

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

OK to Release

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" To:  
<JXR4@nrc.gov> <Terrill.Garland@kidde-fenwal.com>  
> >  
cc: "John Jankovich"  
03/24/2005 <JPJ2@nrc.gov>  
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

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

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**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 <sup>2</sup> )	Yes (see comments)	Provide the equipment used and how the average over 10 cm <sup>2</sup> 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)

<b>Additional Tests (using a separate detector for each)</b>	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).
<b>Additional Tests On Sources</b>	Maintenance (on 2 sources, 2x number of cleaning operations expected during lifetime)	No	Not applicable for exempt products (smoke detectors)  (N/A)
<b>Other Tests</b>	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 $\phi$ 2.381 ~ $\phi$ 2.391
Radioactivity	0.8 microcurie (29.6kBq)

*look at Drawing*

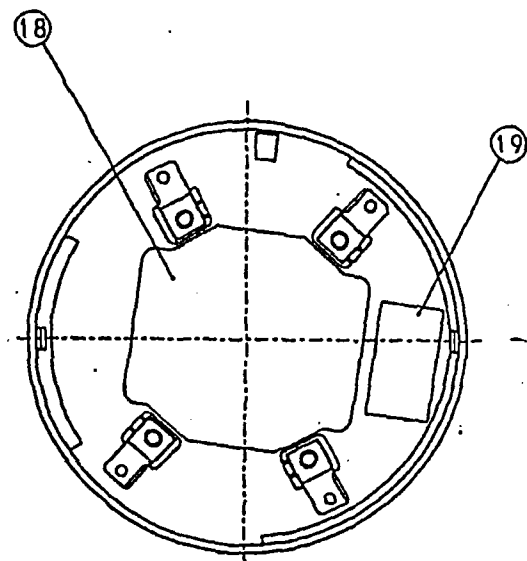
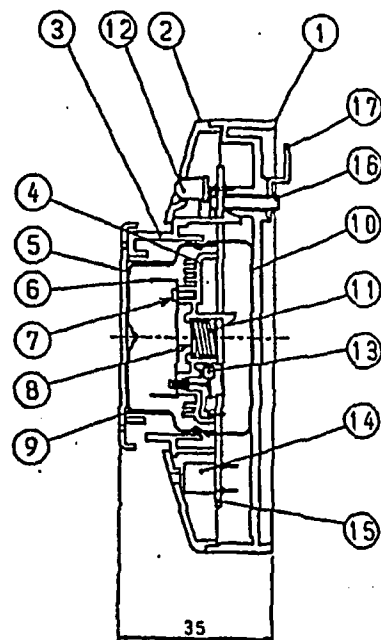
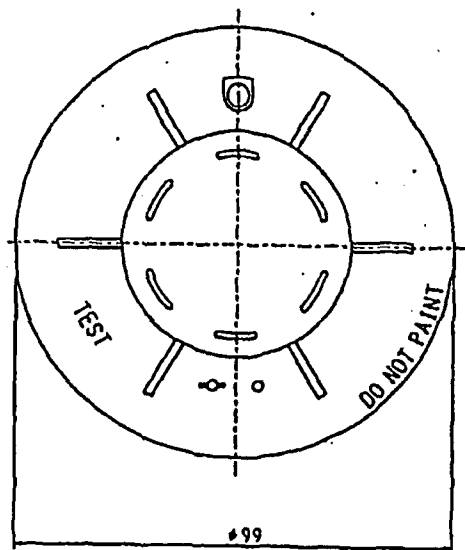


Number of source 1 piece  
per detector

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.

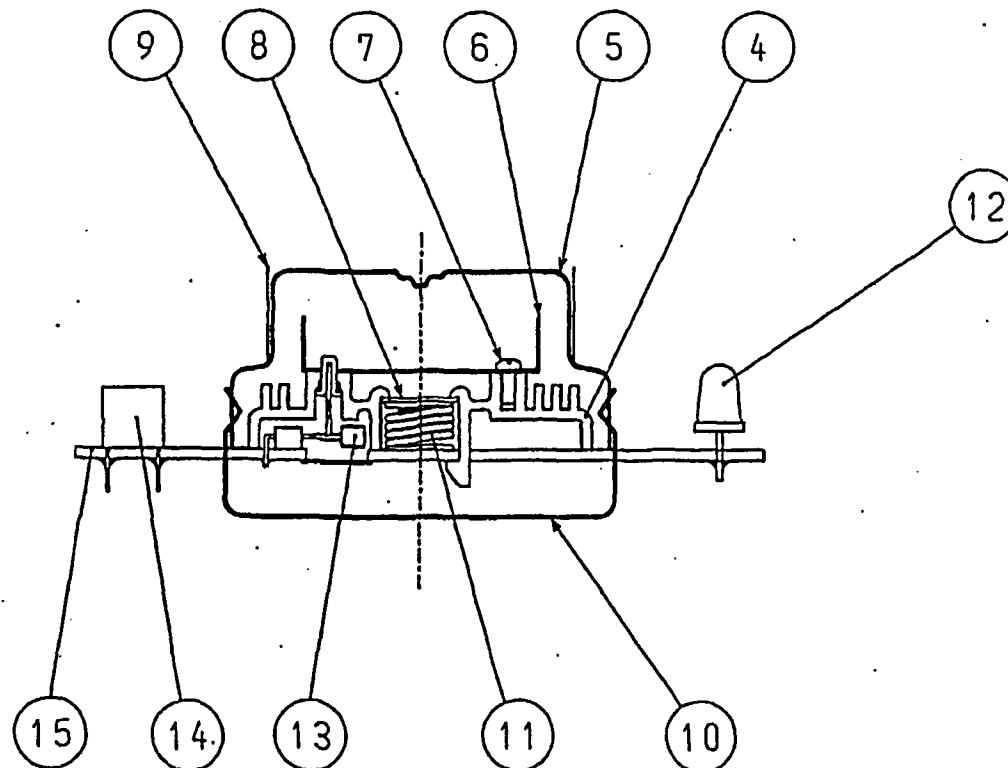
As can be seen from DETECTOR ASSEMBLY DWG. NO. AF30404000 / CHAMBER ASSEMBLY DWG. NO. AF30404098, the whole source is completely shielded with the metallic outer chamber and shield case so that the source can not be readily disassembled nor touched with finger.

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 0.3mm 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.



- |                           |                          |
|---------------------------|--------------------------|
| 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
UNIT: mm			SCALE: 1 / 1	7051 DETECTOR ASSEMBLY		
DATE: SEP. 25 2002			DVG. NO. AF30404000			
DESIGNED BY: A. Okada			TRACED BY:			
CHECKED BY: J. Yokihama			APPROVED BY: [Signature]			
NOHMI BOSAI LTD.						



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
						CHAMBER ASSEMBLY
						DWG. NO.
						AF30404098
						NOHMI BOSAI LTD.

UNIT: mm	SCALE: 2 / 1
DATE: SEP. 25 2002	
DESIGNED BY A. Okada	DRAWN BY
CHECKED BY J. Ishihama	APPROVED BY [Signature]

UNIT: mm	ANGLE ± 3°
> 18.....20±0.5	
> 20.....70±1.0	
> 70.....150±1.2	
> 150.....300±1.5	
> 300.....500±2.0	
(UNIT:mm)	

[illegible]

A diagram of a mechanical assembly. A horizontal beam is supported by a vertical post on the left and a vertical support on the right. A force vector  $F$  is applied to the beam at a distance of  $40.5$  from the left support. The force  $F$  is directed upwards and to the right, making an angle of  $25^\circ$  with the horizontal. The vertical support on the right is labeled  $R9.5$ . The dimensions of the beam and support are given as  $42.5$ ,  $12.5$ , and  $20.5$  respectively.

TEST

DETAIL 'K' (2/1)

Technical drawing of a mechanical part, likely a valve or pump component. The drawing shows a cross-section with various dimensions and labels.

- Dimensions:**
  - Top horizontal dimensions: 8.9, 3.4, 4.5, 3.5
  - Left vertical dimensions: 694.7, 406, 493.7
  - Internal rectangular features: 32.5, 4.3, 4.4, 2.5
  - Bottom right dimensions: 1.5, 0.2, 2.5, 3, 70
- Labels:**
  - F:** Points to a small circular feature at the top right.
  - H:** Points to a larger circular feature at the bottom right, enclosed in a dashed circle.

A7-A3			
IN (SHEET)	"NO HOT PAINT" ADDED	EX-17-1	IONIZATION SMOKE DETECTOR
DATE	DESCRIPTION	REV. NO.	REV.
MATERIALS (SYSTEMS) MANUFACTURE (UNIT) NO.		SCALE	
TITLE		COVER	
FIG. 1	010-00-00	DATE	09-12-70
FIG. 2	010-00-00	REVISION	1
FIG. 3	010-00-00	FIG. NO.	CF10-001003
FIG. 4	010-00-00	FIG. NO.	
FIG. 5	010-00-00	FIG. NO.	
FIG. 6	010-00-00	FIG. NO.	
FIG. 7	010-00-00	FIG. NO.	
FIG. 8	010-00-00	FIG. NO.	
FIG. 9	010-00-00	FIG. NO.	
FIG. 10	010-00-00	FIG. NO.	
FIG. 11	010-00-00	FIG. NO.	
FIG. 12	010-00-00	FIG. NO.	
FIG. 13	010-00-00	FIG. NO.	
FIG. 14	010-00-00	FIG. NO.	
FIG. 15	010-00-00	FIG. NO.	
FIG. 16	010-00-00	FIG. NO.	
FIG. 17	010-00-00	FIG. NO.	
FIG. 18	010-00-00	FIG. NO.	
FIG. 19	010-00-00	FIG. NO.	
FIG. 20	010-00-00	FIG. NO.	
FIG. 21	010-00-00	FIG. NO.	
FIG. 22	010-00-00	FIG. NO.	
FIG. 23	010-00-00	FIG. NO.	
FIG. 24	010-00-00	FIG. NO.	
FIG. 25	010-00-00	FIG. NO.	
FIG. 26	010-00-00	FIG. NO.	
FIG. 27	010-00-00	FIG. NO.	
FIG. 28	010-00-00	FIG. NO.	
FIG. 29	010-00-00	FIG. NO.	
FIG. 30	010-00-00	FIG. NO.	
FIG. 31	010-00-00	FIG. NO.	
FIG. 32	010-00-00	FIG. NO.	
FIG. 33	010-00-00	FIG. NO.	
FIG. 34	010-00-00	FIG. NO.	
FIG. 35	010-00-00	FIG. NO.	
FIG. 36	010-00-00	FIG. NO.	
FIG. 37	010-00-00	FIG. NO.	
FIG. 38	010-00-00	FIG. NO.	
FIG. 39	010-00-00	FIG. NO.	
FIG. 40	010-00-00	FIG. NO.	
FIG. 41	010-00-00	FIG. NO.	
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FIG. 69	010-00-00	FIG. NO.	
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FIG. 71	010-00-00	FIG. NO.	
FIG. 72	010-00-00	FIG. NO.	
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FIG. 93	010-00-00	FIG. NO.	
FIG. 94	010-00-00	FIG. NO.	
FIG. 95	010-00-00	FIG. NO.	
FIG. 96	010-00-00	FIG. NO.	
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FIG. 100	010-00-00	FIG. NO.	
FIG. 101	010-00-00	FIG. NO.	
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FIG. 132	010-00-00	FIG. NO.	
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FIG. 135	010-00-00	FIG. NO.	
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FIG. 157	010-00-00	FIG. NO.	
FIG. 158	010-00-00	FIG. NO.	
FIG. 159	010-00-00	FIG. NO.	
FIG. 160	010-00-00	FIG. NO.	
FIG. 161	010-00-00	FIG. NO.	
FIG. 162	010-00-00	FIG. NO.	
FIG. 163	010-00-00	FIG. NO.	
FIG. 164	010-00-00	FIG. NO.	
FIG. 165	010-00-00	FIG. NO.	
FIG. 166	010-00-00	FIG. NO.	
FIG. 167	010-00-00	FIG. NO.	
FIG. 168	010-00-00	FIG. NO.	
FIG. 169	010-00-00	FIG. NO.	
FIG. 170	010-00-00	FIG. NO.	
FIG. 171	010-00-00	FIG. NO.	
FIG. 172	010-00-00	FIG. NO.	
FIG. 173	010-00-00	FIG. NO.	
FIG. 174	010-00-00	FIG. NO.	
FIG. 175	010-00-00	FIG. NO.	
FIG. 176	010-00-00	FIG. NO.	
FIG. 177	010-00-00	FIG. NO.	
FIG. 178	010-00-00	FIG. NO.	
FIG. 179	010-00-00	FIG. NO.	
FIG. 180	010-00-00	FIG. NO.	
FIG. 181	010-00-00	FIG. NO.	
FIG. 182	010-00-00	FIG. NO.	
FIG. 183	010-00-00	FIG. NO.	
FIG. 184	010-00-00	FIG. NO.	
FIG. 185	010-00-00	FIG. NO.	
FIG. 186	010-00-00	FIG. NO.	
FIG. 187	010-00-00	FIG. NO.	
FIG. 188	010-00-00	FIG. NO.	
FIG. 189	010-00-00	FIG. NO.	
FIG. 190	010-00-00	FIG. NO.	
FIG. 191	010-00-00	FIG. NO.	
FIG. 192	010-00-00	FIG. NO.	
FIG. 193	010-00-00	FIG. NO.	
FIG. 194	010-00-00	FIG. NO.	
FIG. 195	010-00-00	FIG. NO.	
FIG. 196	010-00-00	FIG. NO.	
FIG. 197	010-00-00	FIG. NO.	
FIG. 198	010-00-00	FIG. NO.	
FIG. 199	010-00-00	FIG. NO.	
FIG. 200	010-00-00	FIG. NO.	
FIG. 201	010-00-00	FIG. NO.	
FIG. 202	010-00-00	FIG. NO.	
FIG. 203	010-00-00	FIG. NO.	
FIG. 204	010-00-00	FIG. NO.	
FIG. 205	010-00-00	FIG. NO.	
FIG. 206	010-00-00	FIG. NO.	
FIG. 207	010-00-00	FIG. NO.	
FIG. 208	010-00-00	FIG. NO.	
FIG. 209	010-00-00	FIG. NO.	
FIG. 210	010-00-00	FIG. NO.	
FIG. 211	010-00-00	FIG. NO.	
FIG. 212	010-00-00	FIG. NO.	
FIG. 213	010-00-00	FIG. NO.	
FIG. 214	010-00-00	FIG. NO.	
FIG. 215	010-00-00	FIG. NO.	
FIG. 216	010-00-00	FIG. NO.	
FIG. 217	010-00-00	FIG. NO.	
FIG. 218	010-00-00	FIG. NO.	
FIG. 219	010-00-00	FIG. NO.	
FIG. 220	010-00-00	FIG. NO.	
FIG. 221	010-00-00	FIG. NO.	
FIG. 222	010-00-00	FIG. NO.	
FIG. 223	010-00-00	FIG. NO.	
FIG. 224	010-00-00	FIG. NO.	
FIG. 225	010-00-00	FIG. NO.	
FIG. 226	010-00-00	FIG. NO.	
FIG. 227	010-00-00	FIG. NO.	
FIG. 228	010-00-00	FIG. NO.	
FIG. 229	010-00-00	FIG. NO.	
FIG. 230	010-00-00	FIG. NO.	
FIG. 231	010-00-00	FIG. NO.	
FIG. 232	010-00-00	FIG. NO.	
FIG. 233	010-00-00	FIG. NO.	
FIG. 234	010-00-00	FIG. NO.	
FIG. 235	010-00-00	FIG. NO.	
FIG. 236	010-00-00	FIG. NO.	
FIG. 237	010-00-00	FIG. NO.	
FIG. 238	010-00-00	FIG. NO.	
FIG. 239	010-00-00	FIG. NO.	
FIG. 240	010-00-00	FIG. NO.	
FIG. 241	010-00-00	FIG. NO.	
FIG. 242	010-00-00	FIG. NO.	
FIG. 243	010-00-00	FIG. NO.	
FIG. 244	010-00-00	FIG. NO.	
FIG. 245	010-00-00	FIG. NO.	
FIG. 246	010-00-00	FIG. NO.	
FIG. 247	010-00-00	FIG. NO.	
FIG. 248	010-00-00	FIG. NO.	
FIG. 249	010-00-00	FIG. NO.	
FIG. 250	010-00-00	FIG. NO.	
FIG. 251	010-00-00	FIG. NO.	
FIG. 252	010-00-00	FIG. NO.	
FIG. 253	010-00-00	FIG. NO.	
FIG. 254	010-00-00	FIG. NO.	
FIG. 255	010-00-00	FIG. NO.	
FIG. 256	010-00-00	FIG. NO.	
FIG. 257	010-00-00	FIG. NO.	
FIG. 258	010-00-00	FIG. NO.	
FIG. 259	010-00-00	FIG. NO.	
FIG. 260	010-00-00	FIG. NO.	
FIG. 261	010-00-00	FIG. NO.	
FIG. 262	010-00-00	FIG. NO.	
FIG. 263	010-00-00	FIG. NO.	
FIG. 264	010-00-00	FIG. NO.	
FIG. 265	010-00-00	FIG. NO.	
FIG. 266	010-00-00	FIG. NO.	
FIG. 267	010-00-00	FIG. NO.	
FIG. 268	010-00-00	FIG. NO.	
FIG. 269	010-00-00	FIG. NO.	
FIG. 270	010-00-00	FIG. NO.	
FIG. 271	010-00-00	FIG. NO.	
FIG. 272	010-00-00	FIG. NO.	
FIG. 273	010-00-00	FIG. NO.	
FIG. 274	010-00-00	FIG. NO.	
FIG. 275	010-00-00	FIG. NO.	
FIG. 276	010-00-00	FIG. NO.	
FIG. 277	010-00-00	FIG. NO.	
FIG. 278	010-00-00	FIG. NO.	
FIG. 279	010-00-00	FIG. NO.	
FIG. 280	010-00-00	FIG. NO.	
FIG. 281	010-00-00	FIG. NO.	
FIG. 282	010-00-00	FIG. NO.	
FIG. 283	010-00-00	FIG. NO.	
FIG. 284	010-00-00	FIG. NO.	
FIG. 285	010-00-00	FIG. NO.	
FIG. 286	010-00-00	FIG. NO.	
FIG. 287	010-00-00	FIG. NO.	
FIG. 288	010-00-00	FIG. NO.	
FIG. 289	010-00-00	FIG. NO.	
FIG. 290	010-00-00	FIG. NO.	
FIG. 291	010-00-00	FIG. NO.	
FIG. 292	010-00-00	FIG. NO.	
FIG. 293	010-00-00	FIG. NO.	
FIG. 294	010-00-00	FIG. NO.	
FIG. 295	010-00-00	FIG. NO.	
FIG. 296	010-00-00	FIG. NO.	
FIG. 297	010-00-00	FIG. NO.	
FIG. 298	010-00-00	FIG. NO.	
FIG. 299	010-00-00	FIG. NO.	
FIG. 300	010-00-00	FIG. NO.	
FIG. 301	01		

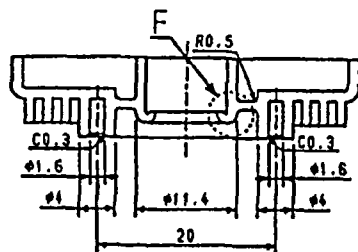
Technical drawing of a mechanical part, showing three views: a front view (top), a side view (middle), and a rear view (bottom). The drawing includes dimensions in millimeters and degrees.

**Front View (Top):** Shows a circular flange with a radius of  $R27.5$  and a central bore with a diameter of  $\phi 46$ . The flange has a thickness of  $4.6$  mm. The drawing is labeled with 'A' and '4'.

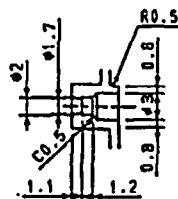
**Side View (Middle):** Shows the profile of the part. The total width is  $20.6$  mm. The central bore has a diameter of  $\phi 46$  mm. The flange has a radius of  $R27.5$  mm. The base has a radius of  $R4.2$  mm. The drawing includes dimensions for the flange thickness ( $4.6$  mm), the base thickness ( $1.2$  mm), and the total height ( $20.6$  mm). The drawing is labeled with 'A' and '4'.

**Rear View (Bottom):** Shows the circular base of the part. The base has a radius of  $R4.2$  mm and a thickness of  $1.2$  mm. The drawing includes dimensions for the base thickness ( $1.2$  mm) and the total height ( $20.6$  mm). The drawing is labeled with 'A' and '4'.

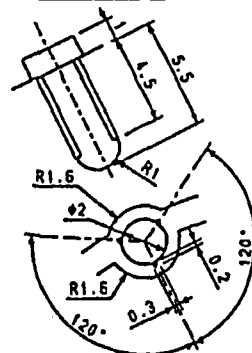
NO.		DATE		DESCRIPTION		REV.		APP.		IONIZAT ON SMOKE DETECTOR	
WIND SCREEN SPECIFIED DIMENSIONS:						UNIT: mm		SCALE: 2/1		TITLE:	
510±2.5		ANGLE		DATE: OCT.18.90						WIND SCREEN	
310.....30±0.7				DESIGNED BY		TRACED BY		DTC NO.			
30.....70±0.0				J. Kalyanali							
370.....150±1.3		23°		CHECKED BY		APPROVED BY				CF30401003	
3150.....500±1.5				Subash		Y. Toriye					
3300.....500±2.0											
(UNIT:mm)										NOHMI BOSAI LTD.	



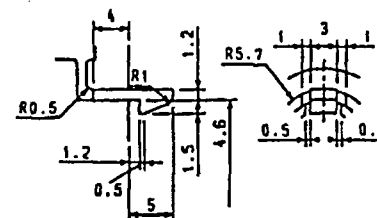
SECTION B-B



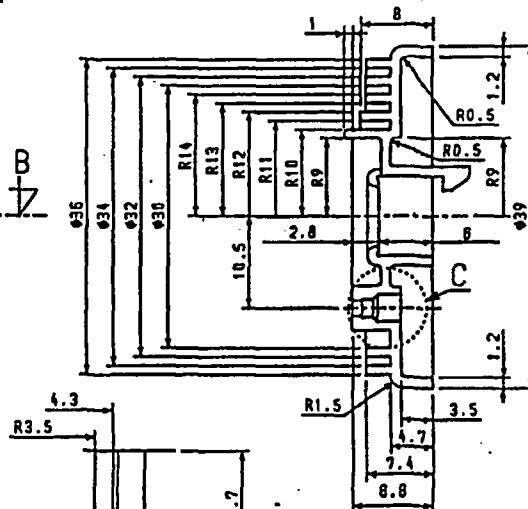
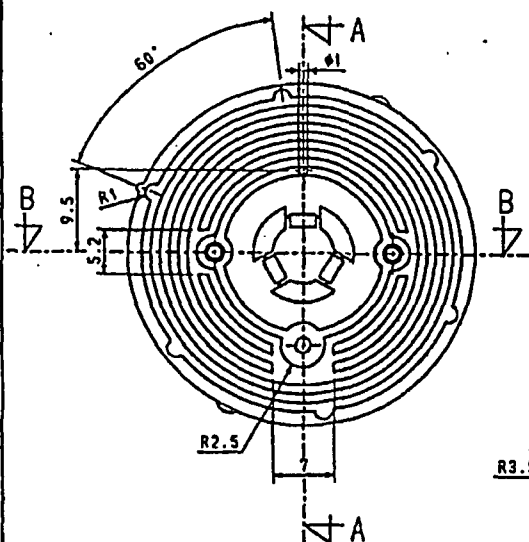
DETAIL "C" (5/1)



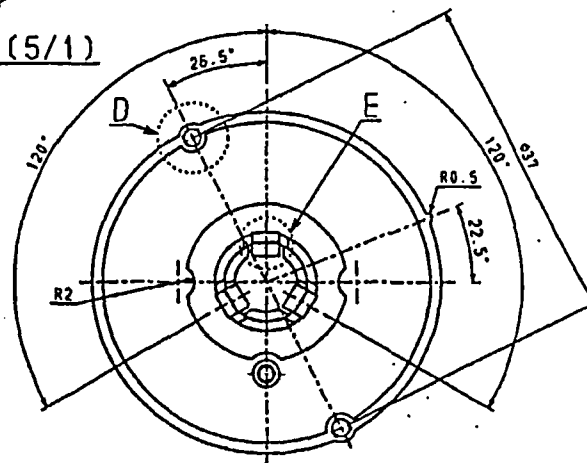
DETAIL "D" (5/1)



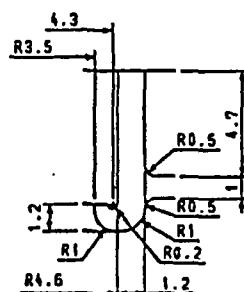
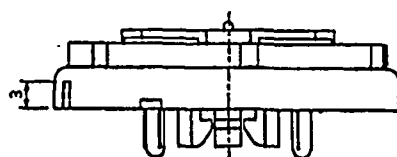
DETAIL "E"



SECTION A-A



MATERIAL: COMPONENT RECOGNIZED PLASTIC (CMF22) BY UL.  
PC/ABS POLYMER ALLOY DESIGNATED "Iupilon".  
NO. PH2220. RATED 94V-0.

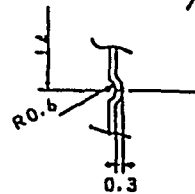
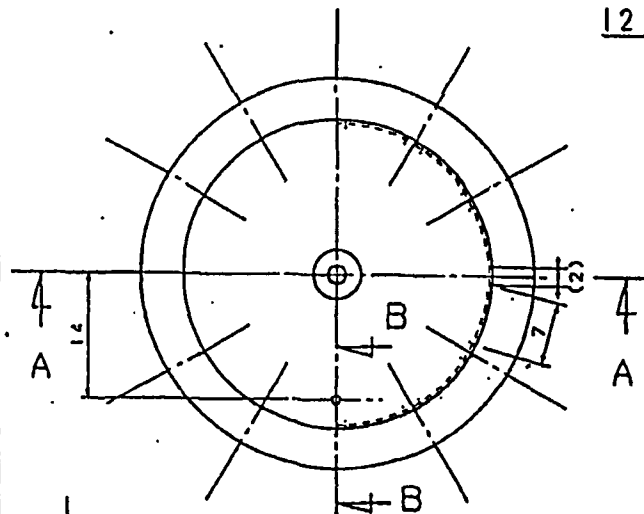


DETAIL "F"  
(5/1)

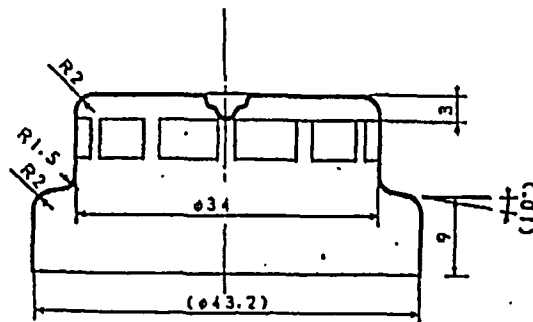
No.	DATE	DESCRIPTION	REV.	CHK.	APP.	TITLE:
						SUPPORT PLATE
						IONIZATION SMOKE DETECTOR
						DWG. NO.
						AF30404001
						NOHMI BOSAI LTD.

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

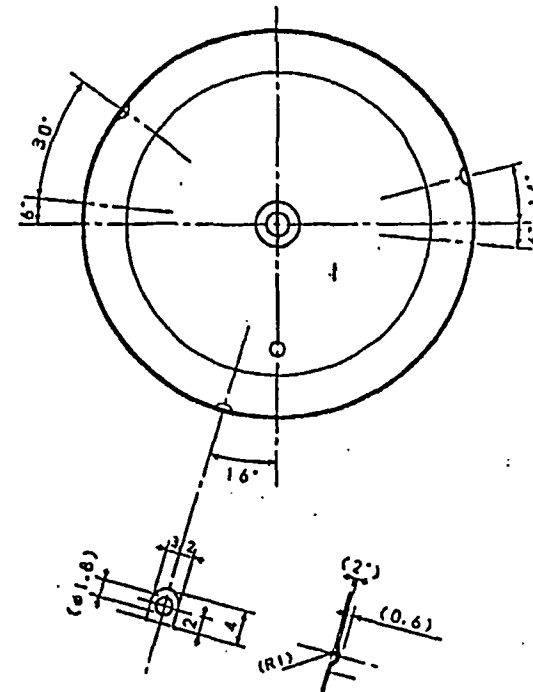
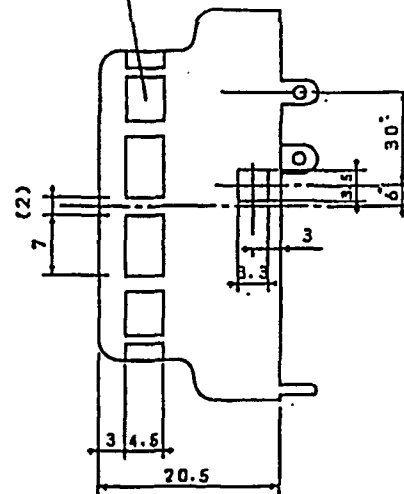
12 OPENINGS



SECTION B-B (5/1)



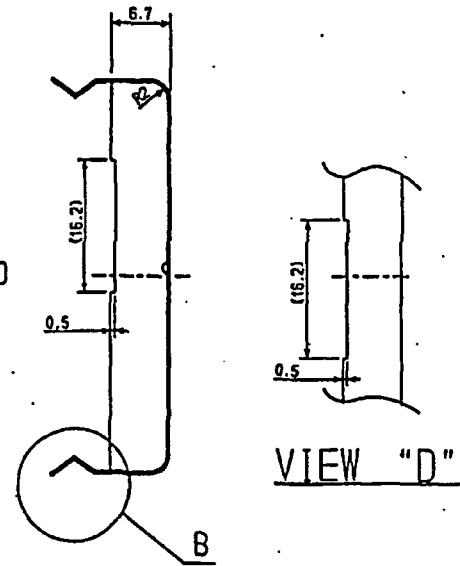
SECTION A-A



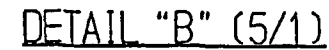
IONIZATION SMOKE DETECTOR			
NO.	DATE	DESCRIPTION	REV.
DATE: OCT. 18, '90		SCALE: 2/1	APP.
TITLE: OUTER CHAMBER		DESIGNED BY: S. Kikayoshi	TRACED BY:
Dwg. NO. CF30401005		CHECKED BY: T. Takasaki	APPROVED BY: Y. Tsumita
NOHMI BOSAI LTD.			



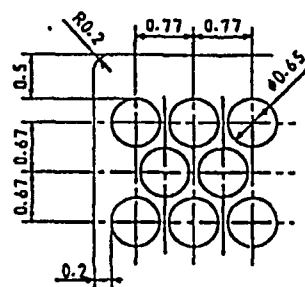
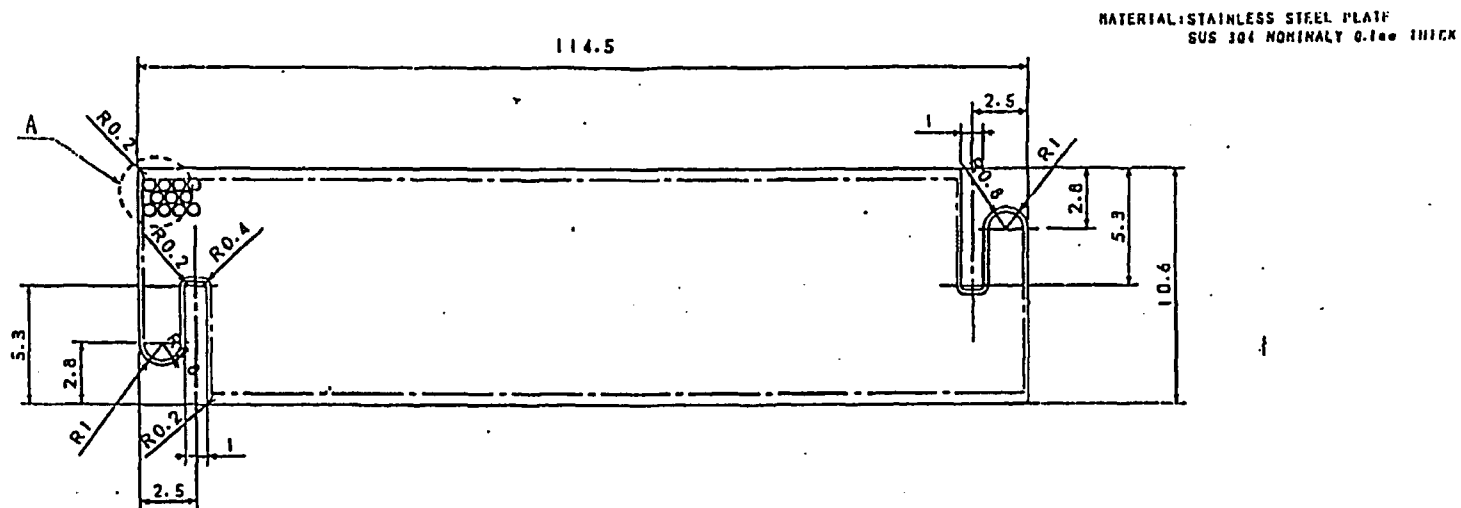
SUS 304, NOMINALLY 0.3mm THICK



VIEW "D"



TITLE:	IONIZATION SMOKE DETECTOR
	SHIELD CASE
DRG. NO.	AF30401006a
	NOHMI BOSAI LTD.

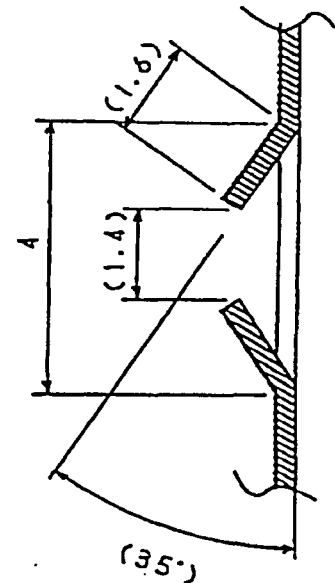
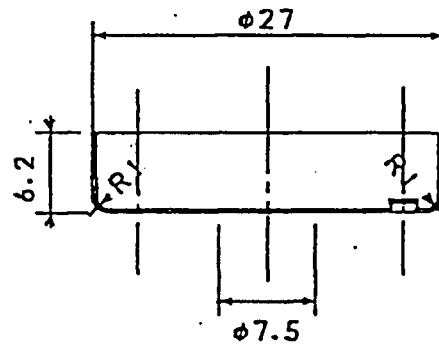
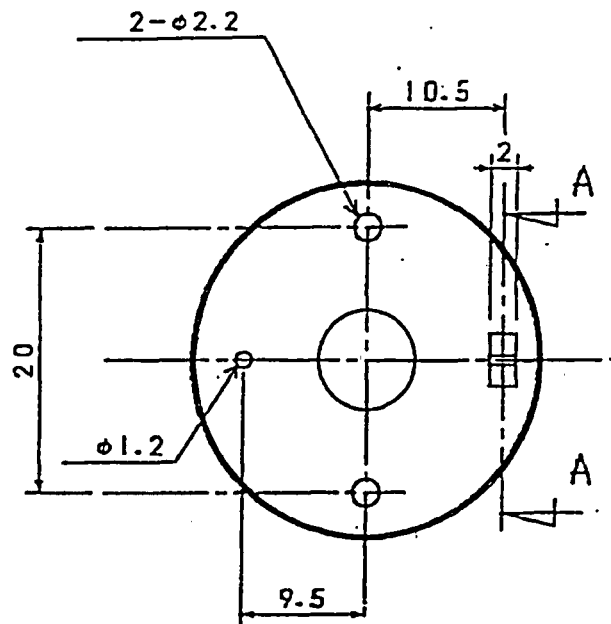


DETAIL "A" (10/1)

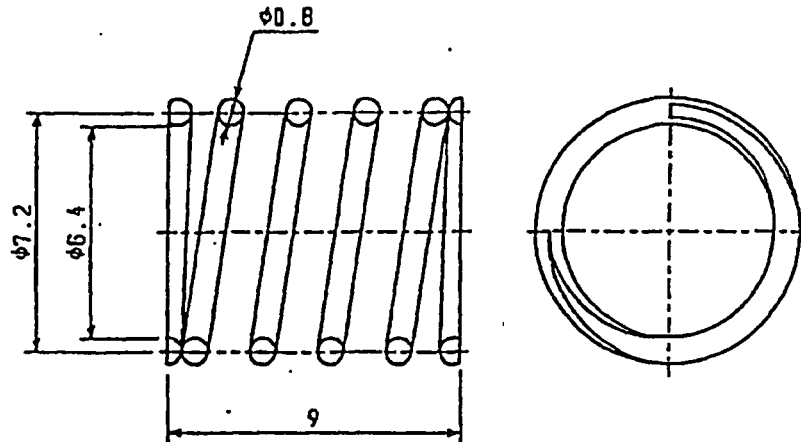
NO.	DATE	DESCRIPTION	REV.	APP.	IONIZATION SMOKE DETECTOR	
TITLE:					INSECT SCREEN	
SCALE: 5/1					Dwg. No.	
DATE: Jun. 22. '91					CF30401009	
DESIGNED BY: I. Katsunori					APPROVED BY: Y. Tomita	
CHECKED BY: T. Katsuki					NOHMI BOSAI LTD.	
UNIT: mm						
TOLERANCE: ±0.1						
ANGLE: 30°						
SURFACE: 100-120 (UNIT: mm)						

MATERIAL: STAINLESS STEEL PLATE

SUS 304, NOMINALLY 0.3 mm THICK

SECTION A-A  
(10/1)

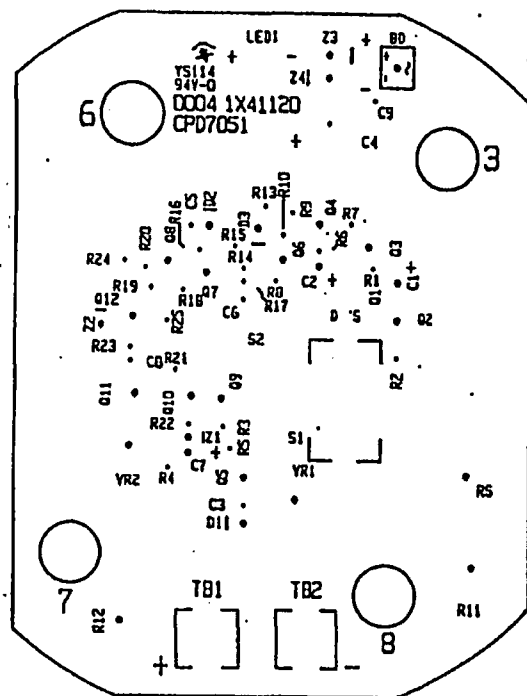
NO.	DATE	DESCRIPTION	REV.	APP.	IONIZATION SMOKE DETECTOR	
UNLESS OTHERWISE SPECIFIED TOLERANCE: UNIT: mm SCALE: 2/1					TITLE:	
DATE: Oct. 27 '91					INTERMEDIATE ELECTRODE	
>10.....30±0.7 >30.....70±1.0 >70.....150±1.2 >150.....300±1.5 >300.....500±2.0 (UNIT:mm)					DWG NO.	CF40401010
ANGLE ±3°				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



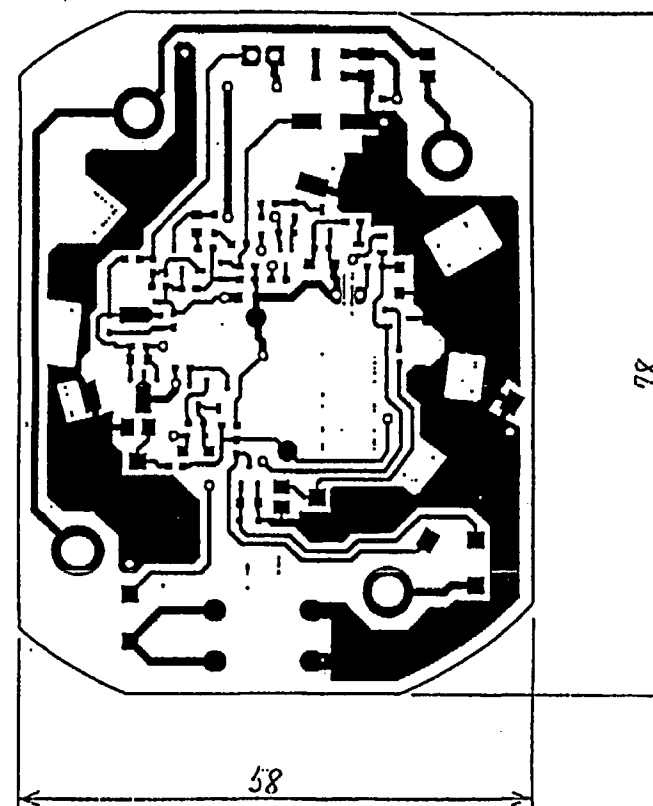
MATERIAL	SUS304-WPA
DIAMETER OF SPRING MATERIAL(mm)	0.8
AVERAGE DIAMETER OF COIL (mm)	7.2
INSIDE DIAMETER OF COIL (mm)	6.4
EFFECTIVE NUMBER OF COILS	4.5
TOTAL NUMBER OF SPRING COILS	6.5
THE DIRECTION OF A VOLUME	RIGHT
FREE HEIGHT (mm)	9
FOR ASSEMBLY	HEIGHT (mm) 5.5
	OVERWEIGHT (N) 7.7N±10%
SPRING CONSTANT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

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

MARKING PATTERN



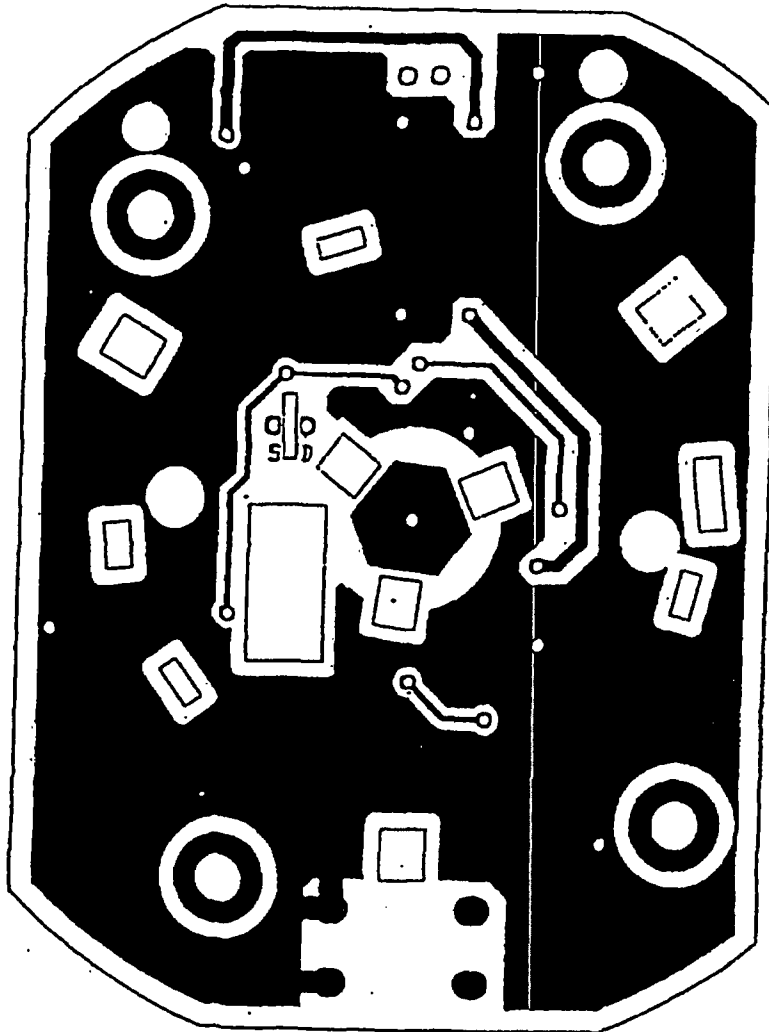
CIRCUIT PATTERN



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

No.	DATE	DESCRIPTION	REV.	D.K.	APP.	TITLE
						IONIZATION SMOKE DETECTOR
						MARKING & CIRCUIT PATTERN (SIDE A)
						DRG. NO.
						SF30404004
						NOHMI BOSAI LTD.

## CIRCUIT PATTERN



COMPONENT RECOGNIZED (ZPMW2), NO. YS-114,  
 RATED 94V-C, NOMINALLY 1.2MM THICK

DATE		DESCRIPTION		REV.	CHK.	APP.	TITLE:	
							IONIZATION SMOKE DETECTOR	
DATE: --		SCALE: 2 / 1					CIRCUIT PATTERNS SIDE B1	
DATE: SEP. 25 2002		DESIGNED BY: S. Tomimoto		CHECKED BY: T. Okada			Dwg. NO. SF40404005	
APPROVED BY: [Signature]							NOHMI BOSAI LTD.	