

030-38507

NRC FORM 313 (3-2009) U.S. NUCLEAR REGULATORY COMMISSION 10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 3/31/2012

APPLICATION FOR MATERIALS LICENSE

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

IF YOU ARE LOCATED IN:

OFFICE OF FEDERAL & STATE MATERIALS AND ENVIRONMENTAL MANAGEMENT PROGRAMS DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555-0001

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH U.S. NUCLEAR REGULATORY COMMISSION, REGION III 2443 WARRENVILLE ROAD, SUITE 210 LISLE, IL 60532-4352

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM DIVISION OF NUCLEAR MATERIALS SAFETY U.S. NUCLEAR REGULATORY COMMISSION, REGION I 475 ALLENDALE ROAD KING OF PRUSSIA, PA 19406-1415

NUCLEAR MATERIALS LICENSING BRANCH U.S. NUCLEAR REGULATORY COMMISSION, REGION IV 612 E. LAMAR BOULEVARD, SUITE 400 ARLINGTON, TX 76011-4125

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item) A. NEW LICENSE B. AMENDMENT TO LICENSE NUMBER C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code) Universal Product Concepts, Inc. 13980 Mountain Avenue Chino, CA 91710

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED 13980 Mountain Avenue Chino, CA 91765

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION Ashfaq Kazi TELEPHONE NUMBER (951) 340-0111 EXT 403

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (See 10 CFR 170 and Section 170.31) FEE CATEGORY 3I AMOUNT ENCLOSED \$ 10,000.00

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE

SIGNATURE

DATE 10/12/10

FOR NRC USE ONLY

Table with columns: TYPE OF FEE, FEE LOG, FEE CATEGORY, AMOUNT RECEIVED, CHECK NUMBER, COMMENTS, APPROVED BY, DATE

573722

Universal Product Concepts, Inc.

13980 Mountain Ave
Chino CA 91710 USA
Tel: 951-340-0111
Fax: 951-340-0251



Division of Industrial and Medical Nuclear Safety
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Sir/Madam,

Universal Product Concepts, Inc. (UPC) is applying for a license authorizing the distribution of smoke detectors containing americium-241 (Am-241) foils to persons exempt from licensing pursuant to 10 CFR 30.15(a)(8), or equivalent provisions of the regulations of any Agreement State. UPC has applied for and received a possession license from the State of California Department of Public Health.

Please feel free to contact me at 951-340-0111 EXT 403 if you have any questions about this request.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ashfaq Kazi', written over a horizontal line.

Ashfaq Kazi
President

Universal Product Concepts, Inc. (UPC) wishes authorization under 10 CFR 32.14 and 32.26 to distribute smoke detectors containing Am-241 foils. The following supporting information is provided as a supplement to NRC Form 313. This information has been provided as specified in NUREG-1556, Vol. 8, "Program Specific Guidance About Exempt Distribution Licenses" and 10 CFR 32.14 and 32.26.

Item 5. Radioactive Material

- | | |
|------------------------------------|---|
| a. Element and Mass Number | Americium-241 |
| b. Chemical and/or Physical Form | foil (QSA Global Incorporated Model AMM.1001) |
| c. Maximum activity in each source | 0.9 microcuries per foil; 27 mCi total |

Item 6. The distribution of smoke detectors containing Am-241 foils to persons exempt from licensing pursuant to 10 CFR 30.20 or equivalent provisions of the regulations of any Agreement State.

UPC expects to have no more than 27 mCi of licensed activity in smoke detectors on site at any one time.

Items 7-11 of the license application do not need to be completed per NUREG 1556, Vol. 8. Additional information concerning the manufacturing process and other radiation safety related items is provided below.

UPC has obtained a possession license from the State of California. A copy is attached in support of this application.

Records of transfers shall be maintained as required by 10 CFR §32.25. Records shall include a description or identification of the type of each product transferred, for each radionuclide in each type of product, the total quantity of the radionuclide, and the number of units of each type of product transferred during the reporting period. We shall maintain the record of each transfer for a period of one year after the event is included in a summary report to the Commission.

UPC shall file the summary report by mail with the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001,

The summary reports shall be filed within 30 days of the following:

- 1) five years after filing the preceding report; or
- 2) filing an application for renewal of the license under §30.37; or
- 3) notification to the Commission of our decision to permanently discontinue activities authorized under the license issued under §32.14.

The report will indicate that no transfers of byproduct material have been made during the reporting period should that be the case.

UPC shall inspect the smoke detectors to assure that they are the proper models ordered and have been labeled as described in this application. Smoke detectors that are not properly labeled will be relabeled in UPC's facility or returned to the manufacturer. Smoke detectors that are the wrong model or are damaged will be returned to the manufacturer.

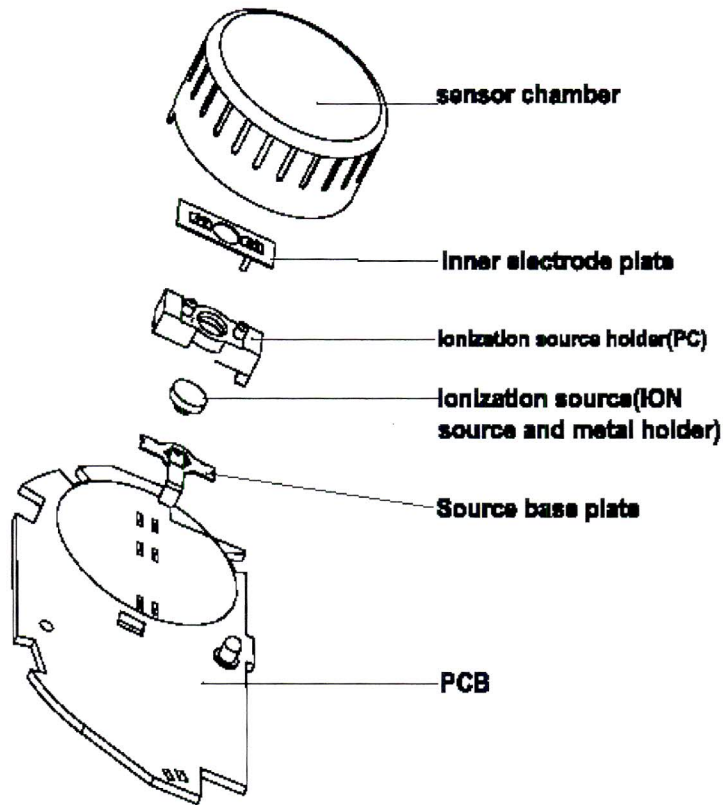
The smoke detectors shall be offered for transportation in accordance with applicable Department of Transportation (DOT) and NRC regulations.

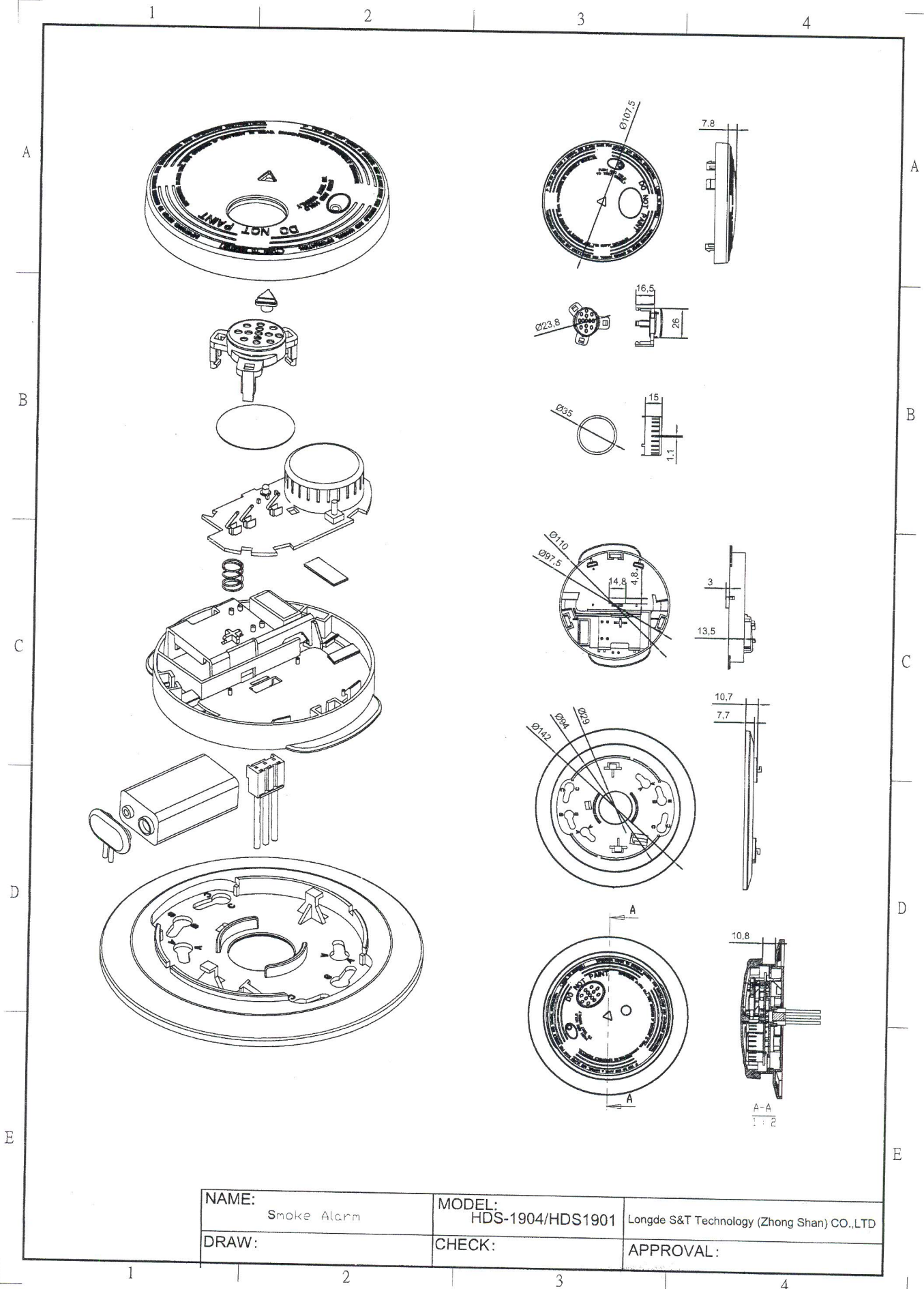
Overview

The smoke detectors distributed by UPC have a working life of a minimum of three years. The Americium-241 foils are distributed by QSA Global Incorporated, as described in Sealed Source and Device Registration Certificate number MA-1059-S-174-S, which is provided below. The certificate details the manufacturing process of the sealed source and establishes the suitability of use in both industrial and residential environments, with a working life of 10 and 15 years, depending on model. Foils have been tested as per ANSI standard N5.10-1968, ANSI N542-1977, and ISO 2919. All wipe tests resulted in less than 0.005 μCi (185 Bq). Testing specifics are provided in the certificate.

Design and Construction

The UPC smoke detectors consist of several items designed and constructed as depicted in the following mechanical drawings.



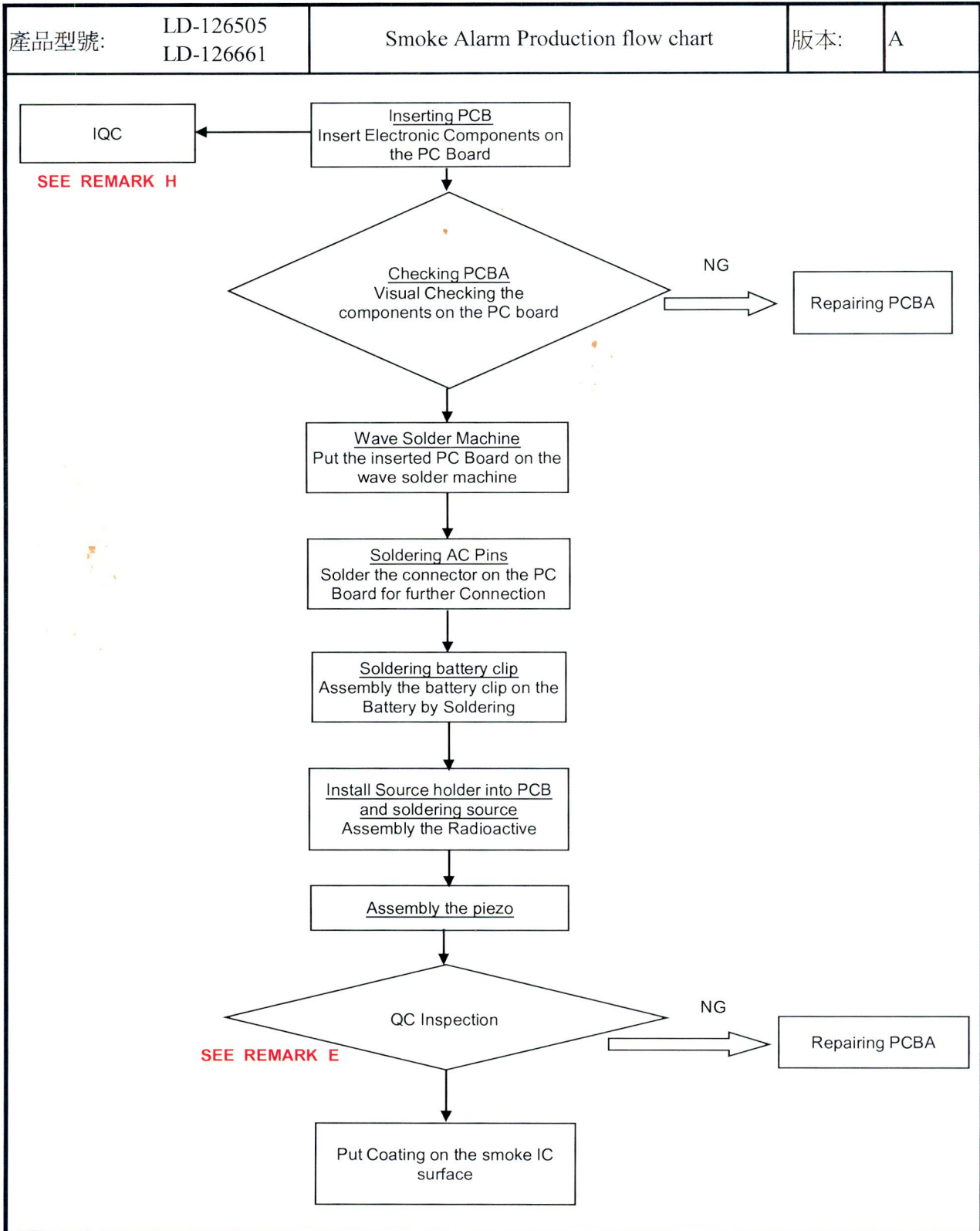


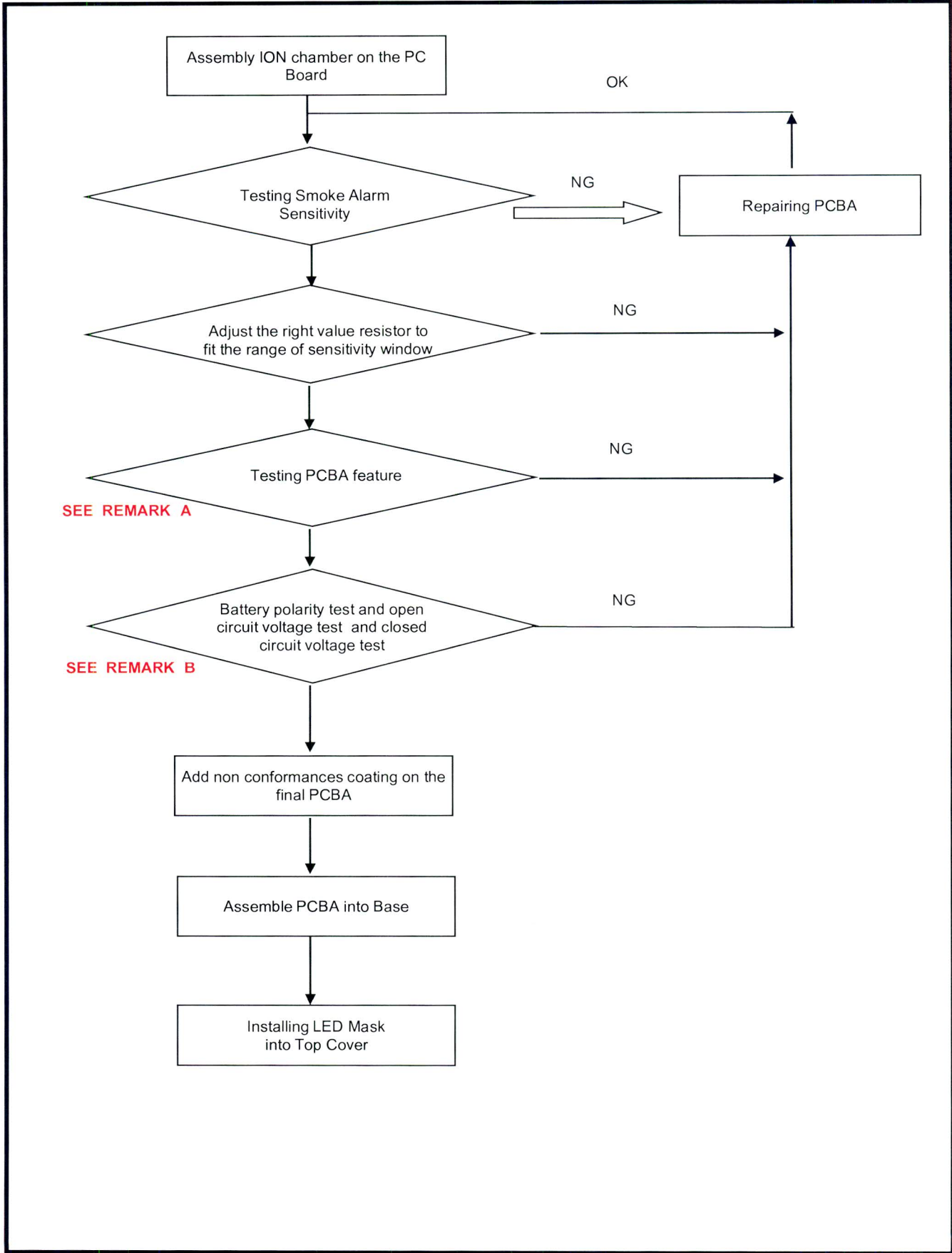
NAME: Smoke Alarm	MODEL: HDS-1904/HDS1901	Longde S&T Technology (Zhong Shan) CO.,LTD
DRAW:	CHECK:	APPROVAL:

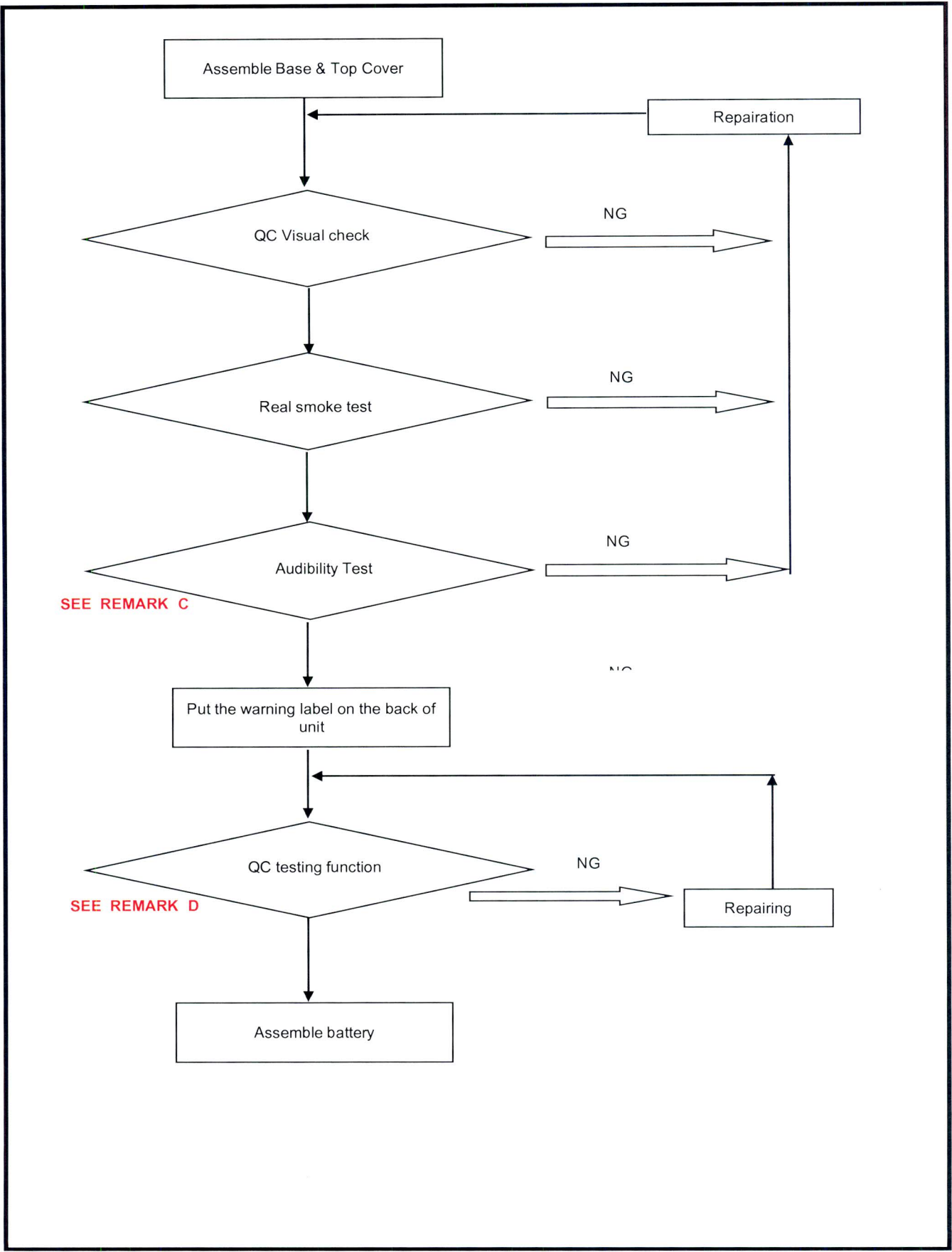
The smoke detectors are manufactured in China by the Longde S&T Technology (Zhong shan) Company, Ltd. The Smoke Alarm Production Flow Chart and descriptive remarks on the following pages steps through the manufacturing process implemented by Longde.

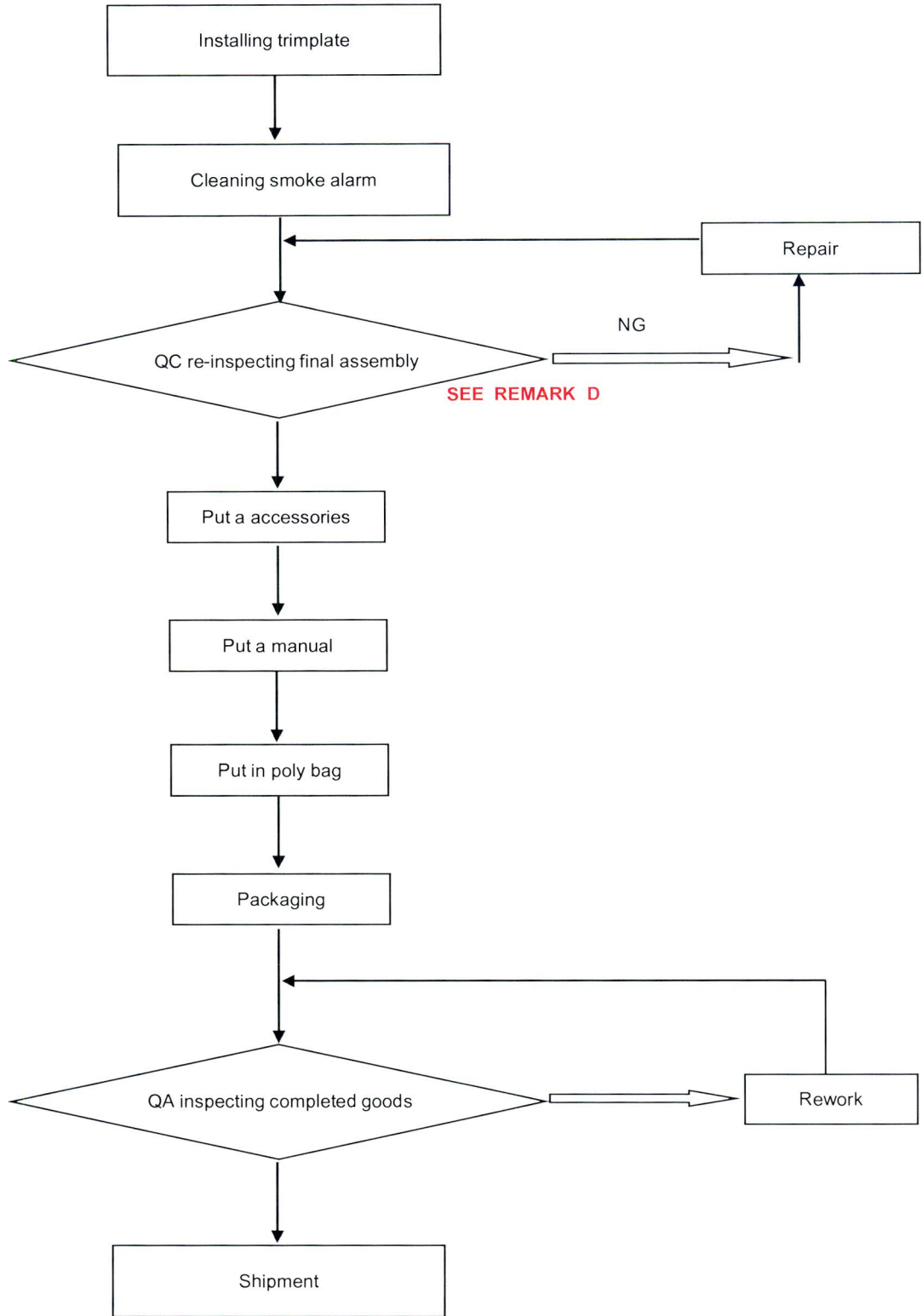
中山市龙的安讯科技有限公司
Longde S&T Technology (Zhong shan) CO, LTD

文件号: LD007-CD3 -100923001A









编制：

审核：

批准：

REMARK A

SENSITIVITY LIMITS - GRAY SMOKE

<u>Voltage</u>	<u>Model</u>	<u>Alarm Orientation In Smoke Box Airflow Into</u>	<u>UL Smoke Box</u>		<u>MIC - Picoamperes</u>	
			<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>
9 Vdc	HDS-126505	Least Favorable Position - 225° counterclockwise from Piezo (into battery compartment).	94.8	93.1	60.9 [1.06]	56.8 [1.43]
120 Vac with 9Vdc battery backup	HDS-126661	Least Favorable Position - 225° counterclockwise from Piezo (into battery compartment).	94.8	93.1	60.9 [1.06]	56.8 [1.43]

Notes: For Battery operated units, the rated voltage is a fresh battery.

The test is to be run after the Fire Test if applicable.

[] Denotes manufacturer's percent per foot obscuration reading.

Smoldering and Fire Test Alarm Placement:

<u>Model</u>	<u>Distance from ceiling (wall mounting)</u>
HDS-126505, HDS-126661	12 inches

REMARK B1

BATTERY POLARITY TEST AND OPEN CIRCUIT VOLTAGE TEST:

GENERAL

These tests are to be conducted on batteries which serve as the primary power supply for the alarms in accordance with the following sampling plan. The two tests may be performed in combination or separately.

Lot Size	Number of Samples Selected	Accept Lot	Reject Lot
0 - 90	13	0	1
91 - 150	20	0	1
151 - 500	50	1	2
501 - 1200	80	2	3
1201 - 3200	125	3	4
3201 - 10000	200	5	6
10001 - 35000	315	7	8
35001 - 150000	500	10	11
150001 - 500000	800	14	15
500001 and over	1250	21	22

POLARITY TEST:

APPARATUS

The following equipment is required to perform the polarity test:

Voltmeter - Mating polarized or color-coded leads to be connected to the battery. The meter shall read up-scale when the battery polarity is correct.

Open Circuit Voltage Test:

APPARATUS

The following equipment is required to perform the open circuit voltage test:

- A. Voltmeter - Minimum 1 percent accuracy over entire scale; 10,000 ohms per volt minimum impedance; full scale range shall not exceed twice the rated battery voltage or 20 V, whichever is higher.
- B. Thermometer - Calibrated in $77 \pm 12^{\circ}\text{F}$ ($25 \pm 7^{\circ}\text{C}$)

METHOD

While the batteries are maintained at room ambient, $77 \pm 12^{\circ}\text{F}$ ($25 \pm 7^{\circ}\text{C}$), the open circuit voltage of each shall be measured.

REMARK B2

Test Equipment -

Six units from each lot shall be drawn at random and subjected to the following test. The units shall be selected one at a time with each of the remaining units from the lot having an equal chance of being the next unit selected for testing.

APPARATUS

The following equipment is required to perform the closed circuit voltage test:

- A. Voltmeter and Theromometer - With same parameters as specified for the Open Circuit Voltage Tests.
- B. Load Resistor - One percent tolerance, resistance values are specified in the following non-standardized pages.
- C. Timing Device - Calibrated in seconds.

METHOD

While the batteries are maintained at room ambient, $77 \pm 12^{\circ}\text{F}$ ($25 \pm 7^{\circ}\text{C}$), the closed circuit voltage of each shall be measured. The meter shall be connected in parallel with the load resistor such that the meter will indicate the battery voltage under load. The load shall be applied to the battery for a period of time as specified in the following non-standardized pages and the voltage measured at the end of the period.

BASIC FOR ACCEPTABILITY

The measured voltage at the end of the discharge shall not be less than that specified in the following non-standardized pages.

Battery Model	Open Circuit Voltage, V dc	Resistance Value, ohm	Duration of Test	Minimum Voltage, V dc
Energizer 522	9 - 9.5	$82 \pm 1\%$	12 hour	8.0

- A. If there are two or more failures, the lot is to be rejected.
- B. If there is one failure, the lot is to be resample by selecting six additional samples. If there are one or more additional failures, the lot is to be rejected.

REMARK C

Audibility Test:

Test Equipment – Sound Level Meter TES 1350A

Method –: In an empty room, Put the Sound Level Meter on a wood desk 1.2meters above the ground. The smoke alarm should be placed 3 meters far from the sound level meter and also keep 1.2meters above the ground on a test shelf, directly facing the sound level meter. Then press the TEST button.

Basis of Acceptability – The detector must have minimum audible output of 96.4 dB when using the model TES 1350A sound meter.

REMARK D

Electrical Function, Inspect and Calibrate:

Test Equipment -

- 1 > Multi-meter: VC 890 C+
- 2 > Adjustable DC manostat power: TPR3005D
- 3 > Voltage regulator: TDGC2-5KVA
- 4 > Hi-pot tester
- 5 > Test shelve

Method -

- a) Input 9V DC power, test and take record of stand-by current, alarm current.
- b) Test the low power to indicate function with Adjustable DC manostat power.
- c) In clear condiiton, test the tracking voltage of the 16th pin ionization chamber of the IC with Multi-meter.
- d) Input 120V AC power, test the power consumption of the smoke alarm.
- e) Press TEST button for alarm function.

Basis of Acceptability - Stand by current < 10uA; alarm current < 20mA
When the Voltage is lower than 7.2V DC, it will "beep". When supplied with 120V AC, the power consumption <= 0.5W. The voltage at the 16th should be within 5.2 ~ 6.4 V.

REMARK E

VISUAL INSPECTION:

METHOD

After all Components of the detector are mounted to the case, an inspection station shall make an intensive visual inspection of a sample of alarms to verify that the following construction steps have been properly performed.

1. All components are mounted in the correct location and position.
2. All components are securely mounted.
3. All wiring has been made mechanically secure and properly soldered in place.
4. The entire alarm assembly is free from extraneous solder dripping or any other foreign material.
5. Metal work and component leads are not deformed, too long, too short, or bent such as would possibly result in a short circuit once the unit would be installed.

PRODUCTION LINE DIELECTRIC VOLTAGE WITHSTAND TEST:

METHOD

The manufacturer shall conduct a Dielectric Voltage Withstand Test on each high voltage cord-connected alarm or alarm that employs splice leads. A 1000 V, 60 Hz alternating current potential shall be applied between live parts and end-use accessible dead-metal parts for a period of 1 min for units rated above 30 V rms, 42.4 V dc or more.

REMARK H

Incoming Inspection - Incoming inspection procedures should provide for the inspection of the item and supporting documentation where applicable. Procedures for the control of nonconforming material should also be included. The extent of incoming inspection should be coordinated with source inspection and supplier quality evidence (items B and C below). All sampling schemes should also include:

- (1) Records of inspection results.
- (2) Adequate methods of identifying inspection lots, including the test and inspection status of the material, and means for establishing lot traceability.
- (3) Identification and verification of source inspected items to validate their documentation of testing and inspections performed.
- (4) Adequate facilities and procedures for storage, handling, and protection of purchased materials. Materials inspected, tested and accepted should be separated from withheld or rejected materials.

Source Inspection - Source inspection is performed at the part supplier's plant, and involves the performance of specific quality checks at the supplier's facility and/or the surveillance of the supplier's quality control processes, acceptance procedures, and quality information generated. Those quality characteristics which cannot or will not be verified during subsequent processing (i.e., incoming, in-process, or final inspection) should be subjected to source inspection. Source inspection may not be necessary when the quality of the part can be fully and adequately verified by supplier quality evidence supplemented by a periodic verification program.

Product testing and Quality Control Procedures

UPC-distributed smoke detectors are manufactured by Longde S&T Technology (Zhong Shan) Co. Ltd, and are in compliance with the requirements of ISO9001:2000. Manufacturing is performed under an appropriate Quality Assurance Program.

Based on the Quality Assurance Programs of QSA Global Incorporated and Longde S&T Technology Co. Ltd., no additional Quality Assurance inspections of the devices will be performed at the UPC distribution center. Devices will be delivered to UPC ready for shipment to point-of-sale retailers. Packages will be inspected for damage upon receipt at UPC. Packages containing smoke detectors that are damaged will be properly disposed or returned to the manufacturer. UPC will check the devices for the appropriate labeling on the point-of-sale packaging and in accordance with the LTPD = 3% table from 10 CFR 32.110 provided below.

Lot Tolerance Percent Defective 3.0 percent

Lot size	Sample Size	Acceptance No.
1 to 40	All	0
41 to 55	40	0
56 to 100	55	0
101 to 200	65	0
201 to 500	70	0
501 to 3,000	75	0
3,001 to 100,000	130	1

OR -

Appendix C to U.S. NRC Regulatory Guide 6.9, “Establishing Quality Assurance Programs for the Manufacture and Distribution of Sealed Sources and Devices Containing Byproduct Material” provides guidance on an acceptable quality control program for devices manufactured overseas. It states:

“Since foreign manufacturers cannot easily be inspected, tests for removable contamination and design conformity performed by these manufacturers cannot easily be verified. The distributor must provide assurance that devices received from a foreign manufacturer have been tested for these criteria. This is accomplished by the distributor conducting lot sampling of the devices. If the foreign manufacturer provides a written certification that these tests were performed, as well as providing the results of these tests, then the distributor need only perform lot sampling for these criteria according to the LTPD =5% table. However, if the foreign manufacturer does not provide a certification and the test results, and if the manufacturer received the source in foil form only, then the distributor must perform lot sampling for these criteria, according to the LTPD = 3% table. This yields a 97 percent confidence level that the devices are within removable contamination limits and meet design specifications. The reason the additional level of confidence is needed goes back to the fact of unprotected foil sources being more susceptible to damage during shipment and installation. If, however, the foreign manufacturer receives the source in a button or a completed ion chamber, from a U.S. manufacturer, then the distributor need only test the devices for removable contamination and design conformance, according to the LTPD = 5% table, even if the manufacturer does not provide a certification and test results.”

Longde S&T Technology Co. Ltd will provide a written certification with each production lot that the Am-241 sources and the finished smoke detectors have been tested in accordance with the requirements of NRC Regulatory Guide 6.9 - Appendix C – “Quality Control Program Specifications for Certain Exempt Products”.

UPC will check the devices for the appropriate labeling on the point-of-sale packaging in accordance with the LTPD = 5% table from 10 CFR 32.110 provided below.

Lot Tolerance Percent Defective 5.0 percent

Lot size	Sample Size	Acceptance No.
1 to 30	All	0
31 to 50	30	0
51 to 100	37	0
101 to 200	40	0
201 to 300	43	0
301 to 400	44	0
401 to 2,000	45	0
2,001 to 100,000	75	1

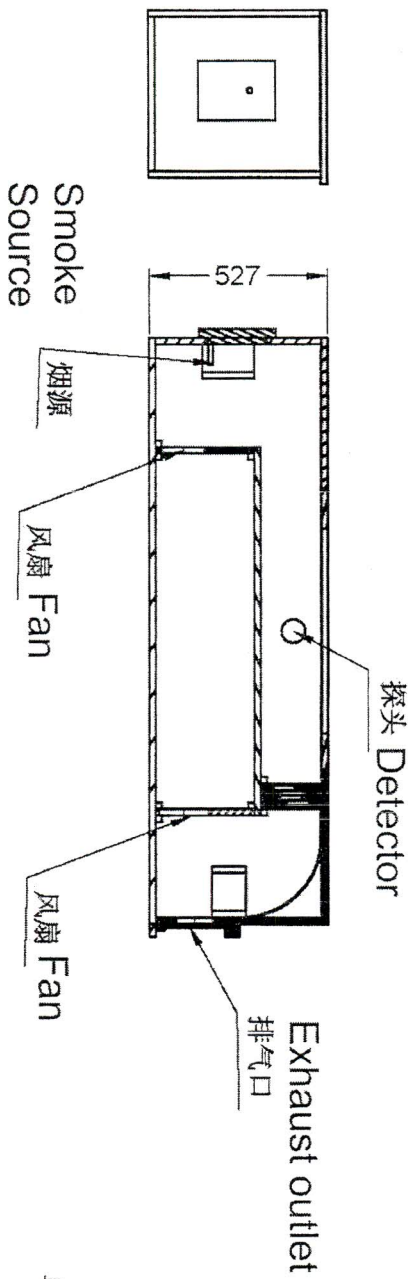
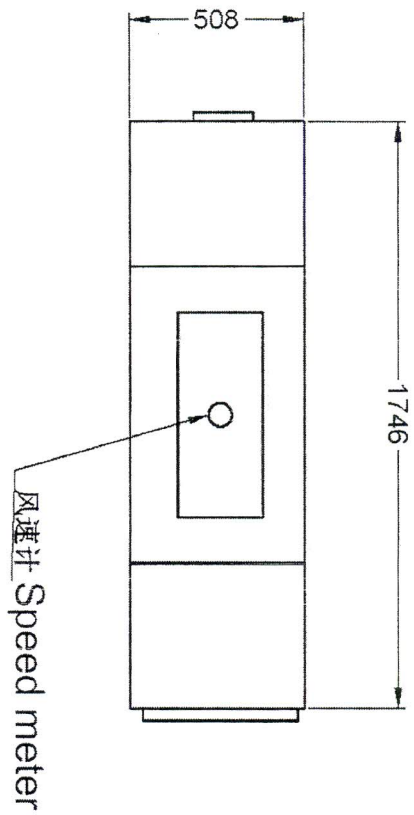
Smoke detector testing is performed in a smoke box chamber, depicted on the mechanical drawing and box drawing which identify the various components of the chamber below. Tests are performed by the manufacturer by placing the unit on the smoke output hole on the chamber. An aerosol can containing CRC smoke detector testing smoke is installed in the appropriate location, with an exposure time set for 2 – 3 seconds. When the power is turned on, the CRC tester material will be spread throughout the chamber. If operating properly, the smoke detector will alarm within 10 seconds.

Dose Rate

NRC regulations found in 10 CFR 32.28 limit the levels of radiation from each device such that the dose equivalent rate must not exceed 5 millirem per year to the whole body, 75 mrem per year to the extremities or skin, and 15 mrem per year to other organs. Given a gamma constant for Am-241 of approximately 0.314 R-m²/hr-Ci, the dose rate at 1 centimeter from a UPC smoke detector will be approximately 0.003 rem, or 3 mrem per hour at 1 centimeter. Of course, it is not likely that anyone would ever be exposed to the source at such a close distance given the intended use of the product. In fact, given the location of the source within the smoke detector, the outer surface of the front of the detector is several cm from the location of the Americium foil. Based on the inverse square law, at 5 and 25 cm from a source, the dose rates would be approximately 0.1 mrem per hour and 0.005 mrem per hour, respectively.

Labels

All UPC smoke detectors will contain a durable, legible, readily visible label or marking on the external surface containing the following: “CONTAINS RADIOACTIVE MATERIAL, 0.9 μCi Am-241, Universal Product Concepts, Inc., Chino, CA. In addition, the external surface of the point-of-sale packaging will have a legible, readily visible label or marking containing the following: “0.9 μCi Am-241, Universal Product Concepts, Inc., Chino, CA; THIS DETECTOR CONTAINS RADIOACTIVE MATERIAL. THE PURCHASER IS EXEMPT FROM ANY REGULATORY REQUIREMENTS.” Pictures of the device label and packaging labels for the two models are provided below.



单位: MM/unit

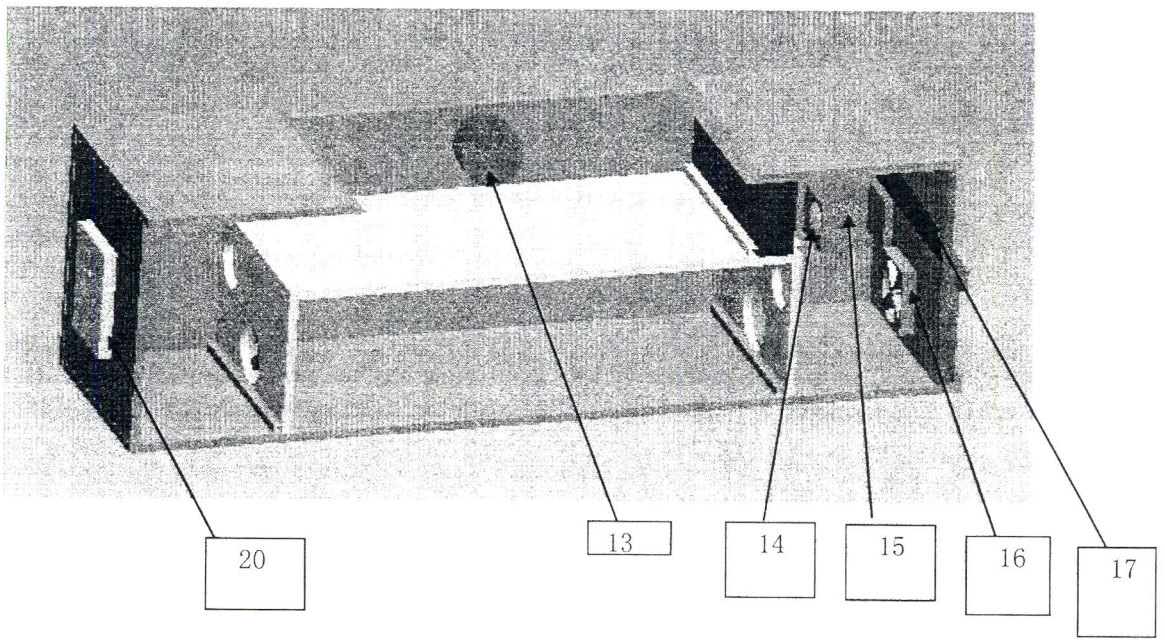
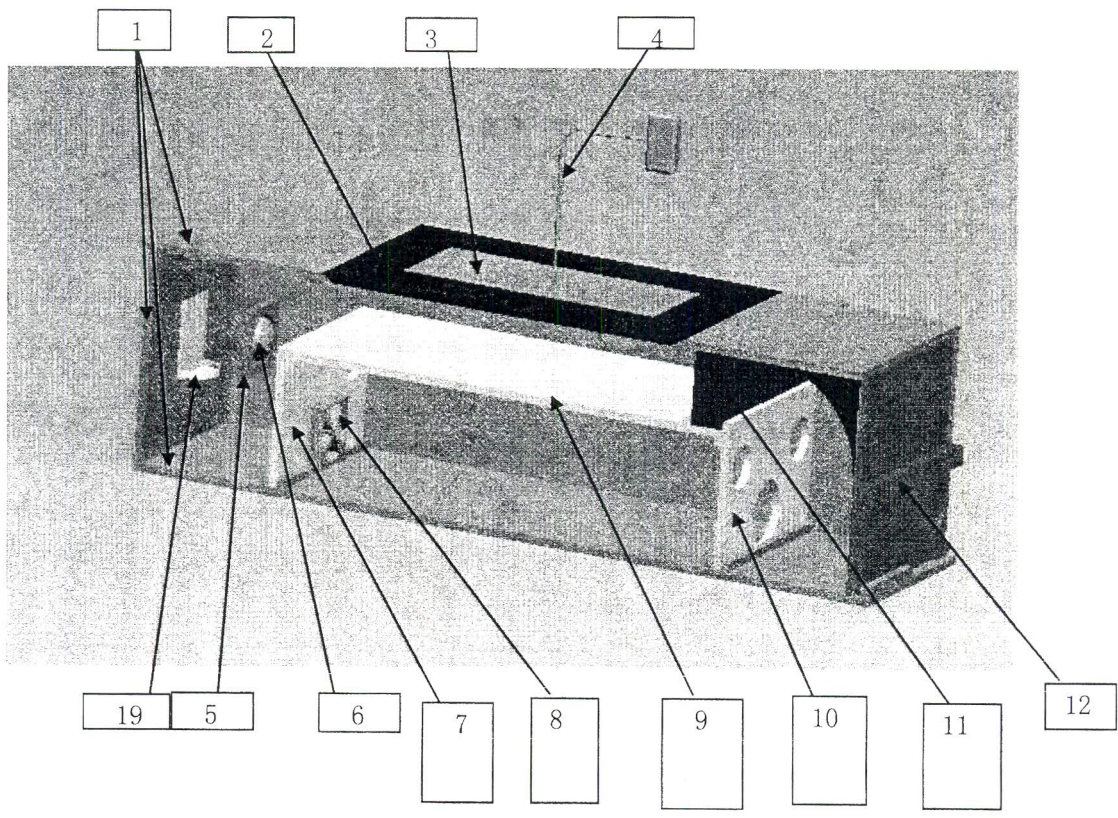
绘图:	基准尺寸 (mm)	车削加工	注塑加工	冲压加工	中山市龙的安讯科技有限公司 Longde S&T Technology (Zhong Shan) CO., LTD	描述:	机型号:	零件号:	图号:
审核:	<0.5	±0.04	±0.06	±0.05	材料:	A4	No Scale	单机用量: 1/1	第 1 页, 共 1 页
批准:	≥0.5<3	±0.05	±0.1	±0.1	表面处理:	比例:			
单位: mm	≥3<6	±0.1	±0.1	±0.1	进胶方式:				
	≥6<30	±0.1	±0.2	±0.2					
	≥30<120	±0.15	±0.3	±0.3					
	≥120<400	±0.2	±0.5	±0.5					
	角度	±0.5°	±0.5°	±0.5°					

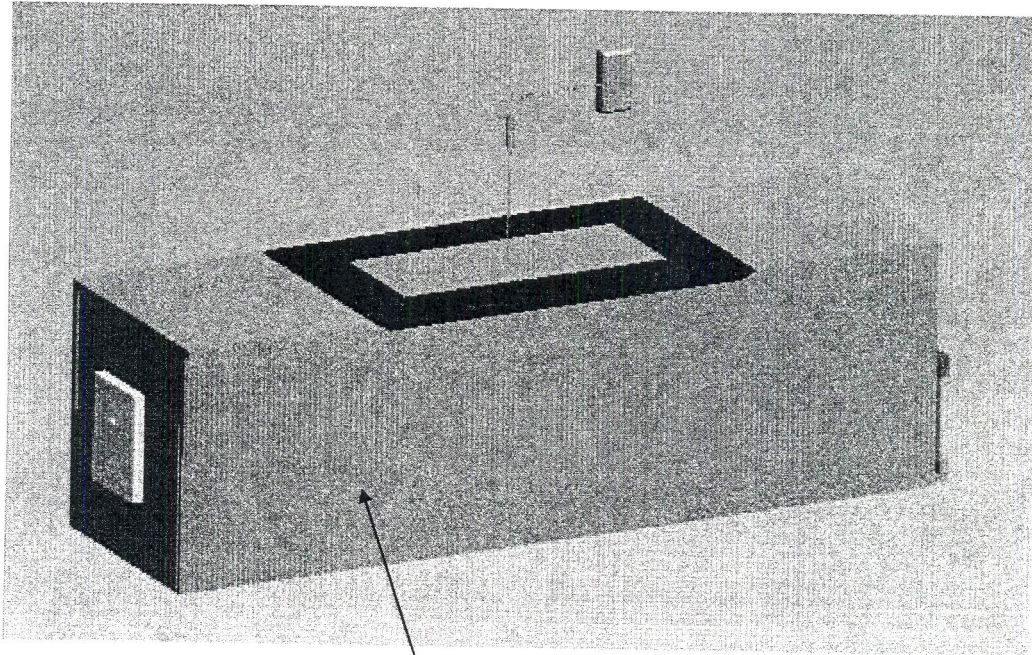
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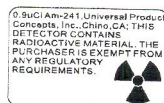
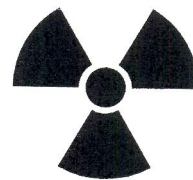


18

- 1. box case
- 2. cover
- 3. transparent cover
- 4. anemograph
- 5. light holder
- 6. light
- 7. fan holder
- 8. fan(enter)
- 9. horizontal board
- 10. holder
- 11. horizontal board
- 12. right side board
- 13. MIC
- 14. Photocell
- 15. photocell holder
- 16. fan(exit)
- 17. baffle
- 18. front baffle
- 19. smoke source holder
- 20. smoke source entrance

1	箱体	LONGDE		
2	箱体上盖	LONGDE		
3	透明板	LONGDE		
4	风速计	ALNOR INSTRUMENT CO.		
5	灯支架	LONGDE		
6	灯	GE	6V, 30W	
7	风扇支架	LONGDE		
8	风扇(进风口)	LONGDE		
9	水平面板	LONGDE		
10	支架	LONGDE		
11	过滤板	LONGDE		
12	右面板	LONGDE		
13	MIC	Denmark		
14	光电池	HUYGEN		
15	感光器支架	LONGDE		
16	风扇(排风口)	LONGDE		
17	挡板	LONGDE		
18	前面板	LONGDE		
19	烟源支架	LONGDE		
20	烟源门	LONGDE		

0.9uCi Am-241, Universal Product
Concepts, Inc., Chino, CA; THIS
DETECTOR CONTAINS
RADIOACTIVE MATERIAL. THE
PURCHASER IS EXEMPT FROM
ANY REGULATORY
REQUIREMENTS.



Scale 1:1

MAINTENANCE
WAREHOUSE

WARNING:

USE ONLY SPECIFIED BATTERIES. OTHER BATTERIES MAY CAUSE IMPROPER OPERATION. CONSTANT EXPOSURE TO HIGH OR LOW TEMPERATURES OR HIGH HUMIDITY MAY REDUCE BATTERY LIFE. TEST UNIT WEEKLY FOR SERVICE. RETURN TO THE ADDRESS ABOVE.
REPLACE BATTERY WITH: GP 1604S; Energizer #522
ASSEMBLED IN CHINA.
MODEL: HDS-126505 MFG DATE:

CAUTION: TEST MONTHLY
CLEAN BY VACUUMING THE
OUTSIDE OF THE UNIT EACH
MONTH. FOR MORE INFORMATION,
REFER TO MANUAL, REV.23 APR 10

REPLACE
ALARM BY
YEAR
2020

REPLACE BATTERY WHEN
HORN BEEPS ABOUT ONCE
PER MINUTE. CONTINUOUS
HORN INDICATES ALARM

MAINTENANCE
WAREHOUSE

WARNING:

USE ONLY SPECIFIED BATTERIES. OTHER BATTERIES MAY CAUSE IMPROPER OPERATION. CONSTANT EXPOSURE TO HIGH OR LOW TEMPERATURES OR HIGH HUMIDITY MAY REDUCE BATTERY LIFE. TEST UNIT WEEKLY FOR SERVICE. RETURN TO THE ADDRESS ABOVE.
REPLACE BATTERY WITH: GP 1604S; Energizer #522
ASSEMBLED IN CHINA.
MODEL: HDS-126661 MFG DATE:

CAUTION: TEST MONTHLY
CLEAN BY VACUUMING THE
OUTSIDE OF THE UNIT EACH
MONTH. FOR MORE INFORMATION,
REFER TO MANUAL, REV.23 APR 10

© 2010, CA, Am-241 Universal Product
Corporation, Inc., City of Industry, CA
THIS SECTION CONTAINS
RADIOACTIVE
MATERIAL. THE
PURCHASER IS
EXEMPT FROM
ANY REGULATORY
REQUIREMENTS.



MAINTENANCE
WAREHOUSE

WARNING:

USE ONLY SPECIFIED BATTERIES. OTHER BATTERIES MAY CAUSE IMPROPER OPERATION. CONSTANT EXPOSURE TO HIGH OR LOW TEMPERATURES OR HIGH HUMIDITY MAY REDUCE BATTERY LIFE. TEST UNIT WEEKLY FOR SERVICE. RETURN TO THE ADDRESS ABOVE.
REPLACE BATTERY WITH: 9V Lithium Battery 1200mAh
ASSEMBLED IN CHINA.
MODEL: HDS-126633 MFG DATE:

CAUTION: TEST MONTHLY
CLEAN BY VACUUMING THE
OUTSIDE OF THE UNIT EACH
MONTH. FOR MORE INFORMATION,
REFER TO MANUAL, REV.23 APR 10



300g (10.93oz) x 170mm (6.69in) x 45mm (1.77in)

300g (10.93oz) x 170mm (6.69in) x 45mm (1.77in)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

NO: MA-1059-S-174-S

DATE: **March 14, 2006**

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SOURCE TYPE: Foil Source

MODEL: AMM.1001; AMM.1001D; AMM.1001H; **AMM**

DISTRIBUTOR: **QSA Global Incorporated**
(Formerly AEA Technology-QSA Incorporated)
40 North Avenue
Burlington, MA 01803

MANUFACTURER: **Shenzhen CIC-QSA Global**
Manufacturing Company Ltd.
Nantou Guankou, Nanshan District
Shenzhen, China 518067

<u>ISOTOPE:</u>	<u>MAXIMUM ACTIVITY:</u>	<u>MODEL NUMBER:</u>
Americium-241	200 μCi (7.4 MBq) and 50 $\mu\text{Ci} / \text{cm}^2$ (1.85 MBq / cm^2)	AMM.1001, AMM.1001D, AMM.1001H
Americium-241	1 millicurie (37 MBq) and 250 $\mu\text{Ci} / \text{cm}^2$ (9.25 MBq / cm^2)	AMM

LEAK TEST FREQUENCY: 3 months for foils greater than 10 μCi (0.37 MBq)

PRINCIPAL USE: (P) Ion Generators, Smoke Detectors

CUSTOM SOURCE: YES ___ NO X

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

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SOURCE TYPE: Foil Source

DESCRIPTION:

Model AMM.1001

The Model AMM.1001 primary foil consists of americium oxide uniformly distributed and sintered in a fine gold matrix at temperatures in excess of 800° C. This matrix is further contained between layers of silver, gold, and palladium by hot forging. The result is a foil, which is typically 1 meter (39.34 in.) long and 4 centimeters (1.57 in.) wide. There are two primary foil designs whose dimensions depend on the particular choice of materials contained within the various layers and the target thickness of each layer.

Model AMM.1001 - Type 1

The Type 1 primary foil is shown in Attachment 1. The target thickness of each layer and the overall thickness are:

Overall thickness:	0.155 - 0.256 millimeters (6.1 - 10.1 mils)
Silver substrate:	0.15 - 0.25 millimeters (5.9 - 9.8 mils)
Gold backing:	0.001 millimeters (39.4 microns)
Americium-241 / gold matrix:	0.002 millimeters (78.8 microns)
Non-radioactive overplate:	0.002 - 0.003 millimeters (79 - 118 microns)

(Overplate is Gold, gold & palladium alloy, gold/palladium laminate, or palladium)

Model AMM.1001 - Type 2

The Type 2 primary foil uses the same layering concept as Type 1. However, in Type 2, there are more layers and there is a variation in the thickness of the overplate, matrix, and silver substrate layers as well as overplate components. The target thickness of each layer and the overall thickness are:

Overall thickness:	0.15 - 0.25 millimeters (5.9 - 9.8 mils)
Gold alloy backing:	~ 0.0005 millimeters (19.7 microns)
Silver substrate:	~ 0.2 millimeters (7.9 mils)
Gold alloy backing:	~ 0.0005 millimeters (19.7 microns)
Americium-241 / gold matrix:	~ 0.0005 millimeters (19.7 microns)
Gold alloy overplate:	~ 0.0002 millimeters (7.9 microns)
Palladium overplate:	~ 0.0018 millimeters (71 microns)

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
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SOURCE TYPE: Foil Source

DESCRIPTION (Cont'd.):

The primary foil (Type 1 or 2) is used to fabricate secondary foil sources by using various dies to punch a specific size and shape of secondary foil. Attachment 2 shows a typical secondary strip which has been fabricated from a Type 1 primary foil. Attachment 3 shows a typical secondary disc source which has been punched from a Type 1 primary foil. Attachment 4 shows a typical secondary disc source which has been punched from a Type 2 primary foil.

Model AMM.1001D

The Model AMM.1001D is manufactured by power rolling two AMM.1001 Type 1 primary foils back-to-back to produce a primary double sided foil with an overall thickness of approximately 0.38 millimeters (15 mils). The layers of the double sided foil are hot forged together prior to rolling with one active insert on either side of the silver block. The design of a typical Model AMM.1001D is shown in Attachment 5. Each foil side has an overplate of either gold/palladium alloy or palladium with a thickness of approximately 0.002 millimeters (79 microns).

Model AMM.1001H

The Model AMM.1001H consists of Model AMM.1001 or AMM.1001D discs (or similarly-shaped foils) mounted into a holder which is constructed of tin plated brass or stainless steel. The mounting is done by either rolling or by staking the edge of the holder so that the outer edges of the foil discs are not exposed. Designs of typical Model AMM.1001H sealed source assemblies are shown in Attachments 6 through 9.

Model AMM

The Model AMM.foil consists of americium oxide uniformly distributed and sintered in a fine gold matrix at temperatures in excess of 800° C. It is further contained by a hot forging process between layers of gold, gold palladium alloy, or palladium. The laminate is mounted, again by hot forging, onto a supporting substrate of silver, gold, palladium, or any combination of those three metals alloyed together. The metal layers, now continuously welded, are extended in area by means of a power rolling mill to give the required active and overall areas. The rolled foil may be distributed over the whole area of the foil piece. See Attachment 10 for a typical example of foil construction.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
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SOURCE TYPE: Foil Source

LABELING:

The source foils are transferred to device manufacturers in containers which are labeled with the model number, trefoil, isotope, the **QSA Global** name or logo, the batch number, and the quantity of secondary source foils or source assemblies in the container.

Each source shipment is accompanied with a Test Report listing the model number, nuclide, activity assay results, a reference date, batch number, leak test results, and other pertinent information. The sources are distributed with 'Handling Instructions for Radiation Sources'.

DIAGRAM:

Attachment 1 - Model 1001 Type 1 primary foil

Attachment 2 - Typical secondary strip

Attachment 3 - Typical secondary disc source punched from a Type 1 primary foil

Attachment 4 - Typical secondary disc source punched from a Type 2 primary foil

Attachment 5 - Model AMM.1001D

Attachments 6 through 9 - Typical Model AMM.1001H sealed source / holder assemblies

Attachment 10 - Model AMM

CONDITIONS OF NORMAL USE:

The Models AMM.1001, AMM.1001D, and AMM.1001H foils sources are designed for use in ionization smoke detectors. The sources will be used in industrial and residential environments. The normal conditions of use should not exceed the ANSI performance classification of C64444. The foils sources are not designed for use in corrosive environments and cyclic thermal and mechanical conditions which must be avoided. **The Model AMM foil source is intended for use as an alpha particle emitter in ionization chambers and related devices located in industrial and military environments which have been granted a specific approval by a licensing authority.**

The recommended working life of the Models AMM.1001 (AMM.1001D and AMM.1001H inclusive) foil sources is 10 years and 15 years for Model AMM; after which the user should arrange for the foil source to be inspected and assessed by a qualified authority to extend its working life, or dispose of the product through a suitable disposal route.

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SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

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SOURCE TYPE: Foil Source

PROTOTYPE TESTING:

Prototype models AMM.1001, AMM.1001D secondary foils and AMM.1001H source assemblies have been tested to conditions described by ANSI standard N5.10-1968, ANSI N542-1977, and ISO 2919, and the classification of C64444 was demonstrated. Results of wipe tests of the tested foils for all models were acceptable to less than 0.005 μCi (185 Bq).

The following additional tests were also performed on Model AMM.1001 foils:

1. Immersion in water of prototype foils for 3 weeks at room temperature; less than 0.001 μCi (37 Bq) per foil loaded at maximum activity was found in the water.
2. Immersion in 0.1 N hydrochloric acid for 24 hours at room temperature; less than 0.004 μCi (156 Bq) activity was detected in the solution.
3. Foils were subjected to tests in moist air, dry air, sulfur dioxide, ammonia vapor, and hydrochloric acid vapor. Less than 0.005 μCi (185 Bq) of contamination was detected in each case.
4. Foils were subjected to repetitive wipe tests (5000X). All single wipes were less than 0.005 μCi (185 Bq) of removable contamination.
5. Shelf-life tests of foils with 50 $\mu\text{Ci} / \text{cm}^2$ loading show no deleterious aging effects after 6 years.
6. Application of solder (used in printed circuit boards of smoke detectors) resulted in less than 0.005 μCi (185 Bq) of detectable contamination.
7. Foils and mounted foils have been subjected to ozone at 0.75 ppm for a period of 60 days and salt spray for 16 days without deleterious results.

Prototype Model AMM sources containing up to 460 $\mu\text{Ci} / \text{cm}^2$ have been tested according to the requirements in ANSI N542-1977 and ISO 2919 and have qualified for performance classification C64344. Additional testing on closely related products has been completed and has been documented in the technical report # 379 dated September 1975 and entitled "Integrity Testing of Alpha Foil Used in the Ionization Chamber Smoke Detectors" which is on file with the Agency.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
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SOURCE TYPE: Foil Source

PROTOTYPE TESTING (Cont'd.):

A summary of the Model AMM testing is as follows:

1. The product has been approved as Special Form material by the United Kingdom Department of the Environment.
2. Two batches of five samples with activities up to $200 \mu\text{Ci} / \text{cm}^2$ were subjected to high humidity atmospheres containing 1% sulphur dioxide for a period of 16 days. Wipe tests of the foil surface after testing produced results of between 3 nCi and 28 nCi from each sample. Immersion testing led to the removal of between 1 nCi and 15 nCi from each source.
3. Two batches of ten samples with activities up to $200 \mu\text{Ci} / \text{cm}^2$ were subjected to an atmosphere maintained at 45°C with high humidity and high sulphur dioxide and hydrogen sulphide concentration for 2 periods of 8 days. Wipe tests of the foil surface after testing produced results of between 0.5 nCi and 105 nCi from each sample. Immersion testing led to the removal of between 0.1 nCi and 16.2 nCi from each source.

NOTE: These severe corrosion tests were conducted on source foils containing 25 and $75 \mu\text{Ci}$ of activity and the tests resulted in removable contamination of less than 1 percent.

4. Two batches of ten samples with activities of 25 and $75 \mu\text{Ci}$ or up to $200 \mu\text{Ci} / \text{cm}^2$ were subjected to an environment in which they were sprayed intermittently with artificial sea water for a period of 16 days. Wipe tests of the foil surface after testing produced results of between 0.17 nCi and 4.1 nCi from each sample. Immersion testing led to the removal of between 0.002 nCi and 0.42 nCi from each source.
5. A batch of ten samples each containing $75 \mu\text{Ci}$ at $200 \mu\text{Ci} / \text{cm}^2$ was subjected to immersion in 0.1 N hydrochloric acid at 37.5°C for 4 hours. The amount of activity leached out was measured and the sources were wipe and immersion tested. This body fluid test was repeated on the same sources after a period of 17 days and in every case, the amount of activity leached out was reduced from 118 - 209 nCi to 27 - 44 nCi. Wipe tests of the foil surface after testing produced results of between

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
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SOURCE TYPE: Foil Source

PROTOTYPE TESTING (Cont'd.):

0.43 nCi and 0.58 nCi and immersion testing removed between 0.06 nCi and 0.10 nCi from each source. The greatest amount of activity seen to leach from any source during either test was 0.25 percent of the source activity.

6. Samples of radioactive foil loaded at $100 \mu\text{Ci} / \text{cm}^2$ were exposed to abrasion by silicon carbide particles until considerable contamination became evident and the conclusion was reached that the degree of abrasion to be expected in a normal working environment would lead to considerably less than 5 nCi of contamination based on a wipe test or immersion test.
7. As part of the test procedure involved in assessing the sources to the criteria outlined in ANSI N542-1977, samples of sources containing $460 \mu\text{Ci} / \text{cm}^2$ have passed wipe and immersion tests at the 5 nCi level after being held at a temperature of 800°C for one hour. However, further testing at even higher temperatures has been conducted to determine the likely effects of exposure to the conditions encountered in major fires, and the conclusions to be drawn are that foils loaded to $125 \mu\text{Ci} / \text{cm}^2$ releases less than 0.01 percent of its radioactive content when held at a temperature of 1200°C for ten minutes. However, the results also highlight the fact that it is necessary to consider the nature of other materials (eg. tin) which may be in close proximity to the source. In the event that these very high temperatures should occur, the source material may alloy with its immediate surroundings, possibly leading to a greater release of activity.

EXTERNAL RADIATION LEVELS:

The distributor has calculated the following radiation exposure rates for a 1 millicurie (37 MBq) source:

<u>Distance</u>	<u>Dose Rate</u>
5 centimeters (1.97 in.)	1.26 mSv / hr (0.13 R / hr)
30 centimeters (11.8 in.)	34.9 mSv / hr (0.35 R / hr)
100 centimeters (39.37 in.)	3.14 $\mu\text{Sv} / \text{hr}$ (0.31 mR / hr)

The calculations were performed using a specific gamma ray constant of $3.14 \mu\text{Sv} / \text{hr} / \text{mCi}$ at 1 meter; from the Health Physics and Radiological Health Handbook, Revised Edition, 1992.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

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SOURCE TYPE: Foil Source

QUALITY ASSURANCE AND CONTROL:

Sources are manufactured and distributed in accordance with the Quality Assurance program of QSA Global Incorporated which is in compliance with the requirements of ISO9001:2000. For operations performed by vendors, these actions are controlled to QSA Global Incorporated specifications through the Quality Assurance program. The program has been deemed acceptable for licensing purposes by the Agency and a copy of the program is on file with the Agency.

The following tests are performed on foil sources (primary and/or secondary foils) by random samples of production lots:

1. Visual inspection to ensure the foil source surface is free from defects and/or ensure the integrity of the foil in the holder.
2. Wipe test to ensure contamination is less than 0.005 μCi (185 Bq).
3. Measurement by alpha spectroscopy and/or autoradiography to ensure uniform distribution of radioactivity, thickness of the overplate, and foil source activity are within specifications.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The foil sources shall only be distributed to persons specifically licensed by the Agency, the U.S. Nuclear Regulatory Commission, or an Agreement State.
- Handling, storage, use, transfer, and disposal: to be determined by the licensing authority.
- The foil sources with activity greater than 0.37 MBq (10 μCi) shall be leak tested at intervals not to exceed 3 months using techniques capable of detecting 185 Bequerels (0.005 μCi) of removable contamination.
- The foil sources shall not be exposed to environments which exceed their ANSI N43.6-1997 classification.
- Users of these foil sources should avoid source contact with corrosive powders such as polyvinylchloride (PVC); prolonged contact of sources with organic solvents such as

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
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SOURCE TYPE: Foil Source

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE (Cont'd.):

methanol or acetone; or use in cyclic thermal or mechanical conditions.

- This registration certificate and the information contained within the references shall not be changed without the written consent of the Commonwealth of Massachusetts, Radiation Control Program.

SAFETY ANALYSIS SUMMARY:

Based on our review of the Models AMM.1001, AMM.1001D, AMM.1001H, and **AMM** foil sources, their ANSI classifications, and the information and test data cited below, we **continue to** conclude that the foil sources are acceptable for licensing purposes.

Furthermore, we **continue to** conclude that these foil sources would be expected to maintain their containment integrity for normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

REFERENCES:

The following supporting documents for the models **AMM**, AMM.1001, AMM.1001D, and AMM.1001H foil sources are hereby incorporated by reference and are made part of this registry document.

- Amersham letters dated March 18, 1971, November 4, 1974, November 8, 1974, March 10, 1975, September 20, 1979, March 15, 1995, June 6, 1997, November 24, 1997, and November 13, 1998, with attachments.
- Amersham Corporation letters dated January 11, 1982 and January 28, 1982, with attachments.
- Amersham letters dated October 23, 1997, August 13, 1999, September 30, 1999, and October 28, 1999, with enclosures thereto.
- AEA Technology letter dated December 2, 1999, with enclosures thereto.
- **QSA Global letter dated November 23, 2005 and March 14, 2006, with enclosures thereto.**

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
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SOURCE TYPE: Foil Source

ISSUING AGENCY: Massachusetts Department of Public Health Radiation Control Program

Date

3-14-06

Reviewer

John Sumares
John Sumares

Date

03/14/06

Concurrence

J. E. D.
Joshua Daehler

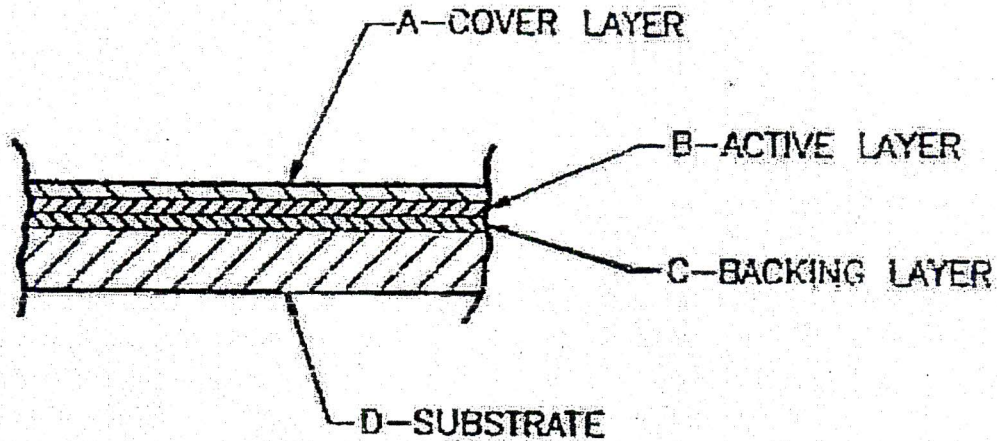
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SAFETY EVALUATION OF SEALED SOURCE
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Attachment 1 of 10

Model AMM.1001 Type 1 Primary Foil



SECTION OF ACTIVE AREA

A-GOLD OR GOLD PALLADIUM ALLOY OR GOLD
PALLADIUM LAMINATE (Pd ON SURFACE) 0.002 OR 0.003mm
B-AMERICIUM OXIDE PLUS GOLD 0.002mm
C-GOLD 0.001mm
D-SILVER 0.15-0.25mm

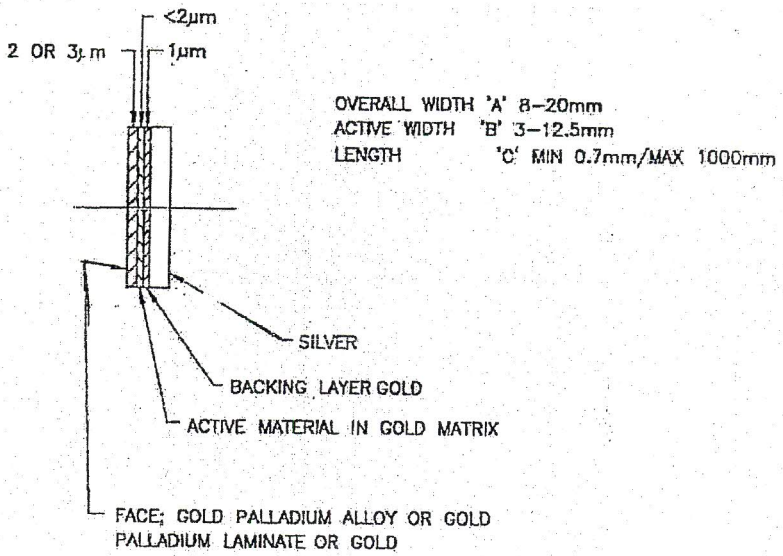
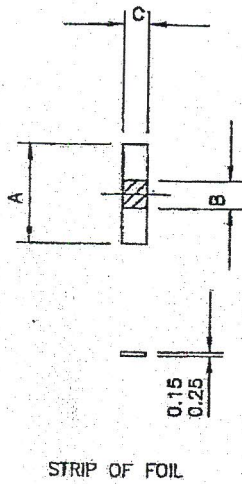
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SAFETY EVALUATION OF SEALED SOURCE
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Attachment 2 of 10

Typical Secondary Strip



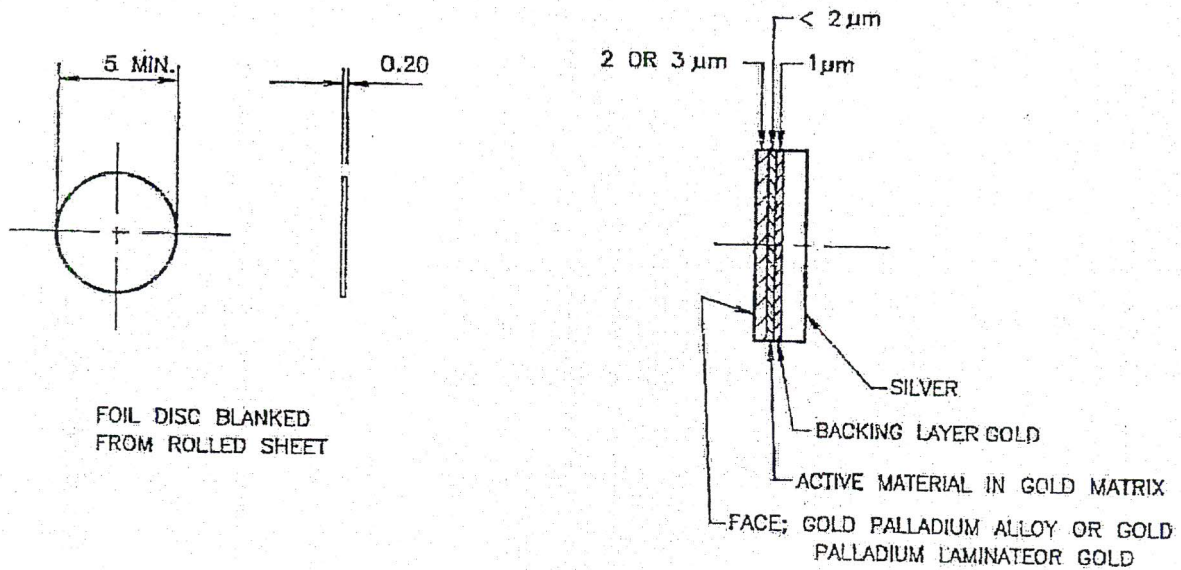
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
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Attachment 3 of 10

Typical Secondary Disc Source
(punched from a Type 1 primary foil)



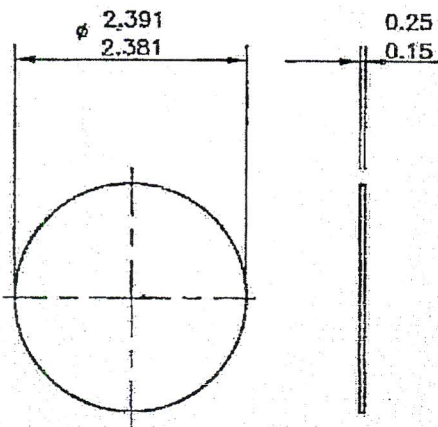
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

NO: MA-1059-S-174-S

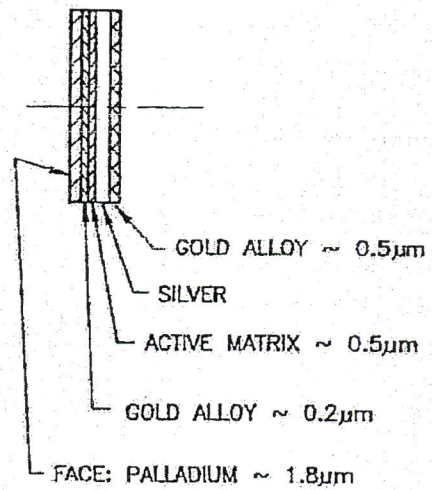
DATE: **March 14, 2006**

Attachment 4 of 10

Typical Secondary Disc Source
(punched from a Type 2 primary foil)



FOIL DISC BLANKED
FROM ROLLED SHEET



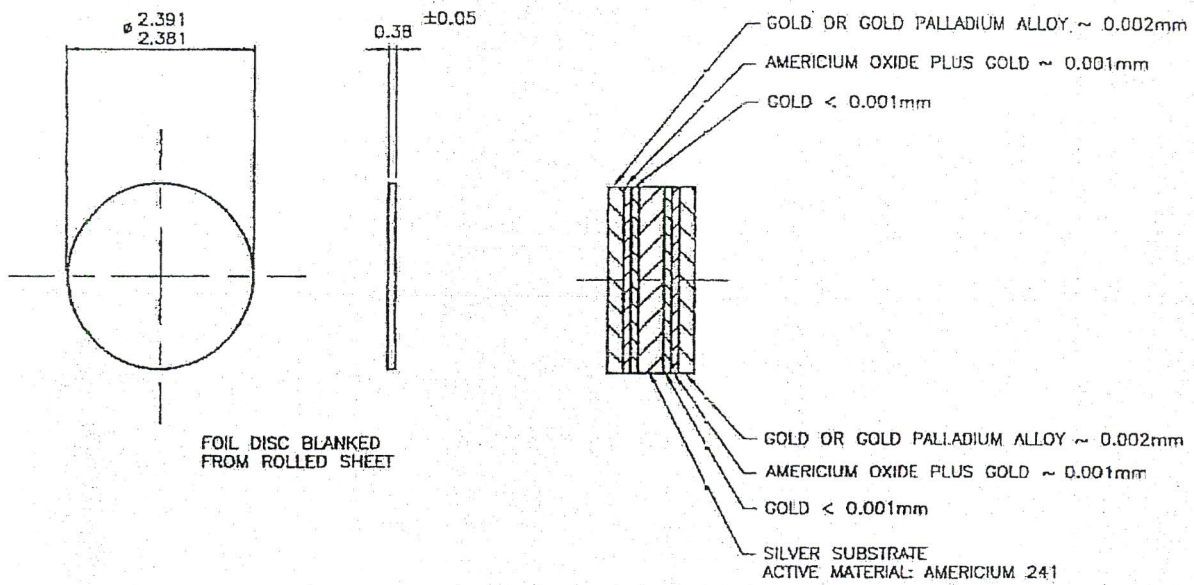
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE
(AMENDED IN ITS ENTIRETY)

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Attachment 5 of 10

Typical Model AMM.1001D



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
 SAFETY EVALUATION OF SEALED SOURCE
 (AMENDED IN ITS ENTIRETY)

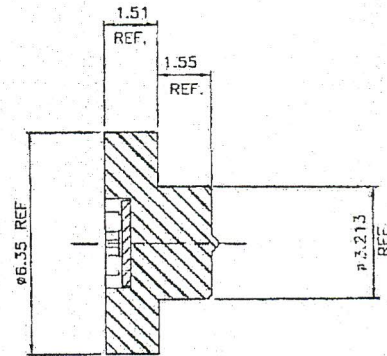
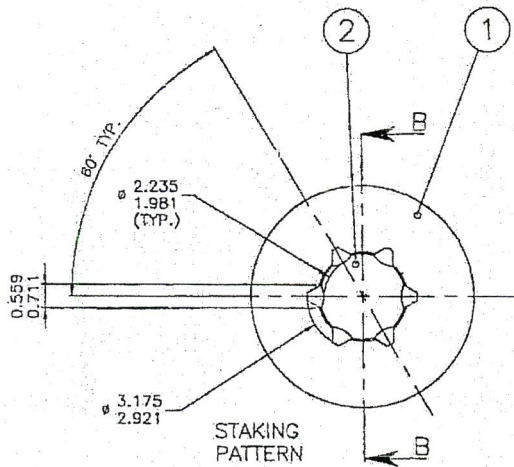
NO: MA-1059-S-174-S

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Attachment 6 of 10

Typical Model AMM.1001H Source Assembly

ITEM	DESCRIPTION
1	SOURCE HOLDER
2	ALPHA FOIL DISC



SECTION B-B

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
 SAFETY EVALUATION OF SEALED SOURCE
 (AMENDED IN ITS ENTIRETY)

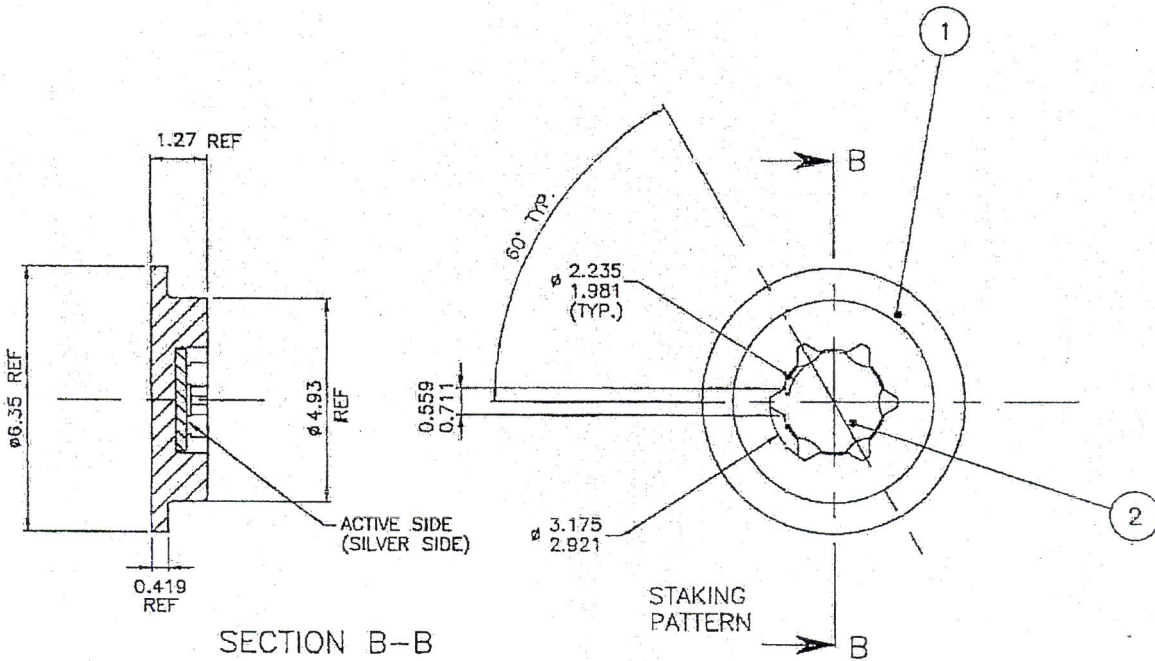
NO: MA-1059-S-174-S

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Attachment 7 of 10

Typical Model AMM.1001H Source Assembly

ITEM	DESCRIPTION
1	SOURCE HOLDER
2	ALPHA FOIL



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
 SAFETY EVALUATION OF SEALED SOURCE
 (AMENDED IN ITS ENTIRETY)

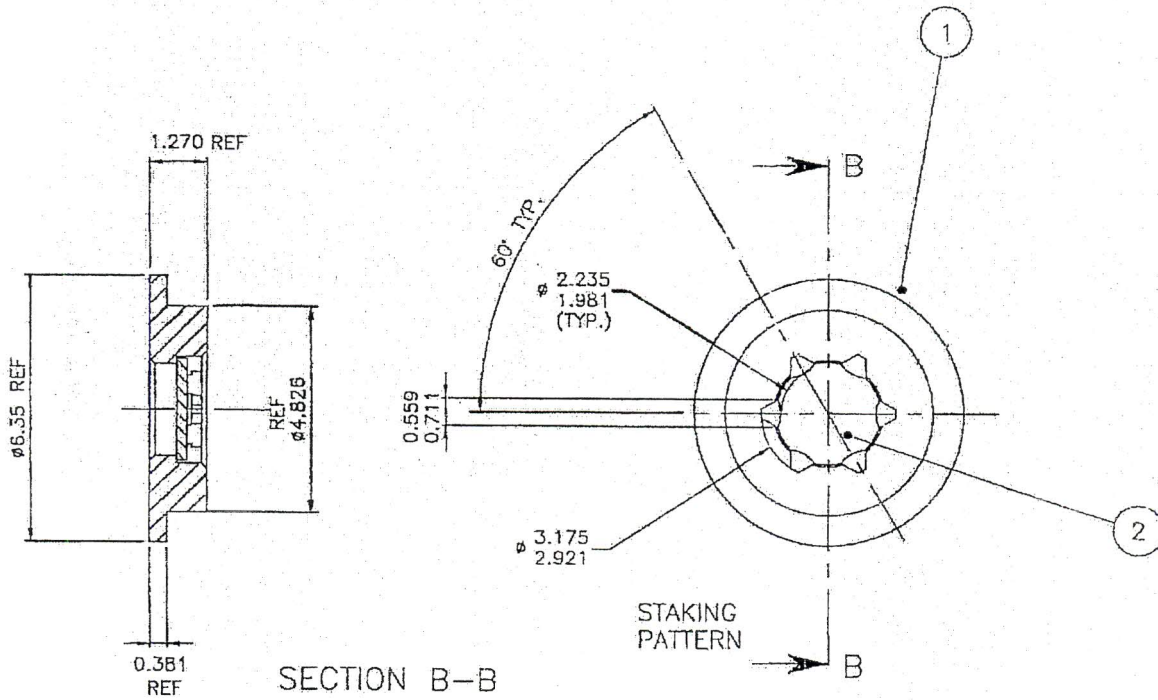
NO: MA-1059-S-174-S

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Attachment 8 of 10

Typical Model AMM.1001H Source Assembly

ITEM	DESCRIPTION
1	SOURCE HOLDER
2	ALPHA FOIL DISC (DOUBLE SIDED)



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
 SAFETY EVALUATION OF SEALED SOURCE
 (AMENDED IN ITS ENTIRETY)

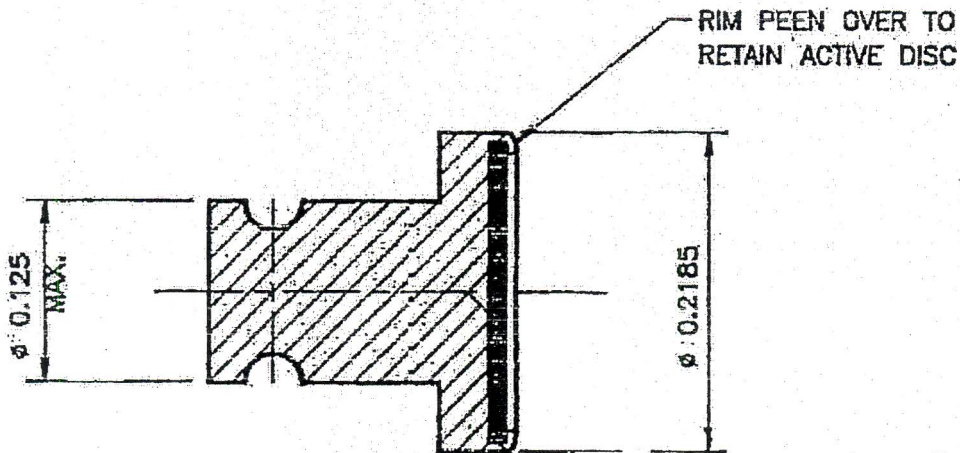
NO: MA-1059-S-174-S

DATE: March 14, 2006

Attachment 9 of 10

Typical Model AMM.1001H Source Assembly

Item	Description	Material
1	HOLDER	SEE TABLE
2	ACTIVE FOIL DISC Am241	



X No.	MATERIAL
X268/1	BRASS TIN PLATED
X268/2	MONEL TIN PLATED
X268/3	STAIN.STL.

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(AMENDED IN ITS ENTIRETY)

NO: MA-1059-S-174-S

DATE: March 14, 2006

Attachment 10 of 10

MODEL AMM FOIL SOURCE

