	±0.20	±0.20	±0.03	±0.02	±0.05	



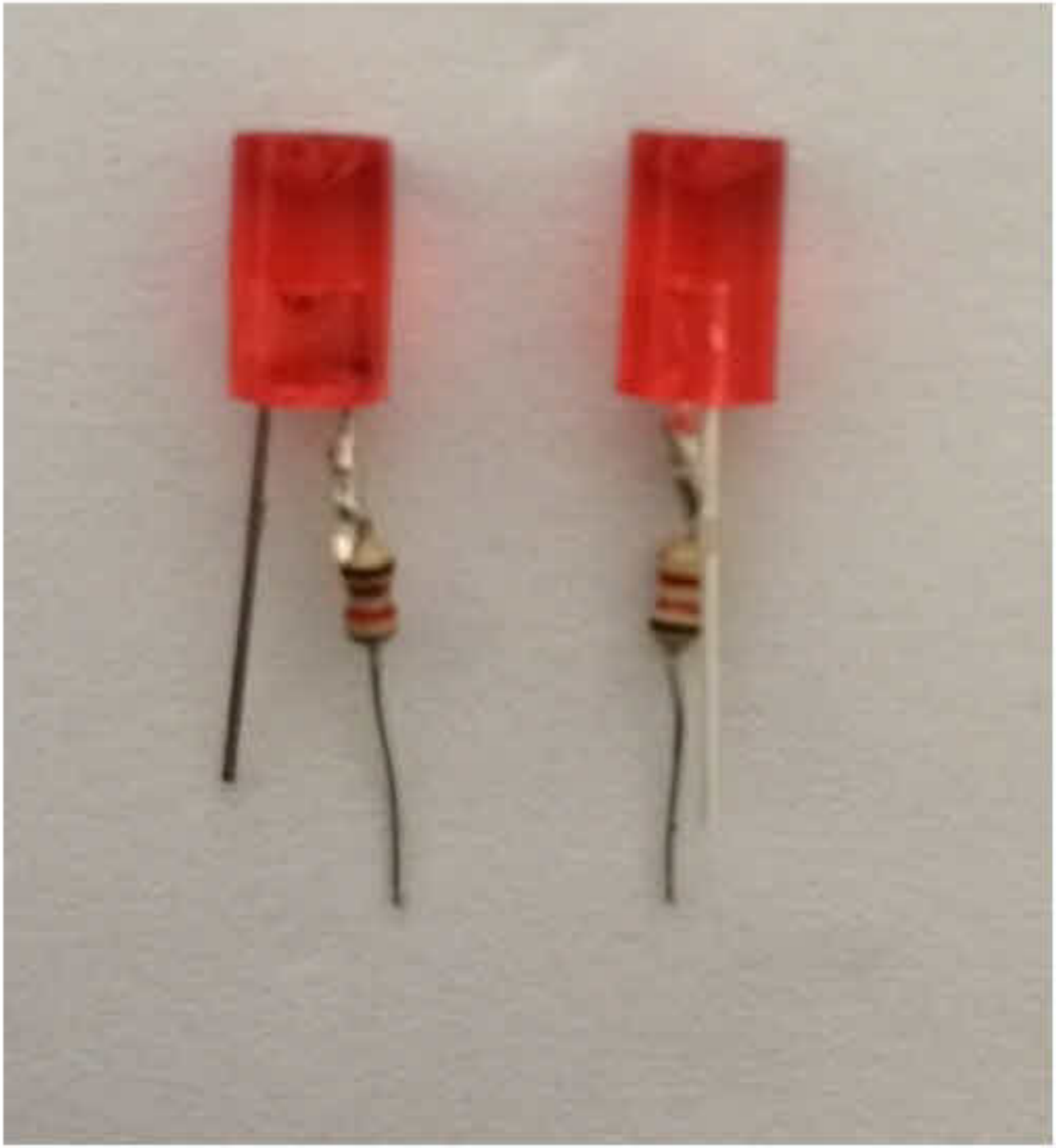


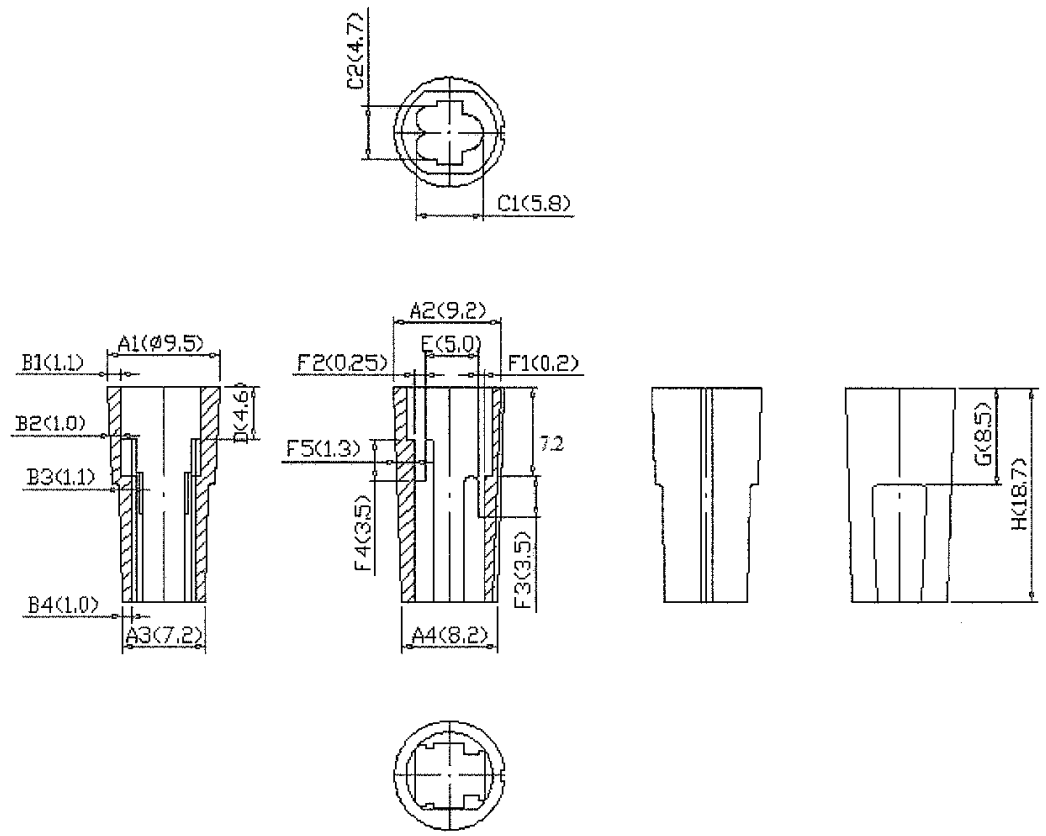


Unit: mm

注：未标示公差为0.05mm

Illustration-7 Page-1





部位		項目	尺寸(mm)	備注
頂端外徑		A1	ø9.5	
		A2	9.2	
底部外徑		A3	7.2	
		A4	8.2	
頂端壁厚		B1	1.1	
上端壁厚		B2	1.0	
最小壁厚		B3	1.1	
末端壁厚		B4	1.0	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
溝槽側壁厚		F5	1.3	
頂端至外部凹入長度		G	8.5	
全長		H	18.7	

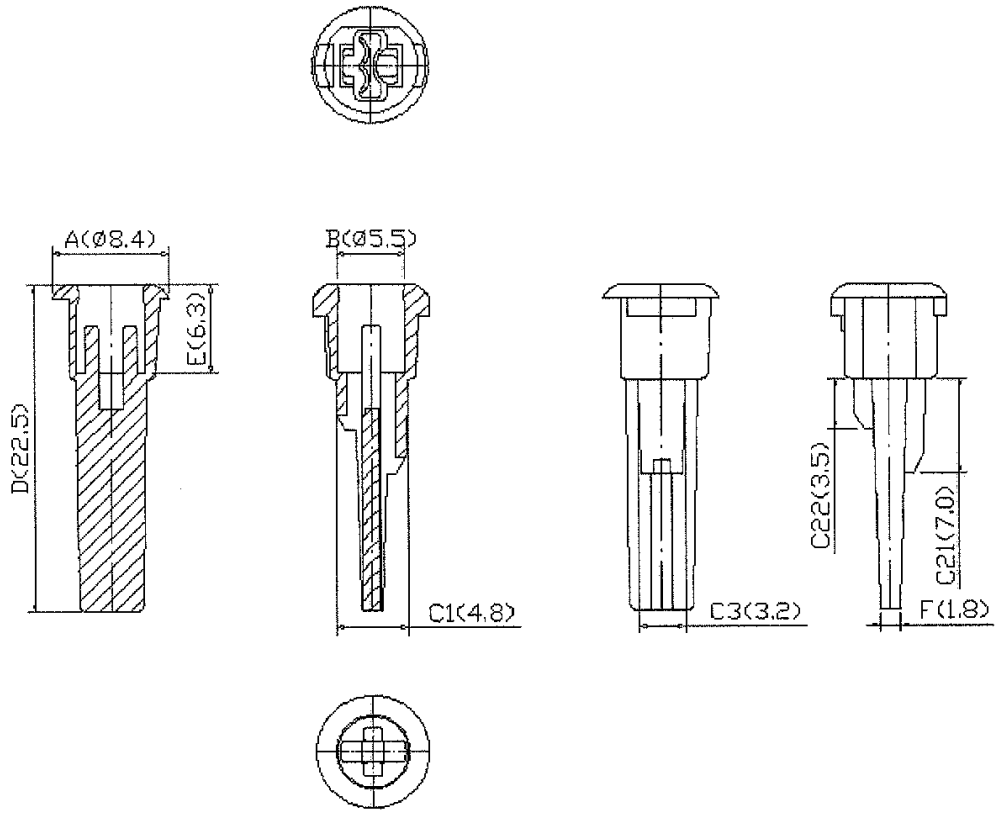
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	ShangChun 21/11/2008
SCALE	1:1	CHECKED	William
SHEET		APPVL. BY	

TOLERANCE: X .X .XX

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	L&S防水式三線軟頭	DWG NO.	
		P/N NO.	



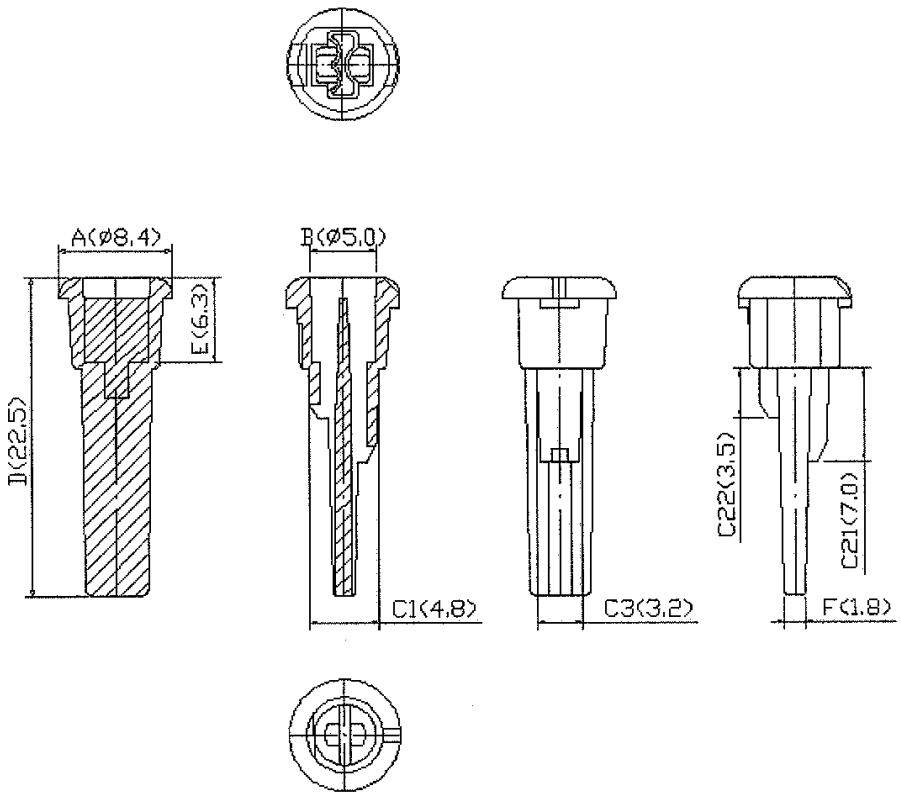
部 位	項 目	尺寸(mm)	備 注
外 徑	A	Ø8.4	
內 徑	B	Ø5.5	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全 長	D	22.5	
燈泡插入長度	E	6.3	
出線直插寬度	F	1.8	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	05/01/2011
SCALE	1:1	X	.X	.XX	CHECKED	
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	LED 3Ø L&S防水式三線軟芯	DWG NO.	
		P/N NO.	



部 位	項 目	尺寸(mm)	備注
外 徑	A	ø8.4	
內 徑	B	ø5.0	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全 長	D	22.5	
燈泡插入長度	E	6.3	
出線直插寬度	F	1.8	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	ZhangChun 23/02/2013
SCALE	1:1	X	.X	.XX	CHECKED	William
SHEET					APPVL. BY	

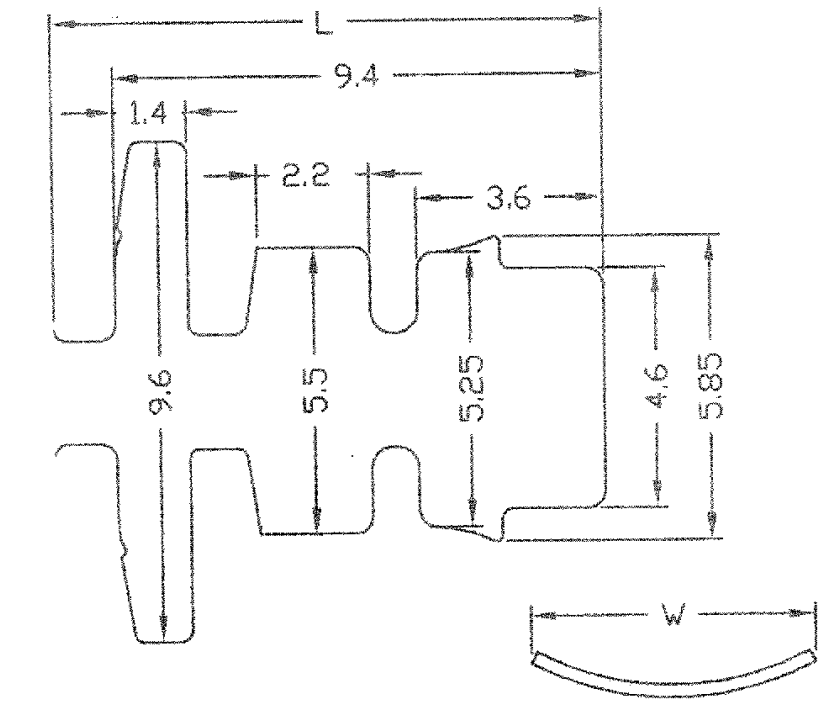
CHY

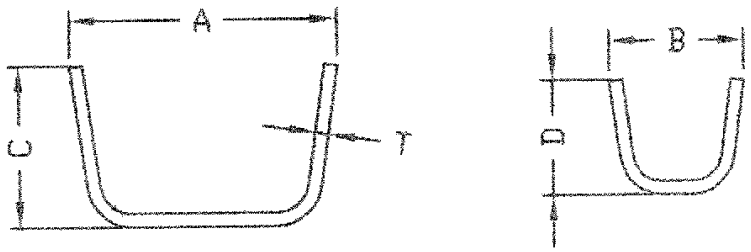
CHYI YUEN PLASTIC FACTORY.

DWG NAME	LED 5ø L&S防水式隔板三線軟芯	DWG NO.	
		P/N NO.	

产品检验图

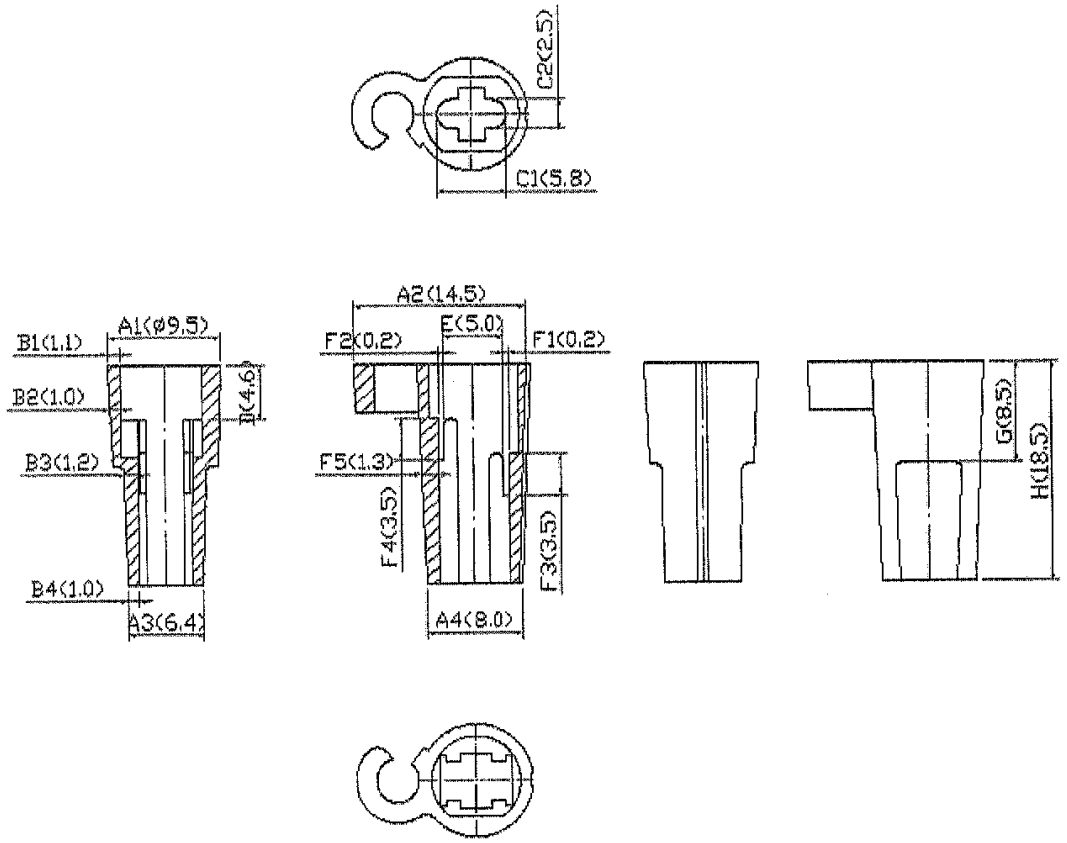
客户名称		产品名称	22#双线5.5弧型高脚		产品编号	B-115	
	A	B	C	D	W	T	L	
尺寸	5.40	2.60	3.20	2.20	5.50	0.25	10.6	
公差	±0.20	±0.20	±0.20	±0.20	±0.04	±0.02	±0.05	





Unit: mm

注：未标示公差为0.05mm



部位	項目	尺寸(mm)	備注
頂端外徑	A1	ø9.5	
	A2	14.5	
底部外徑	A3	6.4	
	A4	8.0	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	1.2	
末端壁厚	B4	1.0	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
溝槽寬度	F2	0.2	
溝槽長度	F3	3.5	
溝槽長度	F4	3.5	
溝槽側壁厚	F5	1.3	
頂端至外部凹入長度	G	8.5	
全長	H	18.5	

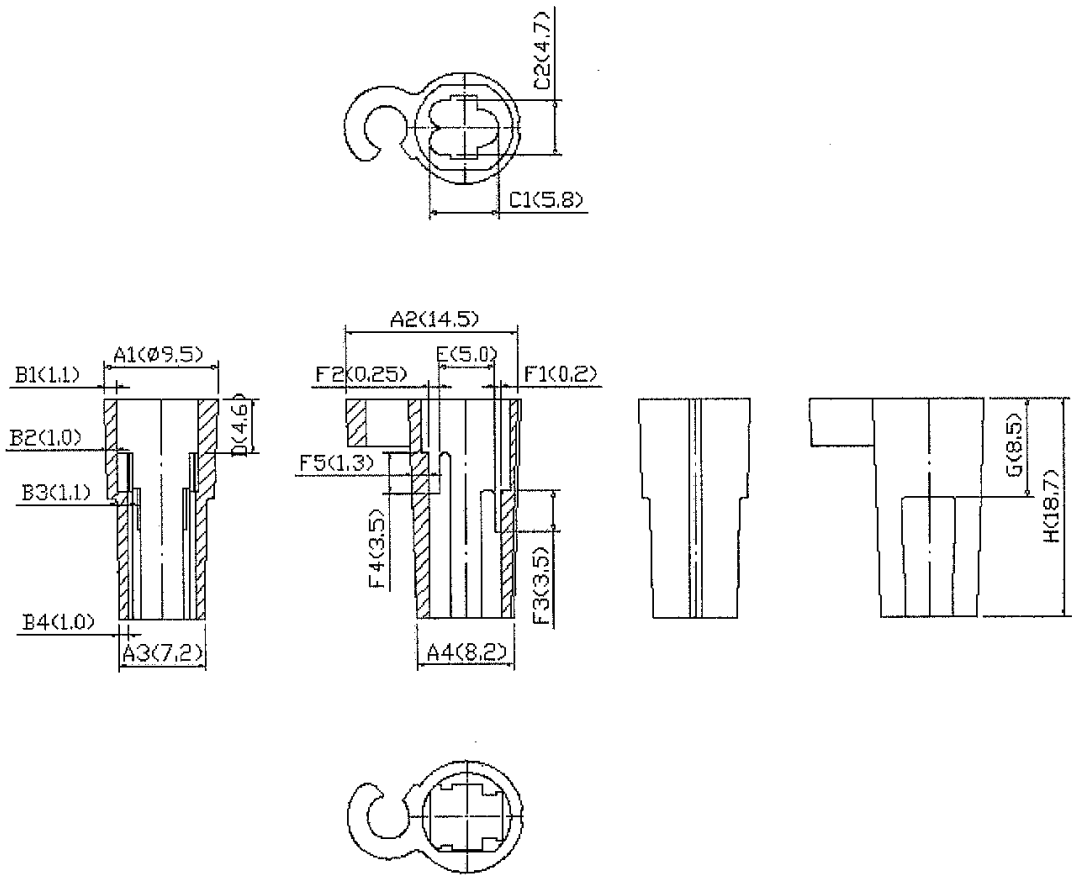
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY Hang Chun	16/01/2009
SCALE	1:1	CHECKED William	
SHEET	1 / 1	APPVL. BY	

TOLERANCE: X X XX

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	3.5φ鐵架階L&S防水式二線軟頭	DWG NO.	
		P/N NO.	



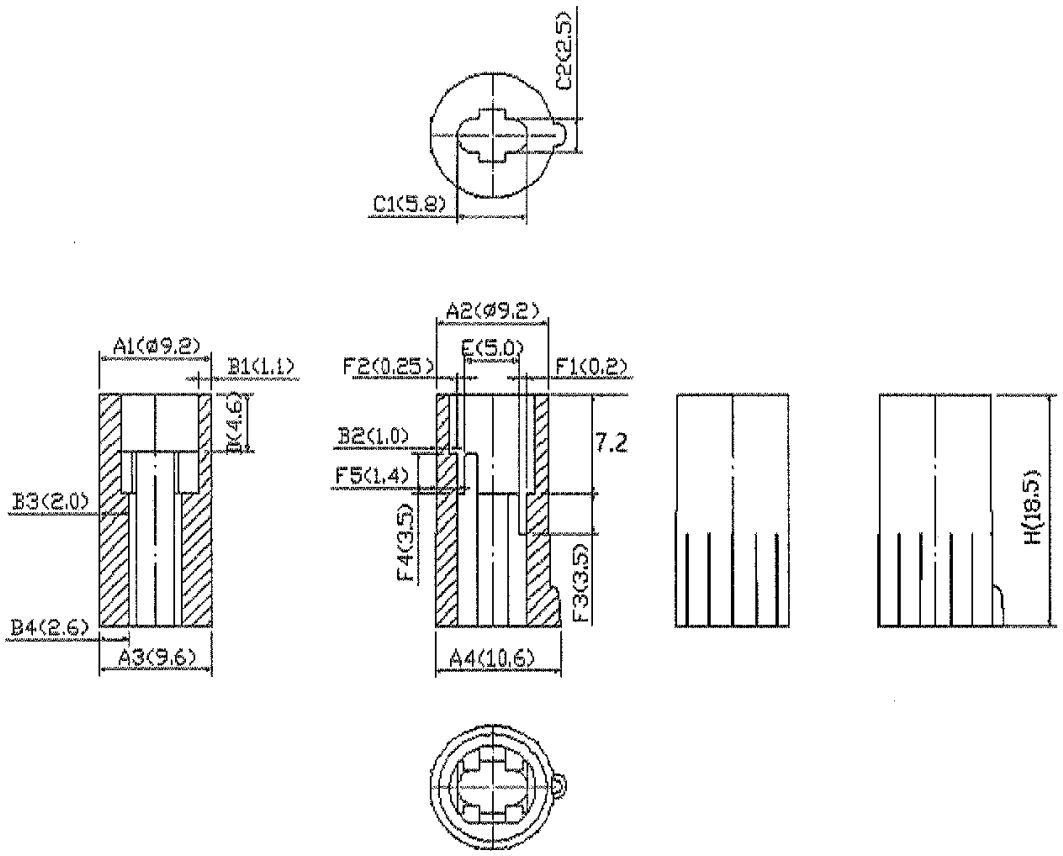
部 位		項 目	尺寸(mm)	備注
頂端外徑		A1	Ø9.5	
		A2	14.5	
底部外徑		A3	7.2	
		A4	8.2	
頂端壁厚		B1	1.1	
上端壁厚		B2	1.0	
最小壁厚		B3	1.1	
末端壁厚		B4	1.0	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
溝槽側壁厚		F5	1.3	
頂端至外部凹入長度		G	8.5	
全 長		H	18.7	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	28/08/2010
SCALE	1:1	X	X	XX	CHECKED	
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	3.5Φ鐵架燈L&S防水式三線軟頭	DWG NO.	
		P/N NO.	



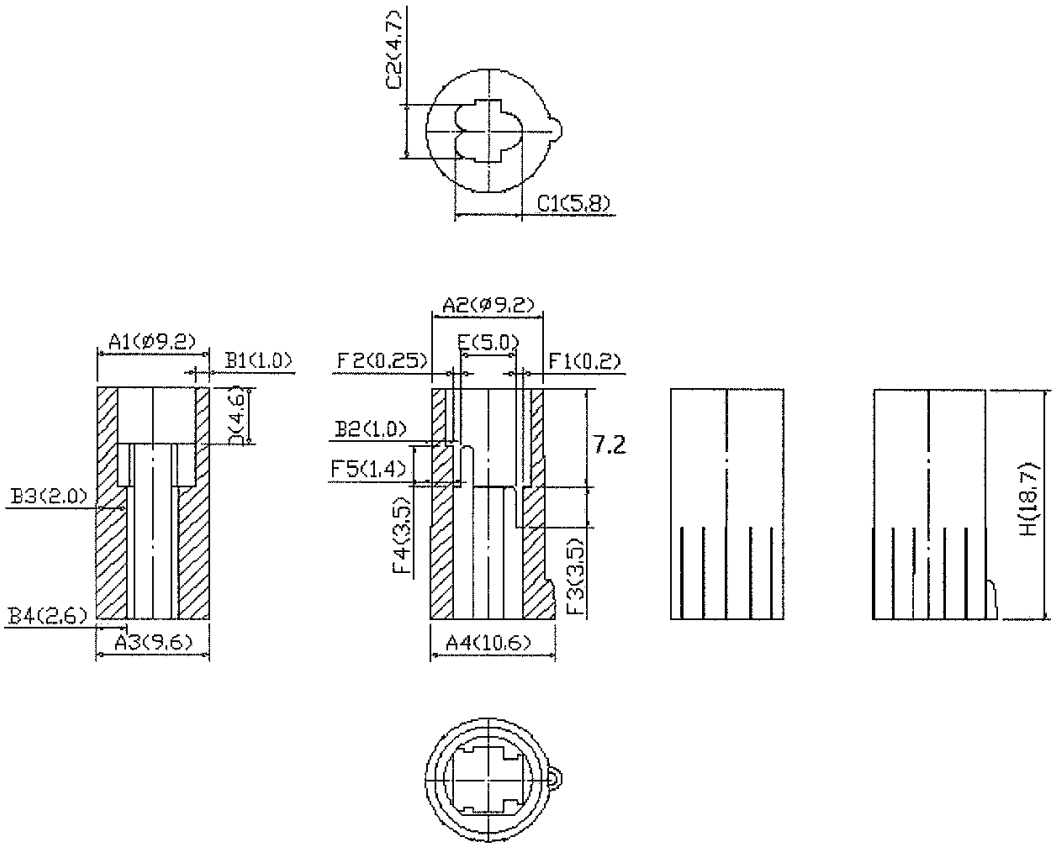
部 位	項 目	尺寸(mm)	備注
頂端外徑	A1	ø9.2	
	A2	ø9.2	
底部外徑	A3	9.6	
	A4	10.6	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	2.0	
末端壁厚	B4	2.6	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
溝槽寬度	F2	0.25	
溝槽長度	F3	3.5	
溝槽長度	F4	3.5	
溝槽側壁厚	F5	1.4	
全 長	H	18.5	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	21/01/2010
SCALE	1:1	X	X	XX	CHECKED	
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	托音L&S防水式二線軟頭	DWG NO.	
		P/N NO.	



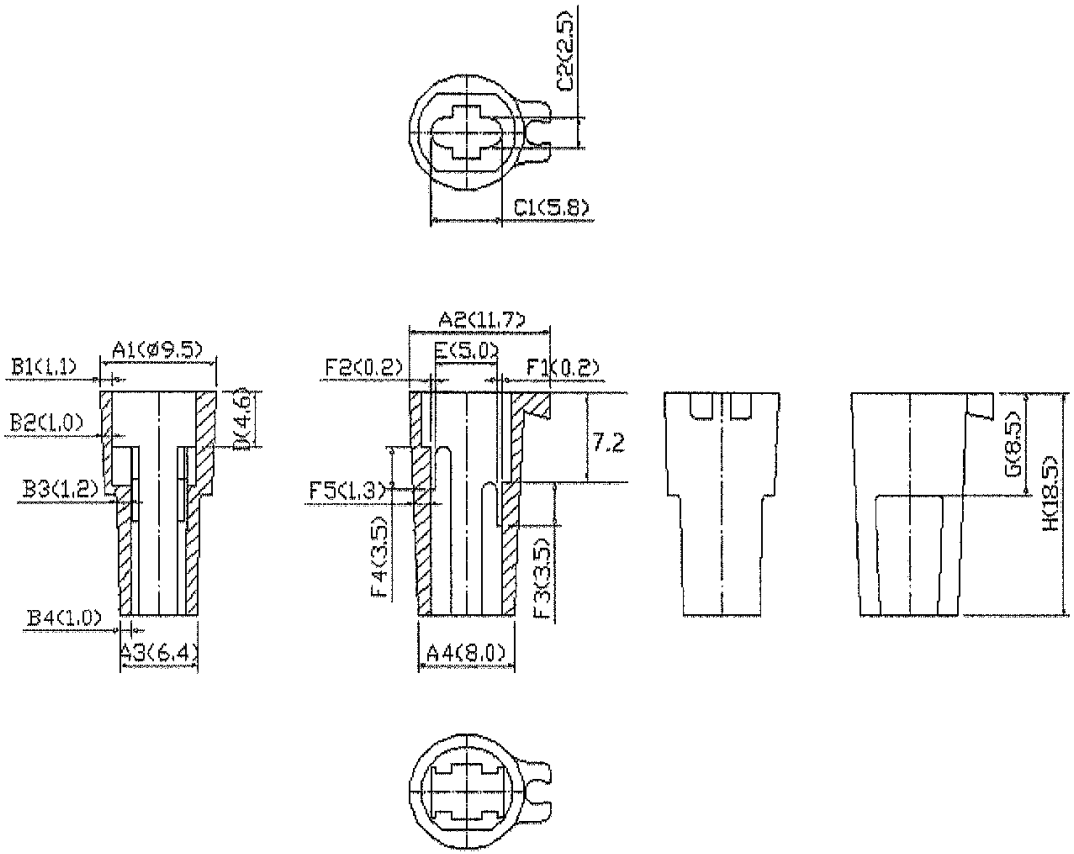
部 位		項 目	尺寸(mm)	備注
頂端外徑		A1	ø9.2	
		A2	ø9.2	
底部外徑		A3	9.6	
		A4	10.6	
頂端壁厚		B1	1.0	
上端壁厚		B2	1.0	
最小壁厚		B3	2.0	
末端壁厚		B4	2.6	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
溝槽側壁厚		F5	1.4	
全 長		H	18.7	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	21/01/2010
SCALE	1:1	X	X	XX	CHECKED	
SHEET	1				APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	托普L&S防水式三線軟頭	DWG NO.	
		P/N NO.	



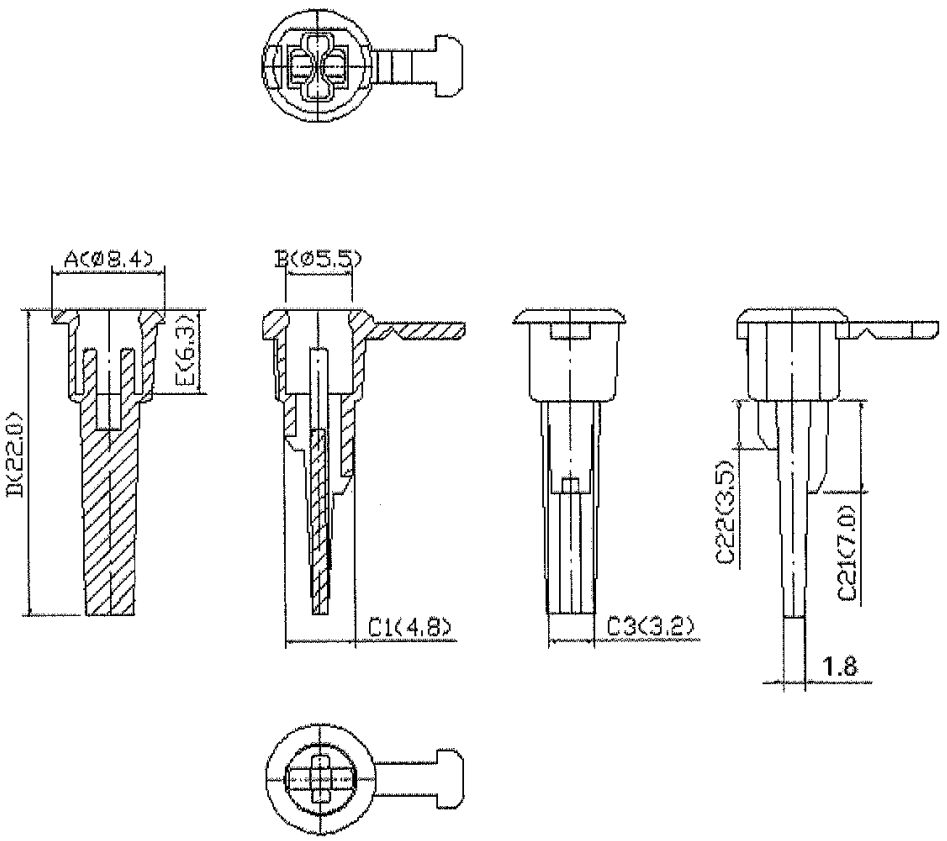
部位	項目	尺寸(mm)	備注
頂端外徑	A1	ø9.5	
	A2	11.7	
底部外徑	A3	6.4	
	A4	8.0	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	1.2	
末端壁厚	B4	1.0	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
溝槽寬度	F2	0.2	
溝槽長度	F3	3.5	
溝槽長度	F4	3.5	
溝槽側壁厚	F5	1.3	
頂端台外部凹入長度	G	8.5	
全長	H	18.5	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	ShangChun 01/11/2008
SCALE	1:1	X	X	XX	CHECKED	William
SHEET	1/1				APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	T型 L&S防水式二線軟頭	DWG NO.	
		P/N NO	



部位	項目	尺寸(mm)	備注
外徑	A	ø8.4	
內徑	B	ø5.5	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全長	D	22.0	
燈泡插入長度	E	6.3	

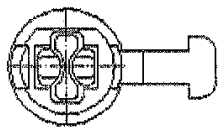
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	05/01/2011
SCALE	1:1	CHECKED	
SHEET		APPVL. BY	

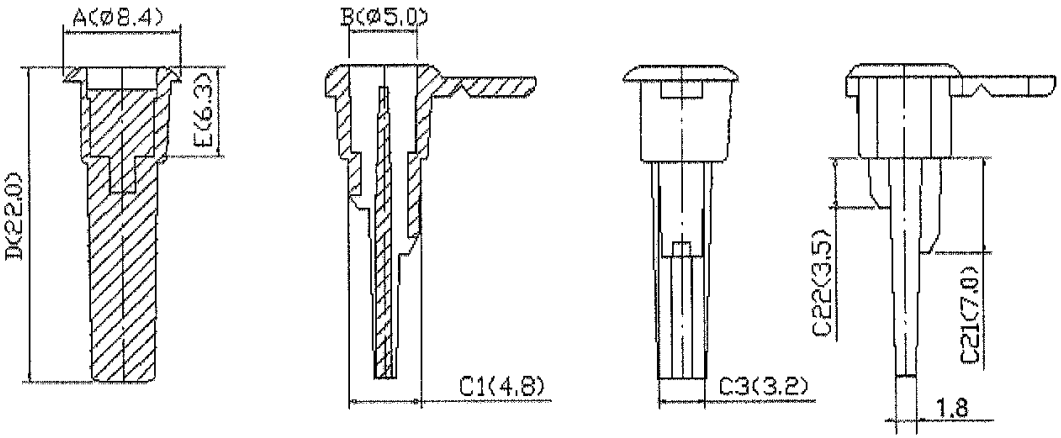
TOLERANCE: X ± X ± .XX

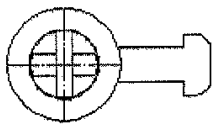
CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	T型LED 3φ L&S防水式二線軟芯	DWG NO.	
		P/N NO.	







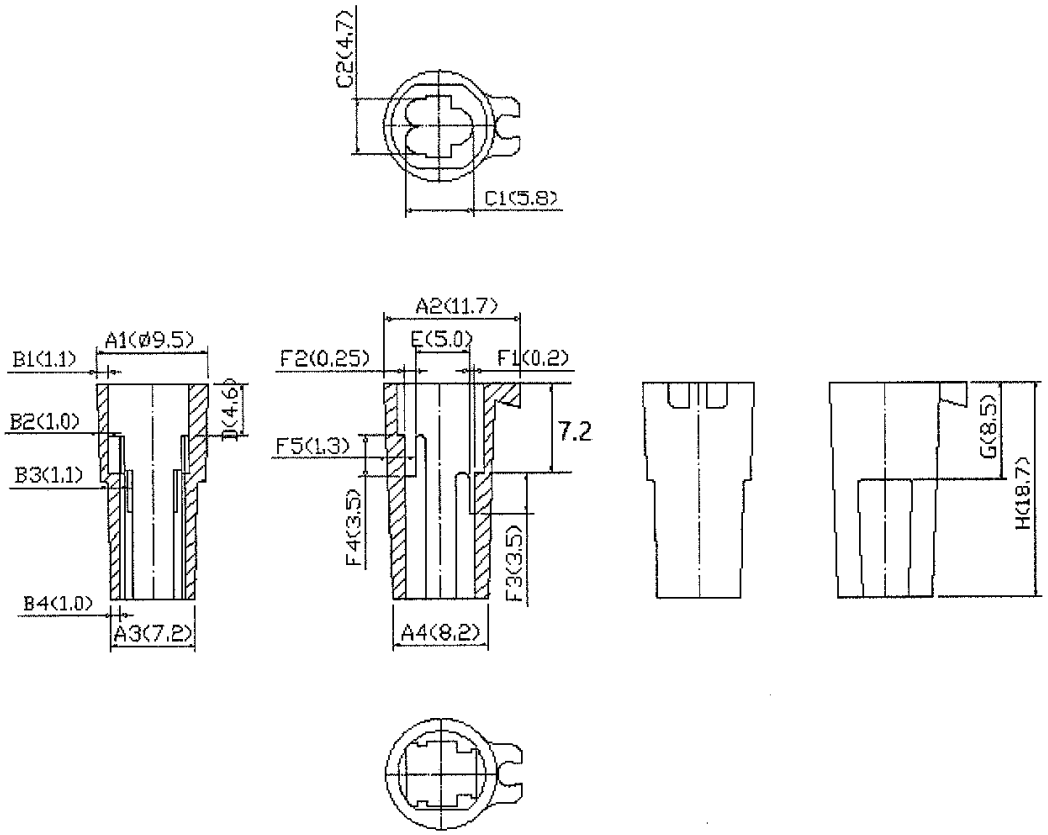
部位	項目	尺寸(mm)	備注
外徑	A	ø8.4	
內徑	B	ø5.0	
與軟陶膠接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全長	D	22.0	
燈泡插入長度	E	6.3	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	Shang-Chun 23/02/2013
SCALE	1:1	X	.X	.XX	CHECKED	William
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	T型LED 5ø L&S防水式隔板二線軟芯	DWG NO.	
		P/N NO.	



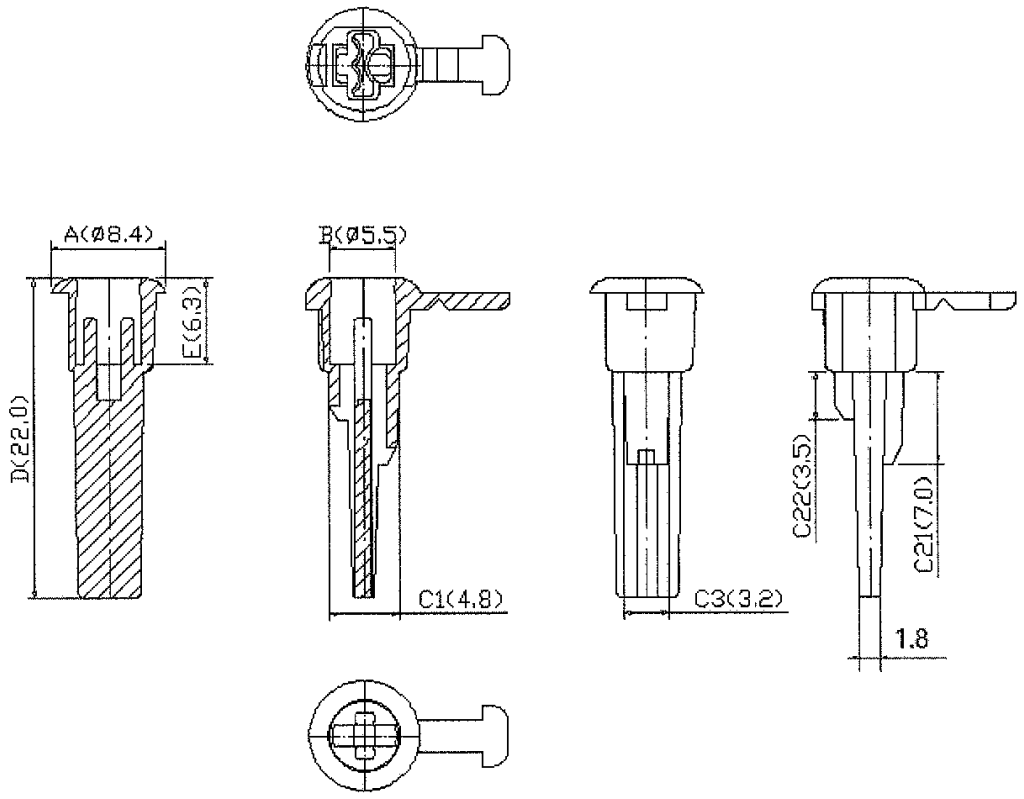
部位		項目	尺寸(mm)	備注
頂端外徑		A1	ø9.5	
		A2	11.7	
底部外徑		A3	7.2	
		A4	8.2	
頂端壁厚		B1	1.1	
上端壁厚		B2	1.0	
最小壁厚		B3	1.1	
末端壁厚		B4	1.0	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
溝槽側壁厚		F5	1.3	
頂端至外部凹入長度		G	8.5	
全長		H	18.7	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	01/11/2008
SCALE	1:1	X	.X	.XX	CHECKED	
SHEET					APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	T型 L&S防水式三線軟頭	DWG NO.	
		P/N NO.	



部 位	項 目	尺寸(mm)	備注
外 徑	A	ø8.4	
內 徑	B	ø5.5	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全 長	D	22.0	
燈泡插入長度	E	6.3	

REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	ThangChun 05/01/2011
SCALE	1:1	CHECKED	William
SHEET		APPVL. BY	

TOLERANCE: X .X .XX

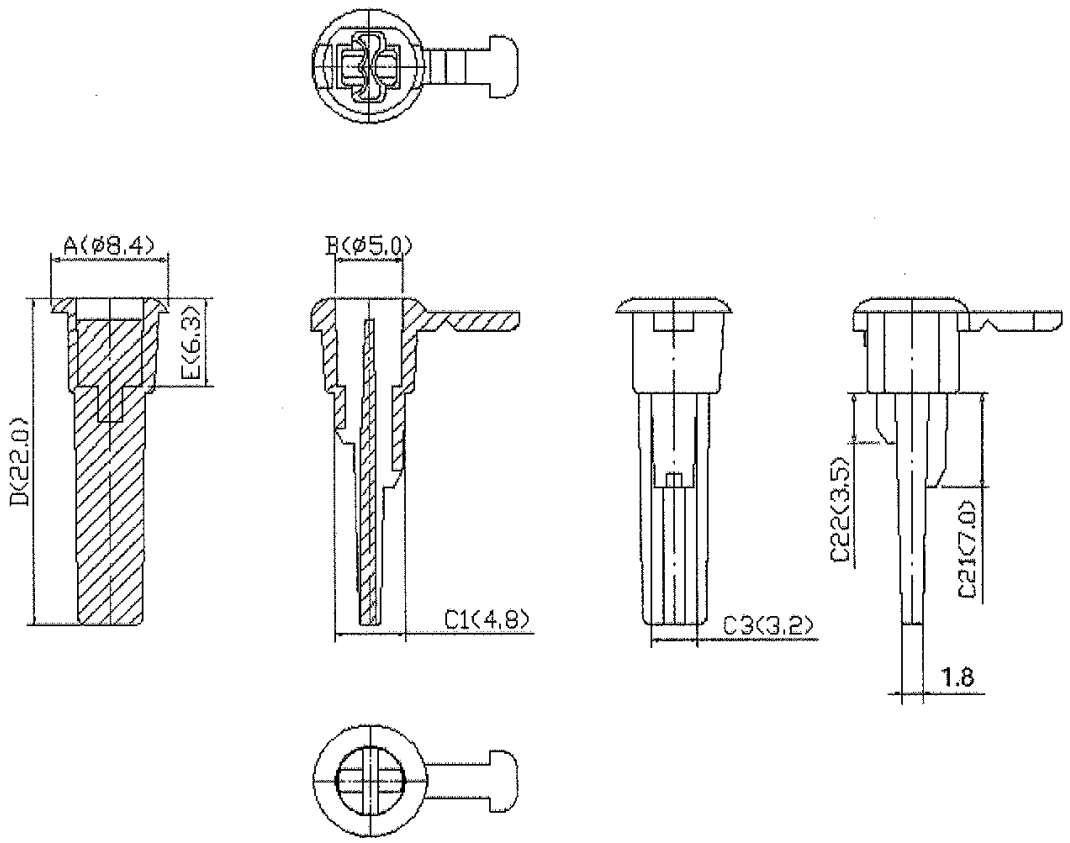
CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME: 7型LED 3φ L≈3防水式三線軟芯

DWG NO.

P/N NO.



部 位	項 目	尺寸(mm)	備注
外 徑	A	ø8.4	
內 徑	B	ø5.0	
與軟頭接觸面詳細尺寸	C1	4.8	
接觸面長	C21	7.0	
	C22	3.5	
接觸面厚	C3	3.2	
全 長	D	22.0	
燈泡插入長度	E	6.3	

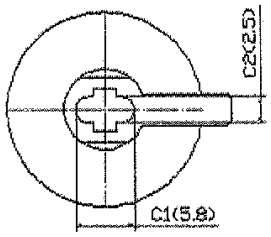
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	Thang Chun 23/02/2013
SCALE	1:1	CHECKED	William
SHEET	1	APPVL. BY	

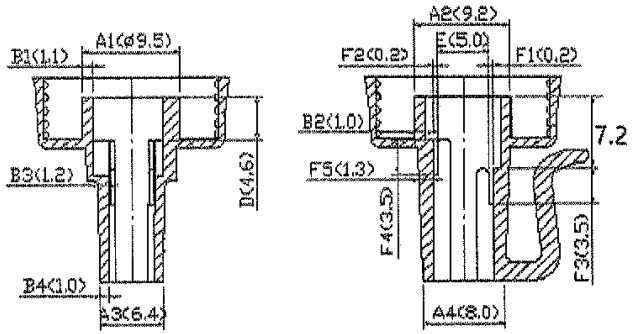
TOLERANCE: X X XX

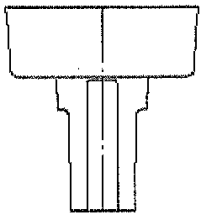
CHY

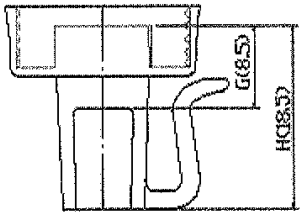
CHYI YUEN PLASTIC FACTORY.

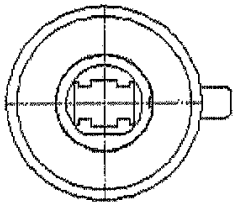
DWG NAME	T型LED 5ø L&S防水式隔板三線軟芯	DWG NO.	
		P/N NO.	











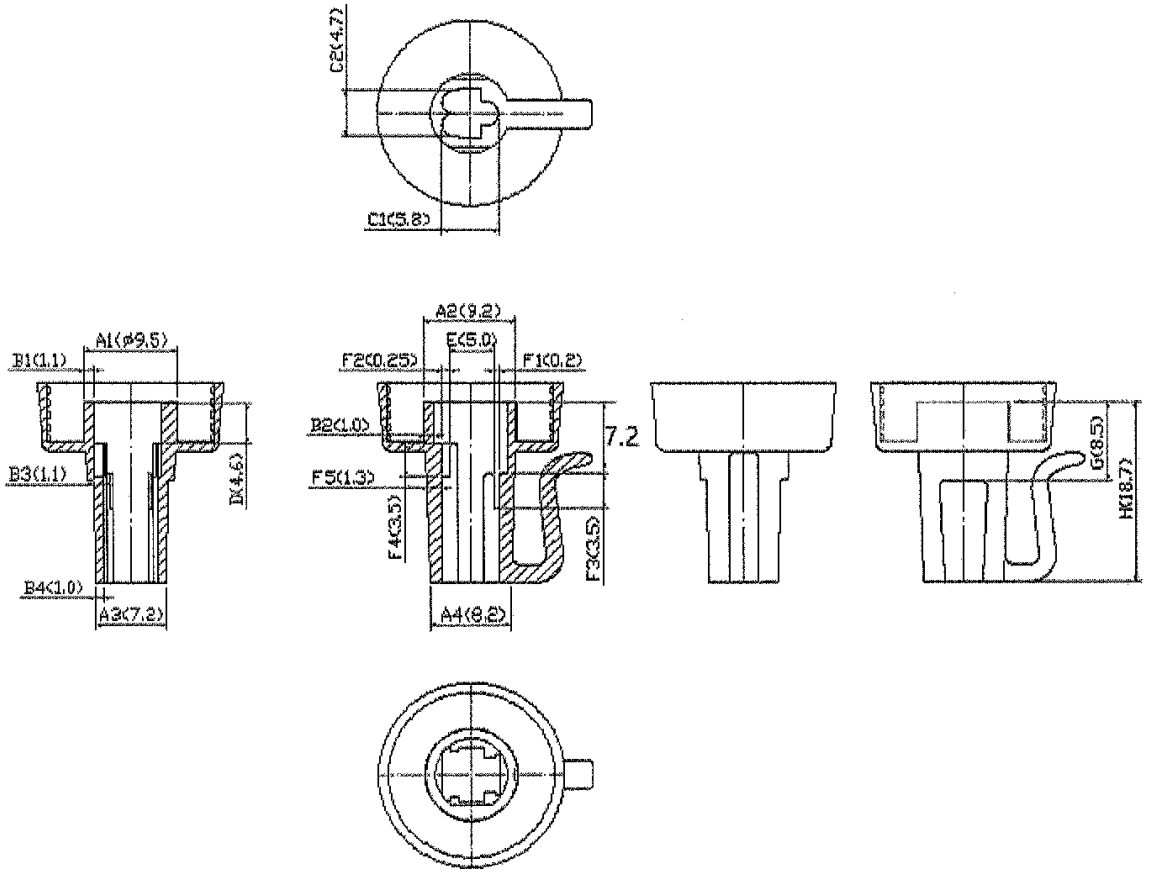
部位	項目	尺寸(mm)	備注
頂端外徑	A1	ø9.5	
	A2	9.2	
底部外徑	A3	6.4	
	A4	8.0	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	1.2	
末端壁厚	B4	1.0	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
溝槽寬度	F2	0.2	
溝槽長度	F3	3.5	
溝槽長度	F4	3.5	
溝槽側壁厚	F5	1.3	
頂端蓋外部匹入長度	G	8.5	
全長	H	18.5	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	Zhang Zhun 13/03/2012
SCALE	1:1	X	X	.XX	CHECKED	William
SHEET	1				APPVL. BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	4# L&S LED C7/C9二線軟頭	DWG NO.	
		P/N NO.	



部位		項目	尺寸(mm)	備注
頂端外徑		A1	ø9.5	
		A2	9.2	
底部外徑		A3	7.2	
		A4	8.2	
頂端壁厚		B1	1.1	
上端壁厚		B2	1.0	
前小壁厚		B3	1.1	
末端壁厚		B4	1.0	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
溝槽側壁厚		F5	1.3	
[illegible]		G	8.5	
全長		H	18.7	

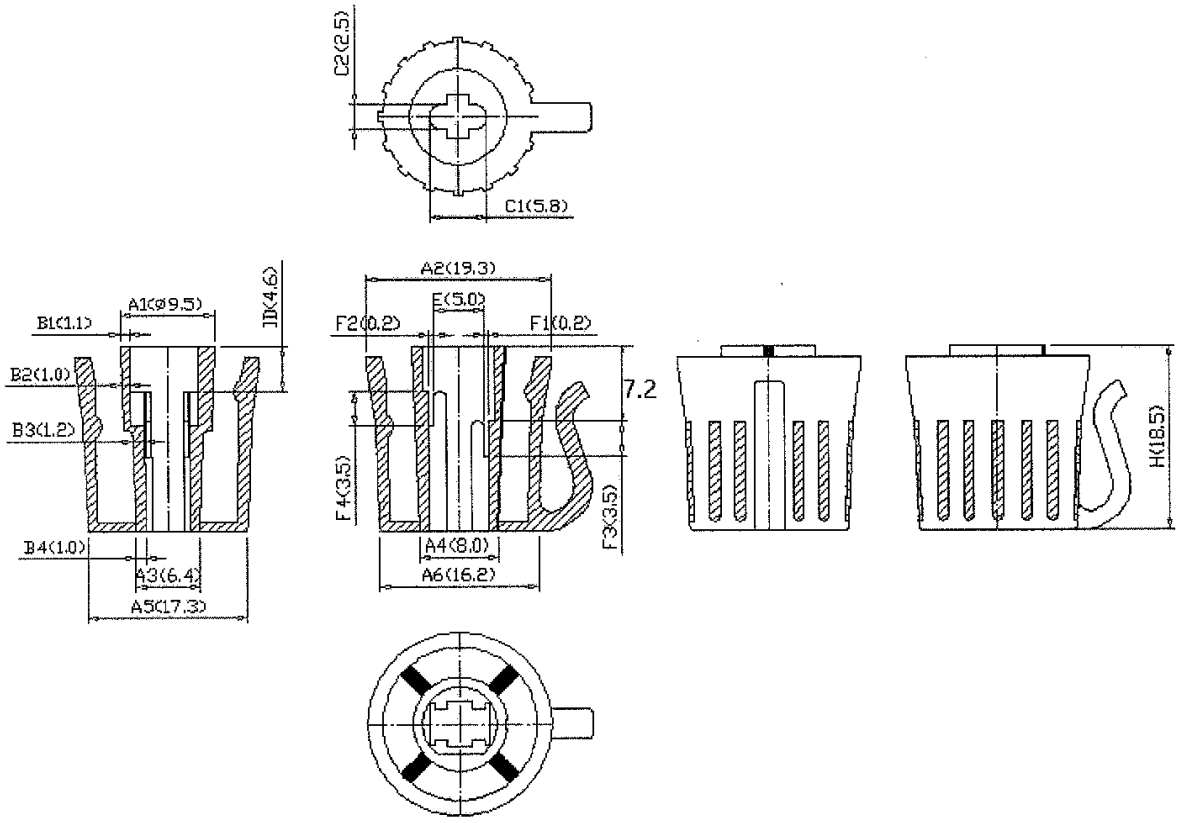
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	13/03/2012
SCALE	1:1	CHECKED	
SHEET		APPVL. BY	

TOLERANCE: X .X .XX

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	4# L&S LED C7/C9三線軟頭	DWG NO.	
		P/N NO.	



部位	項目	尺寸(mm)	備注
頂端外徑	A1	ø9.5	
	A2	19.3	
底部外徑	A3	6.4	
	A4	8.0	
	A5	17.3	
	A6	16.2	
頂端壁厚	B1	1.1	
上端壁厚	B2	1.0	
最小壁厚	B3	1.2	
末端壁厚	B4	1.0	
出線口形狀及尺寸	C1	5.8	
	C2	2.5	
前端內孔深度	D	4.6	
溝槽間距	E	5.0	
溝槽寬度	F1	0.2	
	F2	0.2	
溝槽長度	F3	3.5	
	F4	3.5	
全長	H	18.5	

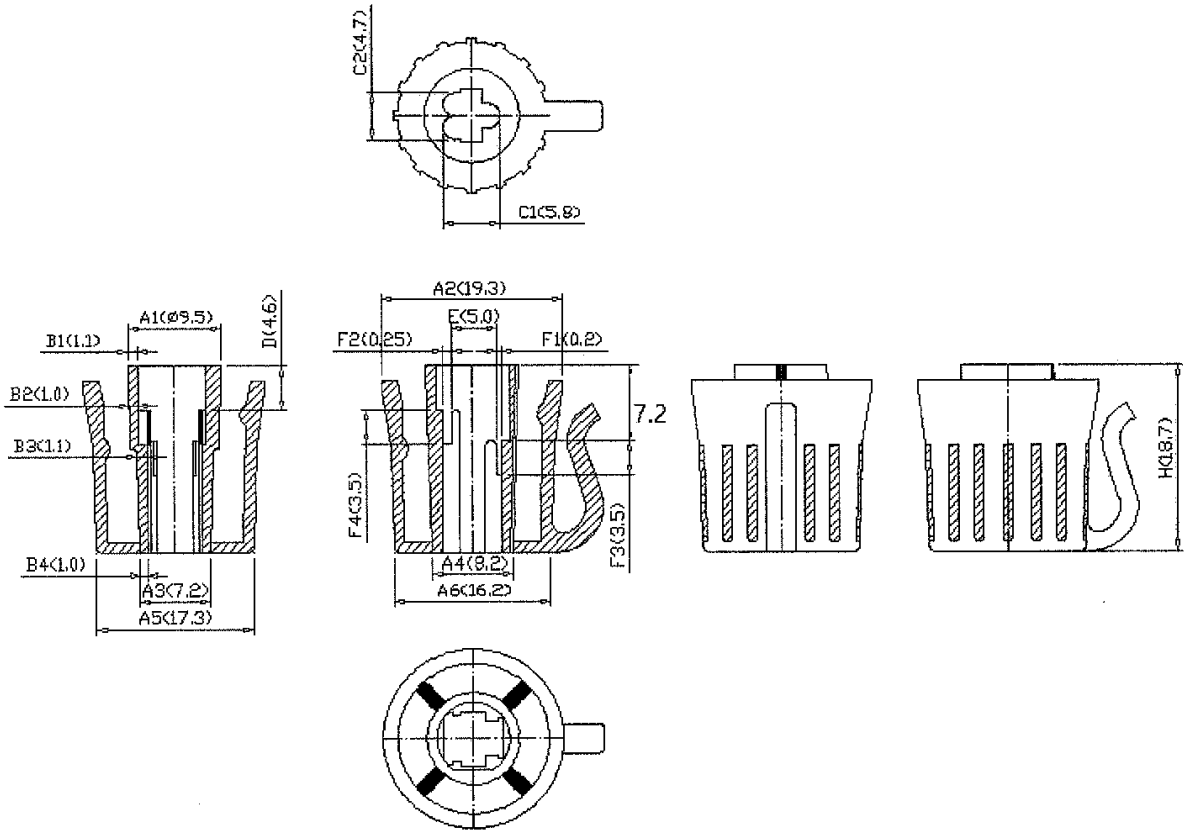
REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY ShangChun	19/04/2012
SCALE	1:1	CHECKED William	
SHEET	1	APPVL. BY	

TOLERANCE: X .X .XX

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	5# L&S LED C7/C9二線軟頭	DWG NO.	
		P/N NO.	



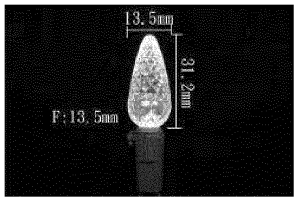
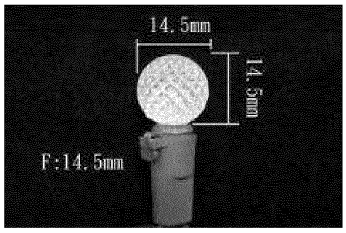
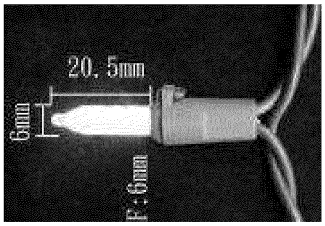
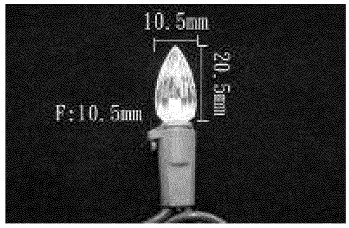
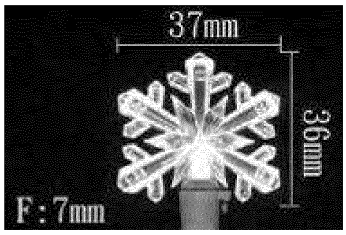
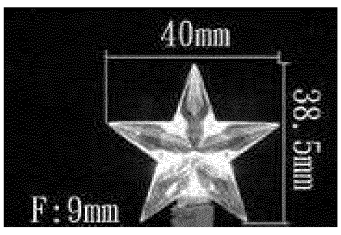
部 位		項 目	尺寸(mm)	備 注
頂端外徑		A1	ø9.5	
		A2	19.3	
底部外徑		A3	7.2	
		A4	8.2	
		A5	17.3	
		A6	16.2	
頂端壁厚		B1	1.1	
上端壁厚		B2	1.0	
最小壁厚		B3	1.1	
末端壁厚		B4	1.0	
出線口形狀及尺寸		C1	5.8	
		C2	4.7	
前端內孔深度		D	4.6	
溝槽間距		E	5.0	
溝槽寬度	單線	F1	0.2	
	雙線	F2	0.25	
溝槽長度	單線	F3	3.5	
	雙線	F4	3.5	
全 長		H	18.7	

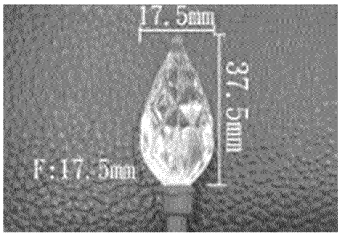
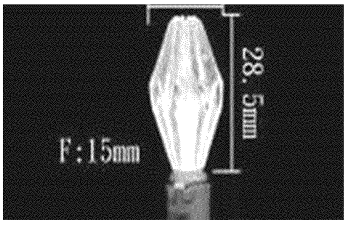
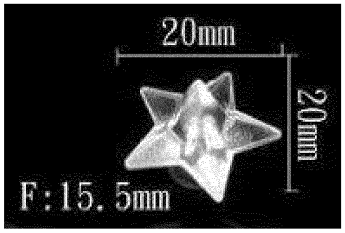
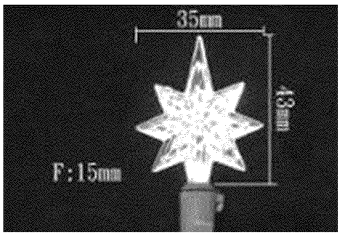
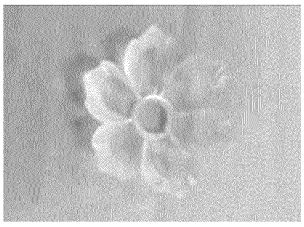
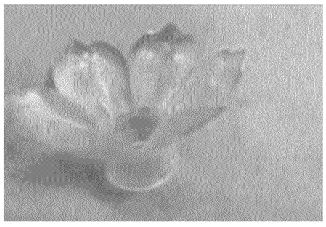
REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW. BY	19/04/2012
SCALE	1:1	X	X	XX	CHECKED	
SHEET	1/1				APPVL. BY	

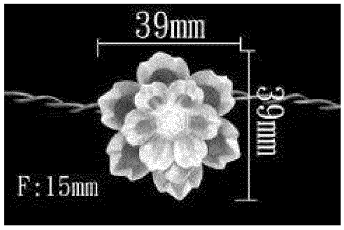
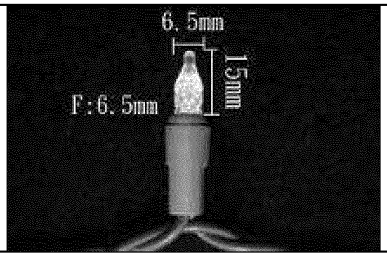
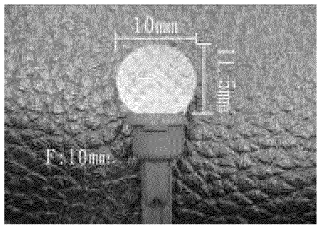
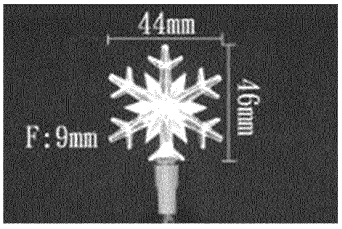
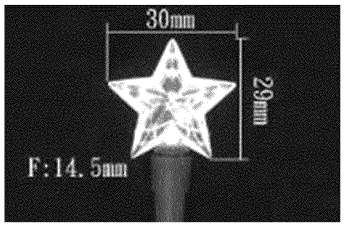
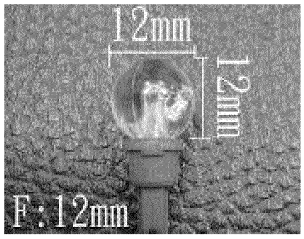
CHY

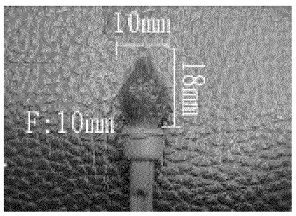
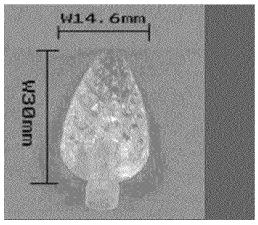
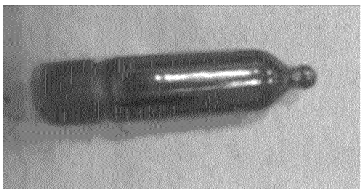
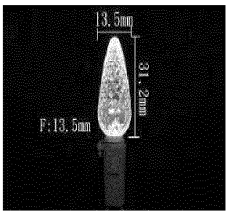
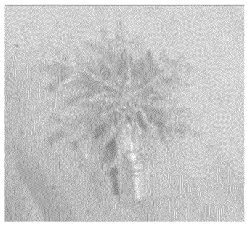
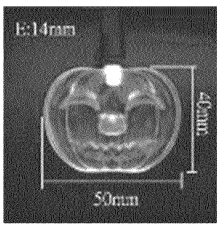
CHYI YUEN PLASTIC FACTORY.

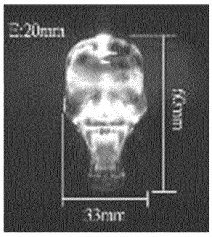
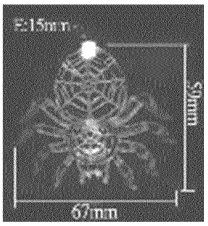
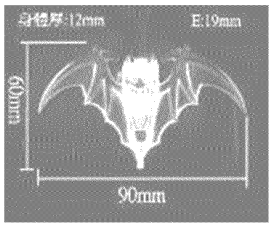
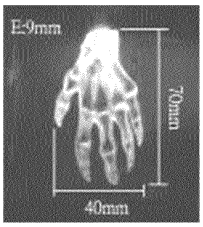
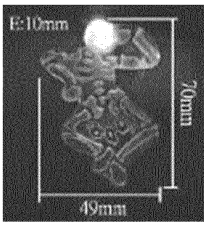
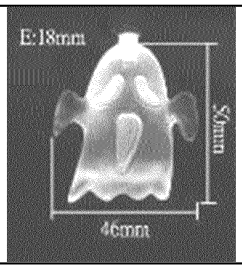
DWG NAME	5# L&S LED C7/C9三線軟頭	DWG NO.	
		P/N NO.	

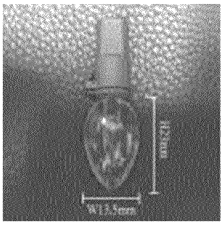
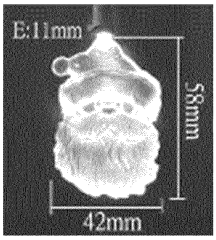
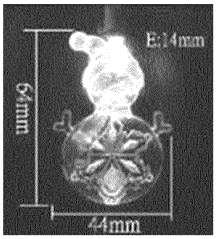
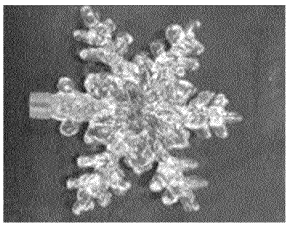
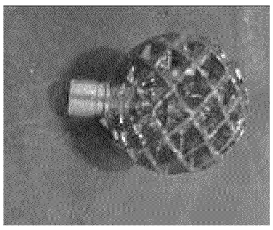
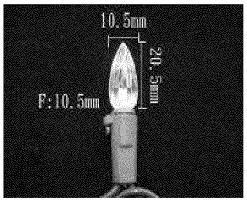
Decorative Cover Cat. No.	Picture
SH-025	
SH-027	
SH-057	
SH-058	
SH-066	
SH-067	

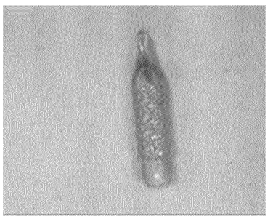
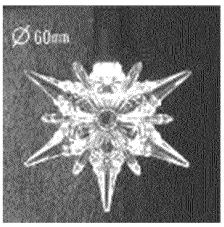
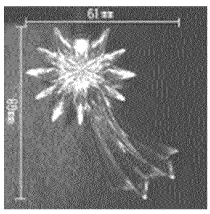
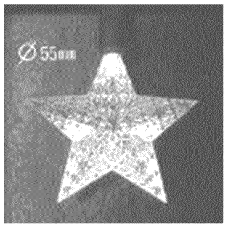
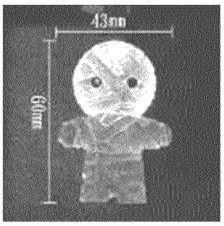
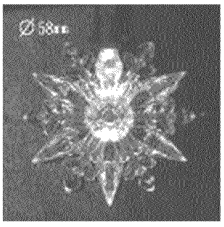
Decorative Cover Cat. No.	Picture
SH-077	
SH-082	
SH-083	
SH-085	
SH-086	
SH-087	

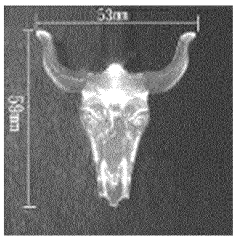
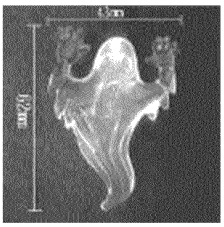
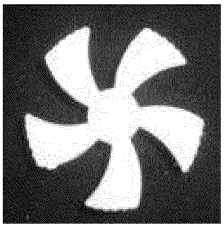
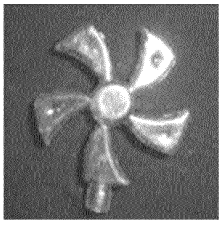
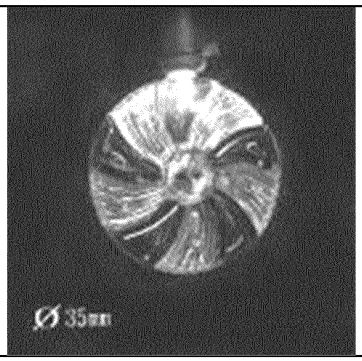
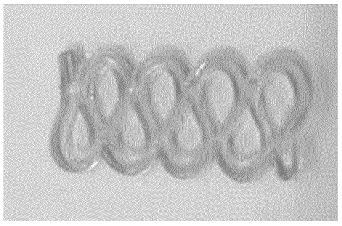
Decorative Cover Cat. No.	Picture
SH-086+SH-087	
SH-099	
SH-093	
SH-095	
SH-096	
SH-103	

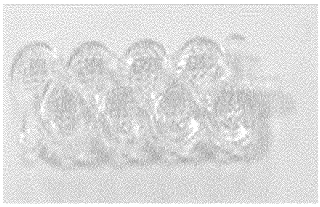
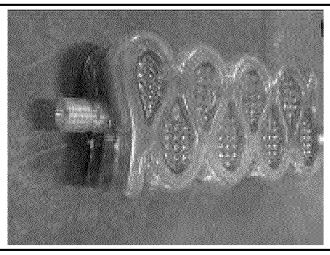
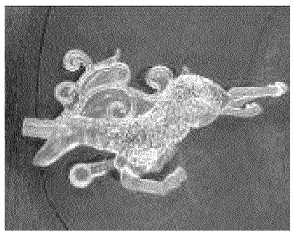
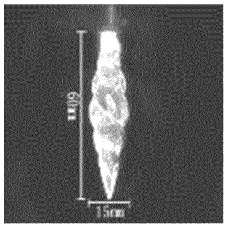
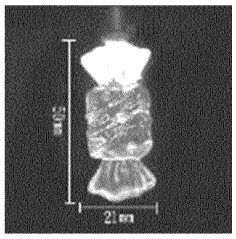
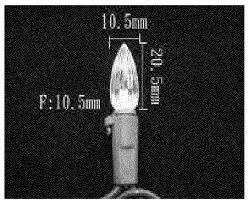
Decorative Cover Cat. No.	Picture
SH-115	
SH-117	
SH-124	
SH-127	
SH-130	
SH-135	

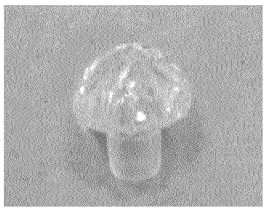
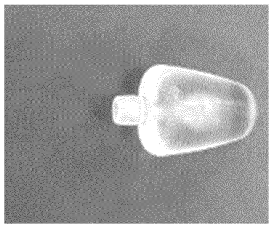
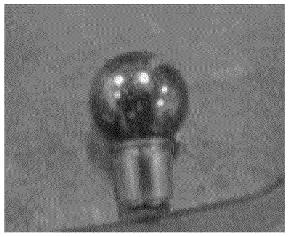
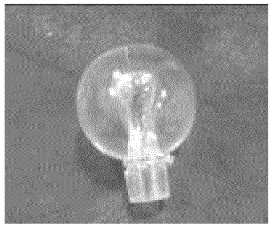
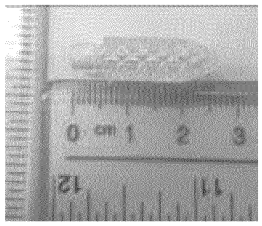
Decorative Cover Cat. No.	Picture
SH-137	
SH-138	
SH-140	
SH-141	
SH-143	
SH-144	

Decorative Cover Cat. No.	Picture
SH-146	
SH-157	
SH-158	
SH-163	
SH-173	
SH-174	

Decorative Cover Cat. No.	Picture
SH-176	
SH-184	
SH-185	
SH-188	
SH-191	
SH-192	

Decorative Cover Cat. No.	Picture
SH-193	
SH-200	
SH-204	
SH-237	
SH-204+SH-237	
SH-207	

Decorative Cover Cat. No.	Picture
SH-235	
SH-207+SH-235	
SH-212	
SH-234	
SH-236	
SH-241	

Decorative Cover Cat. No.	Picture
SH-248	
SH-249	
SH-275	
SH-276	
SH-278	
SH-316	

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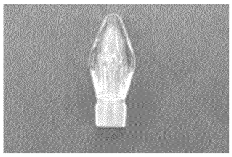
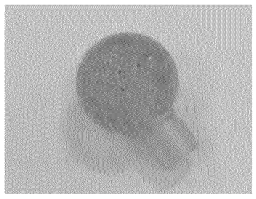
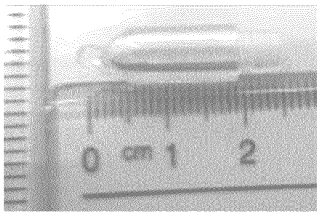
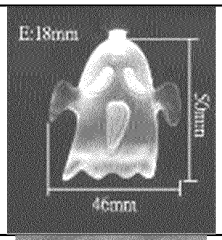
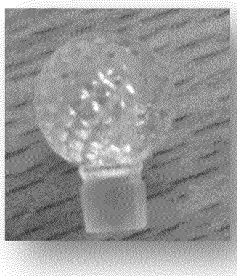
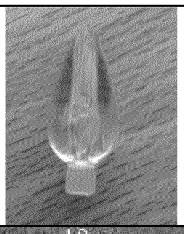
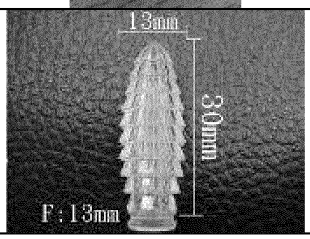
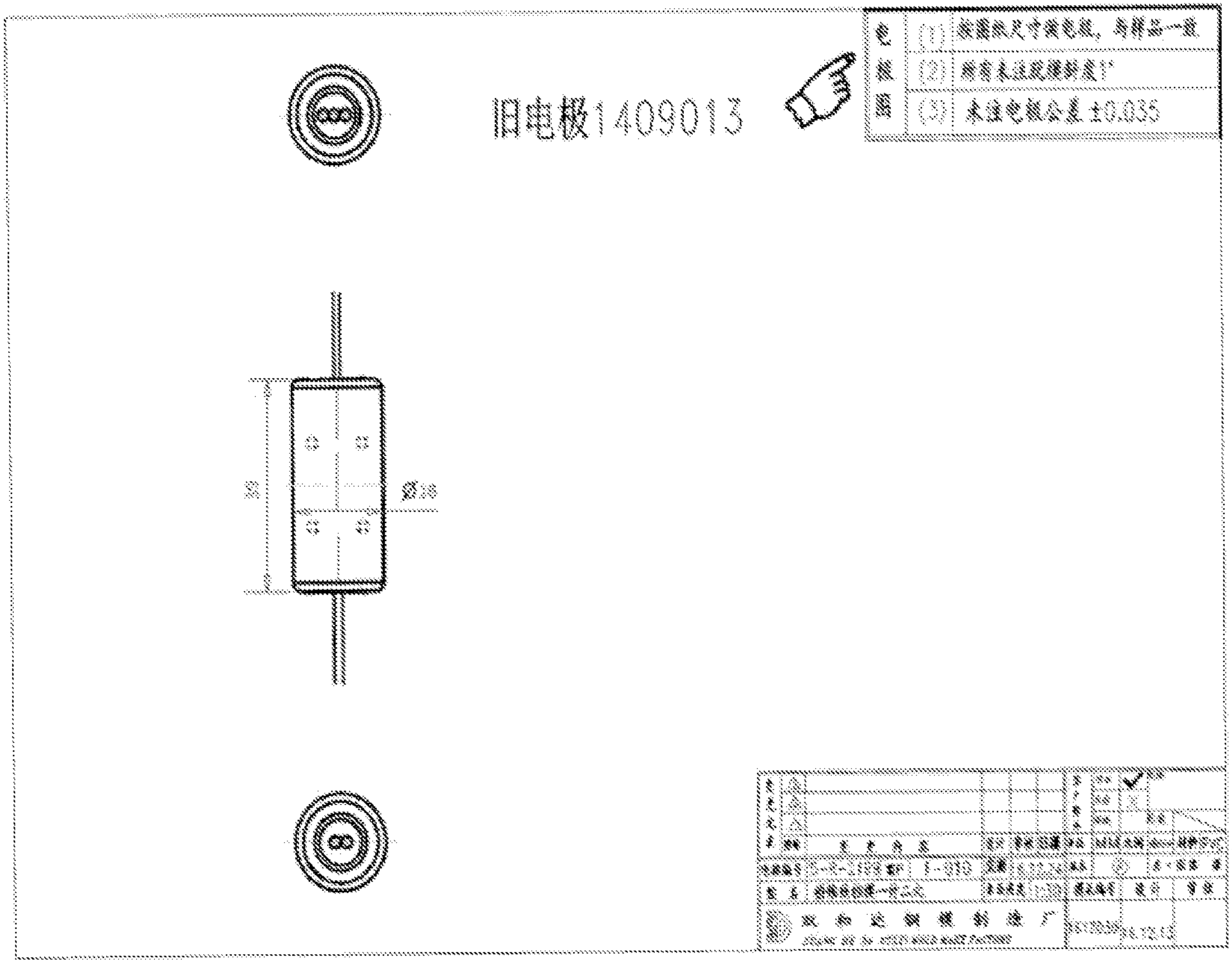
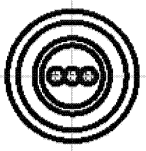
Decorative Cover Cat. No.	Picture
SH-317	
SH-320	
SH-329	
SH-274	
SH-147	
SH-078	

Illustration-26 Page-12

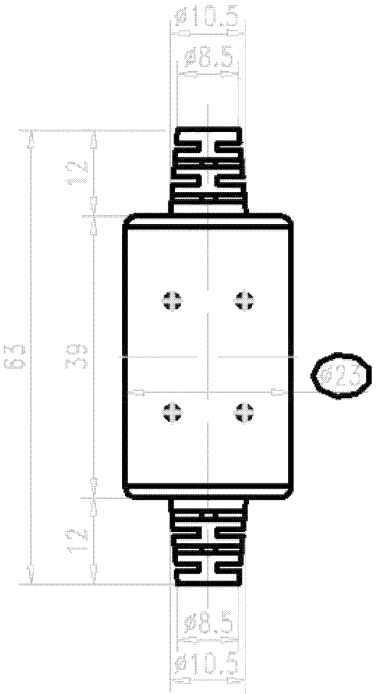
Decorative Cover Cat. No.	Picture
SH-094	
SH-100	
SH-293	

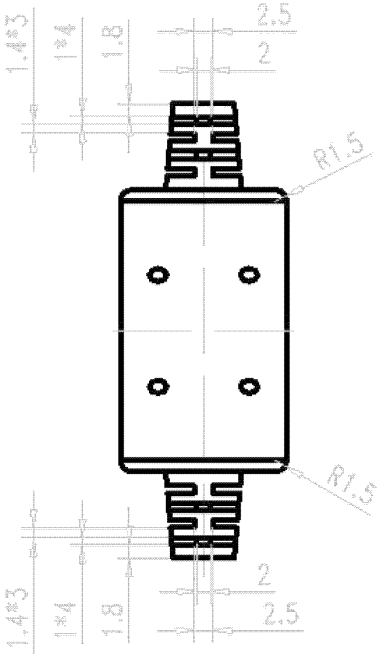

旧电极1409013
(3) 未注电极公差 ±0.035

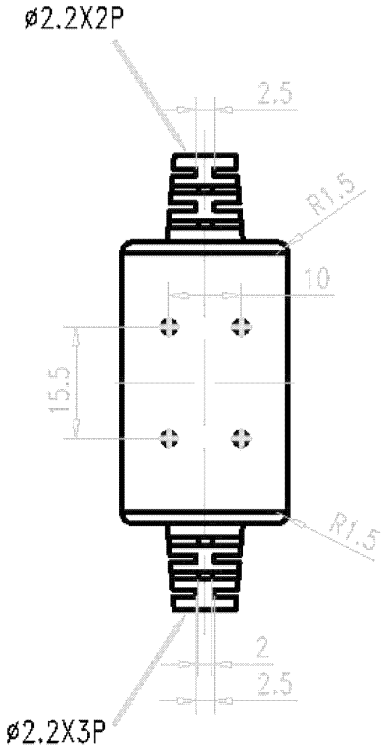


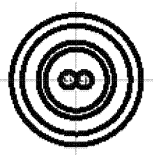
旧电极1409013

电极图		
	(1)	按图纸尺寸做电极，与样品一致
	(2)	所有未注脱模斜度1°
	(3)	未注电极公差 ±0.035









按图纸做电极

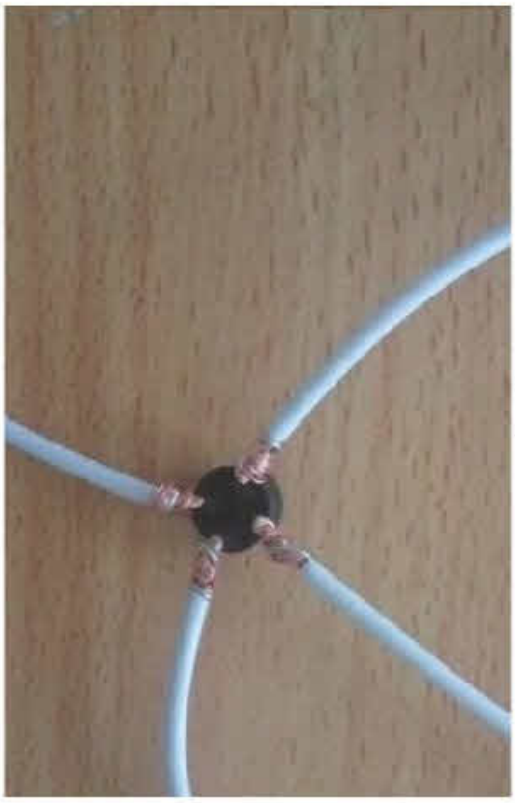
主体加大

2017.6.1

变更记录	序号	变更内容	设计	审核	日期
	△				
	△				
	△				

客户附件				
样品	✓	模材		
五金	X			
料线		其他		

电极编号	S-R-2199	客户	F-010	交期	16.12.24	单位	MM	比例		材料	PVC
图名	桥绑线档模一付二穴			表面光度	1:30	版本	Ⓐ	共 * 张第 张			
双和达钢模制造厂 SUANG HE DA STEEL MOLD MAKE FACTORY						模具编号	1612030	设计	16.12.13	审核	



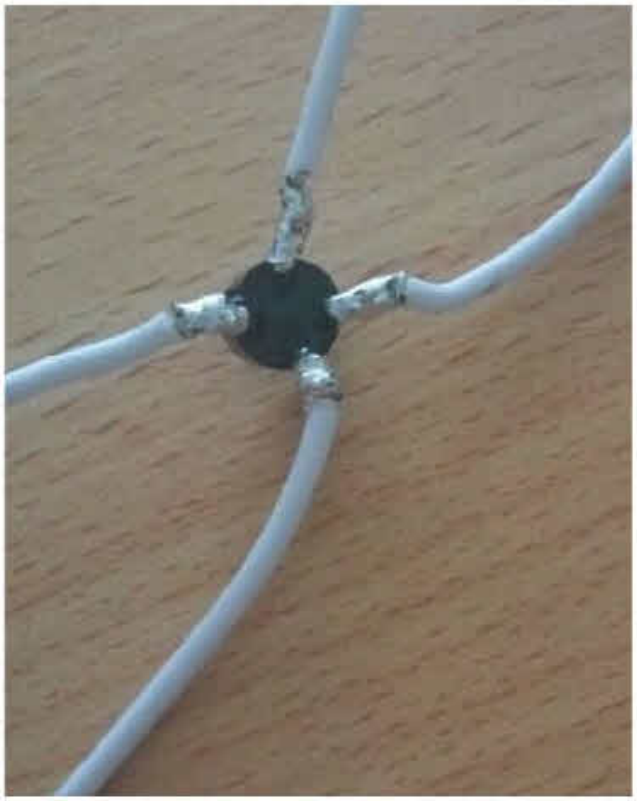
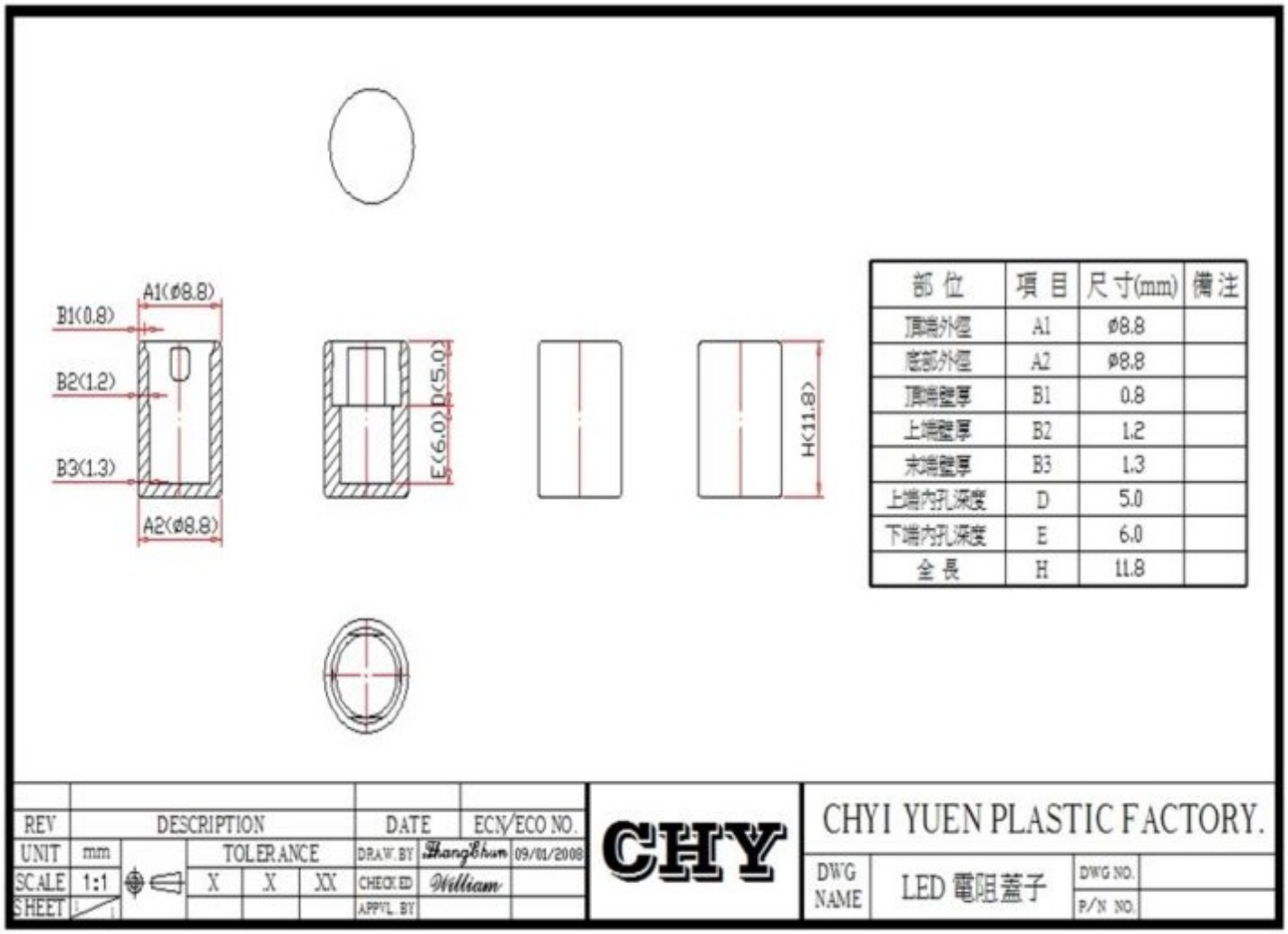


Illustration-30 Page-1



部 位	項 目	尺寸(mm)	備注
頂端外徑	A1	ø8.8	
底部外徑	A2	ø8.8	
頂端壁厚	B1	0.8	
上端壁厚	B2	1.2	
末端壁厚	B3	1.3	
上端內孔深度	D	5.0	
下端內孔深度	E	6.0	
全 長	H	11.8	

REV	DESCRIPTION				DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE			DRAW BY ZhangShun	09/01/2008
SCALE	1:1	X	X	XX	CHECKED William	
SHEET					APPVL BY	

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	LED 電阻蓋子	DWG NO.	
		P/N NO.	

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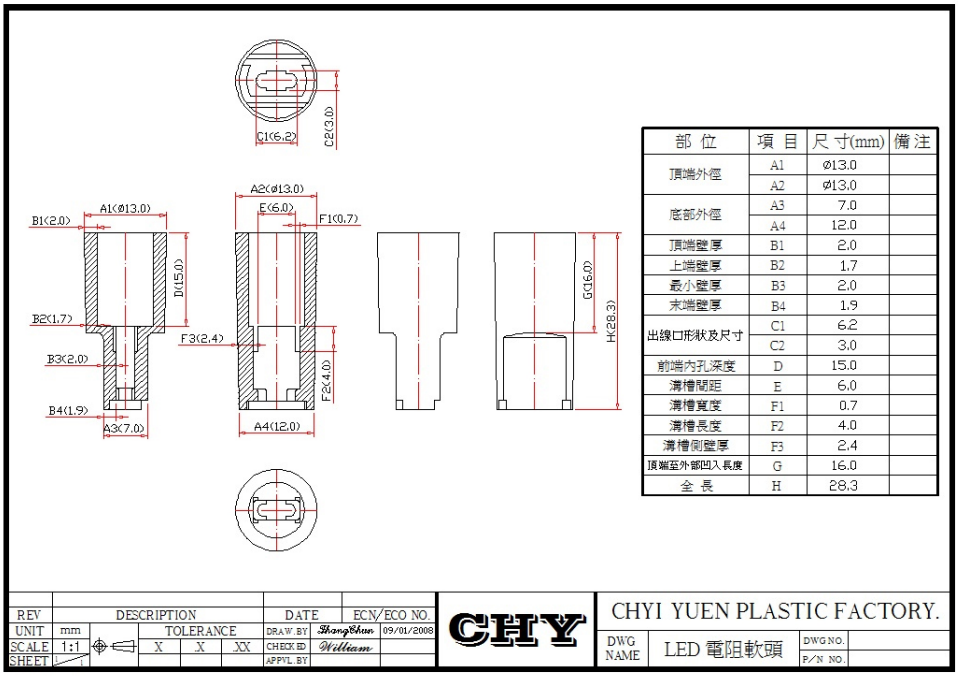


部 位	項 目	尺寸(mm)	備注
頂端外徑	A1	ø13.0	
	A2	ø13.0	
底部外徑	A3	7.0	
	A4	12.0	
頂端壁厚	B1	2.0	
上端壁厚	B2	1.7	
最小壁厚	B3	2.0	
末端壁厚	B4	1.9	
出線口形狀及尺寸	C1	6.2	
	C2	3.0	
前端內孔深度	D	15.0	
溝槽間距	E	6.0	
溝槽寬度	F1	0.7	
溝槽長度	F2	4.0	
溝槽側壁厚	F3	2.4	
頂端至外部凹入長度	G	16.0	
全 長	H	28.3	

REV	DESCRIPTION	DATE	ECN/ECO NO.
UNIT	mm	DRAW. BY	09/01/2008
SCALE	1:1	CHECK ED	
SHEET	1 / 1	APPVL. BY	

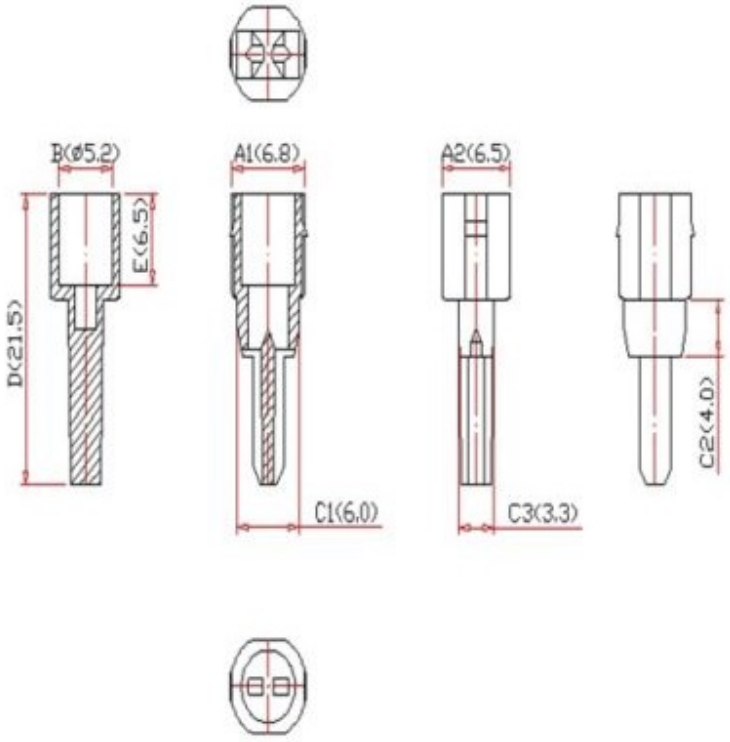
TOLERANCE: X ± X, XX

CHY

CHYI YUEN PLASTIC FACTORY.

DWG NAME	LED 電阻軟頭	DWG NO.	
		P/N NO.	

Illustration-32 Page-1



部位	項目	尺寸(mm)	備注
外徑	A1	6.8	
	A2	6.5	
內徑	B	ø5.2	
與軟膠接觸面詳細尺寸	C1	6.0	
接觸面長	C2	4.0	
接觸面厚	C3	3.3	
全長	D	21.5	
電阻插入長度	E	6.5	

REV	DESCRIPTION			DATE	ECN/ECO NO.
UNIT	mm	TOLERANCE		DRAW. BY	09/01/2008
SCALE	1:1	X	.X .XX	CHECKED	
SHEET				APPVL. BY	

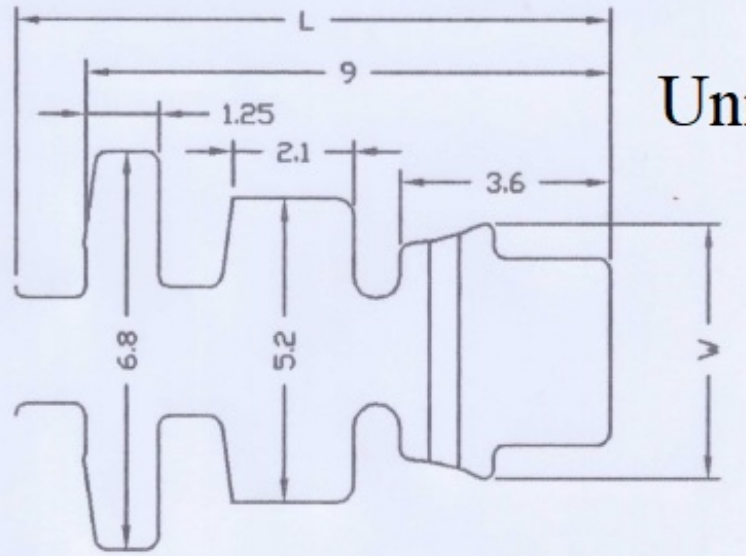
CHY

CHYI YUEN PLASTIC FACTORY.

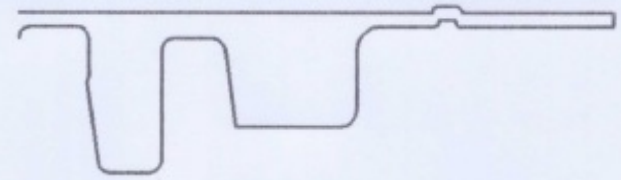
DWG NAME	LED 電阻軟芯	DWG NO.	
		P/N NO.	

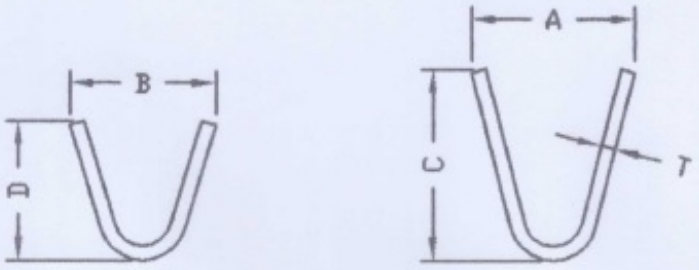
产品检验图

产品名称	24#双线4.3高脚				产品编号	B-112		
	A	B	C	D	W	T	L	
尺寸	2.80	2.50	3.0	2.30	4.3	0.20	9.6	
公差	±0.20	±0.20	±0.20	±0.20	±0.04	±0.02	±0.05	



Unit: mm





注：未标示公差为0.05mm

TEST RECORD NO. 1

The products indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Decorative Lighting Strings, Models LEHD Series.

The Models LEHD-10/1 (Blue), LEHD-10/1 (Red), LEHD-50/1 (Blue), LEHD-50/1 (Red), LEHD-20/1, LEHDSH-124-10/1 (Blue), LEHDSH-124-10/1 (Red), LEHDSH-124-50/1 (Blue), LEHDSH-124-50/1 (Red) and 2-wire/3-wire lampholder assemblies were used for investigation purposes and were considered representative of the entire series.

The following tests were conducted:

TEST	STANDARD	CLAUSE
Leakage Current Test	UL 588	40
Leakage Current Following Humidity Conditioning Test	UL 588	41
Input Test	UL 588	42
Temperature Test	UL 588	43
Dielectric Voltage-Withstand Test	UL 588	45
Downward Burning Rate Test	UL 588	50
Oven Test	UL 588	78
Lead Pull Test	UL 588	79.1
Secureness Of Leads Test	UL 588	79.2
Secureness Of Lampholder Contacts Test	UL 588	80
Lampholder Millivolt Drop Test	UL 588	81
Crush Test	UL 588	83
Rain Test for Series-Connected Lighting Strings	UL 588	90
Flexing Test	UL 588	95
Temperature Test After Flexing	UL 588	97
Flammability of Small Components	UL 588	22.2.1.1.1
	UL 1694	6

Additional tests were not considered necessary due to tests conducted in test record referenced below.

The following tests were waived:

TEST	Rationale for Waived Test (see below)	File Reference	Report Date	Test Record No.
Fuseholder Temperature Test	1	E465949	2014-05-23	1
Reliability of Conductor Connections Test				
Security of Insulation Test				
Strain Relief Test				
Identification Test consisting of IR, TGA and DSC; SPS (Guangzhou) Ltd., Cat. No. 5508(f1)	2			

1. Employed with same current tap Cat. No. TS 22 and cord connector Cat. No. TS 23 as existed Models LEH series covered in the report date May 23, 2014.
2. Employed with same plastic material as existed Models LEH series covered in the report date May 23, 2014.

A copy of the original test data is available as a Supplement to this Test Record.

Test results relate only to the items tested.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Revision Date
UL 588	Seasonal and Holiday Decorative Products	19th	2015-10-26

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

TEST RECORD NO. 2

The products indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Decorative Lighting Strings, Models LEHD Series employed with 1) alternate flasher control Cat. No. GT-P2, manufactured by Grandlite Co., Ltd.; 2)In-line rectifier assembly.

The Models LEHDZ-10/1, LEHDK-40/4 and in-line rectifier assemblies were used for investigation purposes and were considered representative of the entire series.

The following tests were conducted:

TEST	STANDARD	CLAUSE
Leakage Current Test	UL 588	40
Leakage Current Following Humidity Conditioning Test	UL 588	41
Input Test	UL 588	42
Temperature Test	UL 588	43
Dielectric Voltage-Withstand Test	UL 588	45
Strain Relief Test	UL 588	46
Wire Push-Back Relief Test	UL 588	47
Abnormal Operation Test - Component Fault	UL 588	48
Enclosure Mold Stress Relief Test	UL 588	58
Drop Test	UL 588	59
Impact Test	UL 588	60
Cold Impact Test	UL 588	61
Resistance to Crushing Test	UL 588	62
Rain Test	UL 588	89
Leakage Current Test after Rain Test	UL 588	40
Dielectric Voltage-Withstand Test after Rain Test	UL 588	45
Standing Water Immersion Test	UL 588	91
Flexing Test	UL 588	95
Temperature Test After Flexing	UL 588	97

Test results relate only to the items tested.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Standard	Title	Edition	Revision Date
UL 588	Seasonal and Holiday Decorative Products	19th	Oct. 26, 2015

Test Record by:

CLAIRE ZHENG
Engineer

Reviewed by:

NANCY CHUANG
Senior Project Engineer

TEST RECORD NO. 3

The products indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Decorative Lighting Strings, Models LEHR Series employing current tap, Cat. No. TS-28-2.

Models LEHR-10/1, LEHR-60/6, LEHR-35/1, LEHR-210/6 and samples of current tap, Cat. No. TS-28-2, were used for investigation purposes and were considered representative of the entire LEHR series.

The following tests were conducted:

TEST	STANDARD	CLAUSE
Input Test	UL 588	42
Fuseholder Temperature Test	UL 588	67
Reliability of Conductor Connections Test	UL 588	71
Security of Insulation Test	UL 588	72
Strain Relief Test	UL 588	75

Test results relate only to the items tested.

Additional tests were not considered necessary due to tests conducted in this Report.

The test methods and results of the above tests have been reviewed and found in accordance with the requirements the Standard(s) noted below.

Standard	Title	Edition	Issue or Revision Date
UL 588	Seasonal and Holiday Decorative Products	19	2018-11-27

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:

Jeff Lutke
Principal Engineer

Reviewed by:

Keith Milau
Senior Project Engineer

TEST RECORD NO. 4

The products indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Decorative Lighting Strings, Models LEHR Series employing current tap, Cat. No. TS-28-2 with twinkle lamp.

Models LEHR-10/1, LEHR-50/1 were used for investigation purposes and were considered representative of the entire LEHR series.

The following tests were conducted:

TEST	STANDARD	CLAUSE
Input Test	UL 588	42
Temperature Test	UL 588	43

Test results relate only to the items tested.

Additional tests were not considered necessary due to tests conducted in this Report.

The test methods and results of the above tests have been reviewed and found in accordance with the requirements the Standard(s) noted below.

Standard	Title	Edition	Issue or Revision Date
UL 588	Seasonal and Holiday Decorative Products	19	2018-11-27

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:

Ali Abbasi
Associate Project Engineer

Reviewed by:

Bruni Hung
Associate Project Engineer

TEST RECORD NO. 5

The products indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Decorative Lighting Strings, Models LEHD series add lamp numbers to 55 in single circuit and employed with 2-wire resistor lampholder.

Models LEHD-10/1,(red), LEHD-10/1,(blue), LEHD-55/1,(red), LEHD-45/1,(blue), LEHD-25/1,(blue), LEHDSH-124-10/1,(red), LEHDSH-124-10/1,(blue), LEHDSH-124-55/1,(red), LEHDSH-124-45/1,(blue), LEHDSH-124-25/1,(blue), 2-wire resistor Lampholder assembly were used for investigation purposes and were considered representative of the entire series.

The following tests were conducted:

TEST	STANDARD	CLAUSE
Leakage Current Test	UL 588	40
Leakage Current Following Humidity Conditioning Test	UL 588	41
Input Test	UL 588	42
Temperature Test	UL 588	43
Dielectric Voltage-Withstand Test	UL 588	45
Oven Test	UL 588	78
Lead Pull Test	UL 588	79.1
Secureness Of Leads Test	UL 588	79.2
Secureness Of Lampholder Contacts Test	UL 588	80
Crush Test	UL 588	83
Rain Test for Series-Connected Lighting Strings	UL 588	90
Flexing Test	UL 588	95
Temperature Test After Flexing	UL 588	97
Flammability of Small Components	UL 588	22.2.1.1.1
	UL 1694	6

Test results relate only to the items tested.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition	Revision Date
UL 588	Seasonal and Holiday Decorative Products	19th	2021-02-08

Test Record by:

ROBERT KUO
Engineer

Reviewed by:

BRUNI HUNG
Associate Project Engineer

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the category and the products are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the samples investigated by UL and does not signify UL certification or that the products described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Listing Mark on such products which comply with UL's Follow-Up Service Procedure and any other application requirements of UL LLC. The Listing Mark of UL LLC on the product, or the UL symbol on the product and the Listing Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

Report by:	Reviewed by:
BRUNI HUNG	NANCY CHUANG
Engineer	Project Engineer