

OK to Release

From: <Terrill.Garland@kidde-fenwal.com>
To: "Jonathan Rivera" <JXR4@nrc.gov>
Date: 3/25/05 3:54PM
Subject: Re: SSD review for new Model No. 7054, Certificate No. NR-668-D-101-E

Jonathan,

Here is our response to the issues we discussed. I have added our comments in red on the attached list. Please let me know if this resolves all of the outstanding issues, except for the two pieces of info. I am waiting for from our manufacturer in Japan.

(See attached file: New dwgs for Alternate Assy.PDF)(See attached file: NRC Ltr 5-13-02.PDF)(See attached file: Kidde-Fenwal, Deficiencies&Clarifications-Response.doc)
Regards,

Terry Garland
Manager, D&A Project Development
Kidde-Fenwal, Inc.

Tel: (508) 881-2000 Ext. 2364
Fax: (508) 231-2015
e-mail: Terrill.Garland@kidde-fenwal.com

"Jonathan Rivera" <JXR4@nrc.gov>
> To: <Terrill.Garland@kidde-fenwal.com>
>
> cc: "John Jankovich" <JPJ2@nrc.gov>
03/24/2005 11:55 AM Subject: Re: SSD review for new Model No. 7054, Certificate No. NR-668-D-101-E

Good Morning Terry,

Would like to check up on the status of the issues that we discussed in our conference call on 3/22, and also make sure that you received my fax with the OECD/NEA 1977 standard for smoke detectors.

Thanks,

Jonathan Rivera
Materials Safety & Inspection Branch

b37

U.S. Nuclear Regulatory Commission
Phone: (301) 415-5810
Email: jxr4@nrc.gov

This email has been scanned by the MessageLabs Email Security System.
For more information please visit <http://www.messagelabs.com/email>

The information contained in this message or any of its attachments may be privileged and confidential and intended for the exclusive use of the addressee. Any views or opinions expressed in this e-mail are those of the individual and not necessarily of Kidde plc. If you are not the intended recipient, any disclosure, reproduction, distribution or other dissemination or use of this communications is strictly prohibited. If you have received this transmission in error, please contact the IT Help Desk on +44 (0) 1753 766380.

Mail Envelope Properties (42447A6A.CC0 : 10 : 44224)

Subject: Re: SSD review for new Model No. 7054, Certificate No. 668-D-101-E NR-
Creation Date: 3/25/05 3:33PM
From: <Terrill.Garland@kidde-fenwal.com>
Created By: Terrill.Garland@kidde-fenwal.com

Recipients

nrc.gov
twf4_po.TWFN_DO
JXR4 (Jonathan Rivera)

Post Office
twf4_po.TWFN_DO

Route
nrc.gov

Files	Size	Date & Time	
MESSAGE	2634	03/25/05 03:33PM	
New dwgs for Alternate Assy.PDF		653585	
NRC Ltr 5-13-02.PDF	69489		
Kidde-Fenwal, Deficiencies&Clarifications-Response.doc			29696
Mime.822	1034470		

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

Deficiency Issues To Address / Clarifications Needed
Kidde Fenwal, 04-58, NR-688-D-101-E

1. Prototype Testing

In accordance with NUREG-1556, Vol. 3, Rev. 1, Section 10.5 and Appendix F, NRC staff uses OECD/NEA 1977, "Recommendations for Ionization Chamber Smoke Detectors in Implementation of Radiation Protection Standards", for the evaluation of prototype testing procedures and results for smoke detectors. The table below compares the prototype testing for the new Model No. 7054, addressed in your application dated September 17, 2004, to the required tests in OECD/NEA 1977. Please review the table below, and either:

- (a) Provide procedures and results for the tests not addressed in your application, as indicated under Comments in the table below;
- (b) Provide justification for excluding the tests not addressed in your application; or,
- (c) Provide a description of how the procedures and results of the currently approved Model No. CPD-7051 would apply to the new Model No. 7054.

	Required Tests in OECD/NEA 1977	Addressed In 9/17/04 Application? (Yes, No)	Comments
Preliminary Tests	General inspection noting obvious defects	No	Provide information (The Outer Chamber, Item 5 on dwg. AF30404100, covers the radiation source and is soldered to the PC bd. This is the same construction as the currently approved Model No. CPD-7051).
	Measurement of external dose rates (averaged over 10 cm ²)	Yes (see comments)	Provide the equipment used and how the average over 10 cm ² is addressed (Currently waiting for our manufacturer in Japan to supply this info.)
	Measurement of radioactive contamination	No	Provide information on wipe tests (The results of the wipe test, which was performed after JRIA Drop Test 2.2, were "Under detection limit" of 1.20Bq, as described in sec. 3.2.b of JRIA Test Report)

Additional Tests (using a separate detector for each)	Temperature (-25°C, 100°C)	Yes (see comments)	Test performed from room temperature to 600°C. Address -25°C to room temperature (20°C) (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).
	Impact (0.5kg steel hammer, 0.5m)	No	Provide information (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).
	Drop (10m)	Yes	-----
	Vibration (5 to 60 Hz)	No	Provide information (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).
Additional Tests On Sources	Maintenance (on 2 sources, 2x number of cleaning operations expected during lifetime)	No	Not applicable for exempt products (smoke detectors) (N/A)
Other Tests	Effects of Fire (600°C)	No	Confirm that temperature test above satisfies this requirement (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).
	High Temperature Industrial Fire and Incineration (1200°C)	No	Provide information (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).
	Corrosion	No	Provide information (The new Model CPD-7054 uses the same source and chamber construction as the currently approved Model No. CPD-7051).

2. Background Information

In order to maintain a complete historical file, please provide:

- (a) A copy of the new drawings for the alternate assembly referenced in the letter dated July 24, 2003, listed under the References section of SSD Certificate No. NR-0668-D-101-E.
(See attached drawings)

- (b) A copy of the letter dated May 13, 2002, listed under the References section of SSD Certificate No. NR-0668-D-101-E.
(See attached copy)

3. Degree of Human Access

In your application, under the Detector Assembly drawing, Appendix B, you indicate screws under Item Nos. 15 and 16. Please indicate whether or not these screws are tamper resistant, and/or describe how access to the source is prevented.

(These are standard screws, which only hold on the plastic enclosure. The steel Outer Chamber, item No.5, which is soldered to the PC bd., prevents access to the source.)

4. Radiation Profiles

Please describe the environmental conditions present during the dose rate measurements addressed under Appendix D of your application, as well as the type, window thickness, and sensitivity of the instrument used.

(Currently waiting for our manufacturer in Japan to supply this info.)

5. Quality Assurance and Quality Control

Please confirm that the Quality Assurance / Quality Control procedures that are on file with the NRC will not change for the manufacture and distribution of the new Model No. 7054.

(This has already been addressed)

5/13/02

Nuclear Regulatory Commission
Mail Stop T-8F-5
Washington D.C. 20555-001

Attention Seung Lee

RE: Device Registration NR-0668-D-101-E Amendment Request

In response to your e-mail dated 4-18-2002 this letter will address those questions in that letter.

Question # 1. You will find enclosed with this letter a copy of our ISO 9001 Certificate issued to us on August 20, 1999.

Question # 2. Kidde-Fenwal does not purchase sealed sources from Amersham. We have named Amersham in our licenses, certificates and other documents as a alternative to NRD. We would only purchase sealed sources from Amersham if NRD was unable to supply us. We have confirmed that the model numbers are still valid from both suppliers. NRD supplies us with model NRD A-001, and Amersham (now known as AEA Technologies) still supplies Nohmi with model AMMD-1001H. This is a sealed source mounted in a holder.

Question # 3. Kidde-Fenwal purchases these devices already assembled in there holders (sealed sources). The only assembly done here is mounting of the holder into the smoke chamber.

Question # 4. The letter dated November 27, 1991 describes in summary the quality guidelines for these detector assemblies. The procedures that are described in the letter are Kidde-Fenwal's procedures Nohmi Bosai Ltd also employs these procedures in their manufacturing process. We manufacture model CPD7052, and Nohmi manufactures model CPD7051. Each lot received from Nohmi is accompanied by quality conformance documentation, and Kidde-Fenwal performs their own quality conformance test procedures prior to distribution of these detectors in the U.S.

Question # 5. This question is answered in question # 4.

Question # 6. Kidde-Fenwal has been using LTPD of 5% and C=0 for all of the smoke detectors that we manufacture and distribute. One reject would fail the entire lot. Please note that we have been using the table in 10 CFR 32.110 (b)(6) but as stated in the original amendment request, one reject will fail the entire lot no matter what the sample size. The table in 10 CFR allows 1 failure on a sample size of 2,001 to 100,000 pieces. The sampling sizes listed in this table are identical to the table found in NRC's regulatory guide 6.9, page C-6. Kidde-Fenwal will be referencing and following the guidelines in Regulatory Guide 6.9 as well as NUREG 1556 vol.3.

Question # 7. Quality records as they pertain to radioactive materials and radiation safety at Kidde-Fenwal are kept for many years. Records are kept in the office of the Radiation Safety Officer, and date back to the early 80's. Section 4.16 of the Quality manual will be revised.

Sincerely,
William E. Sawyer R.S.O.

Enclosures: Kidde-Fenwal's ISO 9001 Certificate
Blue Print for Model NRD A-001

CONSTRUCTION DETAILS

Refer to DETECTOR ASSEMBLY DWG.NO.AF30404000

1. **LOWER ENCLOSURE** - Component Recognized plastic (QMFZ2) by UL, Acrylonitrile - chlorinated, polyethylene - styrene (ACS), No.NF-920, rated 94V-0, manufactured by ASAHI CHEMICAL INDUSTRY CO.,LTD. Refer to DWG.NO.AF20400901d
Same component as used in Model 7155 photoelectric Smoke Detector.
2. **COVER** - Same material as item 1.
Refer to DWG.NO.CF20401002a.
3. **WIND SCREEN** - Same material as item 1.
Fits in the printed wiring board. Refer to DWG.NO.CF30401003
4. **SUPPORT PLATE** - Component Recognized plastic (QMFZ2) by UL, PC/ABS Polymer Alloy Designated "Iupilon", NO.PM2220, rated 94V-0, manufactured by MITSUBISHI ENGINEERING-PLASTIC CORP.
Refer to DWG.NO.AF30404001.
5. **OUTER CHAMBER** - Stainless steel plate. Approximate overall dimensions 43.2mm ID at bottom, 34mm ID at top, 20.5mm high, Nominally 0.3mm thick. With 12 smoke entry openings Approx 4.5mm by 7.0mm on cover side.
Refer to DWG.NO.CF30401005.
6. **INTERMEDIATE ELECTRODE** - Stainless steel plate. Approximate overall dimensions 27mm OD, 6.2mm high, nominally 0.3mm thick. Refer to DWG.NO.CF40401010.
7. **SCREW** - Brass, M3X15, Ni plated, four provided.
With spring lock and plain washers.
8. **SOURCE** - Americium 241 (hermetically sealed)

Manufacturer	AEA Technology plc. Harwell, Oxfordshire, England
Product Code	AMMK 7544
Source Dimension	Overall ϕ 2.381 ~ ϕ 2.391
Radioactivity	0.8 microcurie (29.6kBq)

look at Drawing

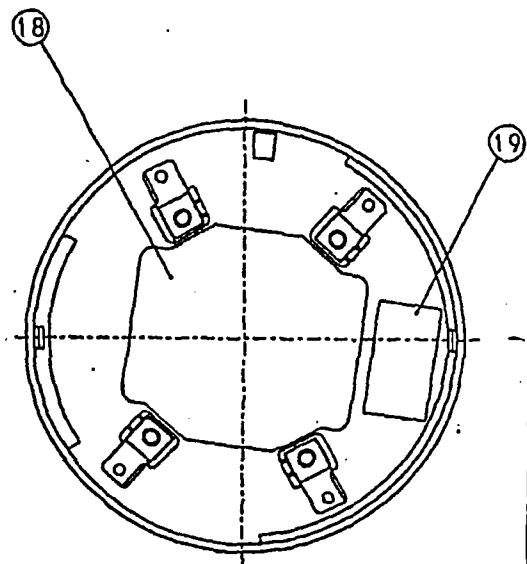
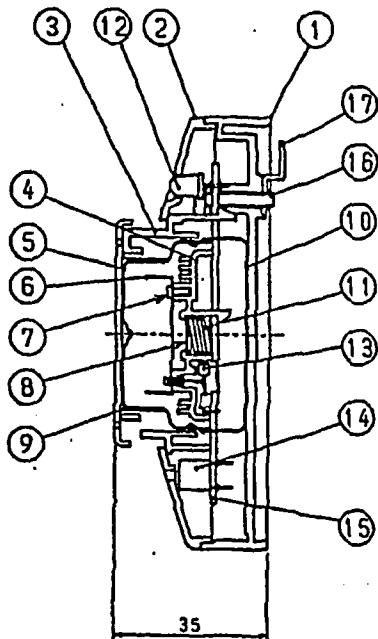
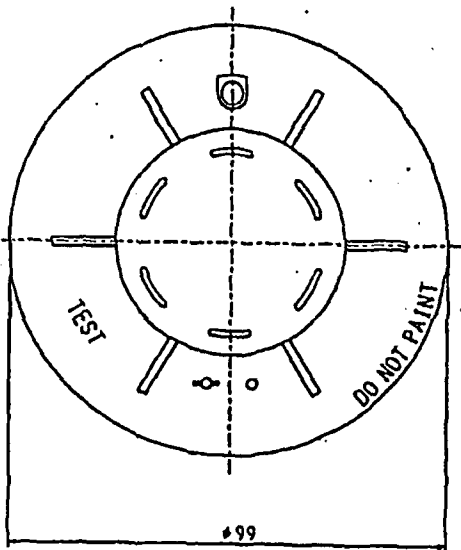
Number of source 1 piece
per detector

As refer to Certificate of Approval of Design for Special Form Radioactive Material, the source is loaded into a holder, fixed to the printed wiring board together with the support plate, and housed in the outer chamber.

As can be seen from DETECTOR ASSEMBLY DWG. NO. AF30404000 / CHAMBER ASSEMBLY DWG. NO. AF30404098, the whole source is completely shielded with the metallic outer chamber and shield case so that the source can not be readily disassembled nor touched with finger.

9. INSECT SCREEN - Stainless steel screen, fits in item 5. Refer to DWG.NO.CF30401009.
10. SHIELD CASE - Stainless steel plate. Approximate overall dimensions 44.5mm ID, 6.7mm high, nominally 0.8mm thick. Refer to DWG.NO.AF30401006a.
11. SPRING - Stainless steel spring. Approximate overall dimensions 7.2mm O.D, 9.0mm high, nominally 0.8mm thick. Refer to DWG.NO.AF40404003
12. INDICATING LED - Built-in type.
13. FET - Refer to ELECTRICAL PARTS LIST(Q1)
14. CHECK TERMINAL - Phosphorus bronze, Sn plated, two provided. Nominally 0.8mm thick. Covered with thermoplastic cube (overall dimensions approx 6.5 by 6.8mm, 7.2mm high).
15. PRINTED WIRING BOARD - Component Recognized(ZPMV2) NO.YS-114, maximum solder bath temperature and time limits are not to be exceeded, Has a minimum flame rating of 94V-0. Refer to DWG.NO.SF30404004 and SF40404005 for Marking and Circuit Patterns information.
16. SCREW - Steel, Zn plated
17. CONTACT BLADE - Brass, Zn-Sn alloying plated, four provided. Nominally 1.0mm thick. Same component as used in the 7155 Detector.

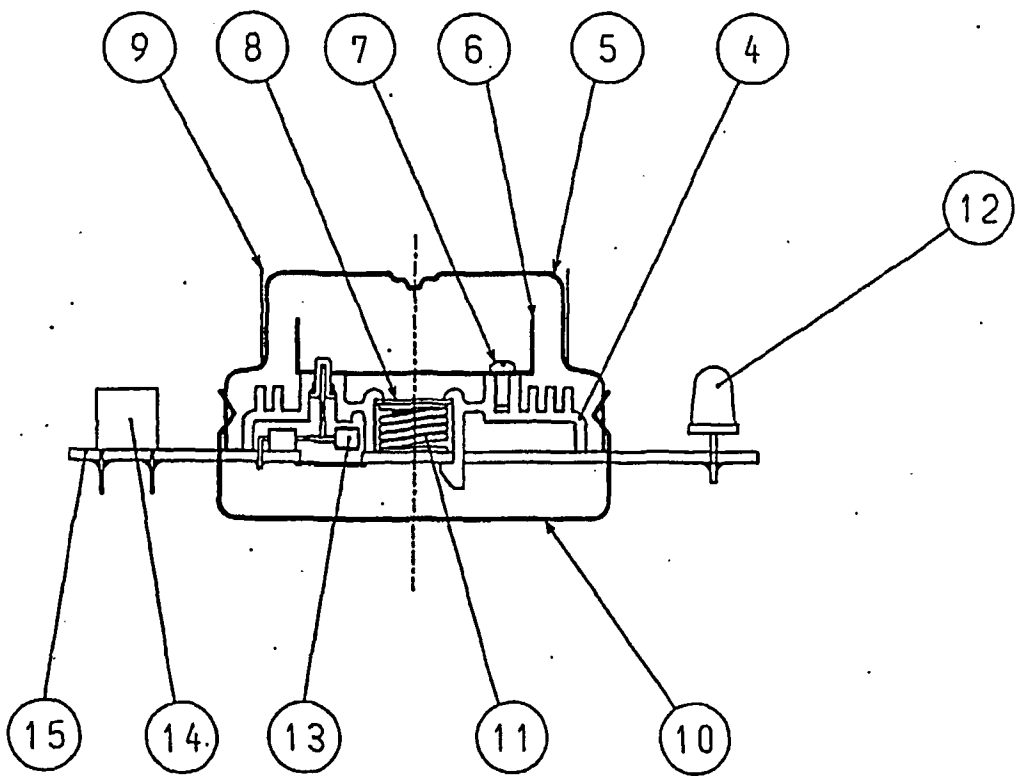
4220221



- | | |
|---------------------------|--------------------------|
| 1. LOWER ENCLOSURE | 11. SPRING |
| 2. COVER | 12. INDICATING LED |
| 3. WIND SCREEN | 13. FET |
| 4. SUPPORT PLATE | 14. CHECK TERMINAL |
| 5. OUTER CHAMBER | 15. PRINTED WIRING BOARD |
| 6. INTERMEDIATE ELECTRODE | 16. SCREW |
| 7. SCREW | 17. CONTACT BLADE |
| 8. SOURCE | 18. NAME PLATE |
| 9. INSECT SCREEN | 19. UL LABEL |
| 10. SHIELD CASE | |

No.	DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE:
						IONIZATION SMOKE DETECTOR
						7051 DETECTOR ASSEMBLY
						DWG. NO. AF30404000
						NOHMI BOSAI LTD.

UNIT: mm	SCALE: 1 / 1
DATE: SEP. 25 2002	
DESIGNED BY: A. Okada	TRACED BY:
CHECKED BY: I. Uchiyama	APPROVED BY:

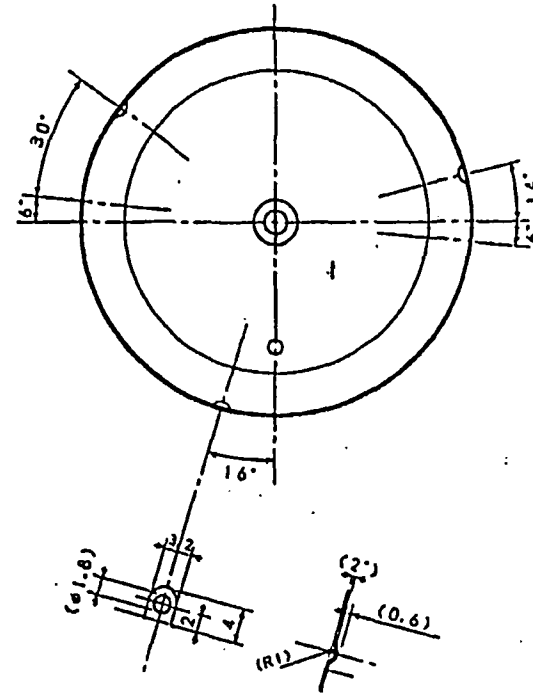
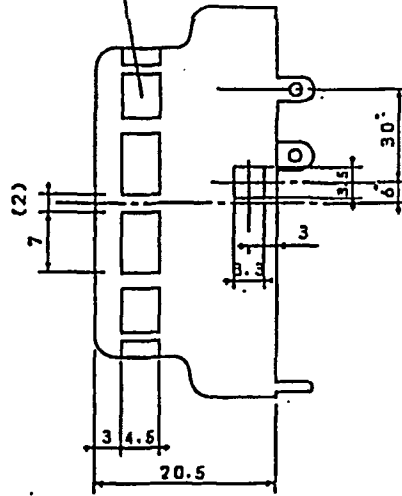
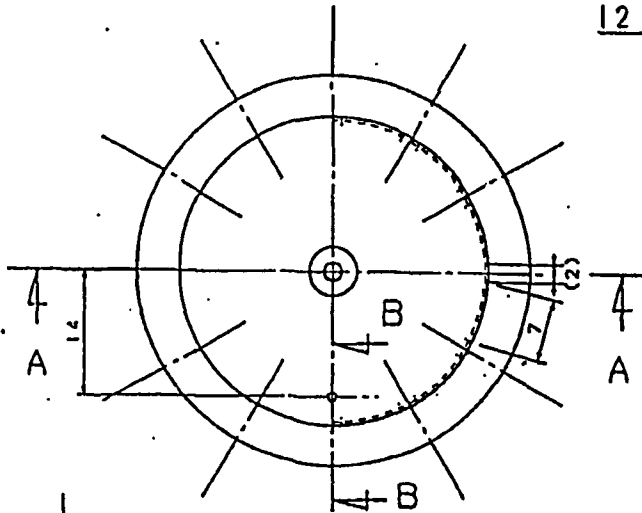


- 4. SUPPORT PLATE
- 5. OUTER CHAMBER
- 6. INTERMEDIATE ELECTRODE
- 7. SCREW
- 8. SOURCE
- 9. INSECT SCREEN
- 10. SHIELD CASE
- 11. SPRING
- 12. INDICATING LED
- 13. FET
- 14. CHECK TERMINAL
- 15. PRINTED WIRING BOARD

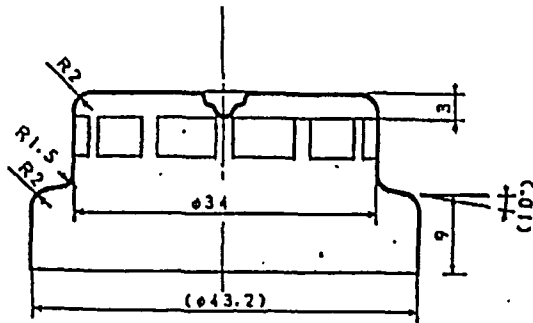
No.	DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE:
						IONIZATION SMOKE DETECTOR
<small>UNLESS OTHERWISE SPECIFIED TOLERANCE:</small> ±0.13 > 18..... 20±0.7 > 20..... 70±1.0 > 70..... 150±1.2 > 150..... 300±1.5 > 300..... 500±2.0 (UNIT:mm)						UNIT: mm SCALE: 2 / 1 DATE: SEP. 25 2002
DESIGNED BY: <i>A. Okada</i> CHECKED BY: <i>J. Sakihama</i>						CHAMBER ASSEMBLY DRG. NO. AF30404098
APPROVED BY: <i>[Signature]</i>						NOHMI BOSAI LTD.

MATERIAL: STAINLESS STEEL PLATE
SUS 304, NOMINALLY 0.3 mm THICK

12 OPENINGS



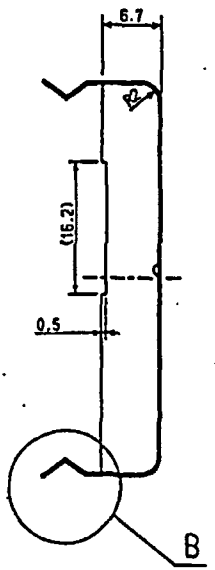
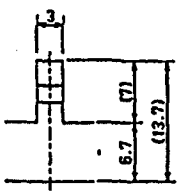
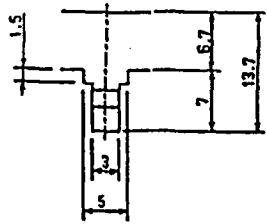
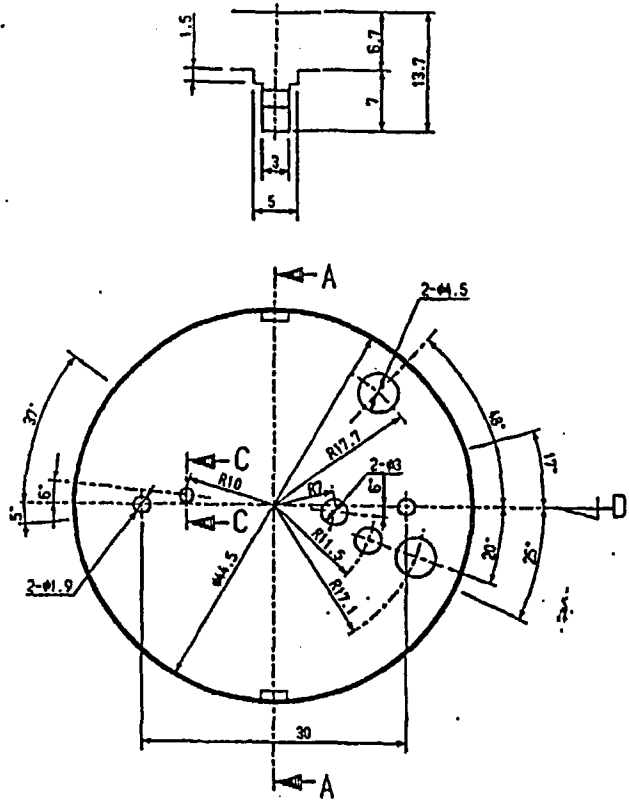
SECTION B-B (5/1)



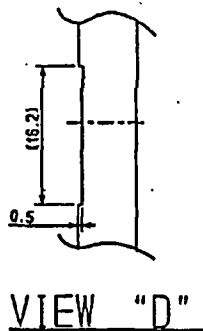
SECTION A-A

NO.	DATE	DESCRIPTION	REV.	APP.	IONIZATION SMOKE DETECTOR		
CHECKS AT SPECIFIED TIME INTERVALS					UNIT: mm	SCALE: 2/1	TITLE:
310	30-20-6	ANGLE	DATE: OCT. 18, '90		OUTER CHAMBER		
330	30-20-7	23°	DESIGNED BY	TRACED BY	DWG. NO.	CF30401005	
370	30-21-0		<i>S. Kobayashi</i>		NOHMI BOSAI LTD.		
370	30-21-2		CHECKED BY	APPROVED BY			
310	30-21-6		<i>T. Takahashi</i>				<i>Y. Tomita</i>
330	30-22-0	(UNIT: mm)					

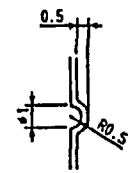
MATERIAL: STAINLESS STEEL PLATE
 SUS 304, NOMINALLY 0.3mm THICK



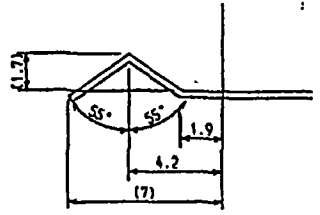
SECTION A-A



VIEW "D"



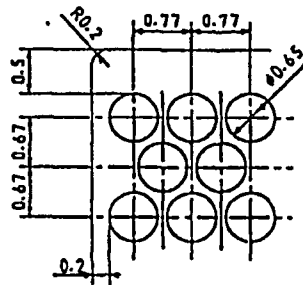
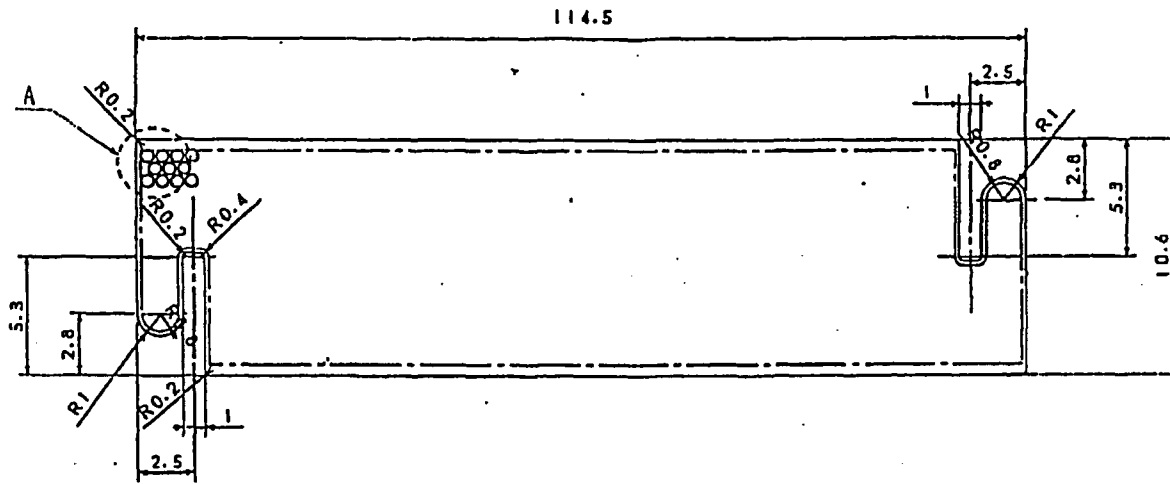
SECTION C-C (5/1)



DETAIL "B" (5/1)

SEP.25.'92	Addition of phi 3 hole	A. Sasaki	A. Takahashi	T. Sakai	TITLE:	
No.	DATE	DESCRIPTION	REV.	CHK.	APP.	IONIZATION SMOKE DETECTOR
UNLESS OTHERWISE SPECIFIED TO DIMENSIONS:		UNIT: mm	SCALE: 2 / 1			SHIELD CASE
> 10.....30±0.7	ANGLE	DATE: OCT. 18 '90	DESIGNED BY	DRAWN BY	DWG. NO.	AF30401006a
> 30.....70±1.0	± 3°	DESIGNED BY	I. KOBAYASHI	APPROVED BY		
> 70.....150±1.2		CHECKED BY	T. SASAKI	APPROVED BY		
> 150.....300±1.5				Y. TOMITA		
> 300.....500±2.0	(UNIT:mm)				NOHMI BOSAI LTD.	

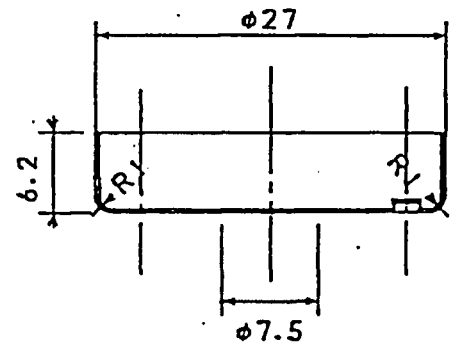
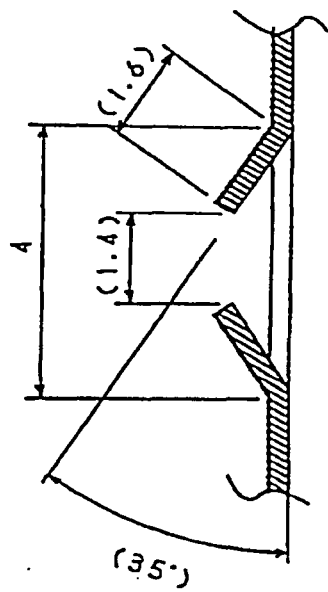
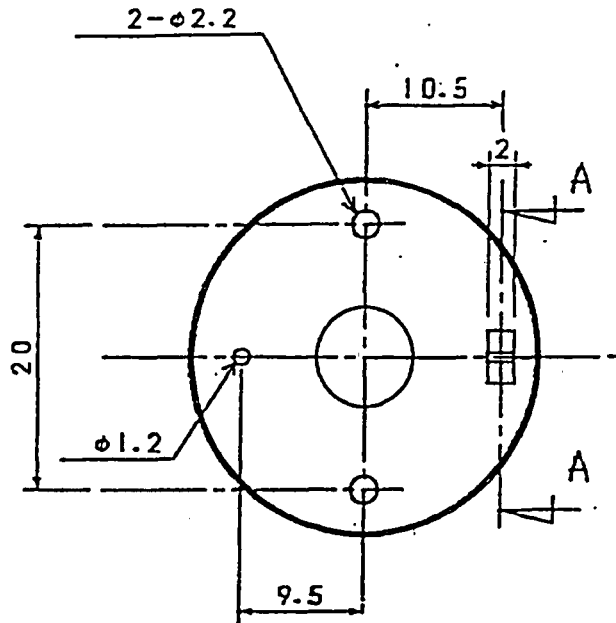
MATERIAL: STAINLESS STEEL PLATE
SUS 304 NOMINALY 0.1mm THICK



DETAIL "A" (10/1)

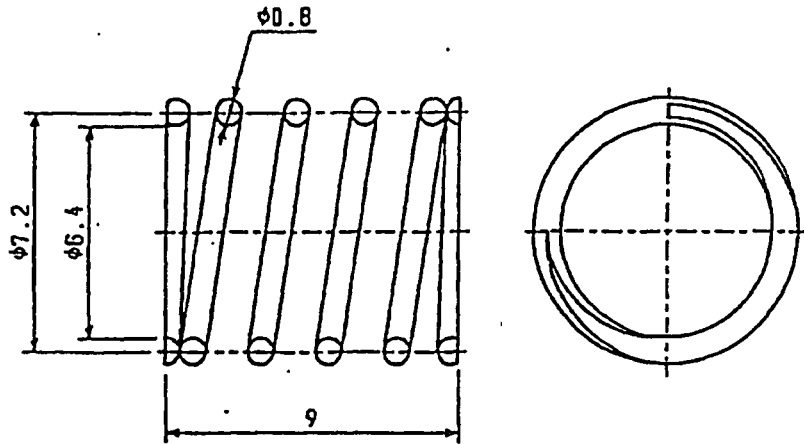
NO.	DATE	DESCRIPTION	REV.	APP.	IONIZATION SMOKE DETECTOR	
TITLE:					INSECT SCREEN	
PRECISE DIMENSION SPECIFIED TOLERANCE: UNIT: mm SCALE: 5/1					DWG. NO. CF30401009	
> 10..... 30-±0.5	ANGLE	DATE: Jun. 22 '91	DESIGNED BY	TRACED BY	DVG. NO.	
> 30..... 70-±1.0	33°		<i>I. Kobayashi</i>		CF30401009	
> 70..... 150-±1.7		CHECKED BY	APPROVED BY			
> 150..... 300-±1.5		<i>T. Sasaki</i>	<i>Y. Tomita</i>			
> 300..... 500-±2.0		(UNIT:mm)				
					NOHMI BOSAI LTD.	

MATERIAL: STAINLESS STEEL PLATE
 SUS 304, NOMINALLY 0.3 mm THICK



SECTION A-A
 (10/1)

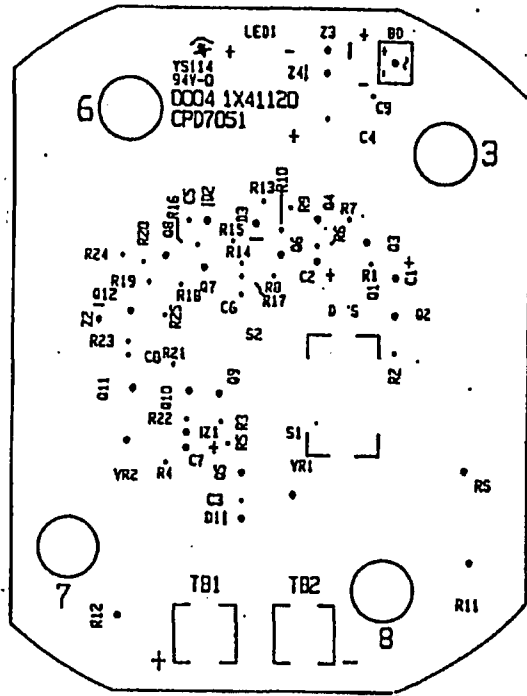
NO.	DATE	DESCRIPTION	REV.	APP.	IONIZATION SMOKE DETECTOR	
UNLESS OTHERWISE SPECIFIED TOLERANCE: UNIT: mm SCALE: 2/1					TITLE: INTERMEDIATE ELECTRODE	
$\le 10 \dots \pm 0.5$ >10.....30±0.7 >30.....70±1.0 >70.....150±1.2 >150.....300±1.5 >300.....500±2.0 (UNIT:mm)		ANGLE ±3°	DATE: Oct.27.'91 DESIGNED BY <i>J. Kobayashi</i>	TRACED BY CHECKED BY <i>T. Sasaki</i>	APPROVED BY <i>Y. Tanaka</i>	DWG. NO. CF40401010
					NOHMI BOSAI LTD.	



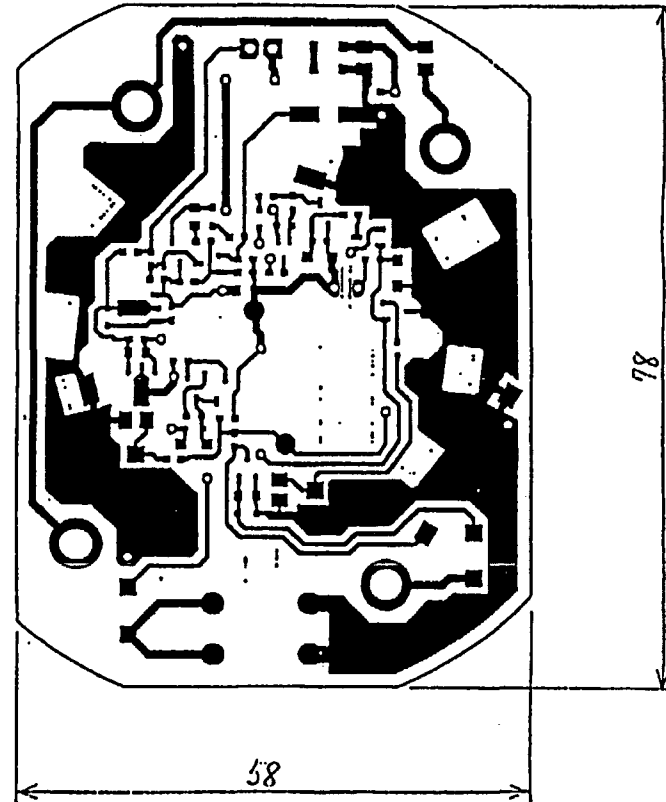
MATERIAL	SUS304-WPA
DIAMETER OF SPRING MATERIAL(mm)	0.8
AVERAGE DIAMETER OF COIL (mm)	7.2
INSIDE DIAMETER OF COIL (mm)	6.4
EFFECTIVE NUMBER OF COILS	4.5
TOTAL NUMBER OF SPRING COILS	6.5
THE DIRECTION OF A VOLUME	RIGHT
FREE HEIGHT (mm)	9
FOR ASSEMBLY HEIGHT (mm)	5.5
OVERWEIGHT (N)	7.7N±10%
SPRING CONSTANT	0.22

DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE; IONIZATION SHOKE DETECTOR
UNLESS OTHERWISE SPECIFIED TOLERANCE;					SPRING
UNIT: mm SCALE: 5 / 1					
DATE: SEP. 25 2002					DWG. NO. AF40404003
DESIGNED BY A. Phada					
CHECKED BY J. Ishikawa					NOHMI BOSAI LTD.
APPROVED BY [Signature]					
$\le 10 = \pm 0.5$ > 10..... 30 = ±0.7 > 30..... 70 = ±1.0 > 70..... 150 = ±1.2 > 150..... 300 = ±1.5 > 300..... 500 = ±2.0 (UNIT:mm)					
ANGLE ± 3°					

MARKING PATTERN



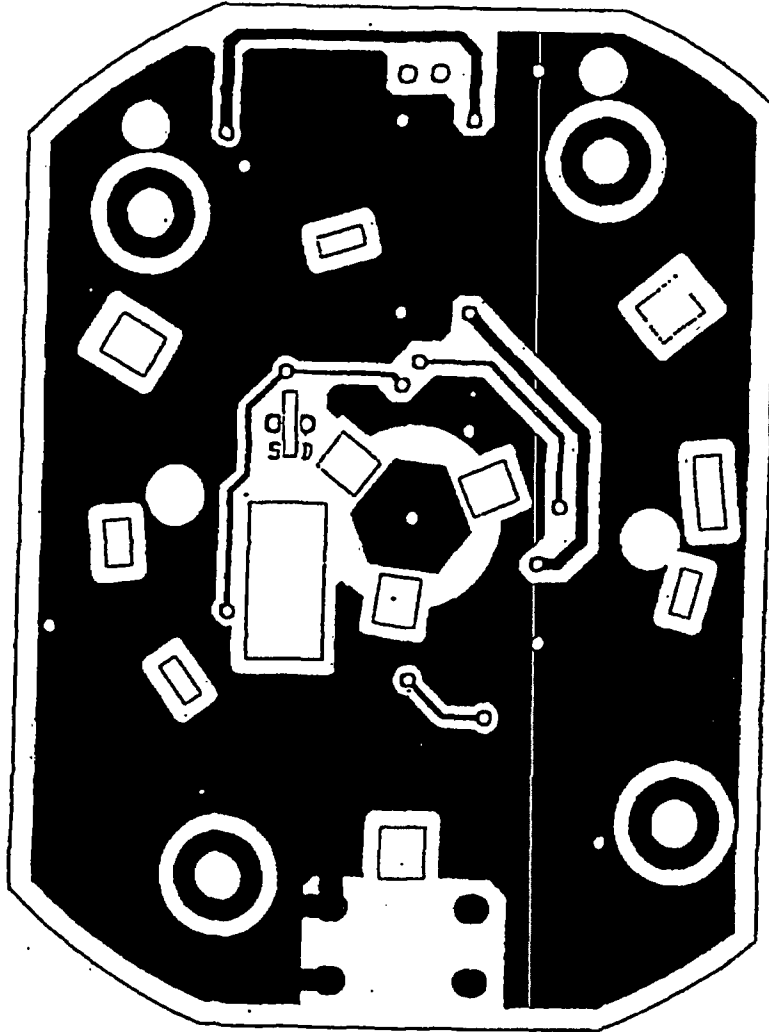
CIRCUIT PATTERN



COMMENT: RECOGNIZED (ZPMV2), NO. YS-114,
RATED 94V-0, NOMINALLY 1.2MM THICK.

No.	DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE:
						IONIZATION SMOKE DETECTOR
						MARKING & CIRCUIT PATTERNS (SIDE A)
						DWG. NO. SF30404004
						NOHMI BOSAI LTD.
UNLESS OTHERWISE SPECIFIED TOLERANCE:		UNIT: mm	SCALE: 2 / 1	DATE: SEP. 25 2002		
> 10..... 20±0.7	ANGLE	DESIGNED BY	DRAWN BY			
> 20..... 20±1.0		S. Tomimoto				
> 25..... 150±1.2	1.3°	CHECKED BY	APPROVED BY			
> 150..... 300±1.5		T. Okada	7.1.02			
> 300..... 500±2.0						

CIRCUIT PATTERN



COMPONENT RECOGNIZED (ZPMV2), NO. YS-114,
 RATED 94V-C, NOMINALLY 1.2MM THICK

DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE:
					IONIZATION SMOKE DETECTOR
DATE: -- SCALE: 2 / 1 DATE: SEP. 25 2002 DESIGNED BY: S. Tomimoto CHECKED BY: T. Okada APPROVED BY: <i>[Signature]</i>					CIRCUIT PATTERN(S) SIDE B1 Dwg. NO. SF40404005 NOHMI BOSAI LTD.
$R1 = 0.7$ $R2 = 1.2$ $R3 = 1.2$ $R4 = 1.6$ $R5 = 2.0$	ANGLE = 3°				