



File MH48334

Vol 1

Auth. Page 1

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FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

COMPONENT - BATTERIES, STANDBY
(BAZR2)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

2547210 (Party Site)
Applicant: SHANGHAI XINLEINA BABY CARS
(100557-030) ACCESSORIES CO LTD
1090 1 LIUQIAO VILLAGE
LV XIANG TOWN
201517 SHANGHAI CHINA

2547210 (Party Site)
Recognized Company: SAME AS APPLICANT
(100557-030)

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 and any applicable Service Terms. 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> and in the document titled "UL and Subscriber Responsibilities" that can be located at the following website: <http://www.ul.com/responsibilities>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the applicable Service Terms, please contact UL's Customer Service at <http://www.ul.com/global/eng/pages/corporate/contactus>, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Recognized Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable agreement is a Global Services Agreement ("GSA") with an effective date of January 1, 2012 or later and this Follow-Up Service Procedure is issued on or after that effective date, the Applicant, the specified Manufacturer(s) and any Recognized Company 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://www.ul.com/contracts/Terms-After-12-31-2011>. 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 Recognized Company 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.

William R. Carney
Director
North American Certification Program

LOCATION

(100557-030) 2547210 (Party Site)
SHANGHAI XINLEINA BABY CARS
ACCESSORIES CO LTD
1090 1 LIUQIAO VILLAGE
LV XIANG TOWN
201517 SHANGHAI CHINA

Factory ID:

UL Contracting Party for above site is: UL AG

Recognized Component Marking Data Page (RCMDP)

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

RECOGNIZED COMPONENT MARKING

Products Recognized under UL's Component Recognition Service are identified by marking elements consisting of:

1. The Recognized Company's identification specified in this document.
2. A catalog, model or other applicable product designation specified in the descriptive sections of this document.
3. The UL Recognized Component Mark shown below is optional unless required elsewhere in the Procedure.

Only those components, which actually bear the Marking, should be considered as being covered under the Recognition Program. The UL Listing or Classification Mark is not authorized for use on or in connection with Recognized Components.

Recognized Component Mark



Minimum size of the Recognized Component Mark is not specified as long as it is legible. Minimum height of the registered symbol ® shall be 3/64 inch but may be omitted if it is out of proportion to the Recognized Component Mark or not legible to the naked eye.

The manufacturer may reproduce the Mark electronically. Any decision regarding the acceptability of the manufacturer's Mark reproduction will be made at the Reviewing Office.

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Product / Model Numbers	Section	Requirements Evaluated to (USR and/or CNR)
Sealed cell, rechargeable Lead-Acid Batteries, Models 3-FM-4, 3-FM-7, 6-FM-10, 3-FM-4.5, 3-FM-10, 6-FM-7, 2- FM-4, 3-FM-5, 6-FM-4.5, 6-FM-12, 6-FM-15, 6-FM-20, 6- FM-24, 12-FM-5, 12-FM-5-1, 12-FM-7, 12-FM-7-1, 12-FM- 10, 12-FM-12, 6-DZM-12, 6-DZM-20, 6-DZM-42, 6-QA-4.	1	USR

ISSUED: 2016-05-02

STANDARDIZED APPENDIX PAGES
Subject 1989

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COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

STANDARDIZED APPENDIX PAGES

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COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

APPENDIX A - FIELD REPRESENTATIVE'S RESPONSIBILITIES AND CONSTRUCTION
CONSIDERATIONS

GENERAL

The Field Representative'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 Representative.

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, which can be found at www.ul.com/fus.

CONSTRUCTION CONSIDERATIONS

The Field Representative is required to examine production bearing, or intended to bear, the UL Mark or Markings, to determine compliance with each of the construction requirements referenced in the "Construction Considerations" section of Appendix D.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

APPENDIX B - INSTRUCTIONS FOR FIELD REPRESENTATIVE'S SAMPLE SELECTION

GENERAL

Referring to Sp. App. B, Table B. Within each calendar year and for each sample group, select either the number of battery models or vent assembly indicated in the No. Per Group Per Year (#/Group/Year) column, or the number in that group which are available during inspection visits, whichever is lesser. The #/Group/Year applies to both the quarterly and annual test programs where applicable.

Unless specifically requested, a battery model or specific vent assembly for the vent test models shall only be selected once each year.

If it is not possible to select the required number of battery models or vent assemblies for a given calendar year due to production schedules, continue with the sample selection per Sp. App. B, Table B when inspection visits resume the following year. Do not select multiple samples of the same model or vent assembly to fulfill the #/Group/Year requirement.

SAMPLES FOR THE TESTING OFFICE

The Field Representative is responsible for selecting the appropriate battery models or vent assembly for Follow-Up testing as indicated above. For each battery model or vent assembly selected, the sample requirements and FUS Test Program are indicated in code, in the Test Program Code columns in Table B of Sp. App. B. Specific details regarding the Test Program Codes are contained in Table A below, including quantity of samples, frequency of test, and the required test program.

TABLE A - TEST PROGRAM CODES

Test Program Code	Tests Required	Test Frequency	Samples Required
A	Pressure Release Test	Quarterly	1 complete sample
B	Vent Tests, consisting of: <ul style="list-style-type: none"> • Back Pressure Test • Sustained Burning Test • Flame Propagation Test 	Quarterly	1 sample of vent assembly (thread-in type), or 1 sample of the vent and battery cover assembly (built-in type). The sample should consist of the particular flame arrester design being tested
C	Capacity Rating Tests	Annually	2 complete samples

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

Samples shall be identified and tagged with the applicable information using a Sample Tag (Form 3000-217). For battery models where no charge voltage and current were specified in Table B of Sp. App. B, the Field Representative shall obtain this information from the manufacturer and mark them onto the Sample Tag. Unless otherwise stated, the Field Representative shall inform the manufacturer that the samples are to be forwarded to the Test Office(s) as designated on the specific Service Profile.

If prior arrangement and authorization from UL is made, the Pressure Release test may be conducted at the factory and witnessed by a qualified UL Representative. If the tests are to be performed at the factory, the samples shall be retained there and marked to be opened by a UL Representative. The qualified UL Representative shall follow the instructions as provided by UL engineering staff, and records of data showing results of the witnessed testing shall be forwarded by the UL Representative to the UL's Engineering Office.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

APPENDIX C - INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

GENERAL

The samples forwarded to UL (or retained at the factory for test witnessing by a qualified UL Representative for the Pressure Release Test) in accordance with Appendix B shall be subjected to the tests as indicated through the Test Program Code in Table B of Special Appendix B. Tests are to be conducted in accordance with the current edition for Standby Batteries, UL 1989.

When the tests are performed at the factory, the qualified UL Representative shall follow the instructions as provided by UL engineering staff.

PRESSURE RELEASE TEST:

GENERAL

When conducting the pressure release test, the test area is to be provided with shielding to protect the technician from projectiles or electrolyte splatter should the battery valve fail and the battery casing disassembles, and the test fixture container holding the battery during testing shall be sufficient for capture of any of the acid electrolyte that may escape should cracks in the battery enclosure develop as a result of the test.

METHOD

One sample is to be completely submerged in a container of mineral oil. The battery is to be subjected to a charging current at an increased rate specified by the manufacturer, which could either be found on the Sample Tag or in Table B of Sp. App. B, until bubbles are observed to rise from battery vent openings. Shielding shall be provided between the bath and operator for protection against explosion and acid spray.

ALTERNATE METHOD

A cylinder is to be secured to each battery vent making a leakproof seal at the point of attachment. Each cylinder is to be partially filled with mineral oil and the battery subjected to an increasing charging rate until bubbles are observed rising from each vent.

BASIS OF ACCEPTABILITY

The battery gas shall release normally and the battery case or cover shall not crack or rupture.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

VENT TESTS:

GENERAL

One sample is to be conditioned and then subjected to the three vent tests in the order indicated below.

CONDITIONING

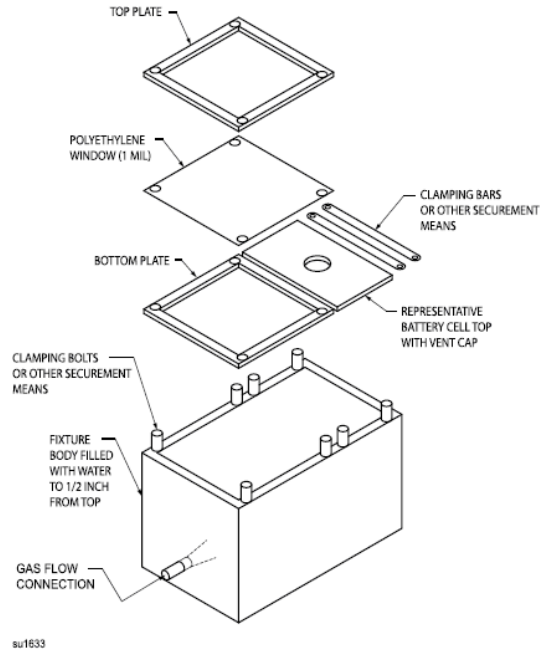
Prior to testing, the samples are to be conditioned for 168 h at 70°C (158°F) in an air-circulating oven

VENT TEST EQUIPMENT

The test apparatus for the vent tests shall consist of the following:

- a) a heavy wall Plexiglas hydrogen test fixture as shown in Fig. 7.2 of UL 1989
- b) Equipment capable of supplying, monitoring and mixing hydrogen and oxygen in stoichiometric proportions
- c) A spark ignition source produced across a 6.4 mm (1/4 inch) gap in the 10 kV, 23 mA secondary of a transformer
- d) A test enclosure cover as shown in Fig. 7.3 of UL 1989

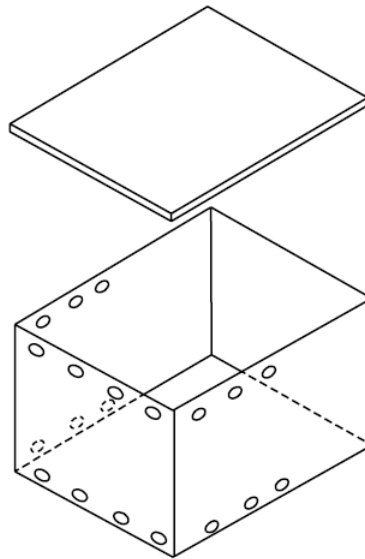
**Figure 7.2
Hydrogen test fixture**



COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

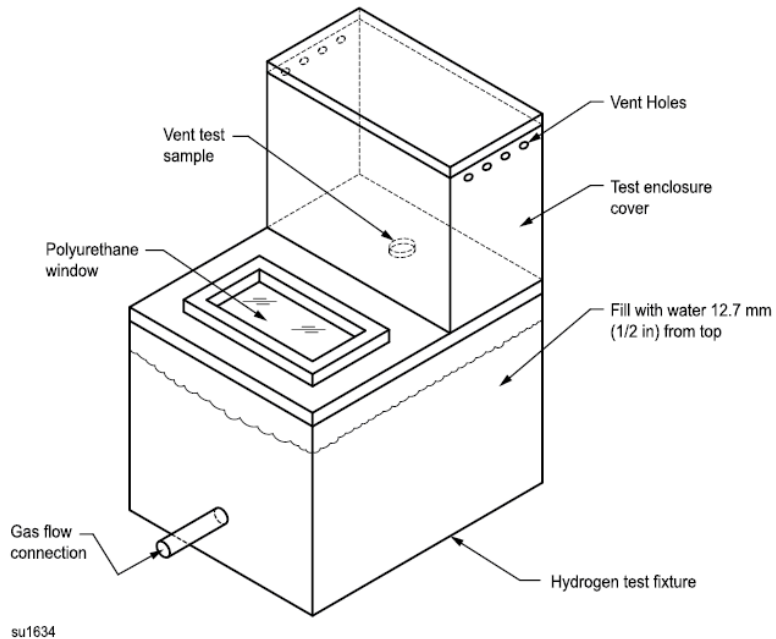
**Figure 7.3
Test enclosure cover**

Clear plastic with ventilation openings shown (1 in² opening area/500 in³ volume)



SB1758

Figure 7.4
Hydrogen test fixture with test enclosure cover assembled



APPENDIX C

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COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

BACK PRESSURE TEST

METHOD

Air shall be vented through the vent at a rate equal in cubic centimeters per minute (cm^3/min) to the Ah capacity of the battery divided by 13.5.

BASIS OF ACCEPTABILITY

The back pressure obtained shall be less than or equal to 15 millimeters of water (mmH_2O).

SUSTAINED BURNING TEST

METHOD

One sample of the hydrogen test fixture with vent sample attached shall be filled with water to 12.7 mm (0.5 inch) from the top. The assembly shall be located inside the test enclosure described in Fig. 7.3 of UL 1989 without the test enclosure cover in place.

The hydrogen test fixture is to be located in a protective room or test chamber as considered necessary for safety purposes.

STANDARDIZED APPENDIX PAGE (SAP)

A mixture of hydrogen and oxygen gas shall be caused to flow through the fixture and vent cap and is to be adjusted to the appropriate maximum value as indicated in Table 7.1 of UL 1989 (see below for an excerpt). Six attempts shall be made to ignite the gas mixture venting from the vent cap using the spark ignition source.

Sustained burning is to be determined by using paper as an indicator. (Note: hydrogen gas can burn without visible flame.)

Gas flow rated for battery vent caps (from Table 7.1 of UL 1989)

Battery Capacity	Flow Rate For hydrogen and oxygen, cc/min							
	Flow Rate Number 1		Flow Rate Number 2		Flow Rate Number 3		Flow Rate Number 4	
	H ₂	O ₂	H ₂	O ₂	H ₂	O ₂	H ₂	O ₂
50	27	14	21	10.5	14	7	7	3.5
100	56	28	49	24.5	28	14	14	7
150	84	42	49	24.5	28	14	14	7
200	112	56	105	52.5	49	24.5	21	10.5
C ^a	C/1.8	C/3.6	C/2.5	C/5.0	C/5.0	C/10	C/10	C/20

^a C is the capacity of the battery in amp-hour (use this row if C > 200)

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

SUSTAINED BURNING TEST (CONT'D)

BASIS OF ACCEPTABILITY

There shall be no sustained burning of vented gas that resulted in impairment to the vent assembly.

FLAME PROPAGATION TEST

METHOD

After the sustained burning test, the test enclosure cover shown in Fig. 7.3 of UL 1989 is to be installed on the assembly as shown in Figure 7.4. A mixture of hydrogen and oxygen gas as outlined in Table 7.1 of UL 1989 (see the Sustained Burning Test above for an excerpt) is allowed to flow into the test fixture.

Six attempts are to be made to ignite the gas venting from the cap, approximately 12.7 mm (1/2 inch) from the vent opening, using a spark ignition source located in the path of the gas flow. There shall be a 10 second interval between each ignition attempt.

The flame propagation test is to be repeated at each of the appropriate gas mixture flow rates as indicated in Table 7.1.

BASIS OF ACCEPTABILITY

There shall be no evidence of flame propagation through the vent cap to within the fixture as determined by rupture of the 0.025 mm (1 mil) polyethylene-film window in the top of the hydrogen test fixture shown in Figure 7.4.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

CAPACITY RATING TESTS:

GENERAL

If required, the battery ratings, charging method, charging voltage and discharge current shall be as specified in the Section General.

CONDITIONING OF SAMPLES

The batteries are to be subjected to conditioning prior to testing per the manufacturer's specification. The conditioning period is not to exceed 168 hours and is not to recharge the battery in excess of the manufacturer's recommended minimum or maximum rates. The conditioning of samples is as shown in the Section General, where the battery temperature rating, the Condition A temperature and Condition B temperature are specified.

Batteries rated for room ambient temperatures ($25 \pm 5^{\circ}\text{C}$ ($77 \pm 9^{\circ}\text{F}$)) are to be tested at $25 \pm 5^{\circ}\text{C}$ ($77 \pm 9^{\circ}\text{F}$) for all of the capacity testing.

Batteries intended to operate at temperatures other than room ambient are to be subjected to capacity testing after 24 hours of condition A and after 24 hours of condition B while maintained at the specified condition. The test temperatures for Conditions A and B are not to vary from the specified value by more than $\pm 2^{\circ}\text{C}$ ($\pm 3.6^{\circ}\text{F}$)

METHOD A - CONTROLLED CURRENT CHARGE TEST

The required test sequence from the Charge/Discharge Test Table is: I, II, III, IV, I, V, I, II.

The specified test sequence is repeated to collect data at the maximum and minimum manufacturer-specified battery charger voltages or currents or both.

METHOD B - CONTROLLED VOLTAGE CHARGE TEST

The required test sequence from the Charge/Discharge Test Table is: VI, II, VII, IV, VI, V, VI, II.

The specified test sequence is repeated to collect data at the maximum and minimum manufacturer-specified battery charger voltages or currents or both.

METHOD C - COMBINED CONTROLLED CURRENT CHARGE AND CONTROLLED VOLTAGE CHARGE TEST

The required test sequence from the Charge/Discharge Test Table is: I, II, III, IV, VII, IV, VI, V.

The specified test sequence is repeated to collect data at the maximum and minimum manufacturer-specified battery charger voltages or currents or both.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

TABLE
CHARGE/DISCHARGE TESTS

Test	Test Mode	Duration of Test (hour)	Load Current	Measurements to be taken ^d
I	Charge @ I (controlled current) ^c	168 ^a	--	I_1, T_c, V_1
II	Discharge (constant current)	1-1/2	I_2	I_2, T_d, V_2
III	Charge @ I (controlled current) ^c	24 ^b	- -	I_c, I_1, T_c, V_c, V_1
IV	Discharge (constant current)	1	I_2	I_2, T_d, V_2
V	Discharge (constant current)	24 ^c	I_2	I_2, T_d
VI	Charge @ V (controlled voltage) ^c	168 ^a	--	I_1, T_c, V_1
VII	Charge @ V (controlled voltage)	24 ^b	--	I_1, T_c, V_1

^a The charge period may be less than 168 hours if requested by the manufacturer.

^b The charge period may be less than 24 hours if requested by the manufacturer.

^c The 24-hour discharge period may be reduced if a sensing circuit is provided that disconnects the battery in a shorter time. The discharge period may be no less than 1-1/2 hours in any case.

^d The measurements symbolized are:

I_c - Specified charge current range (maximum and minimum).

I_1 - Battery charger current during battery charge cycle.

I_2 - Battery current rating.

T_c - Temperature on battery case during charge cycle.

T_d - Temperature on battery case during discharge cycle.

V_c - Specified charger voltage range (maximum and minimum).

V_1 - Battery terminal voltage during charge cycle.

V_2 - Closed circuit voltage at battery terminals at end of discharge cycle.

BASIS OF ACCEPTABILITY

The final open circuit battery voltage shall be greater than 87.5% of the nominal battery voltage as specified in Table B of Sp. App. B.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

APPENDIX D - MANUFACTURER'S RESPONSIBILITIES AND CONSTRUCTION CONSIDERATIONS

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.

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 Representative.

MANUFACTURER'S RESPONSIBILITIES

Use of Non-Specified UL Recognized Plastic Materials - When the Procedure specify a generic Recognized plastic material rating, such as a minimum flammability rating, without providing a manufacturer name and type designation, the Recognized plastic material used shall meet the minimum rating as specified.

Before a non-specified UL Recognized plastic material can be used, the UL on-line Certification Directory, the Plastics IQ database, or a copy of the Plastic Material Company's Recognition Report shall be checked to verify that the plastic material has a flammability rating as specified at the thickness specified.

NOTE: The above does not apply to materials for which the specific manufacturer and type designation of the plastic is described in the Procedure.

The Component Recognition Report may be used only if it is issued after the latest publication as shown in the Online Certification Directory. The Online Certification Directory should be checked to verify that all vendors still have UL Recognition.

In all cases where the information is not available in the UL on-line Certification Directory, it is the manufacturer's responsibility to provide the Field Representative with either a copy of the Plastic Material Recognition Report, or Recognition Card so that the Field Representative can determine the flammability rating of the plastic material at the thickness being used. The manufacturer will then request authorization for the continued use of the substitute material from the New Work assignment engineer.

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

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 manufacturer's responsibility to assure that production complies with these requirements.

Marking Requirements - The batteries covered under this procedure are to be provided with the following marking or instructions that include the following information:

"Warning: Risk of fire, explosion, or burns. Do not disassemble, heat above XX°C, or incinerate"

with the "XX" to be filled in with the maximum use temperature.

Instruction Requirements - The batteries covered under this procedure shall be provided with a set of instructions for the end use application that includes:

1. Installation instructions and maintenance for those batteries that are not "maintenance free" instructions for the batteries;
2. The warning statement above "Warning: Risk of fire, explosion, or burns. Do not disassemble, heat above XX°C, or incinerate." if not marked on the battery; and
3. Instructions on the appropriate rate and method of charging or the specific charging systems to be used for charging the battery.

UL 1598

LUMINAIRES

**(IEUZ, IEUZ7, IEVV, IEVV7, IEZR, IEZR7)
(IEZX, IEZX7, IEXT IEXT7, IEXZ IEXZ7, IFAH, IFAH7)
(IFAM, IFAM7, IFAO, IFAO7)**

FOLLOW-UP INSPECTION INSTRUCTIONS

FOLLOW-UP AND INSPECTION INSTRUCTIONS (FUII)
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Controlled Document: Direct Request for Revision to PDE for Category

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L1 SCOPE

L1.1 These Follow-Up Inspection Instructions (FUII's) describe the manufacturer's production program necessary to verify that luminaries intended to bear the UL Mark comply with the requirements of UL Standard 1598. Any clause, Section, Table, or Figure number referenced in this document that is not prefixed by L, refers to the requirements in the Standard for Luminaires UL 1598. Any reference to the term "Standard" also applies to UL 1598.

L1.1.2 General

L1.1.2.1 A Follow-Up Service Procedure identifying the authorized manufacturing location and product authorized to bear the UL Mark is loaned to the manufacturer. The Follow-Up Service Procedure, the Standard and the Follow-Up Inspection Instructions constitute the basis on which the product is judged for compliance.

L1.1.2.2 As a part of UL's follow-up inspection, it is required that a Field Representative periodically visit the factory and select, for test or examination or both, samples of production made since the last inspection visit of the products covered.

L1.2 Glossary

L1.2.1 For the purposes of the Follow-Up Service Inspection Instructions, the following definitions apply.

L1.2.2 FIELD REPRESENTATIVE - An authorized representative of UL who makes periodic unannounced visits to the manufacturer's facilities for purposes of conducting inspections and monitoring the manufacturer's production program.

L1.2.3 GENERAL COVERAGE LUMINAIRE - A luminaire that complies with the temperature test-exempt requirements and all construction requirements in the Standard. General coverage luminaires do not require a specific product description in the Procedure document and are evaluated at the authorized factory using the Standard as indicated in the Follow-Up Inspection Instructions.

L1.2.4 RESPONSIBLE OFFICE - Designated UL facility that has primary client interface responsibility for handling new work and FUS-related activities for a client file.

L1.2.5 INSPECTION REPORT - The report generated by the Field Representative summarizing the results of an inspection visit.

L1.2.6 LISTED PRODUCT - A product that has been determined to comply with the appropriate standards by UL and for which a Procedure authorizing use of the UL Mark on the product has been established.

L1.2.7 LISTING MARK - A distinctive registered certification mark of UL that the manufacturer is authorized to apply to Listed products as the manufacturer's declaration that the products under the program comply with the Follow-Up Service Procedure, the Standard and Follow-Up Inspection Instructions.

L1.2.8 MANUFACTURER - The authorized party who maintains and operates the facilities where a Listed product is fabricated, processed, finished, or stored; where the product is inspected and/or tested as described in this Supplement; and the Listing Mark is applied to conforming products.

L1.2.9 MANUFACTURER'S TEST PROGRAM - The factory tests that are conducted by the manufacturer on a periodic or 100 percent basis and for which the manufacturer may be required to keep records.

L1.2.10 PROCEDURE - The document issued by UL, upon determination that a product is eligible for Listing, for use by the authorized manufacturer and the Field Representative. The document contains requirements and other provisions and conditions regarding the Listed product and provides the authorization for the manufacturer to use the Listing Mark on products fulfilling these requirements.

L1.2.11 RECOGNIZED COMPONENT - A part or subassembly intended for use in other equipment and that has been investigated for certain construction or performance, or both, characteristics. A Recognized Component is incomplete in construction features or is restricted in performance capabilities so as not to warrant its acceptability as a field-installed component. It is intended solely as a factory-installed component of other equipment where its acceptability is determined by UL.

L1.2.12 TYPE TEST- Test conducted on a certain design to show that the design meets applicable requirements of the Standard.

L1.2.13 VARIATION NOTICE (VN) - A document (electronic or otherwise) used to record observed differences between a product or manufacturing process and the description of the product or process in the Procedure and/or Standard or other requirement.

L2 RESPONSIBILITY OF THE MANUFACTURER

L2.1 General

L2.1.1 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 Representative.

L2.1.2 Confine the markings referencing UL to the factory location or locations authorized in the Follow-Up Service Procedure.

L2.1.3 Determine that all test and measuring instruments required as part of the Follow-Up Services Procedure or used by UL Field Representatives in the conduct of inspection activity at the factory are calibrated in accordance with UL's published calibration requirements for manufacturers. The published document is titled, "UL Calibration Requirements: Equipment Used for UL/C-UL/ULC Mark Follow-Up Services", and is available on UL's website at the following address, "www.ul.com/fieldservices/requirements.html". Manufacturers that do not have internet access may obtain the current version from their local UL Customer Service representative in the same manner as other requests for requirements.

L2.1.4. Perform a root cause analysis of nonconforming test results reported by UL in order to determine and implement appropriate corrective actions. Upon request, the manufacturer shall submit the findings of their analysis and action plan for review and/or monitoring by UL. For those cases involving questionable test and measuring equipment, the manufacturer shall evaluate and document the effects of the equipment on previous inspections or tests. The manufacturer shall evaluate if the equipment condition could have significantly affected previous inspection or test results and take corrective action as appropriate. The equipment in question shall be removed from service by segregation or prominent labeling and marking.

L2.2 Manufacturer's Test Program

L2.2.1 Factory Type Tests

L2.2.1.1 The manufacturer shall conduct at the factory the applicable type tests shown in Table L2.2.1 for each design as required by the Standard. Each luminaire design shall be subjected to the applicable type tests a minimum of once every six months during production. The manufacturer shall maintain a record of all factory tests. Test records shall be maintained for a minimum period of six months.

L2.2.1.2 A type test conducted on one design may represent another design, provided that the construction feature tested is representative of all designs. For example: A conduit knockout and twist out test conducted on a 0.66 mm (0.026 in.) thick enclosure intended for a 1/2 inch trade size conduit may represent a test for another model with a knockout having the same metal thickness and knock out dimensions.

**Table L2.2.1
Factory Type Tests**

Test	Reference Clause UL 1598	Test Reference Clause UL 1598
Conduit knockout and twist out	5.9.1	16.13
Self-threading screw torque	5.10.2, 5.10.3	16.14
Loading	5.10.8, # 5.10.8.1, # 5.10.8.2, 5.10.12, 5.11.1, 10.2.4, 10.2.8, 10.5.2	16.15
*Snap-in or tab mounted part without conduit openings	5.10.10	16.16
*Snap-in or tab mounted part with conduit openings	5.10.10, 5.10.11	16.17
Suspended ceiling luminaires - security of clips	11.1.4	16.18
Swivel torsion and pull	5.12.2	16.20
Enclosure secured by friction	5.10.10	16.16, 16.17
Accessible lampholder lead pull test	6.13.2.5	17.4, 16.38

* Exempt from factory type test when construction is described in the Follow-Up Service Procedure.

- Clause numbers 5.10.8.1 and 5.10.8.2 have an effective date of April 17, 2014.

L2.2.2 Factory Production Line Tests

L2.2.2.1 The manufacturer shall conduct at the factory all factory production line tests shown in Table L2.2.2 as required by the Standard. Test records shall be maintained in accordance with the Standard.

**Table L2.2.2
Factory Production Line Tests**

Test	Test Reference Clause UL 1598
Dielectric voltage-withstand	18.1 ^a , 19.20
Grounding continuity	18.2, 19.19.2
Glass support	18.3
Strain relief	18.4
Polarity	18.5
Ground-screw assembly strength	18.6
^a Exception: The dielectric voltage-withstand test may be conducted with the applied DC Voltage of 1414 volts for one minute or 1697 volts for one second. The sensitivity for the trip circuit shall be maximum 141.1ma for the applied voltage.	

L2.3 "General Coverage" Luminaires Evaluated At The Factory

L2.3.1 An incandescent or fluorescent luminaire that complies with the Standard and for which none of the clauses specified in Table L2.4 are applicable is considered a "General Coverage Luminaire".

L2.3.2 General Coverage type luminaires are evaluated at the authorized factory using the requirements of the Standard for Luminaires, UL 1598. The Procedure references compliance with the Standard and does not provide a specific product description of General Coverage type luminaires.

L2.3.2.1 General Coverage type luminaires must comply with the temperature test exempt requirements of Sections 7.2 (Incandescent) or 8.5 (Fluorescent) in UL 1598 and ALL construction and test requirements NOT specified in Table L2.4.

L2.3.2.2 Luminaires with construction features that are evaluated using the Clauses specified in Table L2.4 **MUST** be submitted to the Responsible Office for evaluation.

L2.3.2.3 The minimum air space between the lamp or lampholder of a pendant mounted luminaire and the ceiling or canopy (See Clause 7.2.4 and Figure 7.2.4.1.) shall be measured with the luminaire installed as close to the ceiling surface as specified in the manufacturer's installation instructions.

L2.3.2.4 The minimum spacing specified in Figure 7.2.5.1 for surface ceiling-mounted luminaires shall be maintained by a permanent means or adjusted for the worst case before making the measurement.

L2.3.2.5 All General Coverage luminaires shall be weighed to determine compliance with Clauses 10.2.5 and 5.11 of UL 1598. A record of the luminaire's model number and weight must be maintained by the manufacturer and made available to the UL Field Representative on request during an inspection.

L2.3.3 Conductors used in Temperature test exempt luminaires shall have minimum insulation temperature rating as specified in the Standard for lamp compartment wattage in accordance with Table 7.2.2.1 of the Standard. The maximum ampacity for conductors shall not exceed values shown table L. 2.3.

TABLE L 2.3
MAXIMUM AMPACITY FOR WIRE AND CORD WITH COPPER CONDUCTORS

Types of wire and cord ^a	Ampacity				
	18 AWG	16AWG	14 AWG	12 AWG	10 AWG
S1 Equivalent mm ² sectional area	0.82	1.3	2.1	3.3	5.3
General Building Wires					
RH, RHH, RHW, RUH, RUW, T, THHN, THW, THWN, TW, XHHW	-	-	20	25	40
AIA, Al, Z	-	-	40	50	70
A, AA	-	-	45	55	75
PFHA, TFE	-	-	60	80	110
Fixture wires					
RHF-1, RHF-2, FFH-1, FFH-2, TFF, TFN TFFN, AF, CF, HF, HFF, KF-1, KFF-1, KF-2, KFF-2 PAF, PAFF, PF, PFF, PGF, PGFF, PTF, PTFF, SF-1, SF-2, SFF-1, SFF-2, ZF, ZFF, XF, XFF	6	8	17	23	28
Flexible Cords					
S, SO, S000, SJ, SJO, SJOO, ST, STOO, SJT, SJTO, SJTOO, STO, SP-1, SP-2, SPT-1, SPT-2, SV, SVO, SVOO, SVTO, SVTOO, SE, SJE, SPE-1, SPE-2,	7 (10) ^b	10 (13) ^b	15 (18) ^b	20 (25) ^b	25 (30) ^b
AFC, AFPD, CFPD	6	8	17	23	28
Appliance Wiring Material^c	6	8	17	23	28
^a Some of the types of wire and cord are not made in each of the sizes shown. For each such type and size the ampacity shown is inapplicable.					
^b These ampacities are applicable to 3-conductor cords and 4 conductor cords with three conductors carrying current. The corresponding ampacities for these sizes of 2-conductor cords and 3-conductor cords with two conductors carrying current are shown in parentheses.					
^c AWM includes Style 20288, also known as SPT-1 ½.					

L2.4 Luminaires Requiring Product Description

L2.4.1 A luminaire that has a feature covered by one or more clauses specified in Table L2.4 is not considered a "General Coverage" luminaire.

L2.4.2 Compliance with the clauses tabulated in Table L2.4 shall be determined exclusively by investigation of the construction by a Responsible Office. Clauses shown in Table L2.4 are **NOT** to be applied at the factory.

L2.4.3 A Listing Mark shall not be applied to any luminaire that has a design feature that is covered by one of the clauses specified in Table L2.4 unless it is described in the Procedure.

L2.4.4 A luminaire designed with features requiring Procedure description in accordance with Table L2.4 may be described only to the extent necessary to authorize the construction subject to investigation. All construction features that are not described shall be evaluated at the factory for compliance with the Standard unless otherwise described in the product description.

For example: The product description of a temperature test exempt luminaire identified as "suitable for wet locations" may be limited to the description of features that serve to prevent water from contacting parts not intended to be wetted. All other product features would then be evaluated at the factory using the Standard to determine compliance.

L2.4.5 Surface mounted Luminaire designs that are Procedure described in accordance with Table L2.4 shall be shipped with the luminaire and diffuser packaged together, unless the diffuser is described as optional.

L2.4.6 Any product with germicidal fluorescent lamps **MUST** be submitted to a Responsible Office to be subjected to an engineering investigation and be Procedure described. Germicidal fluorescent lamps have a clear glass envelope, no phosphor coating on the inside surface. luminaires with germicidal lamps are typically mounted in air ducts or near the ceiling in health care facility waiting rooms to sanitize the air.

Table L2.4
Clauses Requiring Product Description

Clause UL 1598	Comment(1)
5.4.1 (e)	Polymeric barrier
5.4.2	Barrier strength test
5.5.1(a, b)	Metal equivalency
5.7	Polymeric materials - entire section
5.8.1(b,c3)	Non-metallic material, flaming oil test
5.10.5	Suitable adhesive
5.12	Moveable Joint
5.16.2.4	Glass - Equivalent Mechanical Strength
5.16.2.5	Glass impact test
5.17.4	Adhesive
5.17.6(e)	Adhesive
5.18.1, 5.18.2	Polymeric thermal insulation
5.18.3(d)	Mechanical Equivalent
5.20.1, 5.20.2, 5.20.3	Raceways
6.4.2	Interlock switches
6.7.1.3, 6.7.1.4, 6.7.1.5	HID luminaires
6.7.2.2	Recessed incandescent , HID luminaires
6.8.1 (c) capacitors	Capacitor short circuit investigation
6.9.3	Less than 18AWG
6.12	Electrical insulation
6.14.3.3,6.14.3.5(d)	Mold stress, equivalent
6.16.1b,6.16.2,6.16.3,6.16.4,6.16.5	Luminaires marked for through branch conductors
6.17.2.3c	Polymeric material
7.1.3	Luminaire with more than one type lamp i.e. fluorescent and incandescent, Incandescent and HID
7.3	Tungsten halogen - entire section
8.3.2	Fluorescent luminaire temperature test
9	ALL HID luminaires - entire section
10.2.4	Crossbar metal thickness equivalency
10.2.6	Polymeric crossbar
10.3	Poles - entire section
10.6.9	Temperature test
10.7	Entire section
11	Entire section for recessed luminaire types: All Incandescent, all HID, and Type IC Fluorescent
11.1.2, 11.3, 11.3.3, 11.4.6, 11.6.1.2(c2)	Recessed fluorescent
11.7	Tests - entire section
12	Entire section for recessed luminaires types: All incandescent, all HID, and Type IC fluorescent
12.2.2.3, 12.2.2.4(d), 12.2.2.5	Tests, equivalent
12.2.3	Tests - entire section
12.3, 12.4, 12.5	Luminaires for cooking use, elevated ambient and luminaire fittings - entire section
13	All luminaires marked for wet Locations
14, 15, 17, 19	Tests - entire section
20.1.2	Pictograms

Note (1) - Items identified under comments have features that require them to be submitted to the Responsible Office for evaluation. These items require a product description in the Procedure document and shall not be evaluated by the Field Representative using the Standard at the factory.

L2.4.7 Products currently identified to be marked with R lamp terminology may be marked with the equivalent BR lamp terminology as shown in Table L2.4.1.

Table 2.4.1
Style R lamps Maximum Replacement BR lamps

Type R lamps	Maximum Replacement Type BR lamps
50R30	45BR30
75R30	65BR30
75R40	65BR40
100R30	85BR30
100R40	90BR40
150R40	120BR40

L2.5 Special Constructions, Luminaire Fittings

L2.5.1 Special constructions, and all luminaire fittings and luminaire components, including posts, raceways, etc. for special use are required to be submitted to the Responsible Office for evaluation.

L2.5.2 Authorization to apply Listing Marks to luminaire components must be described in the Procedure.

L2.6 Components

L2.6.1 All components shall be Listed or Recognized or otherwise evaluated by UL for the intended application as required by the Standard. All components shall be used in an application consistent with the component evaluation.

L2.6.1.1 A Fluorescent ballast shall have a rating consistent with the application and consistent with the marking on the luminaire. Open core and coil constructions (i.e., ballasts without complete metal enclosures) are intended for use within an enclosure to prevent accessibility. Fluorescent luminaires identified for use in damp or wet locations shall use ballast marked as "Type 1", "Type 2" or "Weatherproof" to comply with clause 13.2.1.1.

L2.6.2 A Recognized Component is permitted to be used in a luminaire if it:

1. Has been determined suitable for the application by UL Conformity Assessment Engineering staff and included in the Procedure description; or,
2. Is included in the list of components below.

Recognized Components that do not comply with 1 or 2 above shall not be used in a General Coverage luminaire bearing a UL Listing Mark.

Acceptability of the following Recognized Components may be evaluated at the factory:

(a) Marking and Labeling Systems - A Recognized Component (PGDQ2) Marking and Labeling System (reference clause 20.1.7), shall be rated for the type of surface to which it is affixed and for a temperature of at least 150°C unless otherwise described in the product description.

(b) Appliance Wiring Material - Any Recognized Component (AVLV2) AWM complying with the conditions of use.

(c) Special-Use Switches - Recognized Component (WOYR2) special-use switches that have been investigated for compliance with the Standard for Special-Use Switches, UL 1054, shall be used within the recognized rating and conditions of use.

(d) Insulating Bushing-Recognized Component (NZMT2) used for protection of conductors that pass over edges of metal.

(e) HID Ballast -Recognized Component Ballast (FLCR2) The product description of an HID luminaire may identify suitable Recognized Component ballasts in accordance with Clause 6.7.1.5 by specifying the maximum wattage, lamp type, ballast insulation system, and a ballast temperature code assigned by UL 1029 (UL Standard for High Intensity Discharge Ballast) corresponding to a maximum bench-top temperature rating.

The ballast temperature code consists of the designation "1029 X", where X is replaced by a single alphabetic identification consisting of a letter A - P. The code letters represent bench-top temperature ratings ranging from the lowest, beginning with "A", through the highest assigned rating "P".

A ballast may be used in a luminaire when the product description identifies a ballast with an equivalent or higher temperature code. Other parameters of the luminaire construction such as electrical spacing must comply with the Standard. For example: The Procedure product description states "Ballast Class 180 insulation system, marked with 1029C." The manufacturer may substitute any recognized component ballast with a Class 180 insulation system and marked with a ballast code 1029C, 1029B or 1029A in lieu of submitting the luminaire to the Certification Organization for a temperature test.

The substitute ballast must not have a higher rated wattage or be designated for use with a different lamp type in accordance with clause 6.7.1.5. For the above example, a ballast marked 1029D represents a higher bench-top coil temperature than permitted by the product description, thus it cannot be used until it has been evaluated with acceptable results at the Responsible Office.

L2.7 Grounding and Bonding Screws

L2.7.1 A grounding and bonding screw secured to metal in accordance with Clauses 6.14.2.11 and 6.14.3.5 shall engage metal with two full threads. The minimum metal thickness to comply with the requirement for a given screw shall be determined by (1) determining the number of threads per unit measurement (Imperial or Metric) of the screw, (2) taking the inverse of the number (to find screw pitch) and (3) multiply number by two.

Example: 8-32 SAE screw

8-32 screw has 32 threads per inch, $(1/32)(2) = 0.0625$ inches which is the minimum thickness in inches of the metal necessary for 2 full threads.

M5 metric screw

M5 screw has 1.25 threads per mm, $(1/1.25)(2) = 1.6$ mm which is the minimum thickness in mm of the metal necessary for 2 full threads.

L2.8 Markings

L2.8.1 Markings on or with a luminaire shall be of a size, minimum letter height, type, and location on the product as designated by the Standard.

L2.8.2 Procedure authorization is required to apply markings to luminaires requiring a product description. Markings requiring specific values that are developed during a product investigation (Table L2.4) shall be described in the Procedure product description. Reference shall be made to the Procedure for authorization to use such markings.

L2.8.3 A Luminaire shall not be provided with any marking, instructions on the carton or with the luminaire that imply or depict use of the product in an application that conflicts with any required markings. For example, a fixture marked for use in dry locations shall not show a picture of an outdoor installation on the carton or a wall-mounted fixture shall not show a picture of a ceiling installation on the carton.

L2.8.4 All luminaries shall be marked with a catalogue number, model number, series number, or the luminaire type as follows: Incandescent, Fluorescent, HID, LED, Recessed Incandescent, Recessed Fluorescent, Recessed HID, Recessed LED and the suitability for installation in a dry, damp or wet location consistent with the evaluation. The markings shall be readily visible when viewing the Listing Mark. The Luminaire shall be additionally marked as required by the Standard.

L3 RESPONSIBILITY OF THE FIELD REPRESENTATIVE

L3.1 General

L3.1.1 The Field Representative'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 Representative.

L3.1.2 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.

L3.1.3. Explain to the manufacturer that a Variation Notice is a means of communication with the manufacturer and forms a record of those items where nonconformance to the Procedure has been encountered. Also explain that it is the manufacturer's responsibility to forward a copy of the Variation Notice to the Applicant.

L3.1.4. A product, that is found to have features that make it unacceptable to bear a marking referencing UL, shall be acceptably corrected if the marking is to be retained. Carefully check subsequent production for such features until conditions are again considered acceptable.

L3.1.5. A product that does not comply with the requirements of the Follow-Up Service Procedure and these Follow-Up and Inspection Instructions shall have each UL referencing Mark removed from the product, or obliterated from the product where the marking is imprinted, die-stamped, molded, or the like. If the rejection of the product is questioned by the manufacturer and Applicant, the material may be held at the point of inspection, typically at the factory, pending an appeal. The manufacturer and Applicant have the right to appeal a decision with which they disagree. Appeals of technical decisions and held shipments should be directed to the Variation Notice handling office. To resolve issues involving variations in construction, the manufacturer and Applicant may also be offered the option of contacting a Customer Service Professional. Should UL grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run. The manufacturer shall demonstrate that all Marks referencing UL are removed from the rejected material. Those Marks referencing UL not destroyed during their removal from the product shall be retrieved from the manufacturer's control and, either (1) held until the manufacturer demonstrates adequate control of their production to assure the application of the Mark to only those products that comply with requirements, (2) returned to the supporting UL Label Center, or (3) destroyed.

L3.2 Inspection Guidelines

L3.2.1 At each visit to the manufacturer's facility, the Field Representative shall review representative samples of each type of luminaire that bears or is intended to bear the Listing Mark, and shall then inspect samples to be representative of the manufacturer's output. The samples are to be reviewed in accordance with the Follow-Up Service Inspection Instructions, the Procedure description, and the applicable requirements of the Standard.

L3.2.2 The Field Representative shall review the artwork, pictures and verbiage on the shipping carton and in the installation instructions to make certain that there is no information or representation that conflicts with any required markings. If the luminaire requires assembly in the field (i.e. luminaries that are partially disassembled for shipping purposes), the assembly instructions included with the luminaire are to be evaluated by the Field Representative by choosing a production sample, assembling it in accordance with the instructions and then evaluating the assembled luminaire for compliance with the Standard. Assembly instructions that are incomplete, unclear, or that do not result in a luminaire that complies with the Standard shall be forwarded to the Responsible Office.

The Field Representative shall verify all markings and instructions provided on or with a separate power supply, LED driver or control module packaged with a luminaire employing an LED light source for compliance with the procedure. This includes all electrical ratings (input/output), environmental and installation requirements specified for the module.

L3.2.3 The Field Representative shall verify that the manufacturer is performing all production line and applicable type testing and that the manufacturer is maintaining all required test records.

L3.2.4 Any observed differences between the luminaire or manufacturing process and the description of the luminaire or process in the Procedure and/or Standard shall immediately be called to the attention of the manufacturer. Any observed differences shall be confirmed in a Variation Notice. An inspection report shall be completed after each visit.

L3.2.5 A product that is found to no longer be in compliance with the requirements shall be brought into compliance by the manufacturer if the Listing Mark is to be used on the product. If the noncompliance was the result of a manufacturing or testing process, the manufacturer shall check subsequent production until it is certain that the process or test method has been corrected and the noncompliance will not reoccur. The Field Representative shall verify that the product continues to be in compliance with the requirements of UL.

L3.2.6 A product that does not comply with all provisions of the requirements shall have the Listing Mark removed or permanently and totally obliterated. The manufacturer shall satisfy the Field Representative that all Listing Marks are removed or obliterated from rejected material. Those Marks not destroyed during removal from the product shall be turned over to the Field Representative for destruction. If rejection of the product is questioned by

the manufacturer, the manufacturer may hold the material at the point of inspection, typically at the factory, pending an appeal.

L3.3 Procedure Described Luminaries

L3.3.1 Luminaires are described in the Follow-Up Service Procedure as a result of an evaluation of a specific design. The design usually requires testing and an investigation performed at UL. The product description in the Procedure may address construction features not specified in the referenced Standard. Only those features that would affect the results of the investigation or tests are described. Unless otherwise specified in Table L2.4, the Field Representative shall evaluate other constructional features not described in the Follow-Up Procedure according to the requirements in the Standard and the Follow-Up Service Instructions.

L3.3.2 Other than for the requirements tabulated in Table L2.4, wherever the word "equivalent" is used in the Standard, it is intended that the Field Representative shall determine the equivalence. The equivalence shall be determined by applying the construction and/or performance criteria of the requirement specified in the Standard. If there is any doubt on the part of the Field Representative, the Responsible Office is to be contacted.

L3.3.3 "General Coverage" Luminaires Evaluated At The Factory

L3.3.3.1 General Coverage incandescent and fluorescent luminaires shall be evaluated at the factory for compliance with Sections 4-8 and Sections 10 and 11 as applicable, in addition to other applicable clauses of the Standard not specified in Table L2.4. Luminaire designs that do not comply with the temperature test-exempt requirements and/or contain features that must be evaluated using the requirements specified in one or more of the clauses in table L2.4 must be submitted to the Certification Organization.

L3.3.3.2 Incandescent temperature test exempt luminaires designed for use with conventional non-halogen tungsten filament lamps (Types A, B, BR, C, ER, F, G, PAR, P, PS, R, S, and T) rated nominally 120 V ac shall be evaluated for compliance with Section 7.

L3.3.3.3 Ceiling mounted temperature test exempt luminaires designed with partially enclosed lamp compartments as illustrated in Figure 7.2.5.1 shall be packaged and shipped with a diffuser.

L3.3.3.4 Lampholders shall be located and positioned in accordance with the Standard. The luminaire shall be designed such that the minimum lamp spacing shall be maintained in the luminaire as packed ready for shipment. Refer to L2.3.2.3 and L2.3.2.4.

L3.3.3.5 Ceiling mounted temperature test exempt luminaires designed with an enclosed lamp compartment as illustrated in Figure 7.2.5.1 may be shipped without a diffuser.

L3.3.3.6 A temperature test exempt pendant or wall mounted luminaire design with a provision to mount a diffuser shall be evaluated as an enclosed lamp compartment if shipped without a diffuser.

L3.3.3.7 Incandescent luminaire constructions designed for use with specialty lamps such as quartz tungsten halogen lamps or low voltage lighting shall be submitted for evaluation in accordance with Table L2.4 (Clauses 7.3 and 19).

L3.3.3.8 Rough-in and Finishing sections of fluorescent luminaires manufactured and shipped from separate locations shall be described in the Procedure.

The field representative shall review the shipping carton and the installation instructions to determine that there is no information or representation that conflict with any required markings. Refer to L2.8.3 and L3.2.2.

L4 LISTING MARK

L4.1 General

L4.1.1 One appropriate Listing Mark shall be applied to each complete luminaire. One Listing Mark shall be applied to each rough-in and finishing section (as appropriate) of a two-section lighting unit that is not shipped as a complete luminaire. Such two-section units may bear one Listing Mark only when both sections are packed (completely wired) and shipped in a single carton.

L4.1.2 Luminaires complying only with the UL requirements may bear only a Listing Mark that identifies conformance with UL requirements. Luminaires complying only with the Canadian requirements may bear only a Listing Mark that identifies conformance with Canadian requirements. Luminaires complying with all requirements may bear a Listing Mark that identifies conformance with the UL and Canadian requirements.

L4.1.3 The Listing Mark shall be so located on the exterior of the luminaire that it is visible when the luminaire is installed. In the case of residential luminaires, the Listing Mark may be located at the point where it will be visible when making and inspecting the connections to the branch-circuit supply wires. In any case, the location of the Listing Mark is acceptable if the Listing Mark is visible after the removal of the lamp, glassware, or a drop canopy is required for the Listing Mark to be visible. It is recommended that the Listing Mark be located on the exterior of residential luminaires when practical.

L4.1.4 The Field Representative shall not permit the attachment of Listing Marks to products not covered by the Procedure, unless special authorization for such action is received from the Responsible Office.

L4.1.5 The Listing Mark shall be procured in the authorized manner specified by UL. The elements of the UL Mark shall be as described in the FUS Procedure. Additional information concerning UL Marks, such as camera ready art work and proportional dimensions for the Marks/Markings, may be found by visiting UL's website at "http://www.ul.com/marks_labels/".

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

TABLE B - SAMPLE SELECTION GUIDE AND TEST CRITERIA

(+) - Maximum capacity that is used to determine the test parameters for a vent assembly

Sample Group	#/Group /Year	Model	Report Date	Chemistry	Type	Capacity (Ah)	Rated Voltage (Vdc)	Charge Voltage (Vdc)	Charge Current (A)	Max Vent Capacity (Ah) (+)	Additional Info	Test Program Code-Quarterly	Test Program Code-Annually
1	2	3-FM-10	2011-06-01	Lead-acid	Valve-regulated	10	6				--	A	
		3-FM-4	2011-06-01	Lead-acid	Valve-regulated	4	6				--	A	
		3-FM-4.5	2011-06-01	Lead-acid	Valve-regulated	4.5	6				--	A	
		3-FM-7	2011-06-01	Lead-acid	Valve-regulated	7	6				--	A	
		6-FM-10	2011-06-01	Lead-acid	Valve-regulated	10	12				--	A	
		6-FM-7	2011-06-01	Lead-acid	Valve-regulated	7	12				--	A	

COMPONENT - BATTERIES, STANDBY (BAZR2, BAZR3)

INDEX TO FOOTNOTES:

GENERALPRODUCTS COVERED:

USR - Component batteries with pressure release vents.

MARKING:

Each battery shall be permanently marked with the following:

- a) The manufacturer's name or File No." MH48334" or trade name or trademark, model designation, and manufacture date code "YYYYMMDD", which represents year/month/date.
- b) Battery type and rated voltage and capacity.
- c) Positive and negative leads or terminals indicated by (+) and (-).

INSTRUCTION:

The battery shall be provided with the following instructions:

- a) Any applicable installation or maintenance instructions, and
- b) The statement ²Warning: Risk of fire, explosion, or burns. Do not disassemble, heat above 40°C, or incinerate.², if it is not already marked on the battery, and
- c) Instructions on the appropriate rate and method of charging or the specific charging system for the battery.

TEST EQUIPMENT PROVIDED BY MANUFACTURER:

The manufacturer shall provide all of the test equipment necessary to conduct the sealed battery/cell pressure release test described in App. A of this Procedure. The test equipment shall include the following.

Equipment for Sealed Battery/Cell Pressure Release Test -

- A. Suitable container with mineral oil to completely submerge battery.
Alternate - Cylinder which may be tightly secured to each vent.
- B. Equipment to charge batteries at increasing rates until pressure release device opens.
- C. Shield over container to protect personnel.

GENERAL CONSTRUCTION:

The batteries and pressure release vents shall comply with the applicable description given in the "Description" section of this Procedure.

File MH48334
Project 11CA17022

June 01, 2011

REPORT

On

COMPONENT - BATTERIES, STANDBY

SHANGHAI XINLEINA BABY CARS ACCESSORIES CO LTD
ShangHai, China

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DESCRIPTION

PRODUCT COVERED:

USR Component - Rechargeable Lead Acid Batteries, Models 3-FM-4, 3-FM-7, 6-FM-10, 3-FM-4.5, 3-FM-10, 6-FM-7, **2-FM-4, 3-FM-5, 6-FM-4.5, 6-FM-12, 6-FM-15, 6-FM-20, 6-FM-24, 12-FM-5, 12-FM-5-1, 12-FM-7, 12-FM-7-1, 12-FM-10, 12-FM-12, 6-DZM-12, 6-DZM-20, 6-DZM-42, 6-QA-4.**

Electrical RATINGS

Battery Model No.	Nominal Voltage, V	Nominal Capacity, Ah
3-FM-4	6	4
3-FM-7	6	7
6-FM-10	12	10
3-FM-4.5	6	4.5
3-FM-10	6	10
6-FM-7	12	7

*

Electrical RATINGS (CONT'D)

Battery Model No.	Nominal Voltage, V	Nominal Capacity, Ah
2-FM-4	4	4
3-FM-5	6	5
6-FM-4.5	12	4.5
6-FM-12	12	12
6-FM-15	12	15
6-FM-20	12	20
6-FM-24	12	24
12-FM-5	24	5
12-FM-5-1	24	7
12-FM-7	24	7
12-FM-7-1	24	5
12-FM-10	24	10
12-FM-12	24	12
6-DZM-12	12	12
6-DZM-20	12	20
6-DZM-42	12	42
6-QA-4	12	4

GENERAL DESCRIPTION

These rechargeable lead-acid batteries are provided with one pressure release vent per cell, designed to prevent excessive accumulations of gas pressure and battery/cell rupture.

Material Modification - There shall be no changes in the formulation or composition of any of the materials used in the construction of the batteries or the pressure relief means unless previously cleared through Underwriters Laboratories Inc.

TECHNICAL CONSIDERATION (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Conditions of Acceptability - The use of these devices may be considered acceptable under the following conditions:

The batteries are identified in accordance with the markings outlined in this report.

1. These batteries in combination with their pressure release vents have been found to comply with the requirements of the pressure release test in the Standard for Standby Batteries, UL1989, Fourth Edition, dated March 30, 2010, including the revisions on June 7, 2010. No other performance related tests have been conducted on these batteries.
2. The need for additional testing shall be determined in the end use application.
3. The capacity and voltage rating under Electrical Ratings were assigned by the manufacturer and has not been evaluated.
4. The suitability of the terminals and electrical connections shall be considered in the end use product.
5. The plastic case material of the batteries for all models has flame rating HB. The suitability of the flame rating for the UPS application and the need for an enclosure shall be determined in the end-use applications.

RECHARGEABLE LEAD-ACID BATTERY, MODEL 3-FM-4, FIG. 1
(ALSO REPRESENTS ALL MODELS DESCRIBED IN TABLE A)

1. Battery Case and Cover - Molded of R/C (QMFZ2), KINGFA SCI & TECH CO LTD (E171666), Type JH960-(h)1DY or MAC-(h)1, rated HB, 60°C, minimum 1.0 mm thick. Case and cover secured by heat sealing, refer to Table A for overall dimensions and minimum thickness.

Alternate - Same as above except R/C (QMFZ2), ZHEN JIANG CHI MEI (E194560), Type D-190, ALL color, rated HB, 60°C, minimum 1.5 mm thick.

Alternate - Same as above except R/C (QMFZ2), TIANJIN DAGU CHEMICAL (E363596), Type DG-417, NC, rated HB, 60°C, minimum 1.6 mm thick.
2. Cells - Each nominal 2 V, lead-acid type.
3. Terminals - Positive and negative, tab type. Each tab formed of Pb or copper alloy, potted with epoxy at tab exit.

Alternate - Same as above except plate type.

Alternate - Same as above except screw type.
4. Plates - Lead calcium alloy for positive and negative plates.
5. Separator - Micro-Fiberglass.
6. Electrolyte - Immobilized dilute sulfuric acid.
7. Pressure Release Vent - One vent per cell, constructed as follows.
 - A. Vent Body - Integrally molded in top half of battery case, refer to Table B for dimensions of vent. See ILL.1 for detail construction.
 - B. Vent Cap - Molded of natural rubber.
8. Markings - See Sec. Gen.

Table A
Overall dimensions and minimum thickness

Battery Model Designation	Overall Dimensions, mm			Case Minimum Wall Thickness, mm		Minimum Wall Thickness	
	Length	Width	Height	Bottom	Sides	Cell Cover, mm	Vent Cover, mm
3-FM-4	70	48	104	2.2	1.85	1.6	1.6
3-FM-7	152	36	101	1.8	2	1.6	1.6
6-FM-10	152	99	101	2	2.17	1.6	1.6
3-FM-4.5	70	48	104	2.2	1.85	1.6	1.6
3-FM-10	150	50	100	2.2	2.17	1.6	2
6-FM-7	150	66	100	2	2.1	1.6	1.6
2-FM-4	47.5	47.5	106.5	1.6	1.6	1.6	1.6
3-FM-5	70	48	104	1.6	1.6	1.6	1.6
6-FM-4.5	89	69.2	105.2	1.6	1.6	1.6	1.6
6-FM-12	152	99	101	1.6	1.6	1.6	1.6
6-FM-15	180.9	77.7	163.3	1.6	1.6	1.6	1.6
6-FM-20	180.6	76.6	168.9	1.6	1.6	1.6	1.6
6-FM-24	180.6	76.6	168.9	1.6	1.6	1.6	1.6
12-FM-5	136.9	91	105.2	1.6	1.6	1.6	1.6
12-FM-5-1	187	102	100	1.6	1.6	1.6	1.6
12-FM-7	187	102	100	1.6	1.6	1.6	1.6
12-FM-7-1	136.9	91	105.2	1.6	1.6	1.6	1.6
12-FM-10	192	151	99	1.6	1.6	1.6	1.6
12-FM-12	192	151	99	1.6	1.6	1.6	1.6
6-DZM-12	151.6	99.7	100.5	1.6	1.6	1.6	1.6
6-DZM-20	180.6	76.6	168.8	1.6	1.6	1.6	1.6
6-DZM-42	267.2	77.3	168.9	1.6	1.6	1.6	1.6
6-QA-4	113	69.5	86.6	1.6	1.6	1.6	1.6

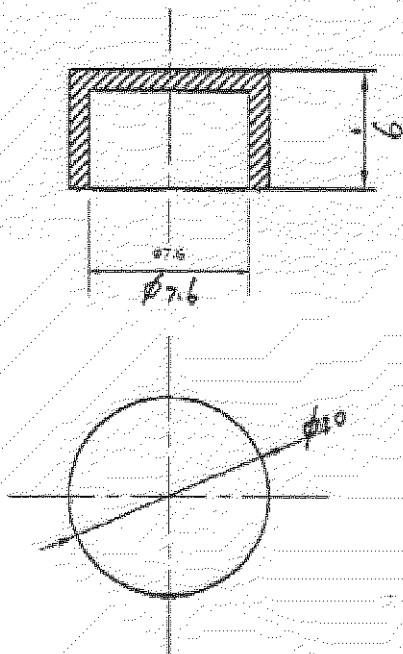
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Table B

VENT DIMENSIONS OF BATTERIES

Battery Model No.	Vent Type	Vent Dimension, mm	
		ID	Height
3-FM-4	Cap valve	7.6	6
3-FM-7	Cap valve	7.6	6
6-FM-10	Cap valve	7.6	6
3-FM-4.5	Cap valve	7.6	6
3-FM-10	Cap valve	7.6	6
6-FM-7	Cap valve	7.6	6
2-FM-4	Cap valve	7.6	6
3-FM-5	Cap valve	7.6	6
6-FM-4.5	Cap valve	7.6	6
6-FM-12	Cap valve	7.6	6
6-FM-15	Cap valve	7.6	6
6-FM-20	Cap valve	7.6	6
6-FM-24	Cap valve	7.6	6
12-FM-5	Cap valve	7.6	6
12-FM-5-1	Cap valve	7.6	6
12-FM-7	Cap valve	7.6	6
12-FM-7-1	Cap valve	7.6	6
12-FM-10	Cap valve	7.6	6
12-FM-12	Cap valve	7.6	6
6-DZM-12	Cap valve	7.6	6
6-DZM-20	Cap valve	7.6	6
6-DZM-42	Cap valve	7.6	6
6-QA-4	Cap valve	7.6	6





Unit: mm