

**EA02-025**

**FORD**

**10/27/03**

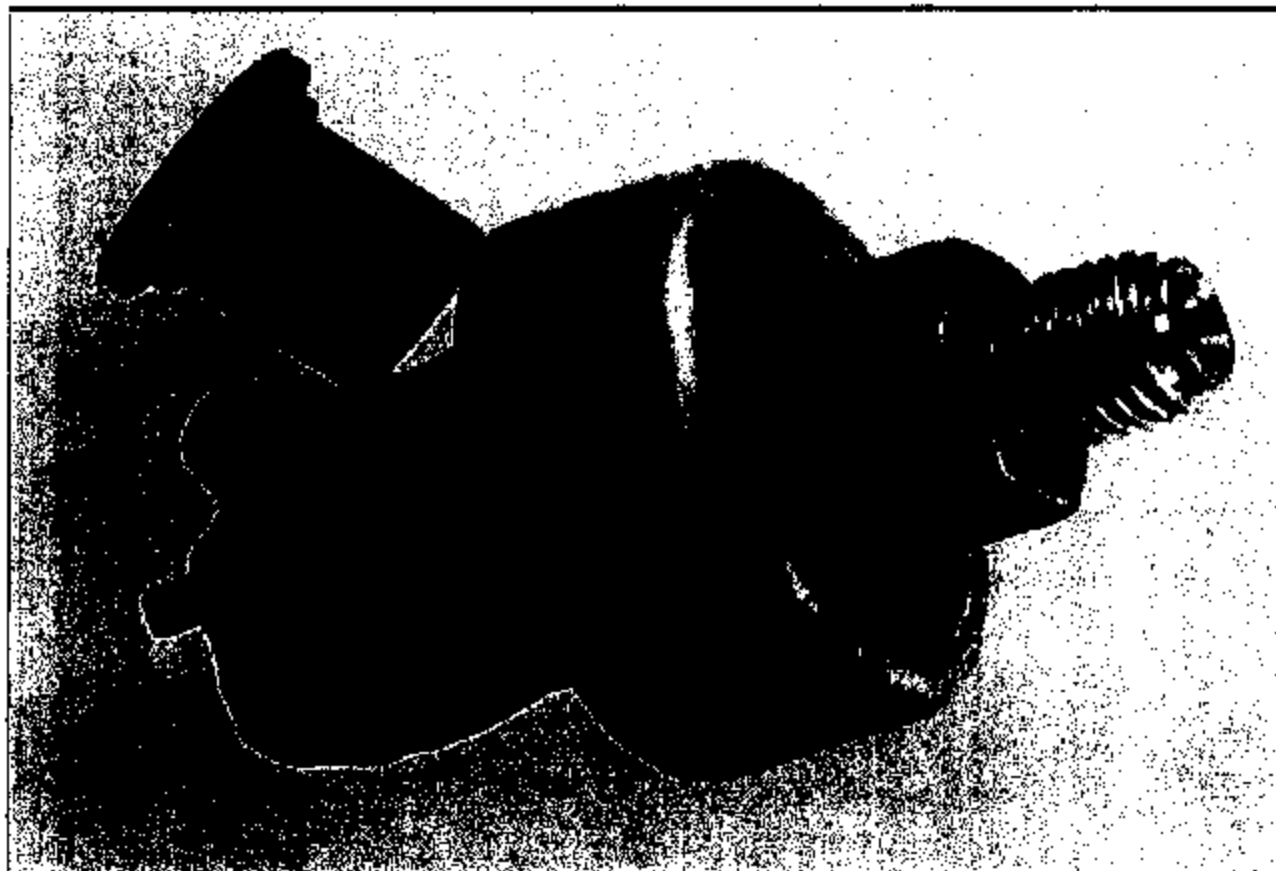
**BOOK 28 OF 61**

**PART 1 OF 5**

**BOX 23 OF 28**

*Central Laboratory*

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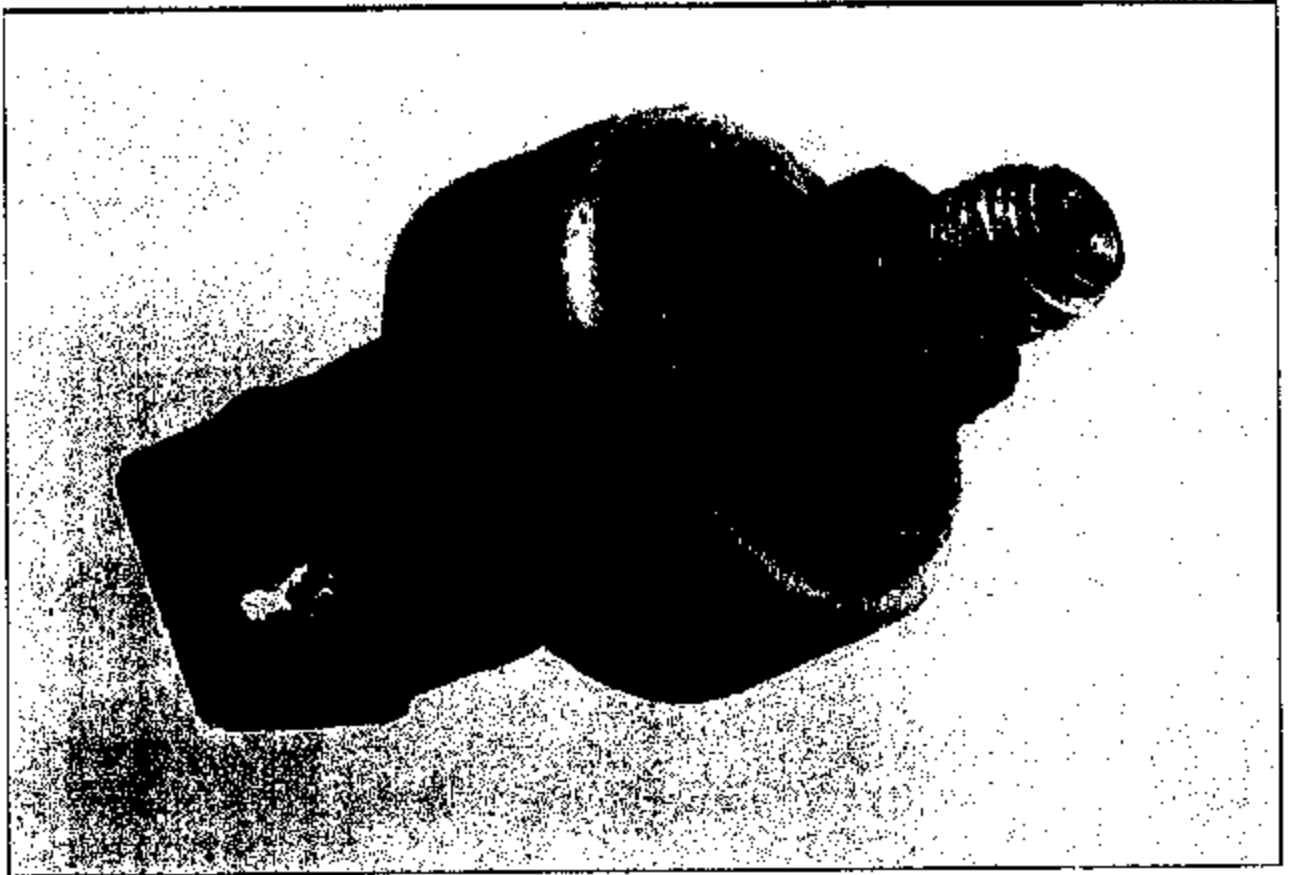
*Figure - 010 -*

*RO # 006895278-8*

*Switch Sample 10*

*Central Laboratory*

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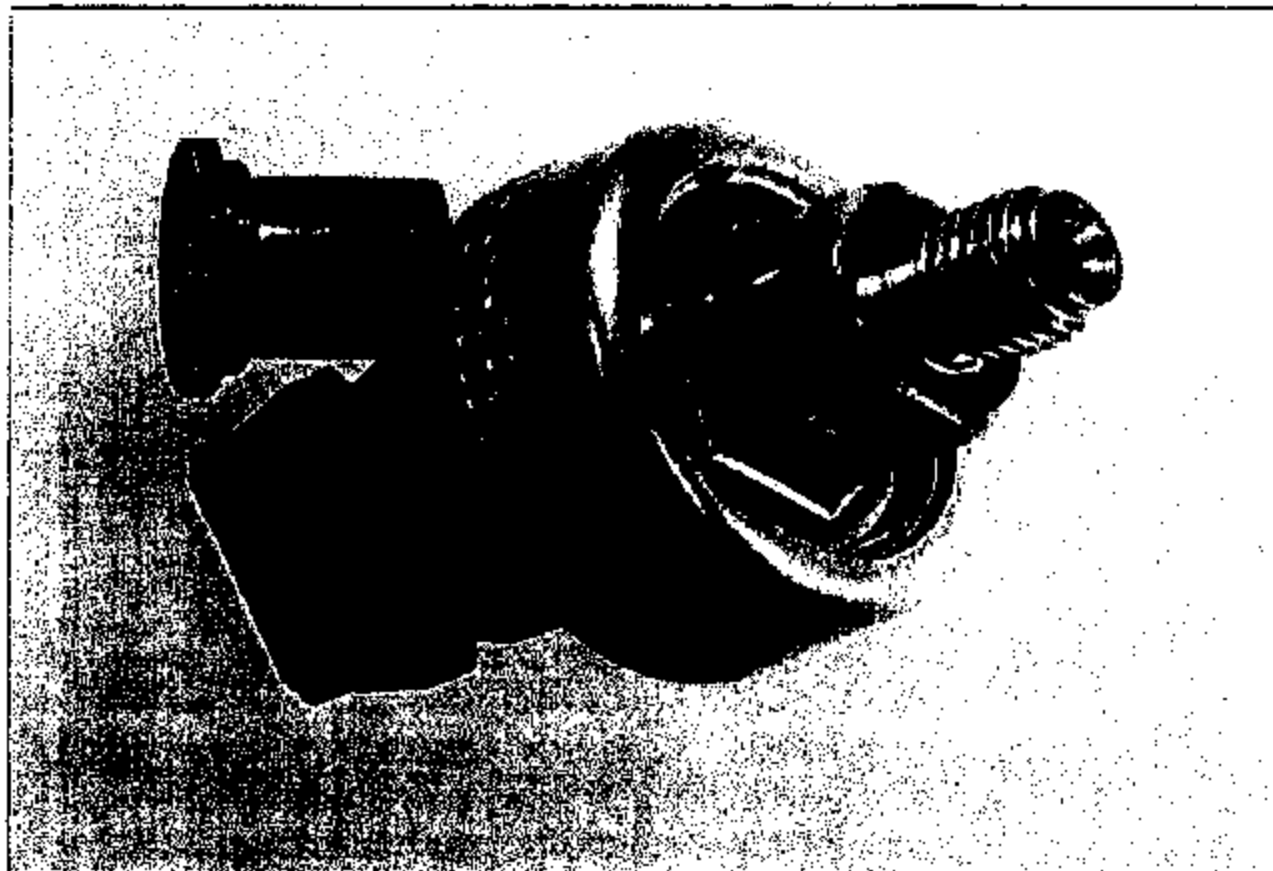
*Figure - 011 -*

*RO # 23257-01*

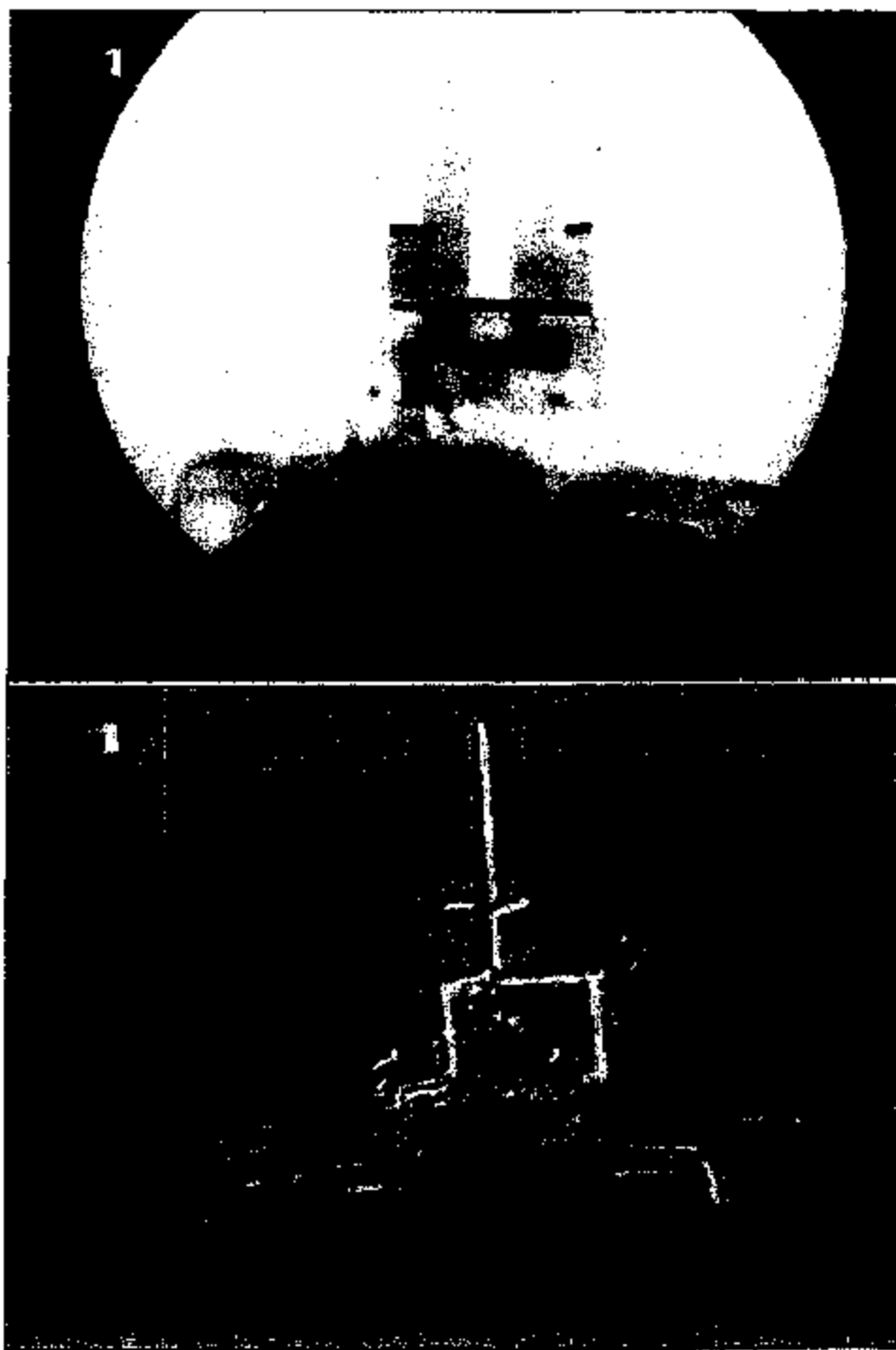
*Switch Sample 11*

*Central Laboratory*

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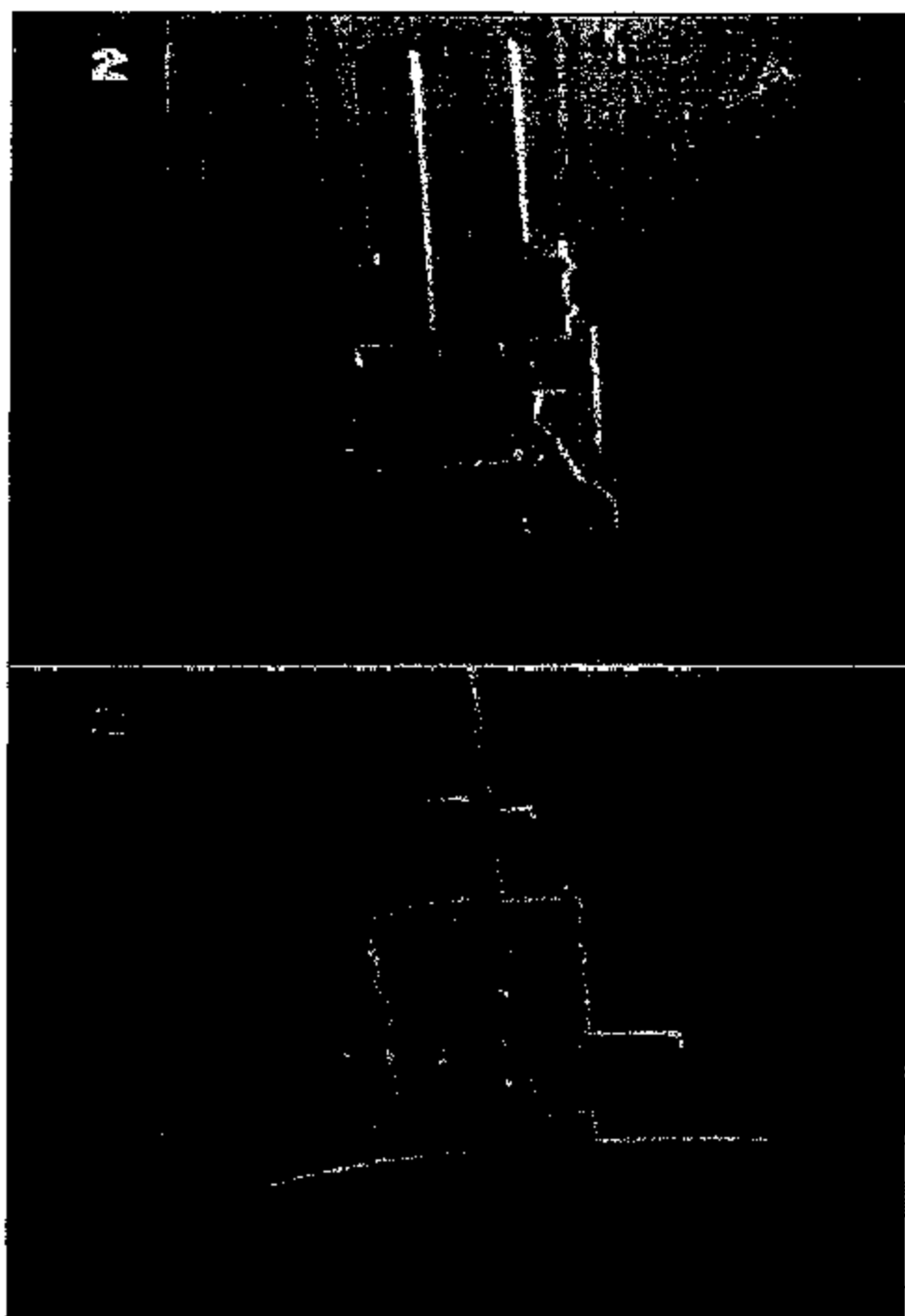
*Figure - 012 -*  
*New Switch Sample*



*Figure - 013 -*

*RO # 006895278-8*

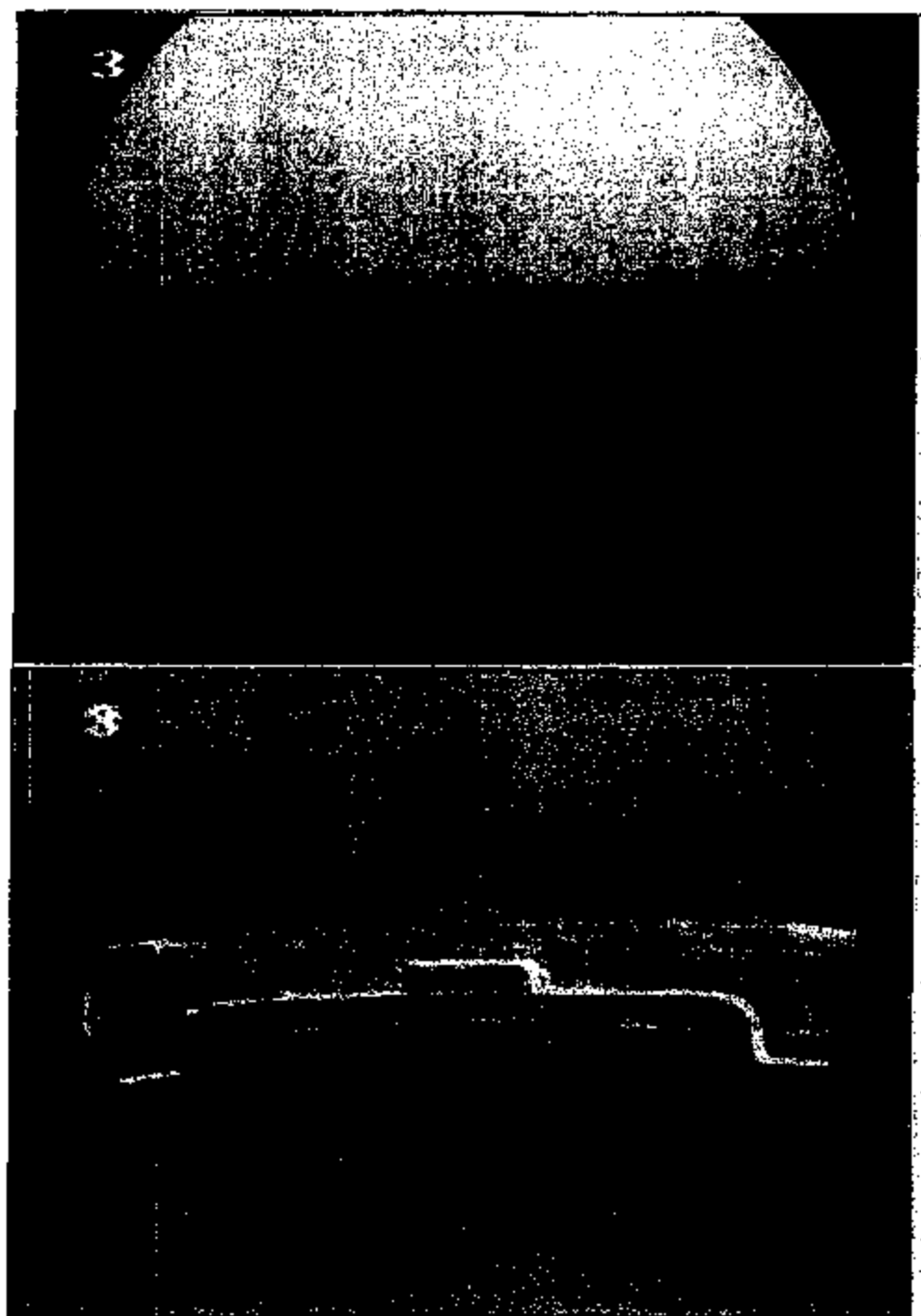
*Switch Sample 01*



*Figure - 014 -*

*RO # 006895278-8*

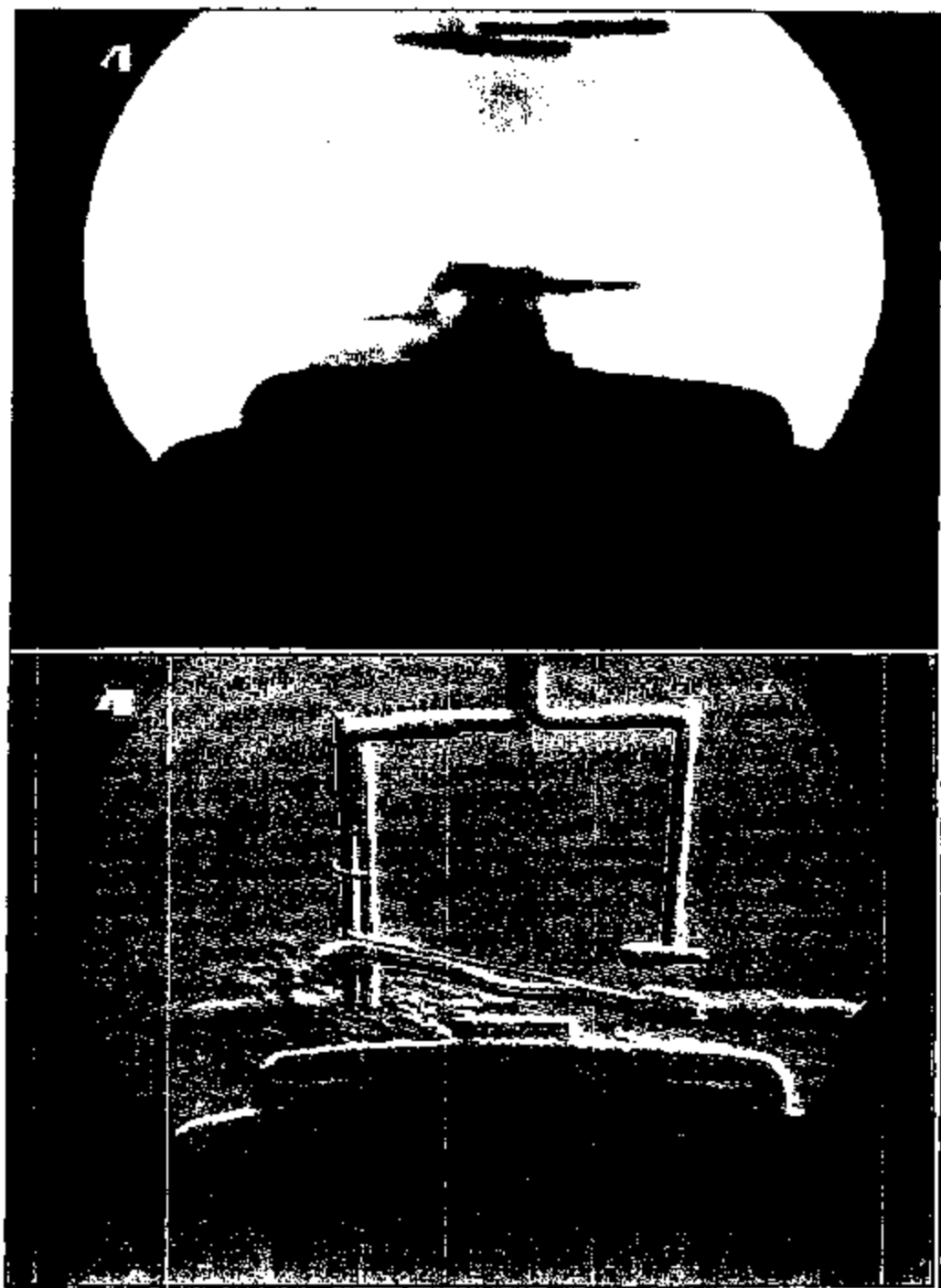
*Switch Sample 02*



*Figure - 015 -*

*RO # 006895278-8*

*Switch Sample 03*

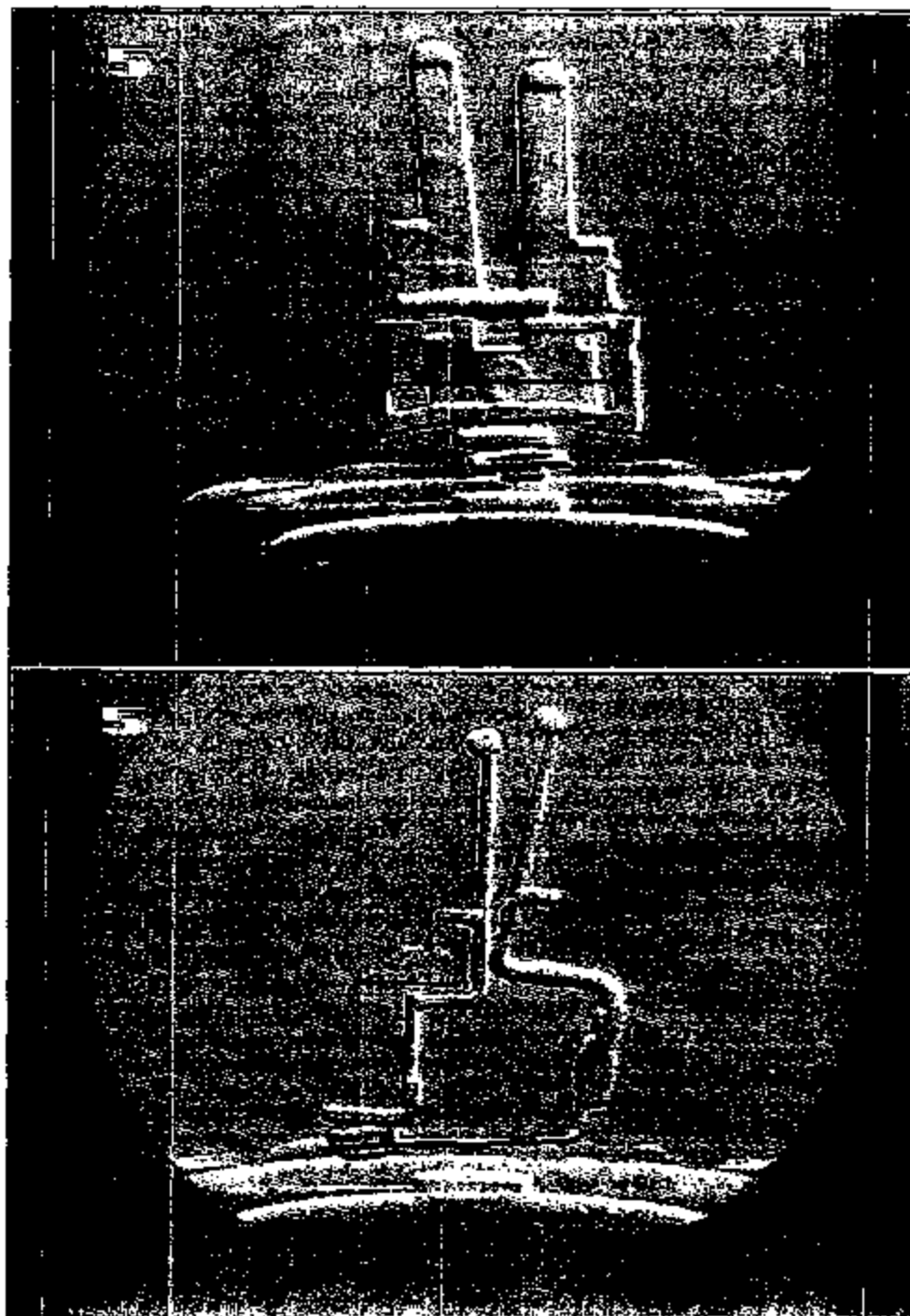


*Figure - 016 -*

*RO # 006895278-8*

*Switch Sample 04*

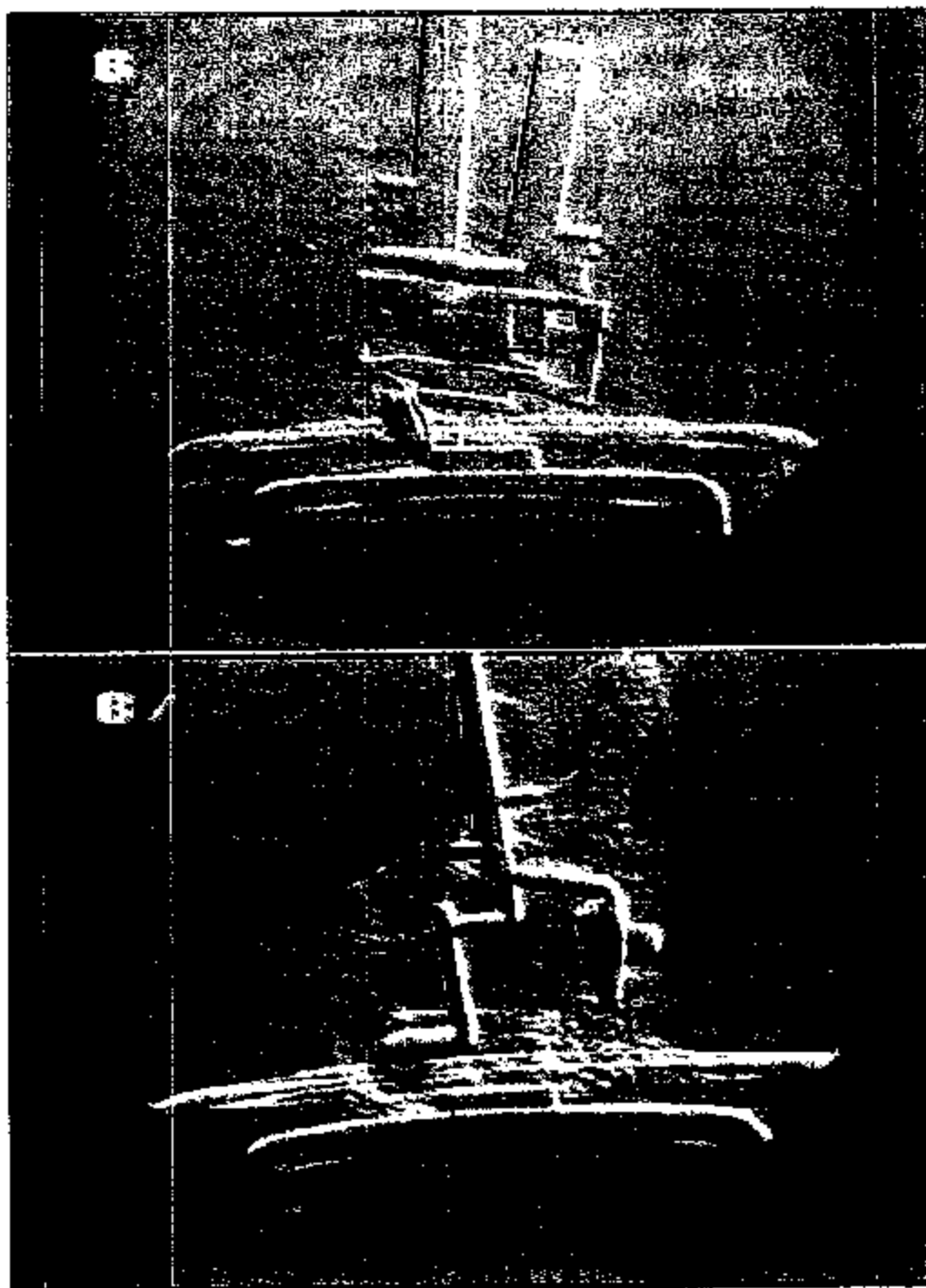




*Figure - 017 -*

*RO # 006895278-8*

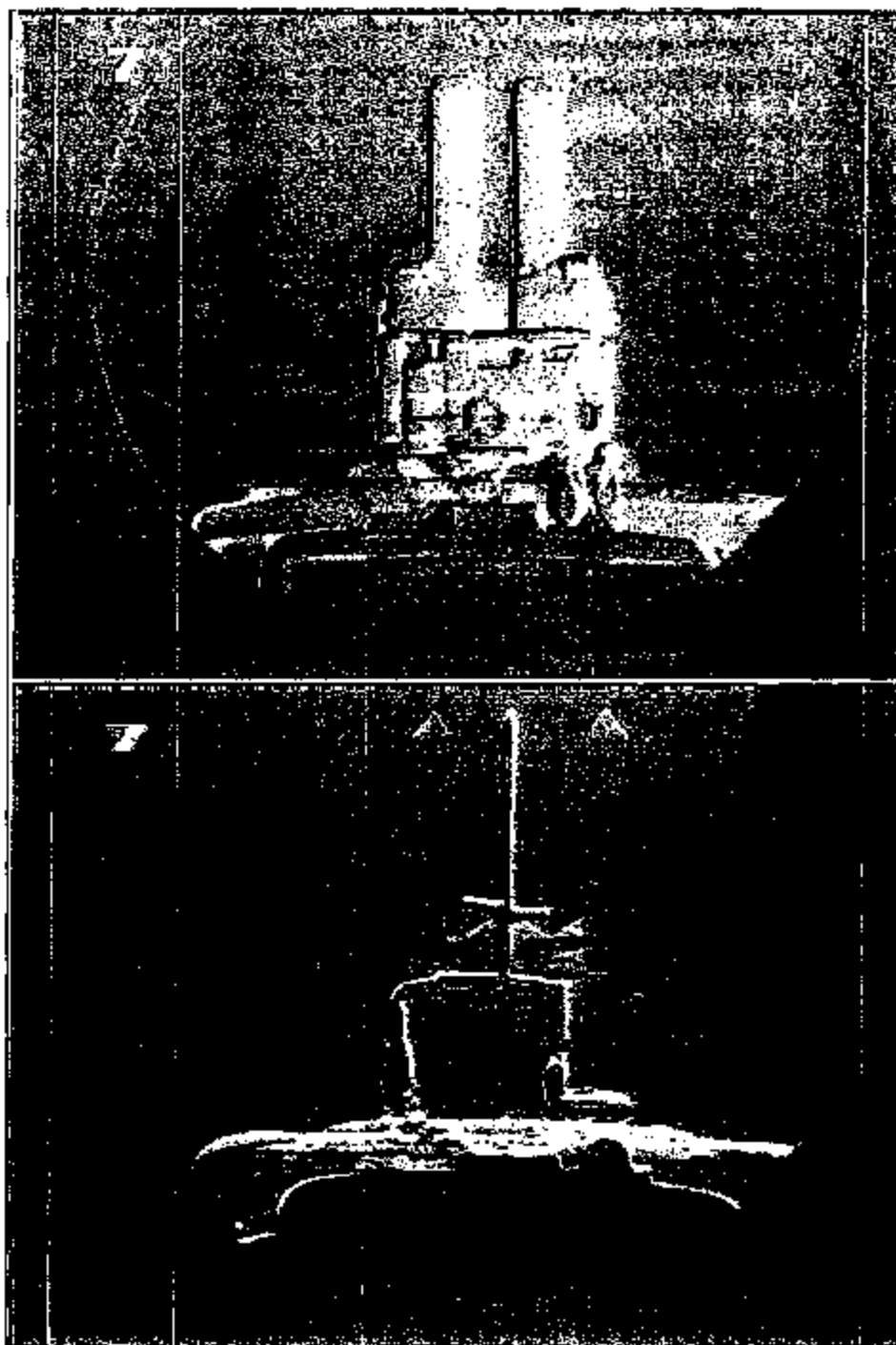
*Switch Sample 05*



*Figure - 018 -*

*RO # 006895278-8*

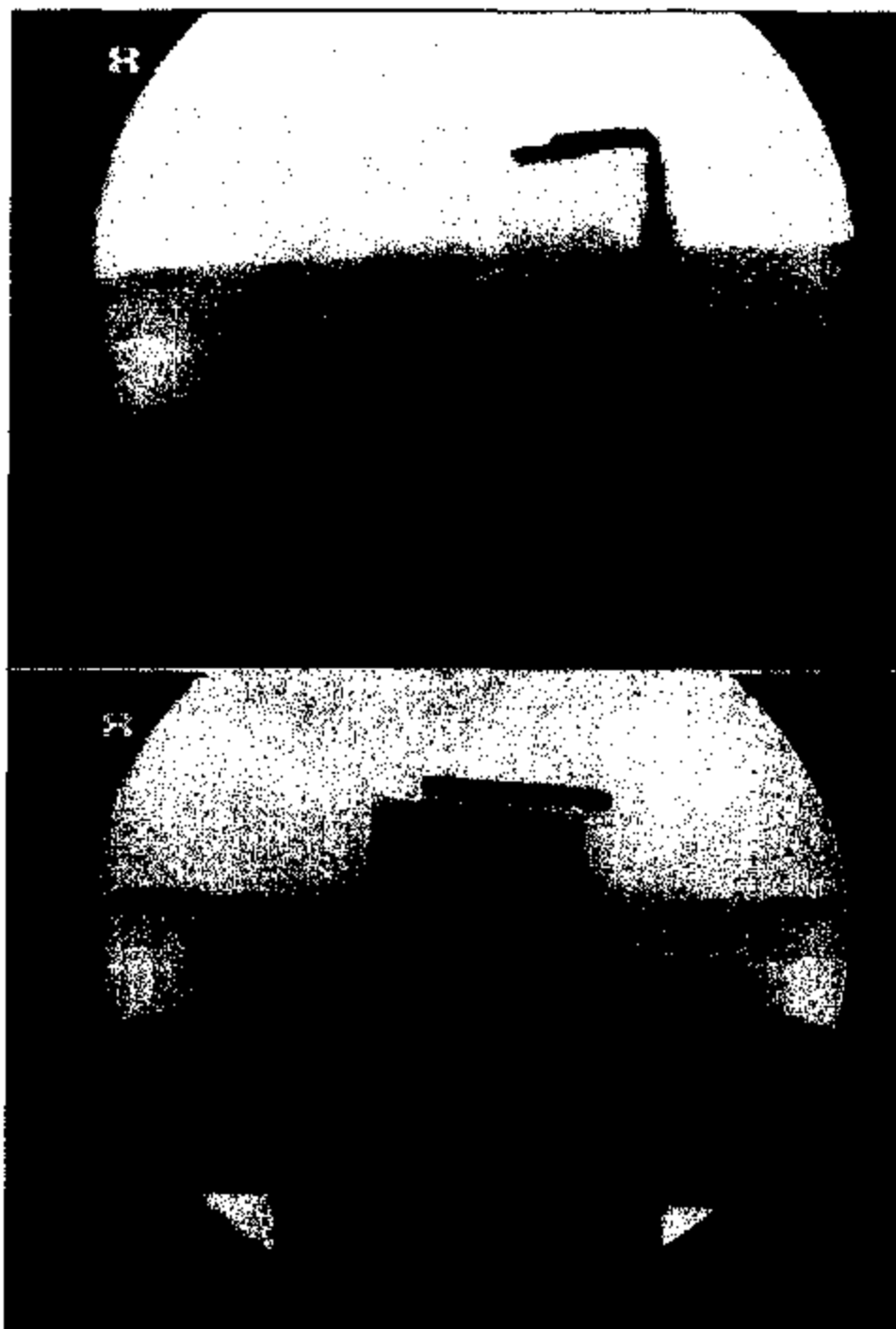
*Switch Sample 06*



*Figure - 019 -*

*RO # 006895278-8*

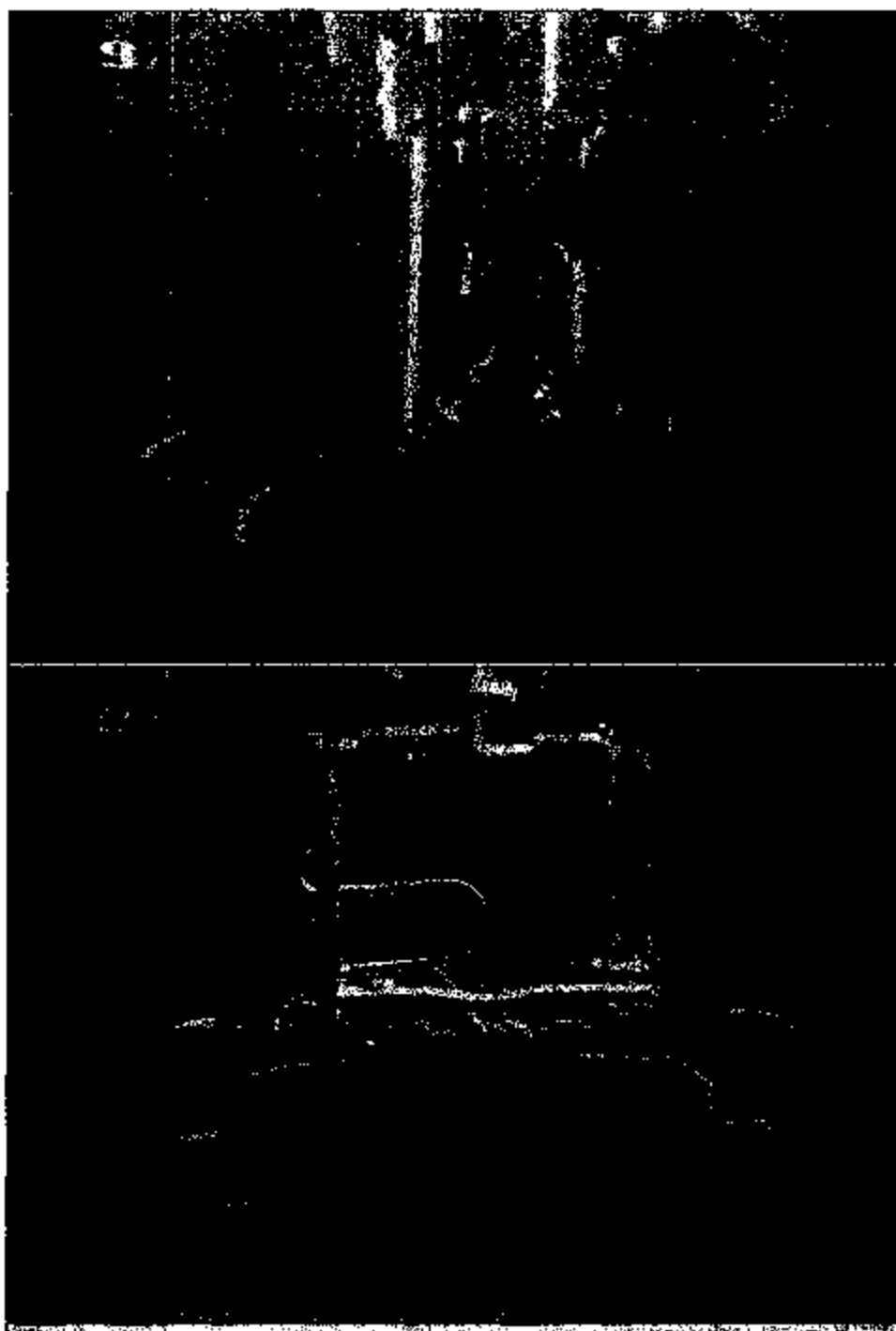
*Switch Sample 07*



*Figure - 020 -*

*RO # 006895278-8*

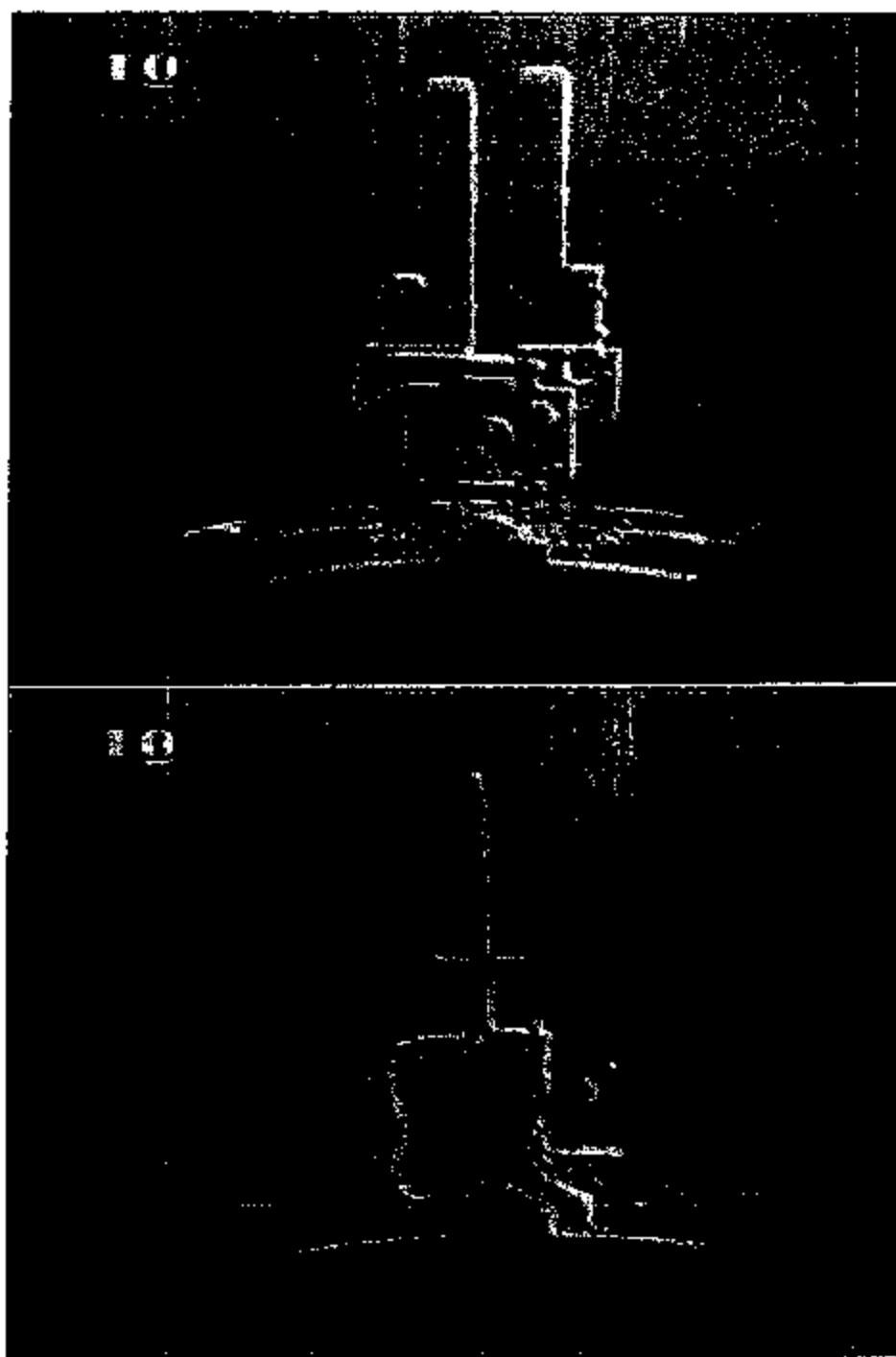
*Switch Sample 08*



*Figure - 021 -*

*RO # 006895278-8*

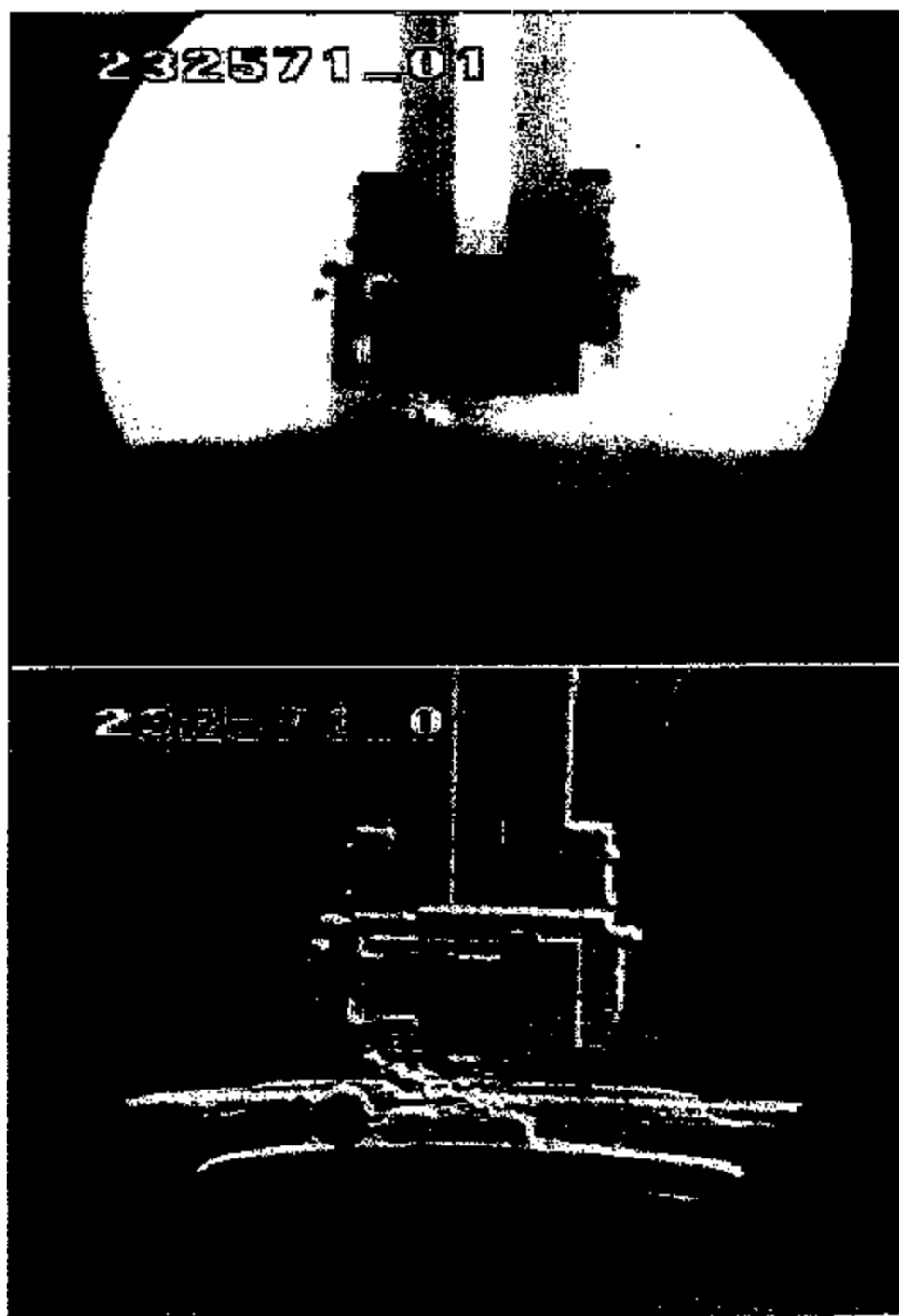
*Switch Sample 09*



*Figure - 022 -*

***RO # 006895278-8***

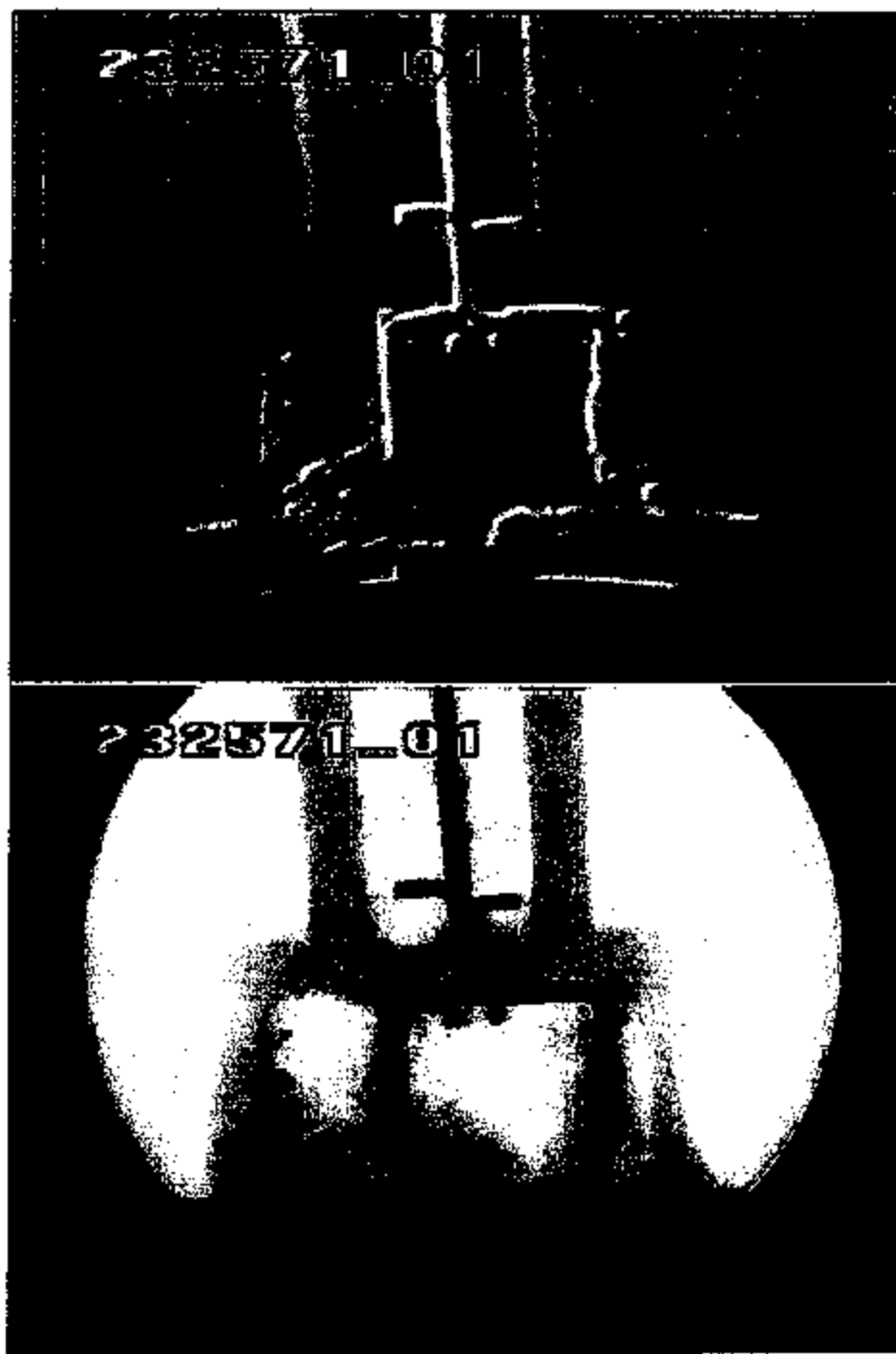
***Switch Sample 10***



*Figure -023 -*

*RO # 23257-01*

*Switch Sample 11*

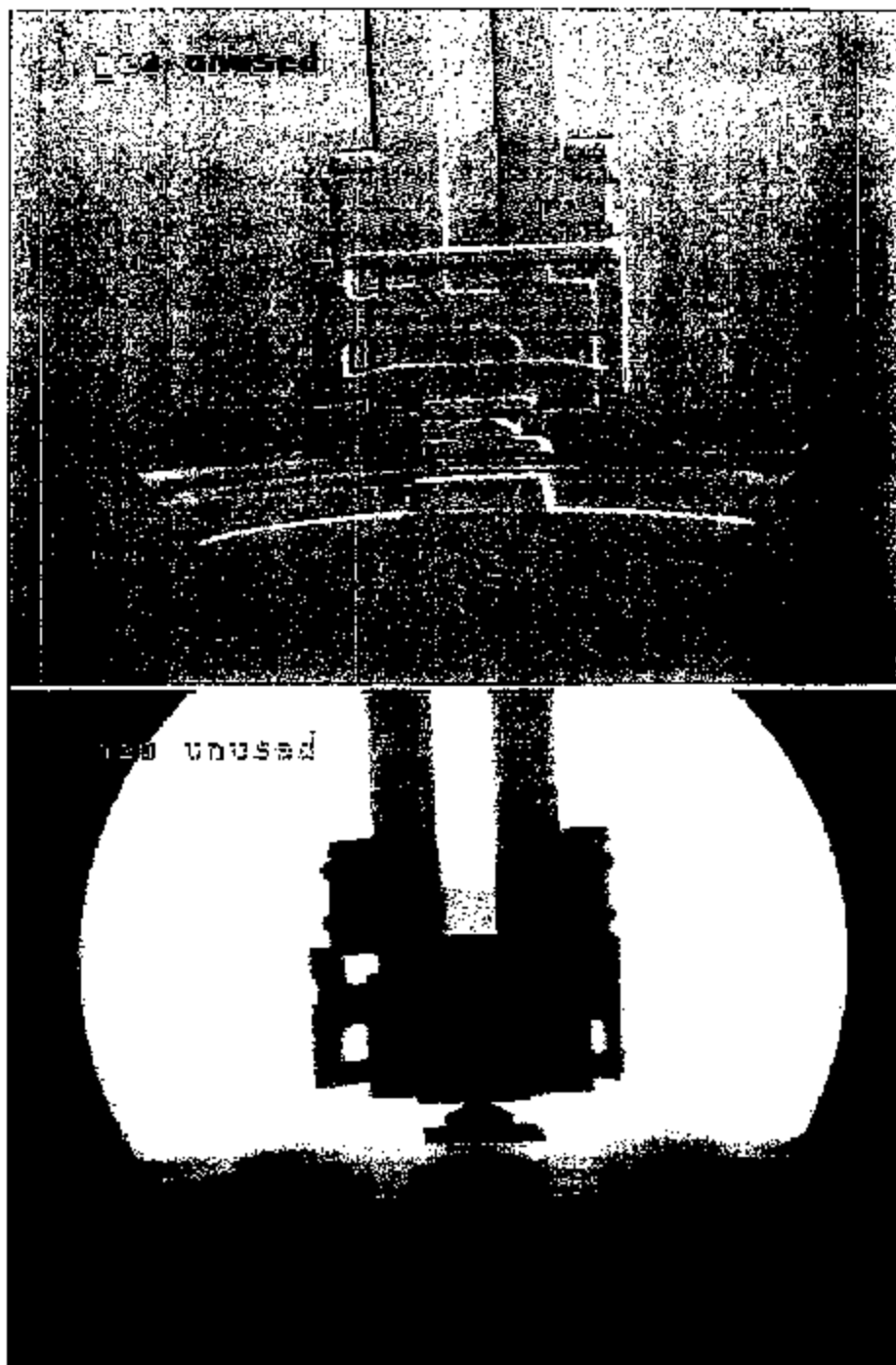


*Figure - 024 -*

*RO # 23257-01*

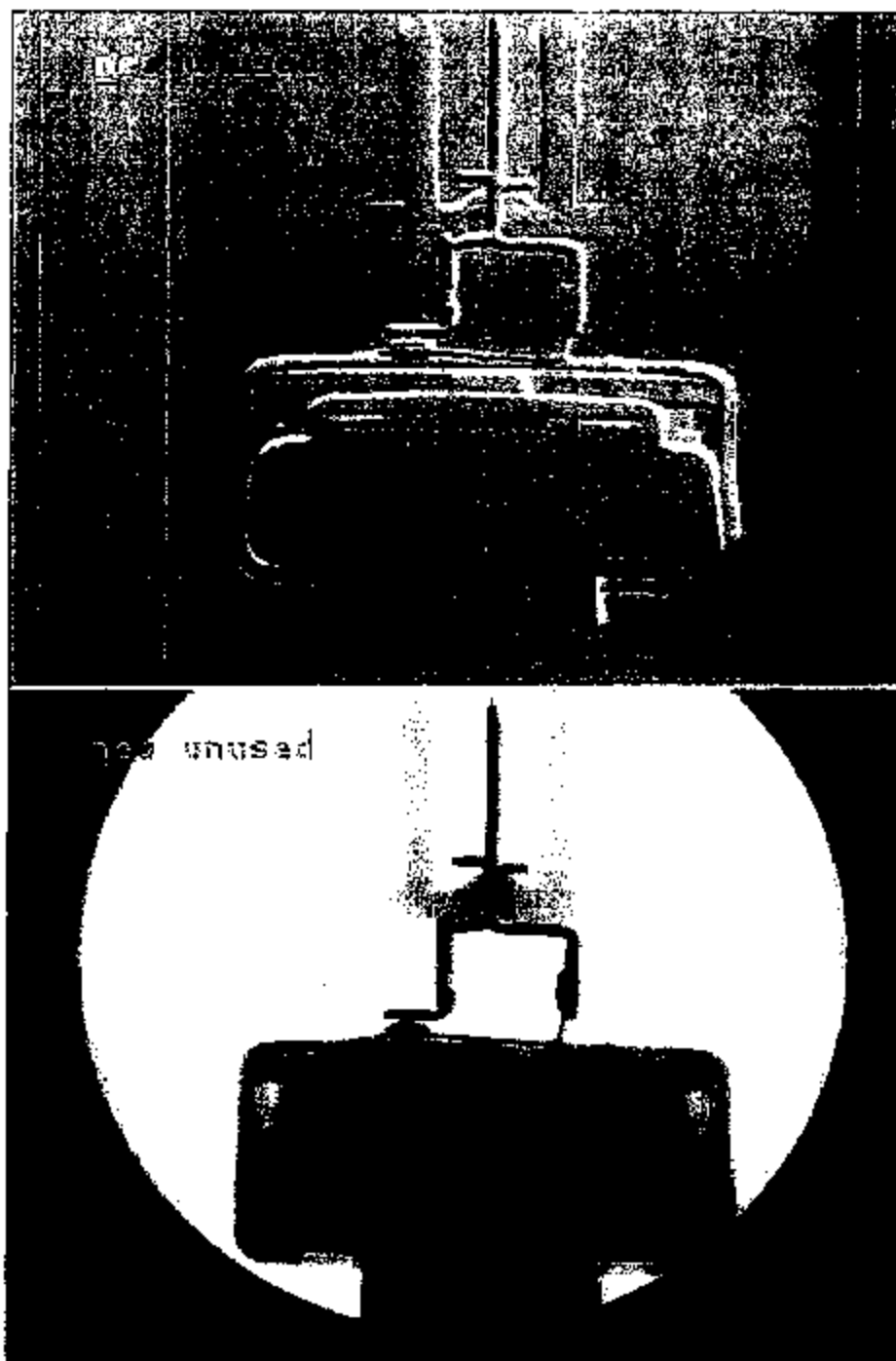
*Switch Sample 11*





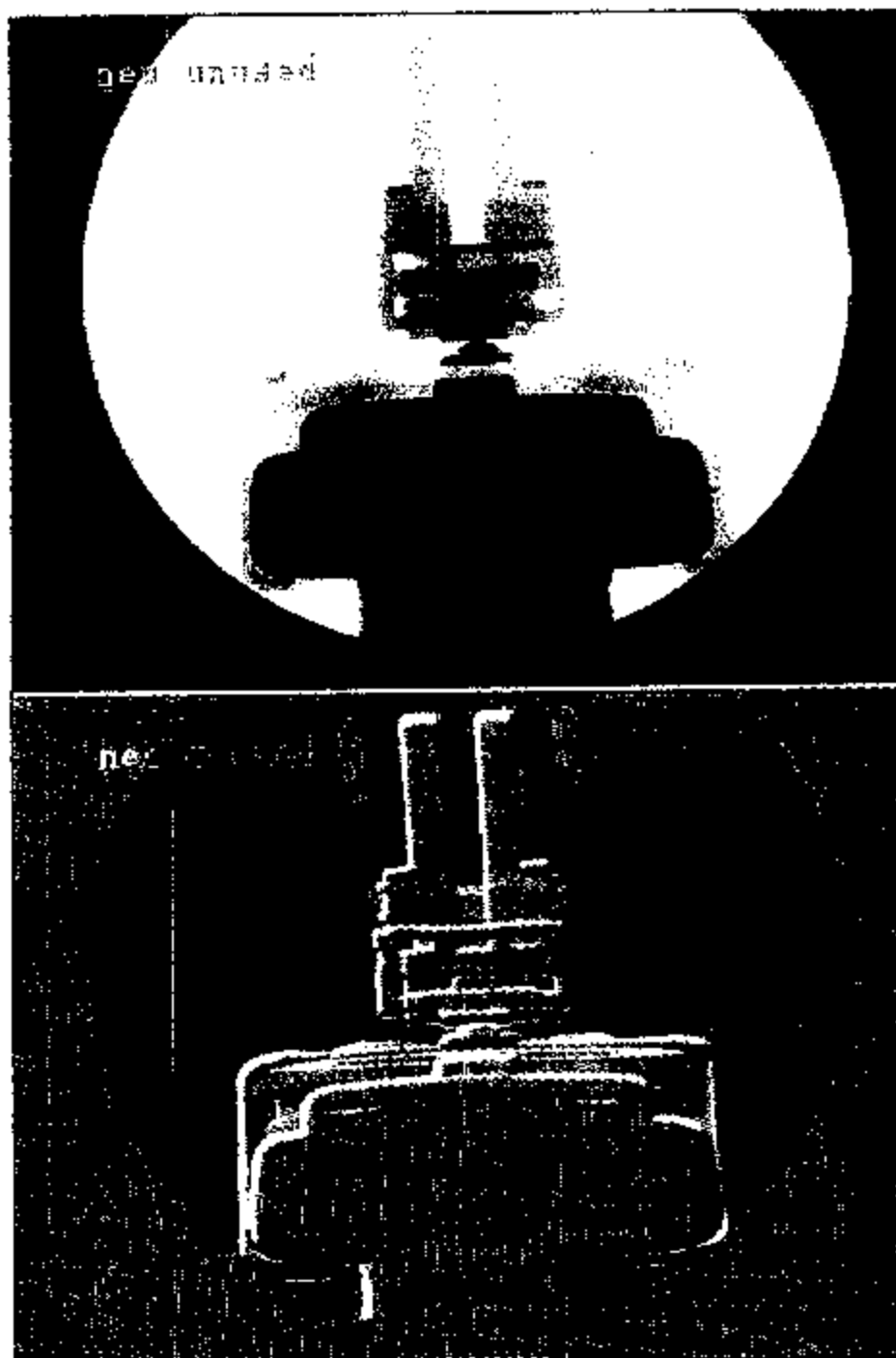
*Figure - 025 -*

**New Switch Sample**



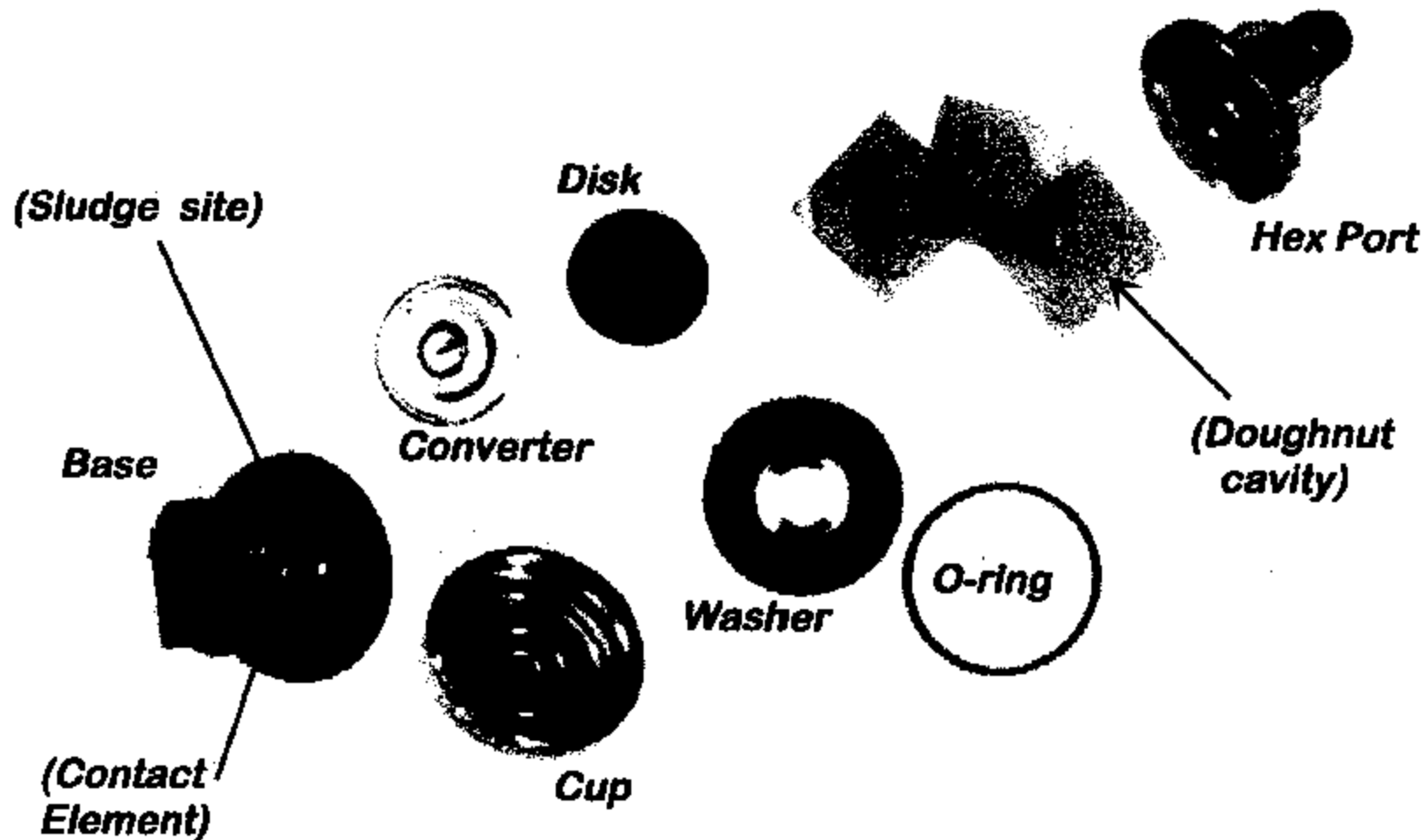
*Figure - 026 -*

**New Switch Sample**



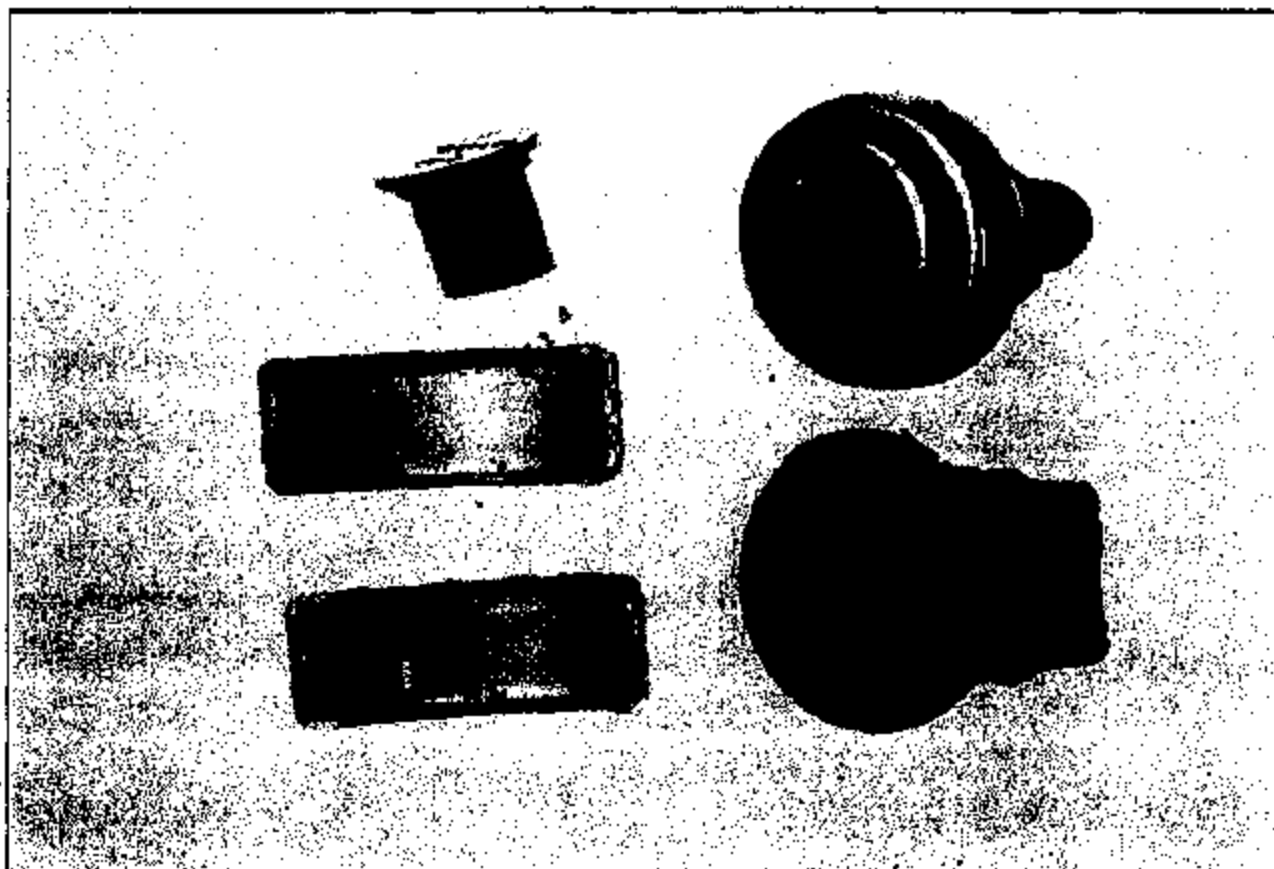
*Figure - 027 -*

**New Switch Sample**



***Brake Switch Components***

*Central Laboratory*

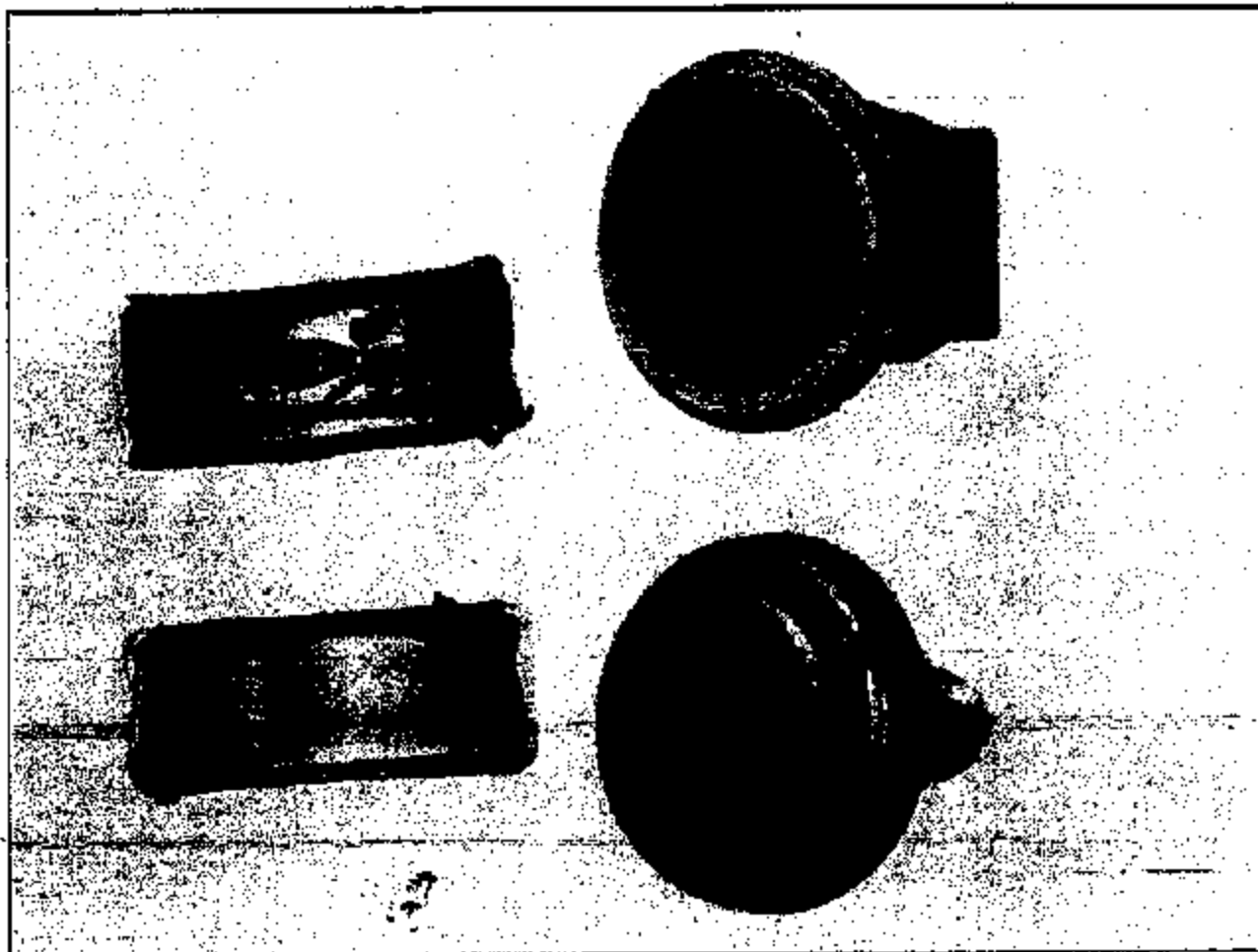


*Figure - 028 -*

*RO # 006895278-8*

*Switch Sample 01*

*Central Laboratory*

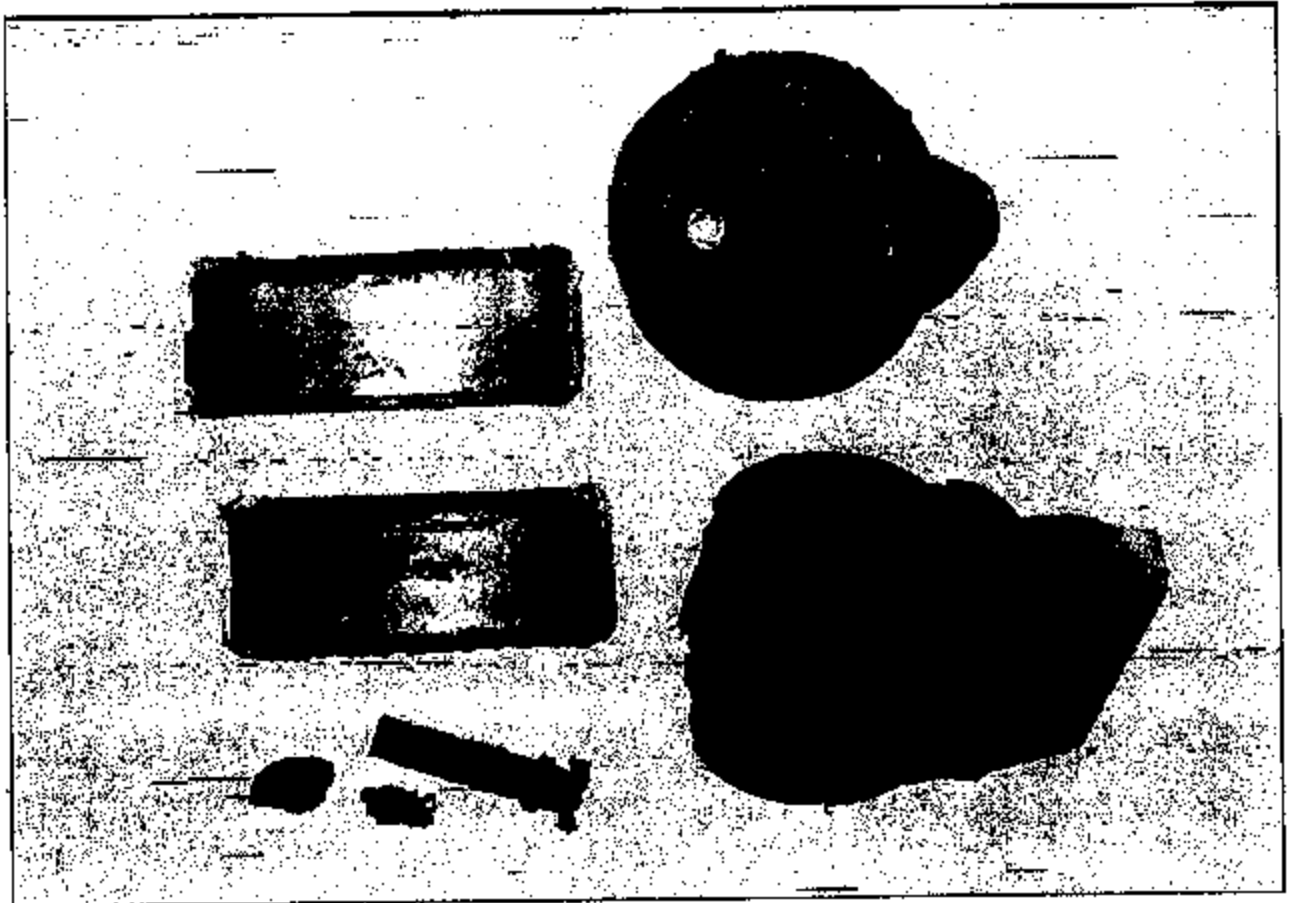


*Figure - 029 -*

**RO # 006895278-8**

**Switch Sample 02**

*Central Laboratory*

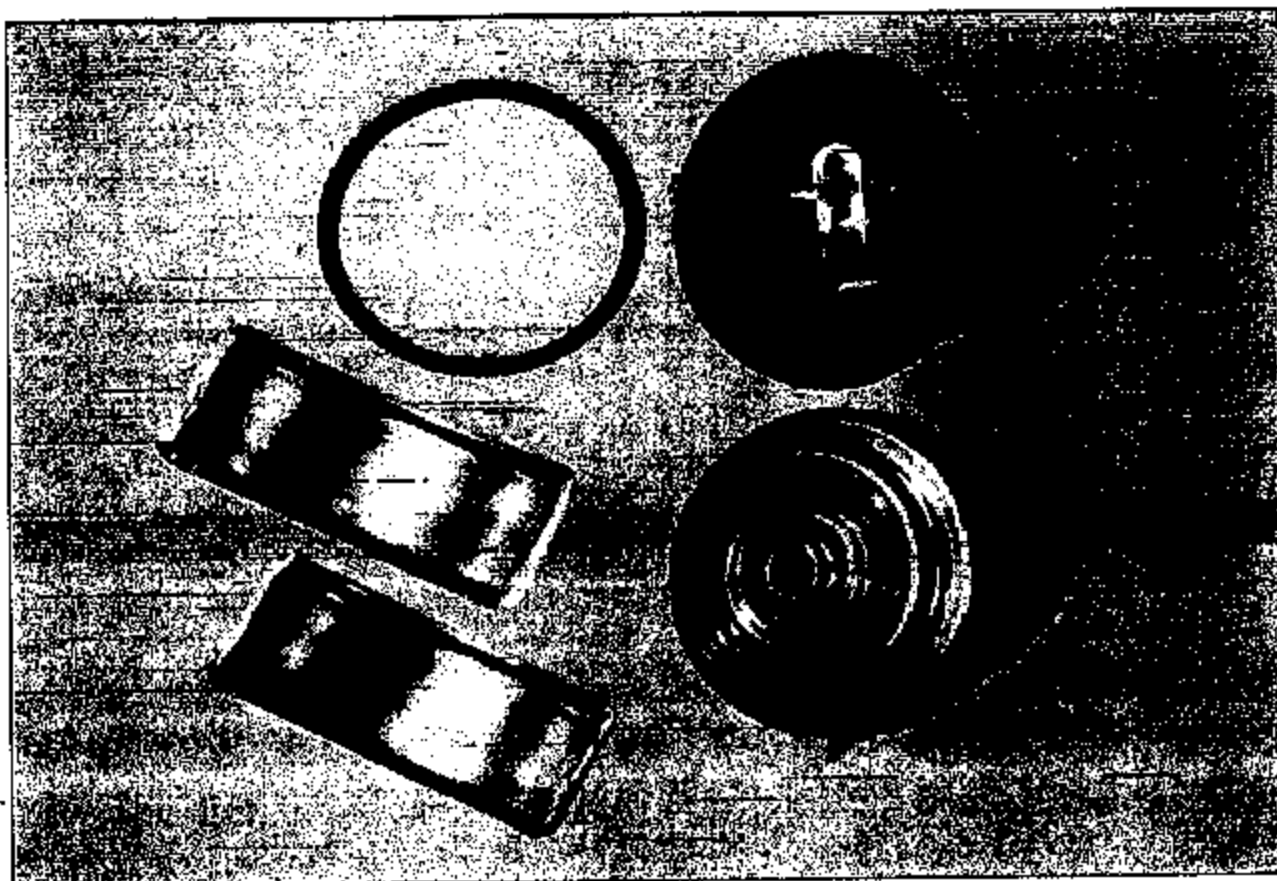


*Figure - 030 -*

**RO # 006895278-8**

**Switch Sample 04**

*Central Laboratory*



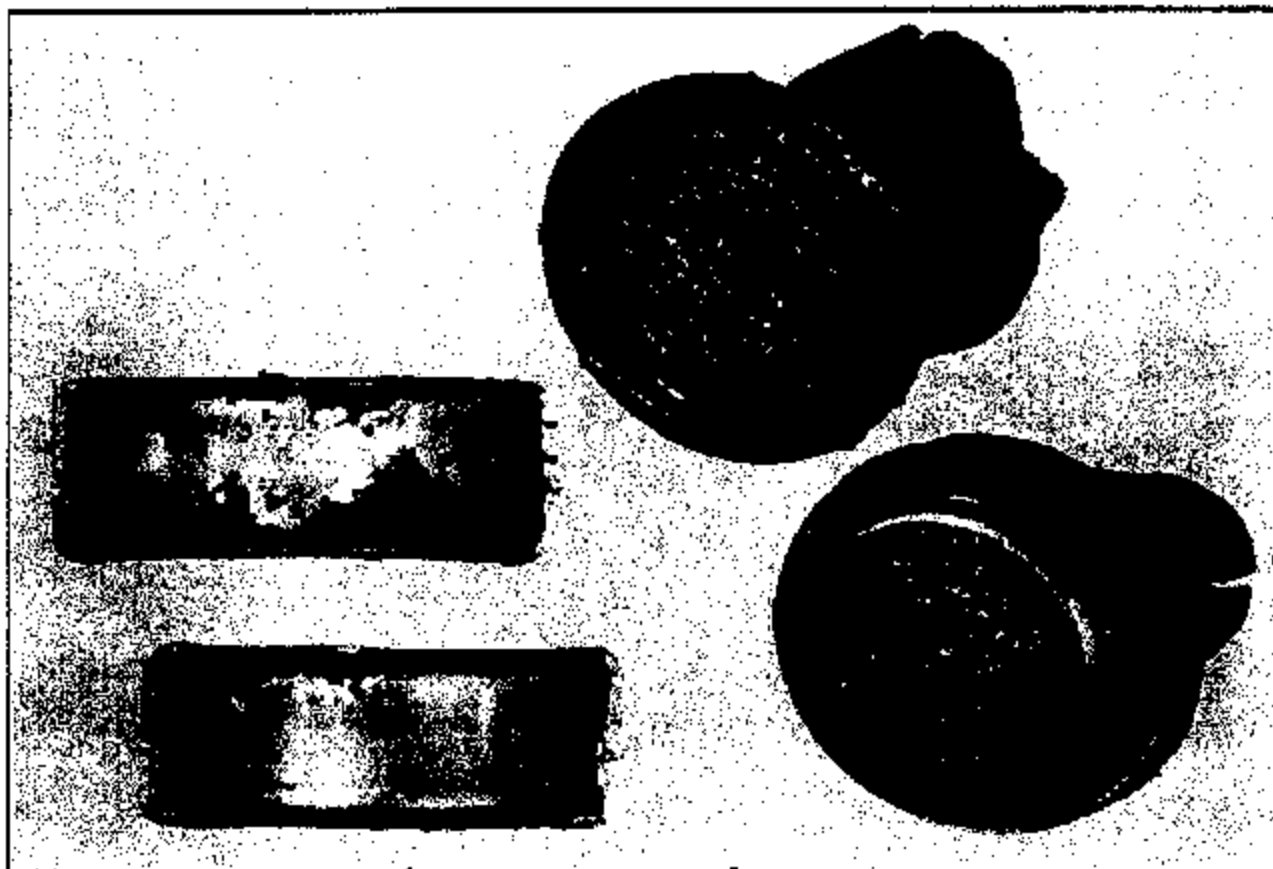
*Figure - 031 -*

*RO # 006895278-8*

*Switch Sample 05*



*Central Laboratory*

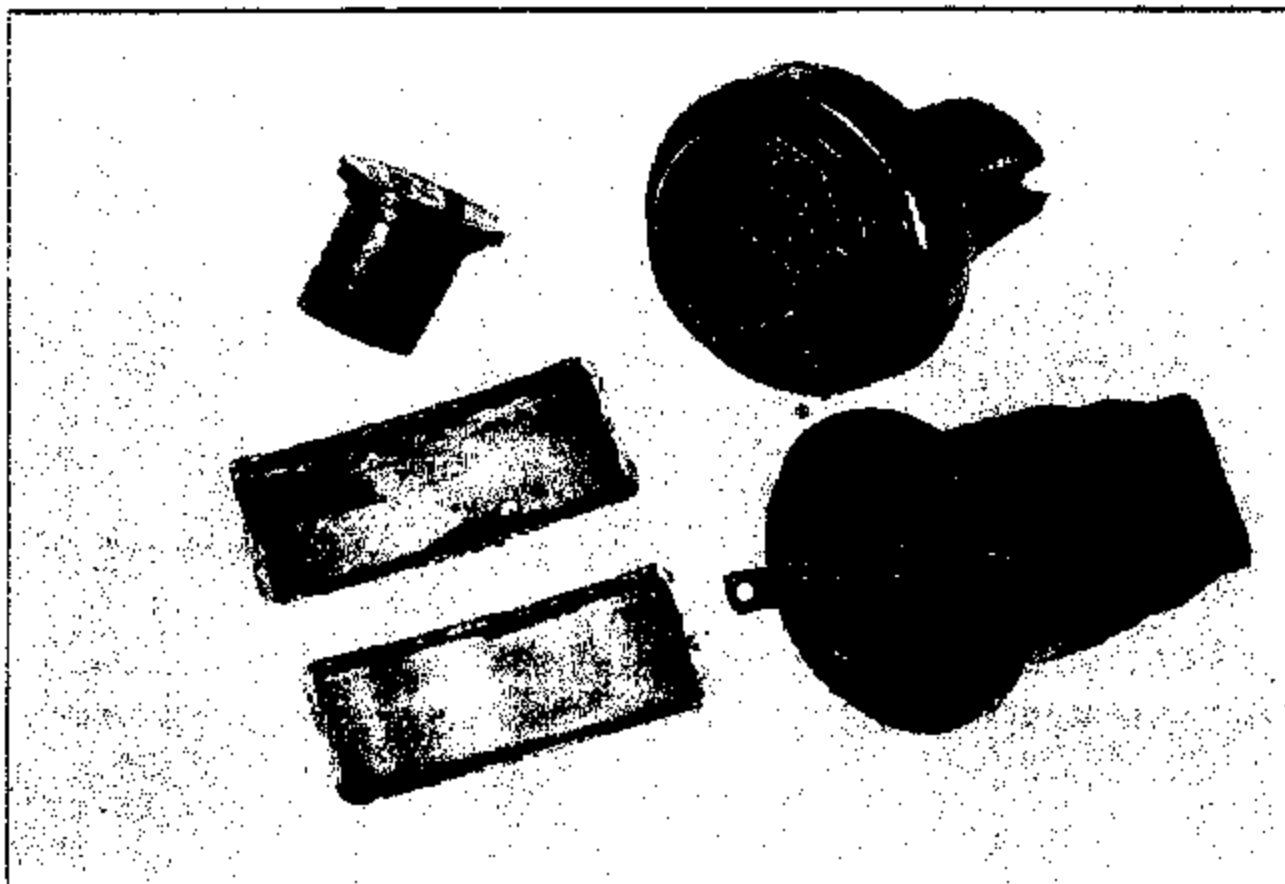


*Figure - 032 -*

*RO # 006895278-8*

*Switch Sample 08*

*Central Laboratory*

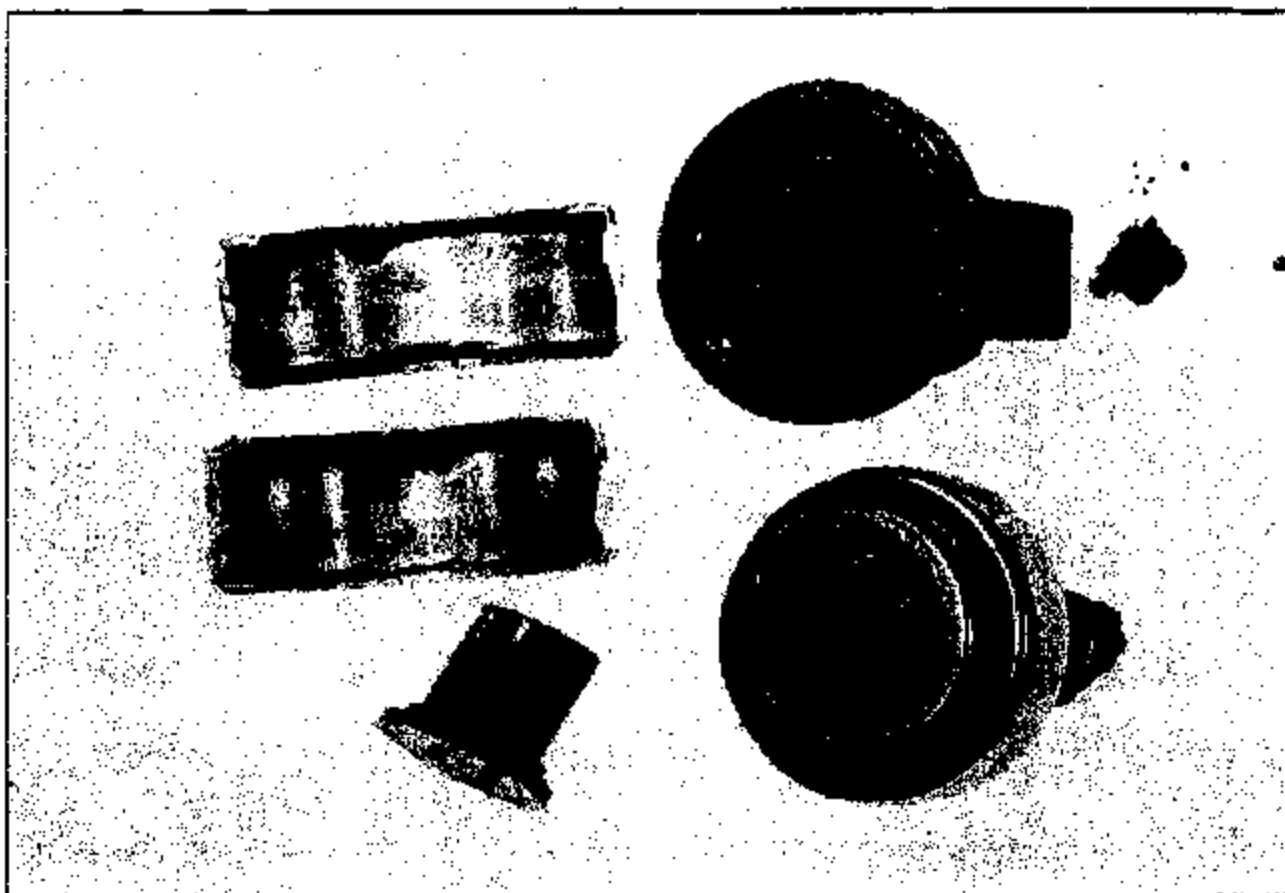


*Figure - 033 -*

*RO # 006895278-8*

*Switch Sample 09*

*Central Laboratory*

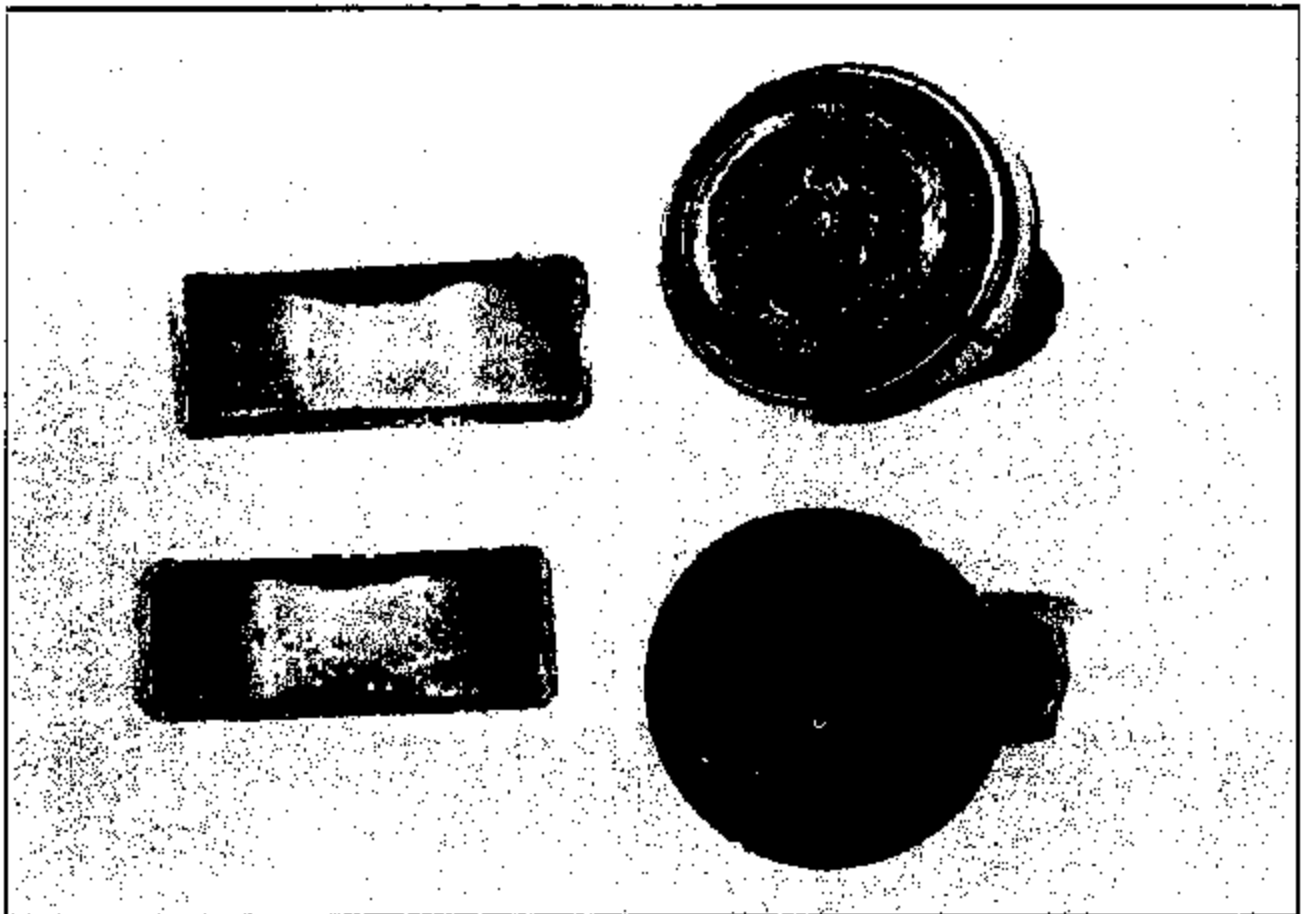


*Figure - 034 -*

*RO # 006895278-8*

*Switch Sample 10*

*Central Laboratory*

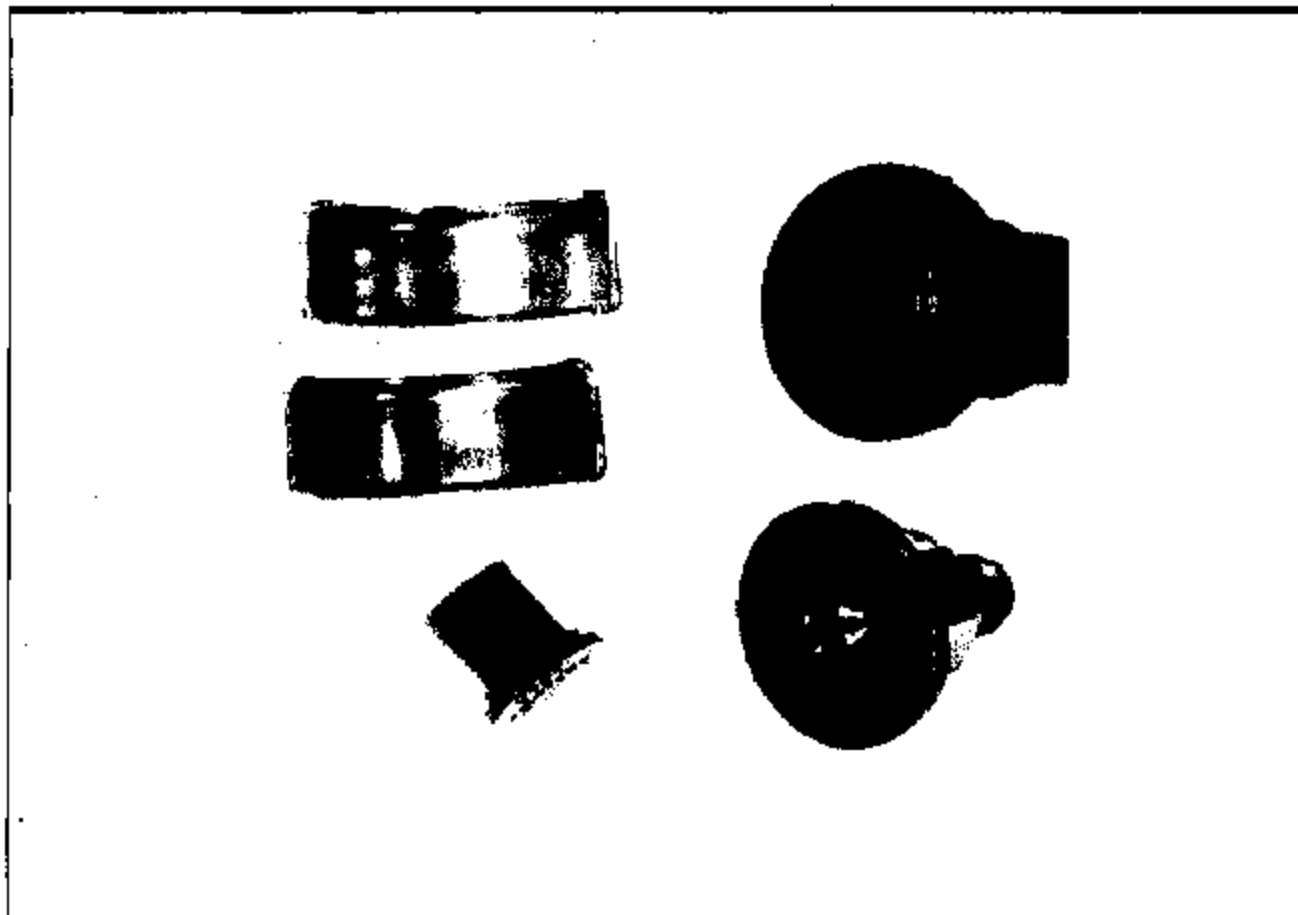


*Figure - 035 -*

*RO # 23257-01*

*Switch Sample 11*

*Central Laboratory*



*Figure - 036 -*

**New Switch Sample**



*Figure - 037 -*

15a



*Figure - 038 -*

16b

*Washer & Converter*

*Switch Sample 01*



*Figure - 039 -*

18a



*Figure - 040 -*

18a

*Layers 1-2 3*

**Switch Sample 01**

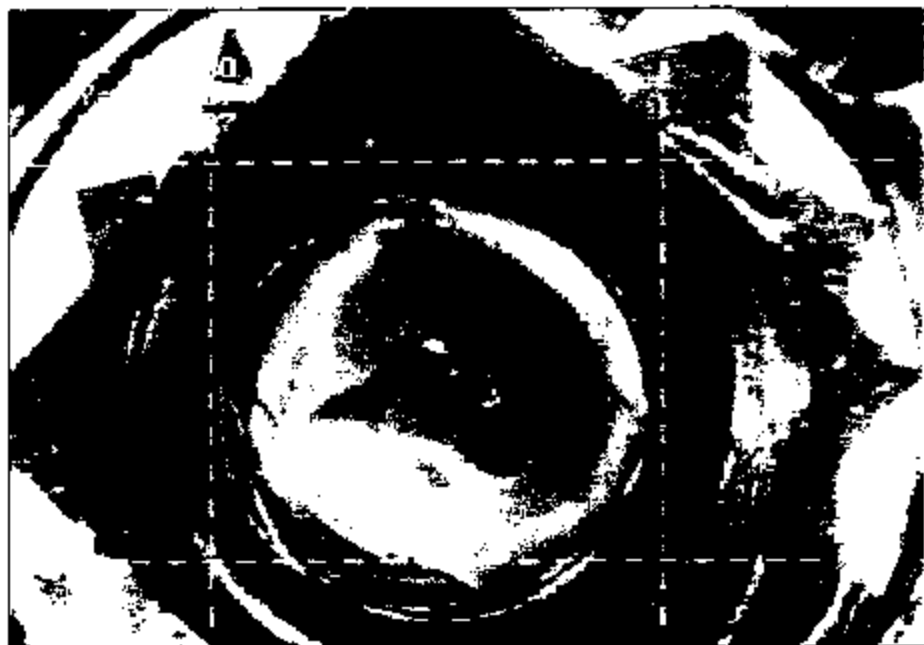


Figure - 041 -

17a

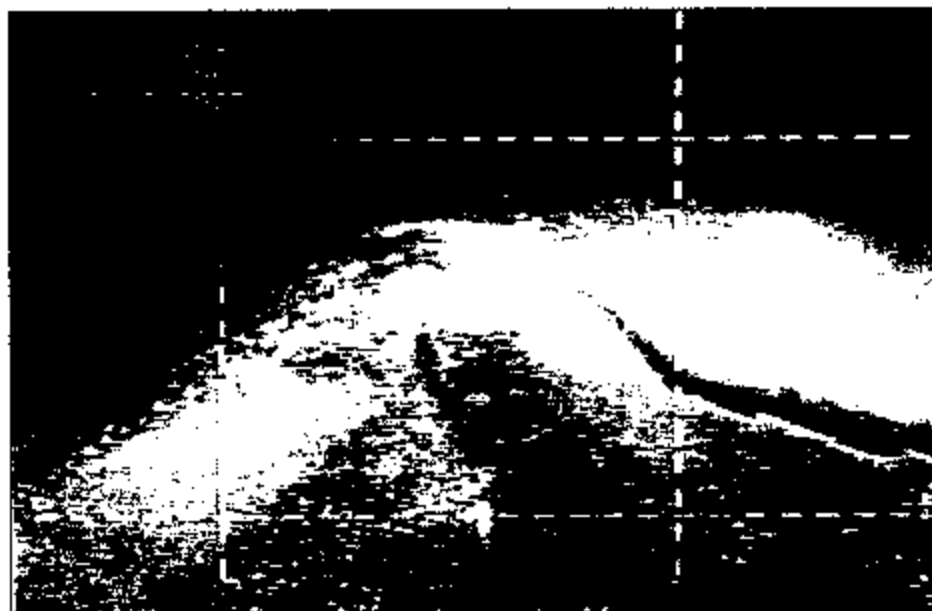


Figure - 042 -

17b

Layers 1-2 3

Switch Sample 01





*Figure - 043 -*

18a



*Figure - 044 -*

18b

*Layers 1-2 3*

*Switch Sample 01*



*Figure - 045 -  
Layers 2 - 3*

19a



*Figure - 046 -*

19b

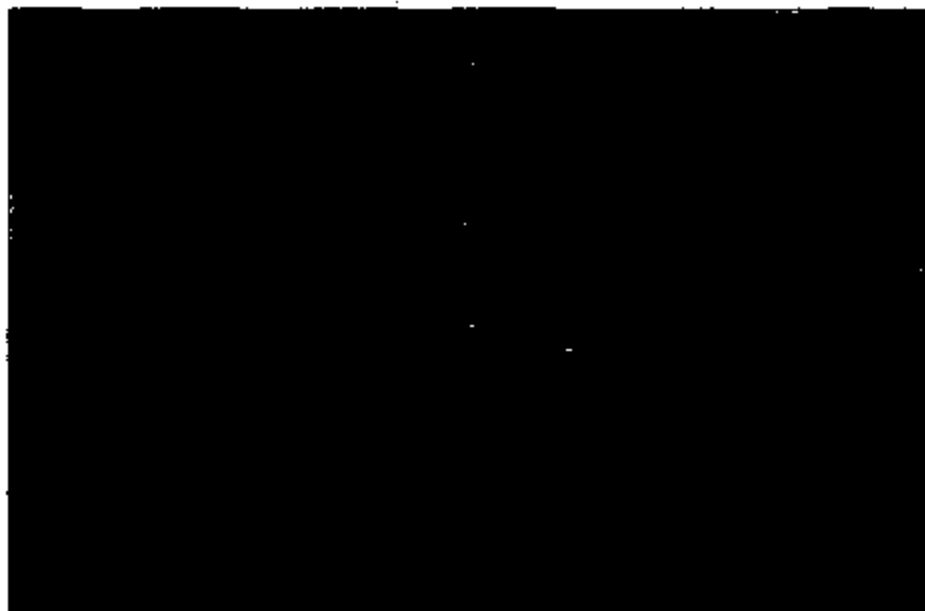
*Connector Side*

*Switch Sample 01*



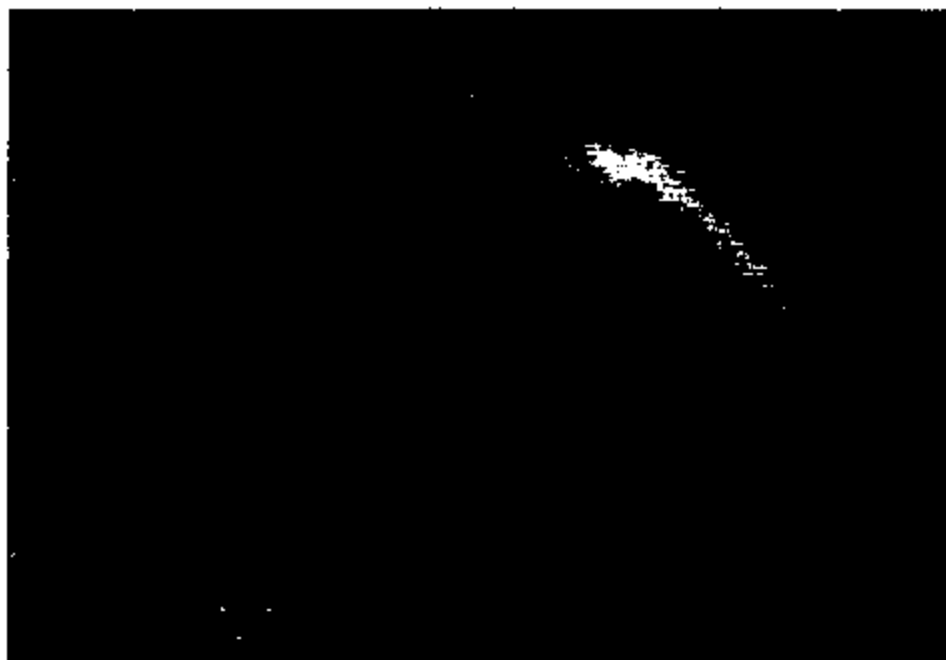
*Figure - 047 -  
Layer 1, Fluid Side*

20a



*Figure - 048 -  
Layer 2, Connector Side  
Switch Sample 01*

20b



*Figure - 049 -  
Layer 2, Fluid Side*

21a



*Figure - 050 -*

21b

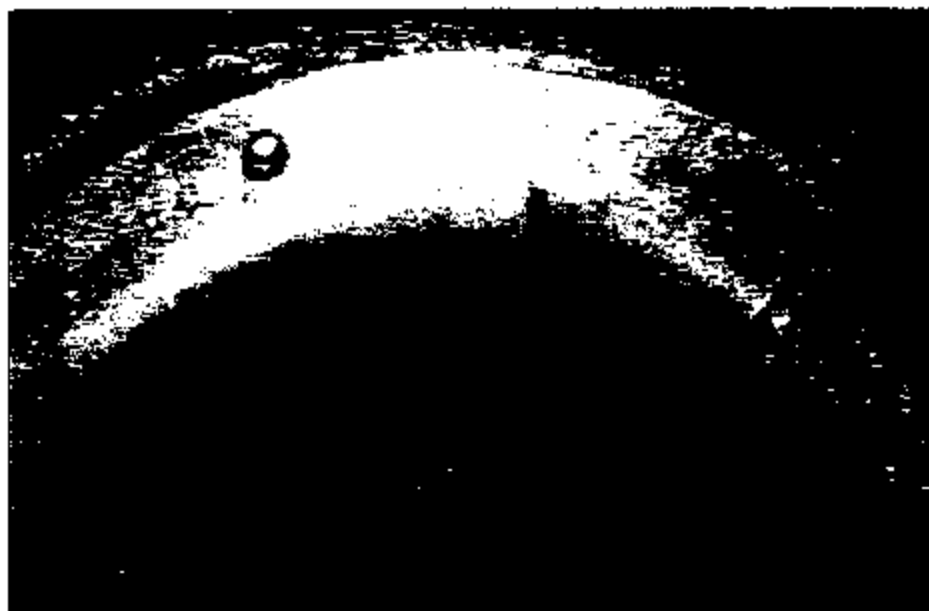
*Layer 3*

*Switch Sample 01*



*Figure - 051 -  
Layer 3, Fluid Side*

22.a



*Figure - 052 -*

22b

*Layer 3*

*Switch Sample 01*



*Figure - 053 -  
Layer 3, Connector Side*

23.B



*Figure - 054 -  
Layer 1, Fluid Side  
Switch Sample 01*

23b



*Figure - 055 -  
Layer 1 - 2 - 3*

24a



*Figure - 056 -*

24b

*Spacer in cup*

*Switch Sample 01*



*Figure - 057 -  
Converter, connector side*

25a



*Figure - 058 -  
Washer, Connector Side  
Switch Sample 01*

25b





*Figure - 059 -  
Converter*

28a



*Figure - 060 -*

28b

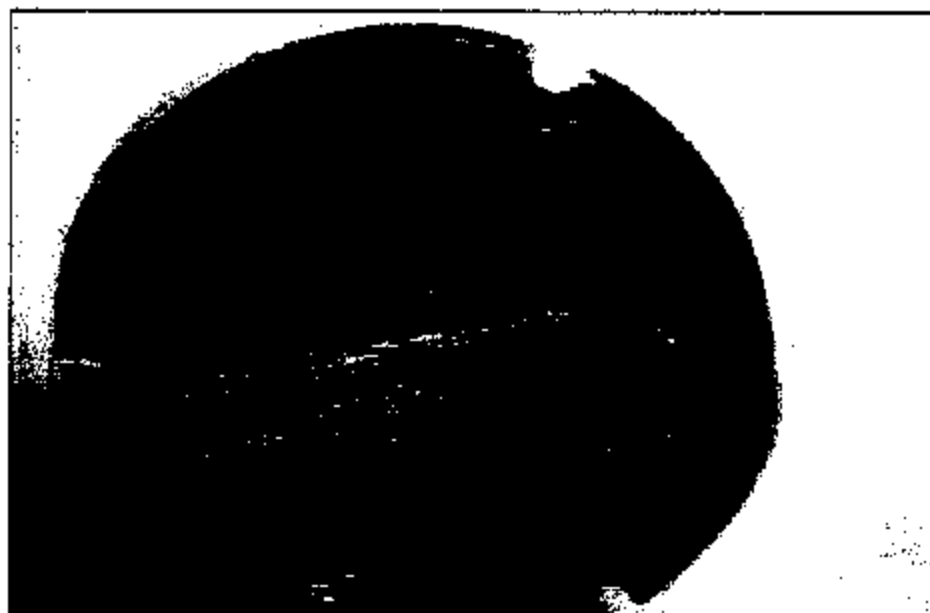
*Disk, Connector Side*

*Switch Sample 01*



*Figure - 061 -  
Cup*

27a



*Figure - 062 -*

27b

*Spacer, Connector Side*

*Switch Sample 01*

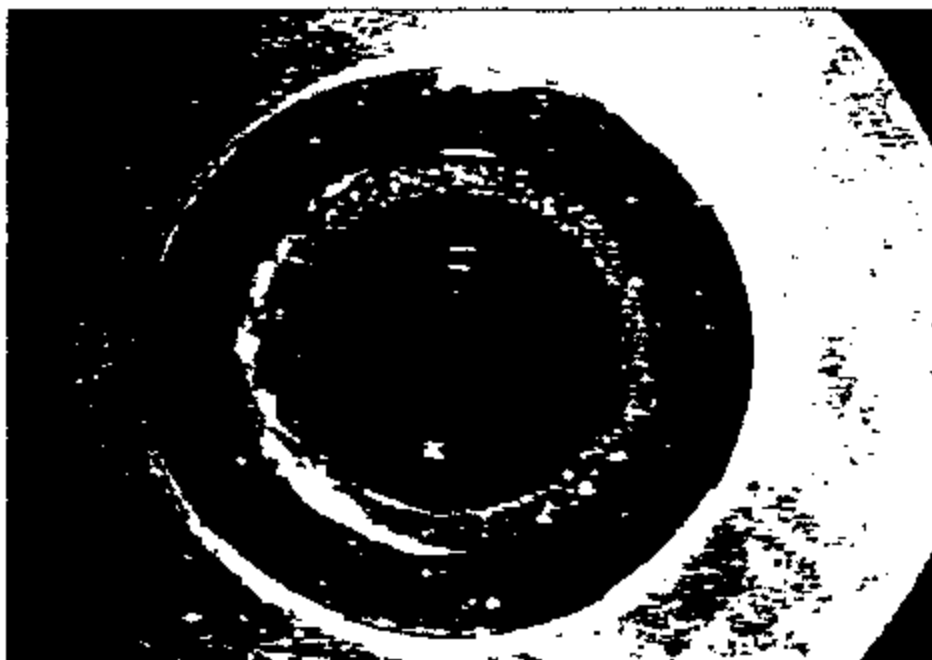


*Figure - 063 -*

28a

*Disk In Cup*

*Switch Sample 01*



*Figure - 064 -  
Hexprot & Gasket*

28



*Figure - 065 -*

30

*Sludge in base*

*Switch Sample 02*



Figure - 066 -

29

Washer side, Layer 1(on top) - 2-3

Switch Sample 02



Figure - 067 -

31

Washer side, Layer 1(on top) - 2-3

Switch Sample 03

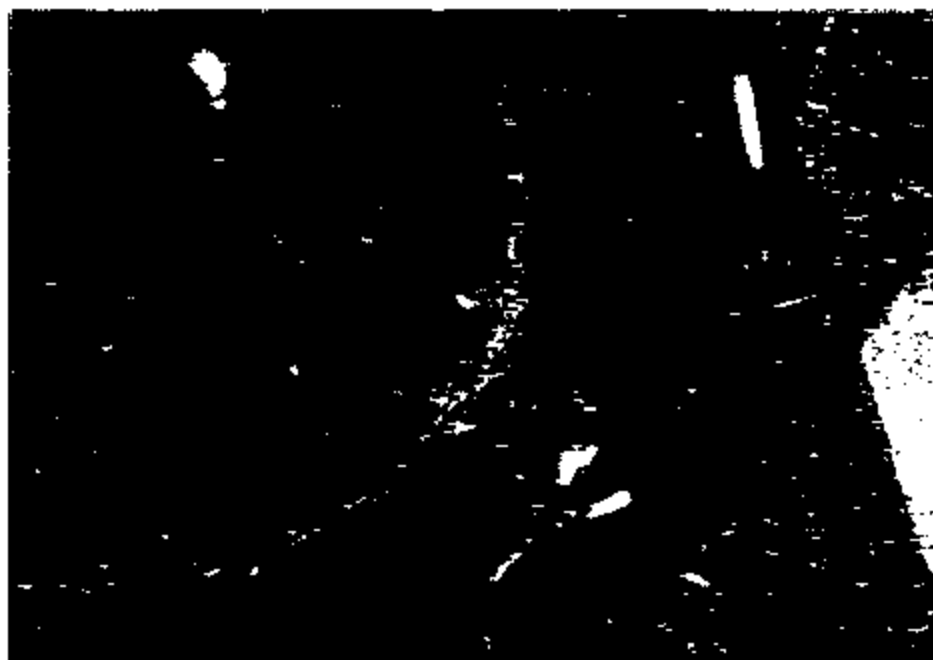


Figure - 068 -

32a

Layer 1 - 2 - 3, Crack @ 7:00 from Index

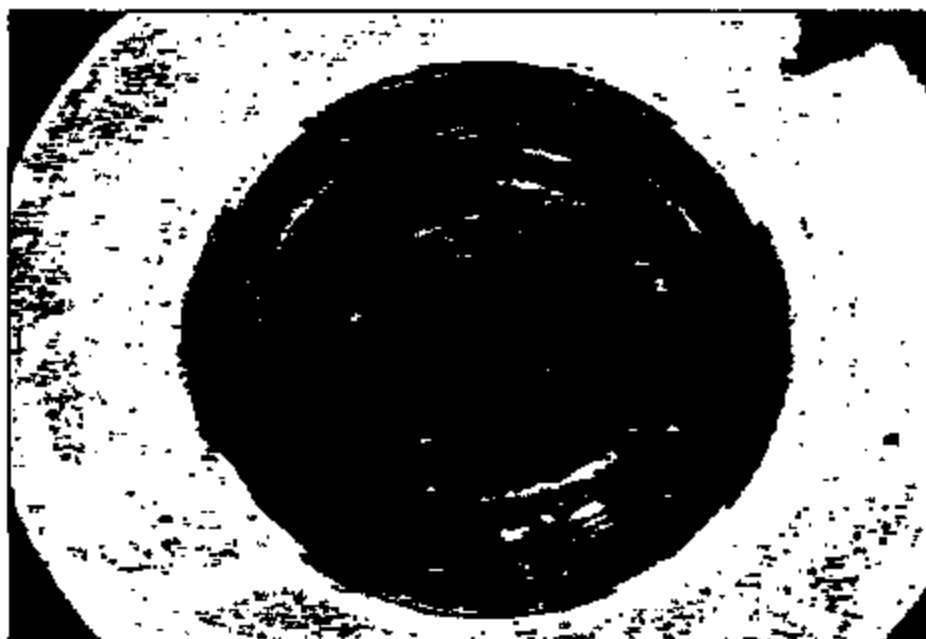


Figure - 069 -

32b

Hexport & Gasket

Switch Sample 03



Figure - 070 -

33

Washer & Converter

Switch Sample 03



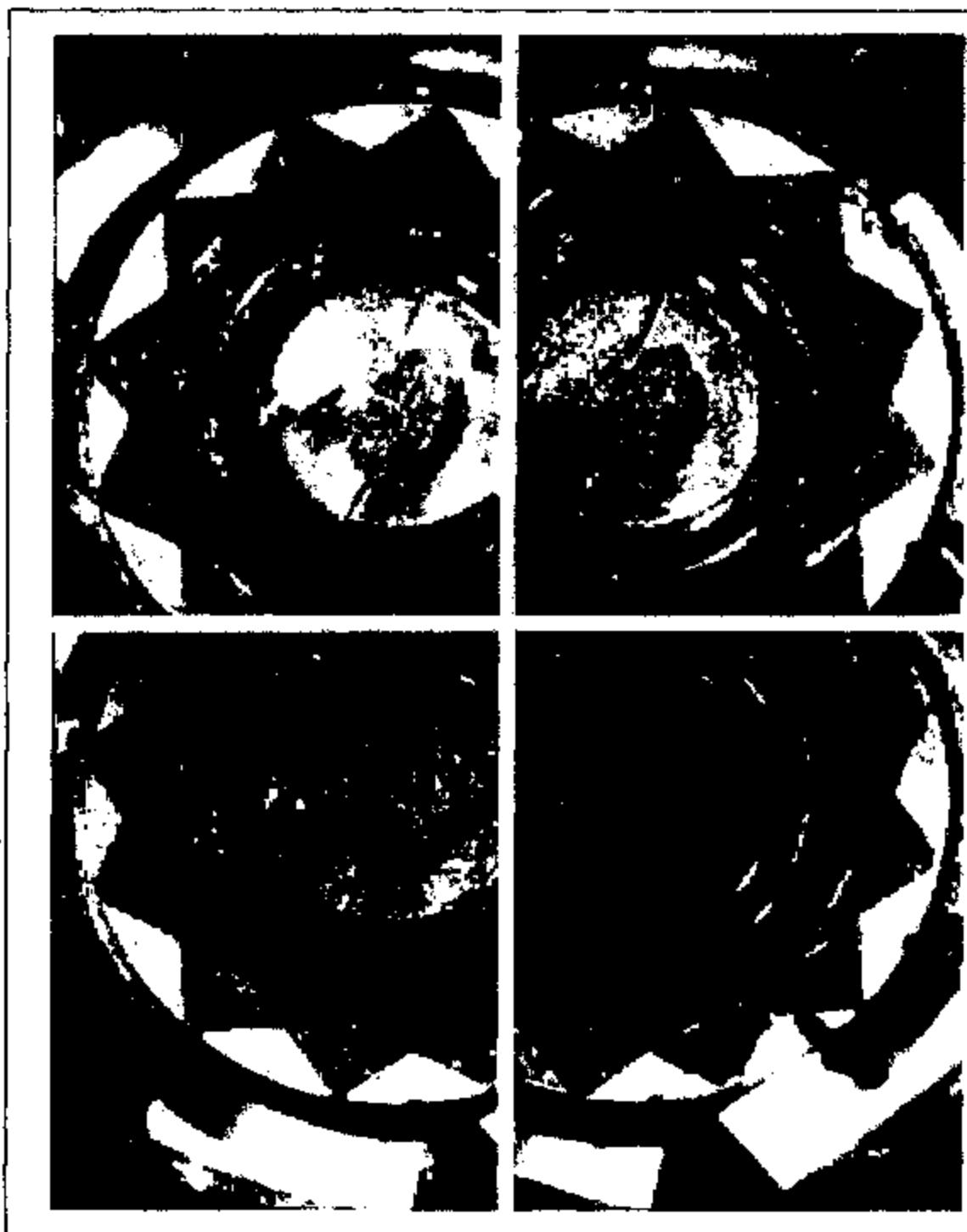


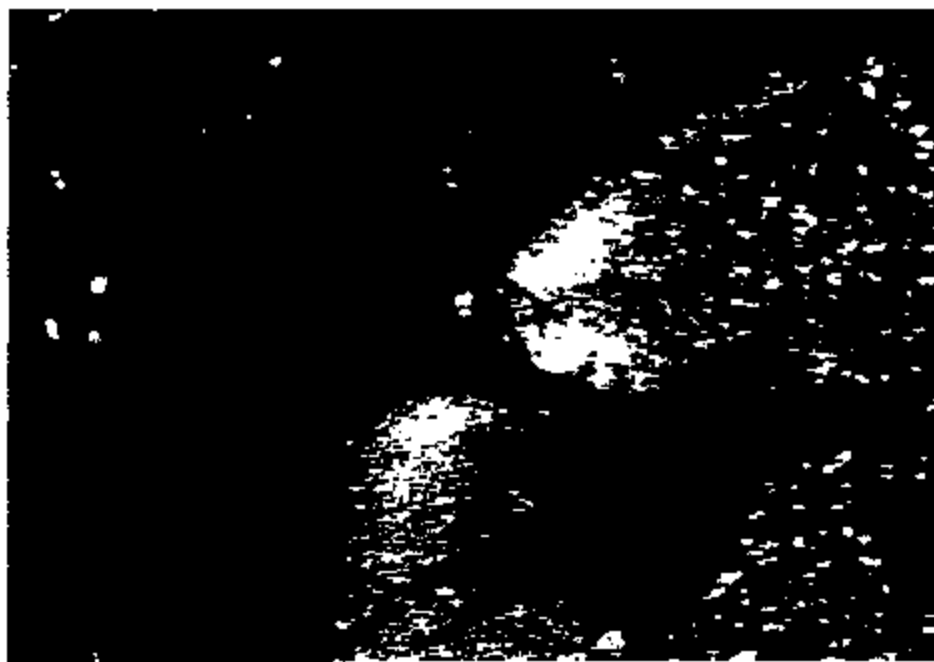
Figure - 071 -

34

Washer Side

Switch Sample 04

3713 8048



*Figure - 072 -*

35a

*Layer 1 (shown), Crack @ 4:00 from Index*



*Figure - 073 -*

35b

*Hexport*

*Switch Sample 04*



Figure - 074 -

38a

Hexport

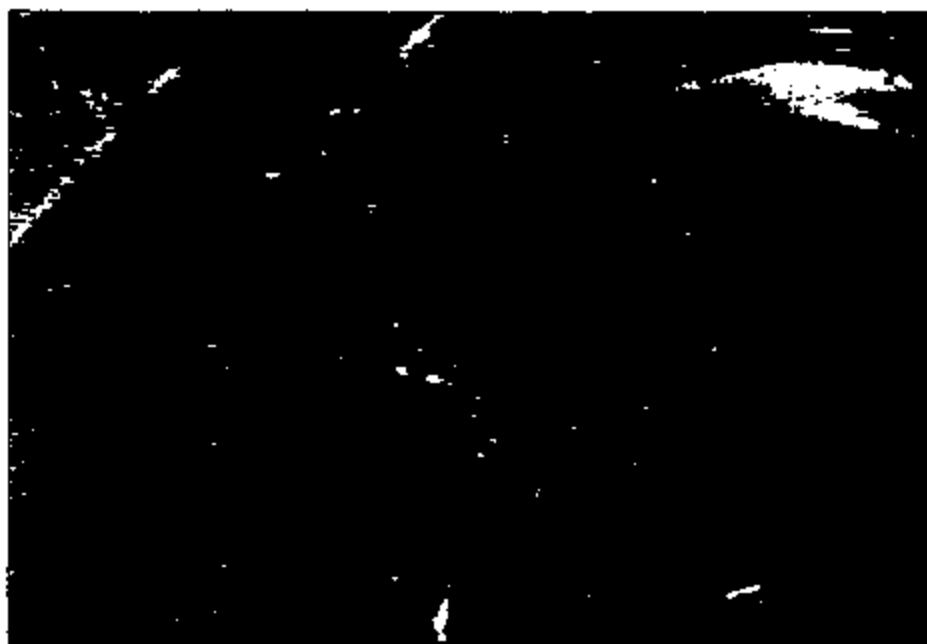
Switch Sample 05



*Figure - 075 -*

38b

*Hexport*



*Figure - 076 -*

37a

Layer 1 - 2 - 3, Crack @ 2:00 from Index

*Switch Sample 06*

3713 8051

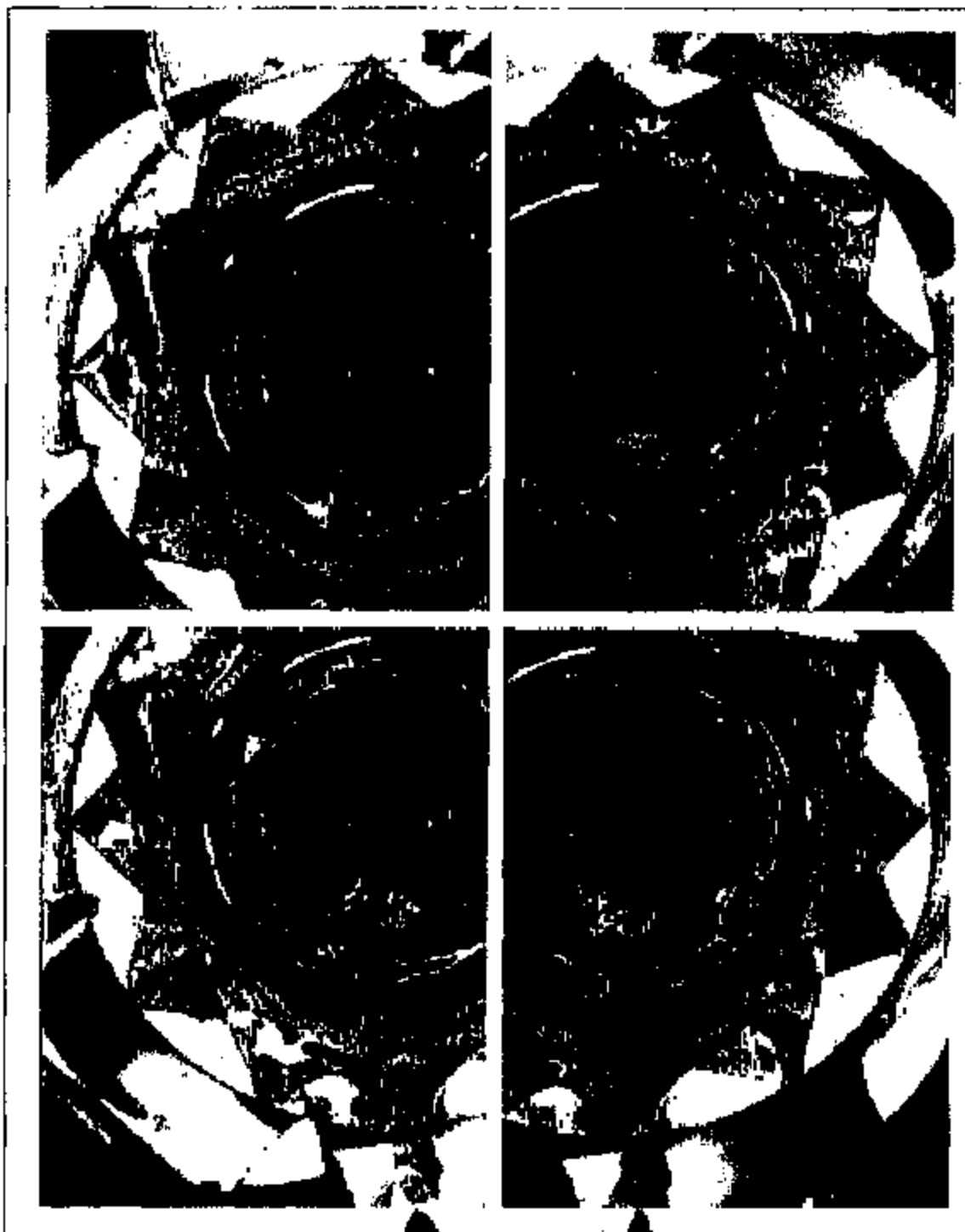


Figure - 077 -

38

Washer Side

Switch Sample 06

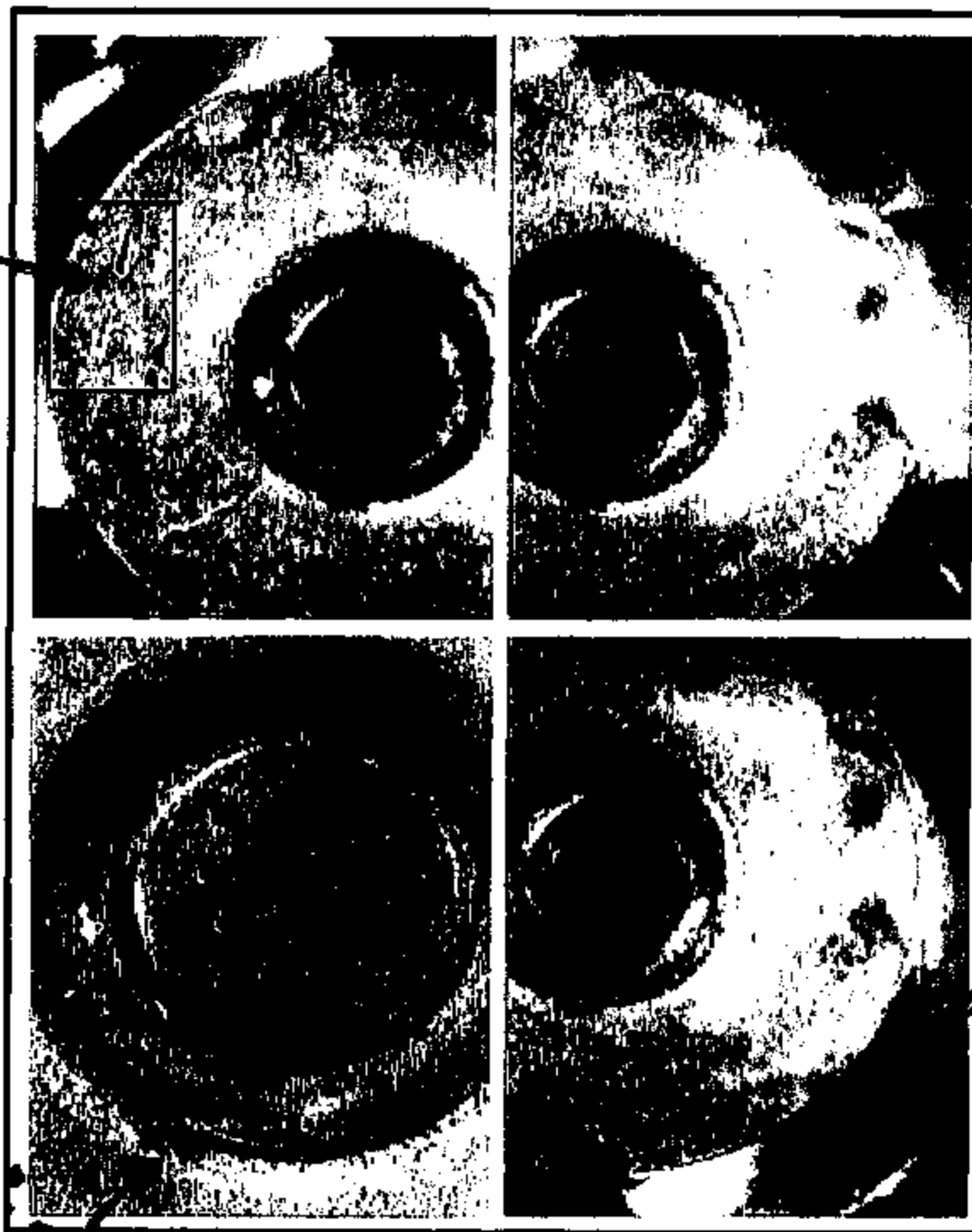


Figure - 078 -

39

Washer & Converter

Switch Sample 07

3713 8053

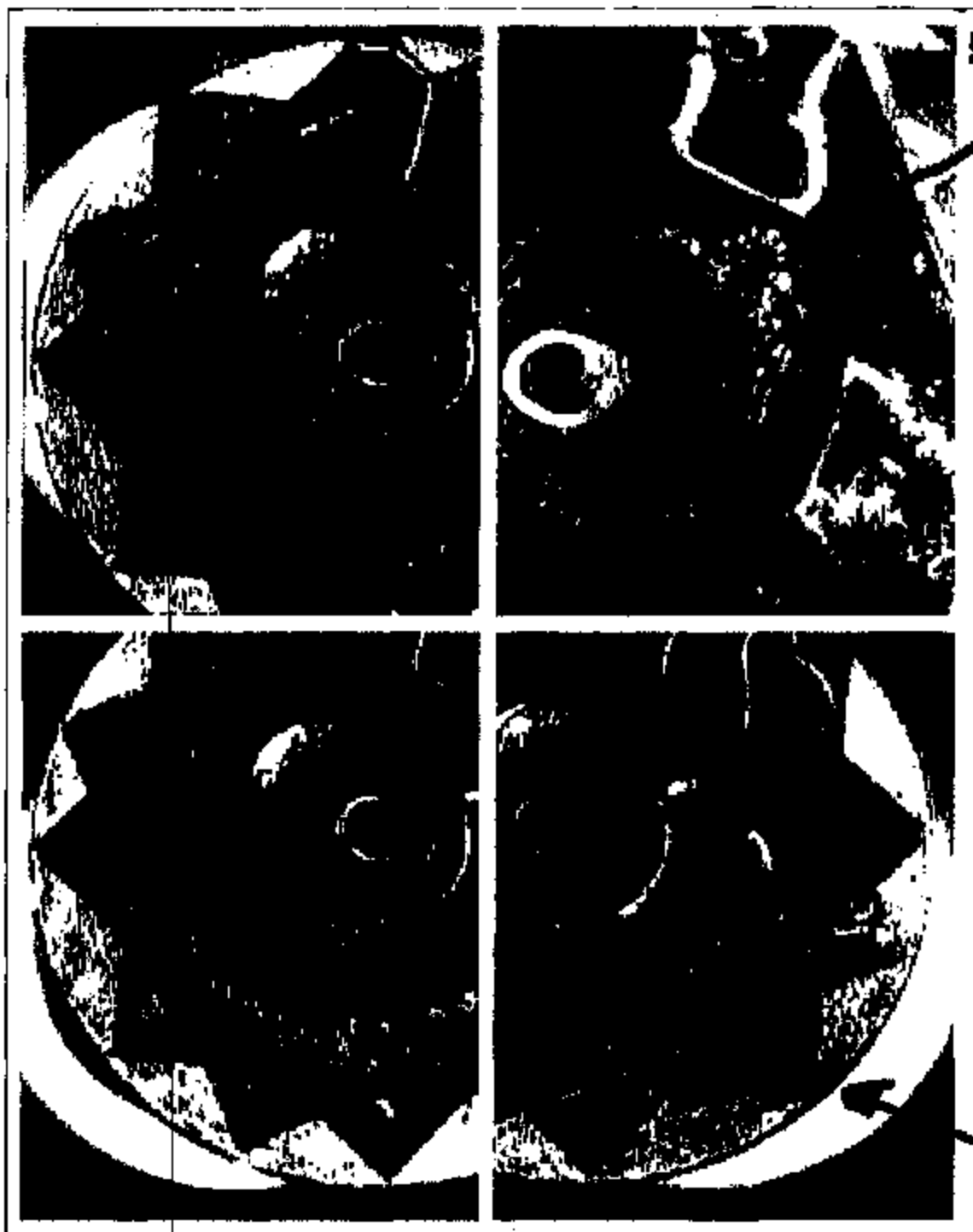


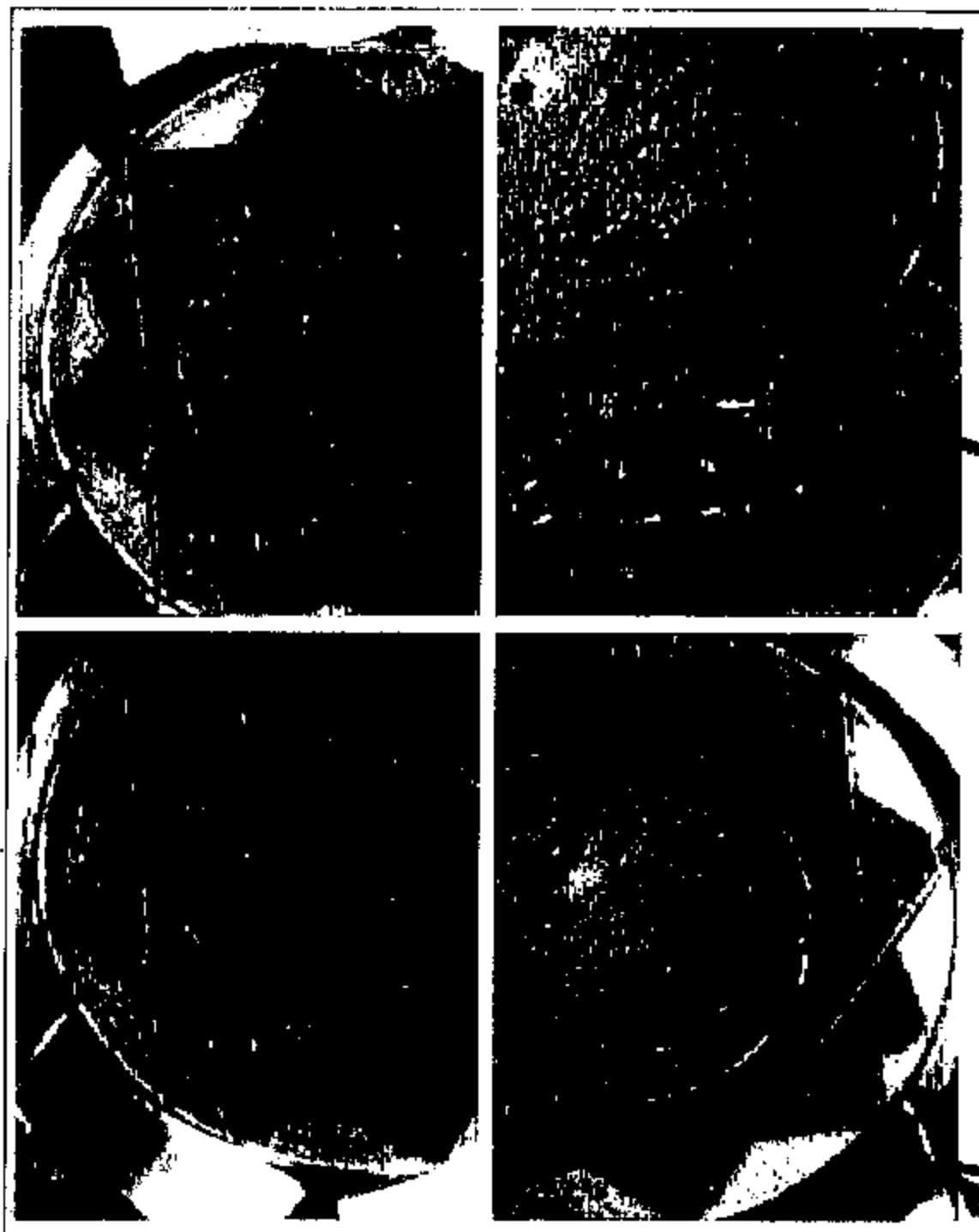
Figure - 079 -

40

Hexport

Switch Sample 07

3713 8054



*Figure - 080 -*

41

*Washer side*

*Switch Sample 08*

3713 8055





*Figure - 081 -*

42a

*Hexport & Gasket*

*Switch Sample 08*

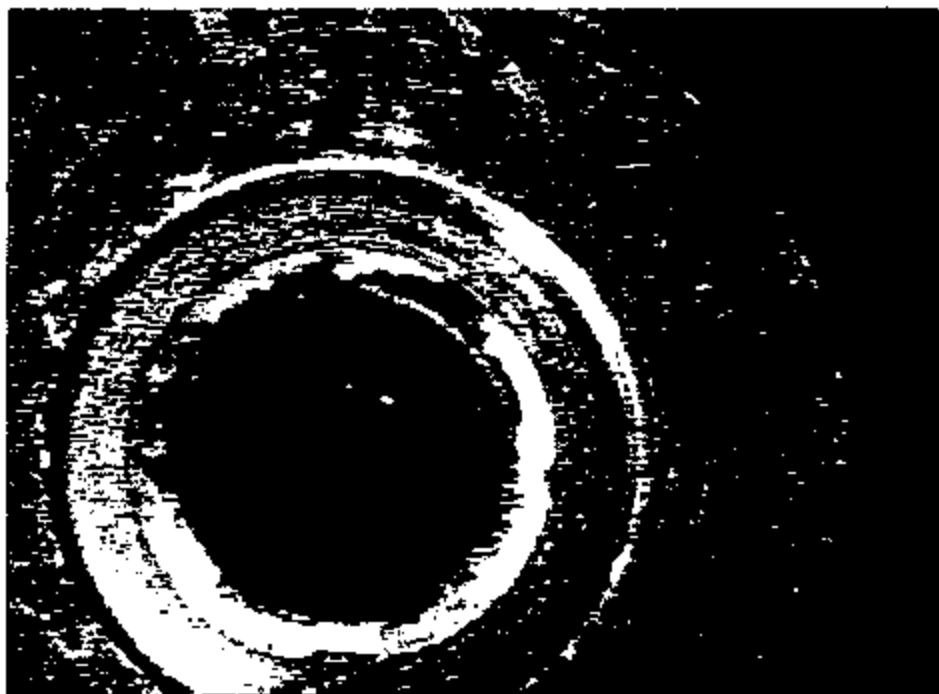


Figure - 082 -

42b

Hexport



Figure - 083 -

44a

Washer Side

Switch Sample 09

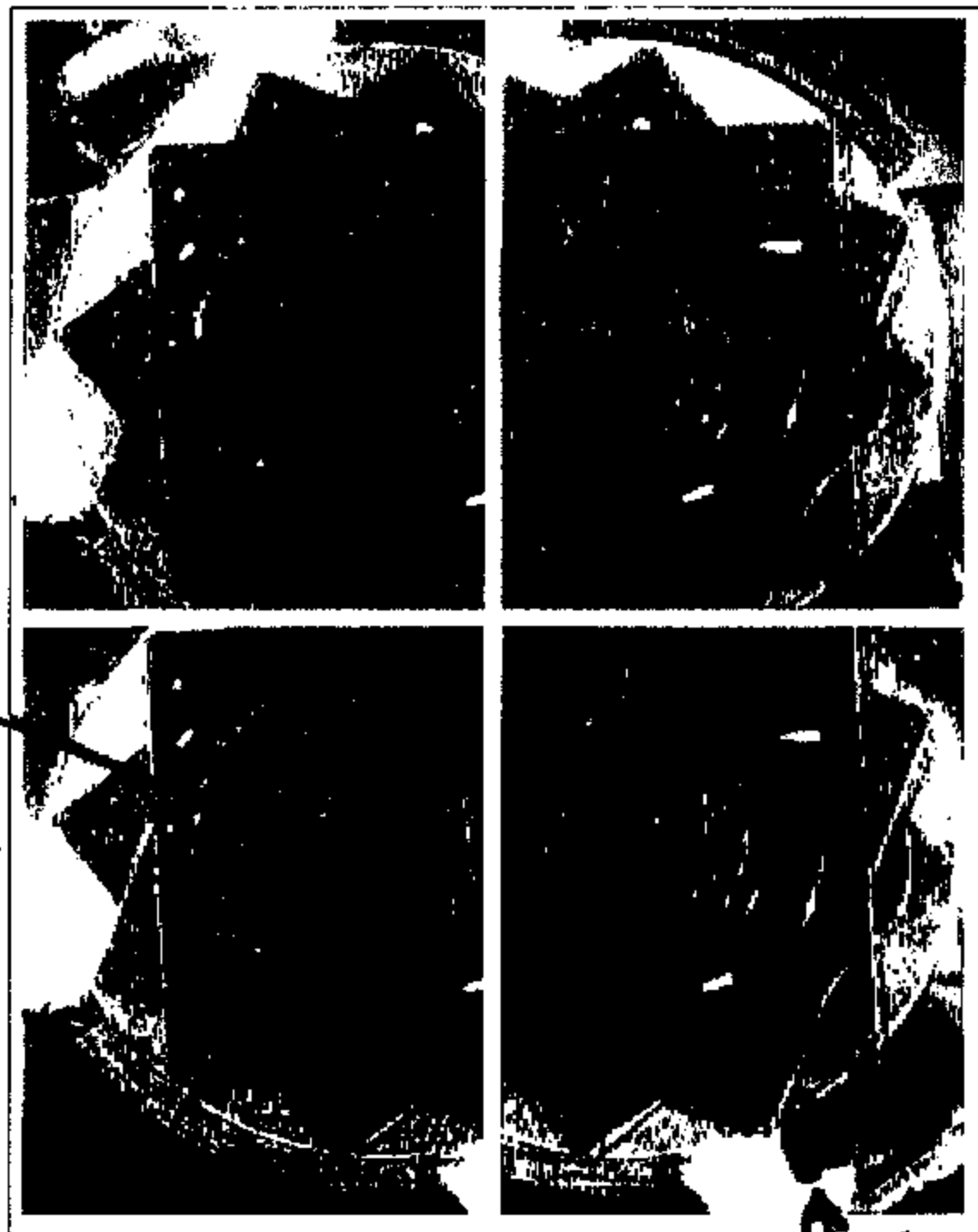
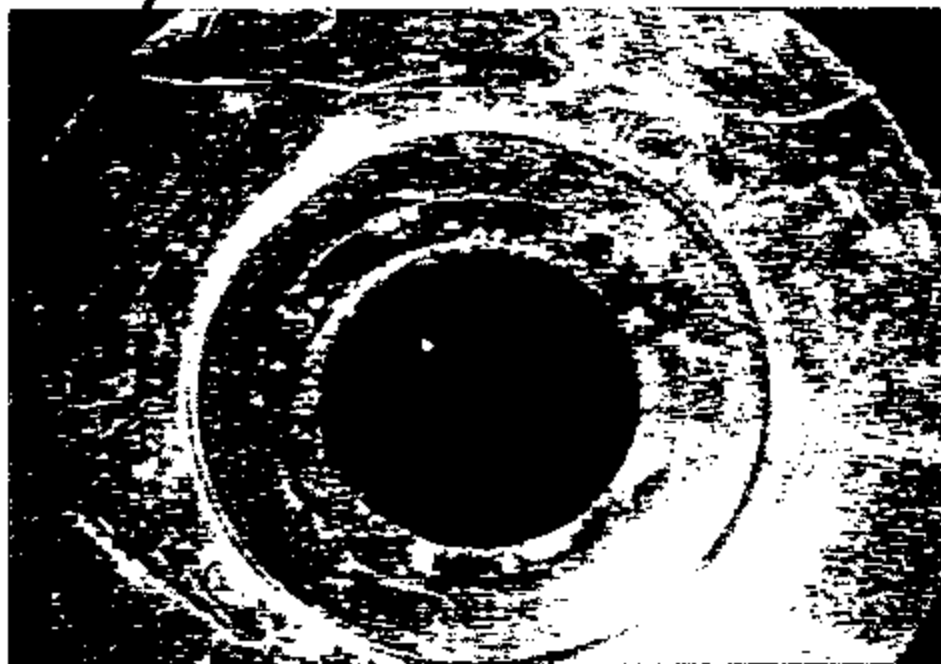


Figure - 084 -

43

Washer side

Switch Sample 09



*Figure - 085 -*

44b

*Hexport*

*Switch Sample 10*

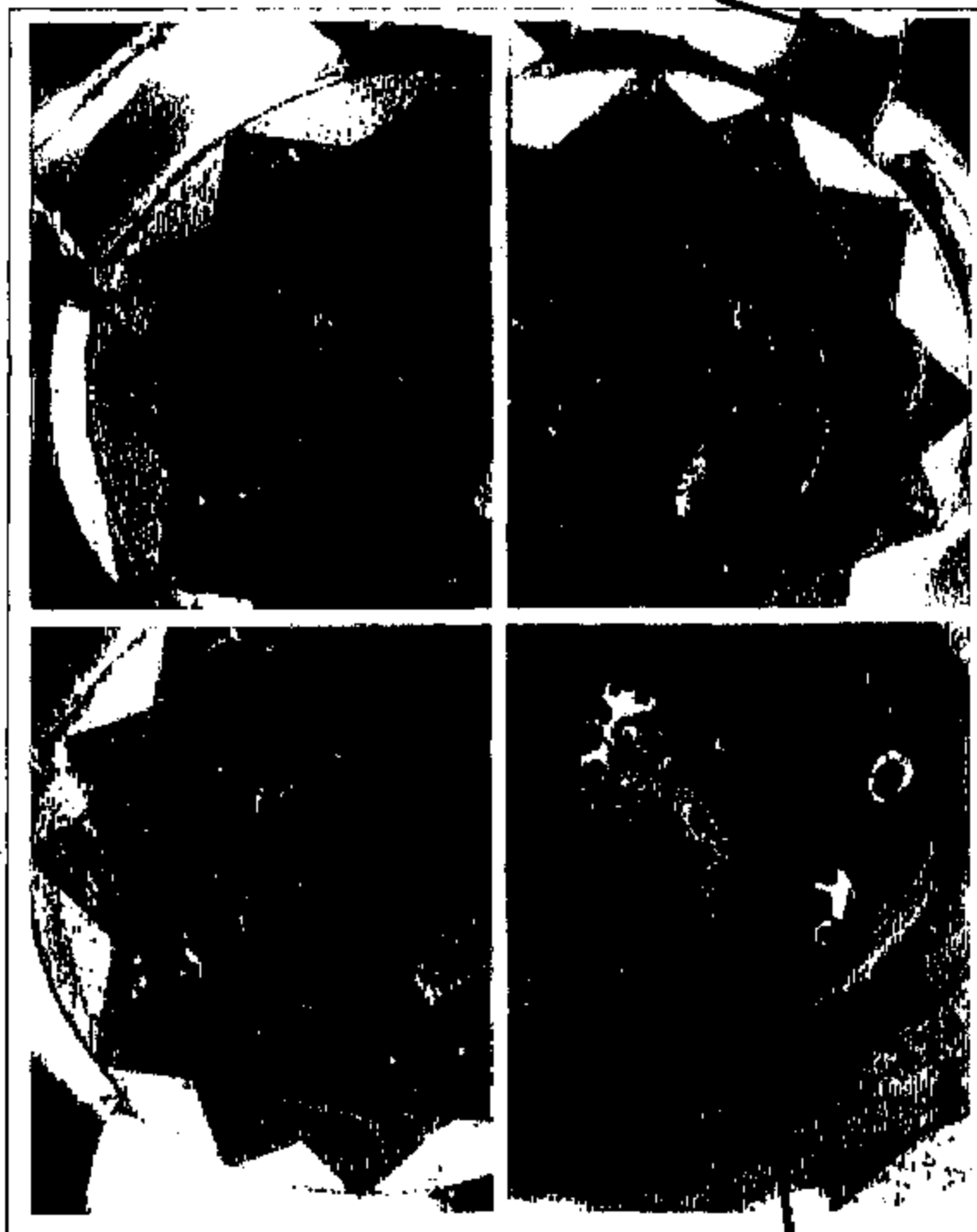


Figure - 086 -

45

Washer ( anomaly in lower left image)

Switch Sample 10

3713 8060



*Figure - 087 -*

48a

*Hexport*

*Switch Sample 11*

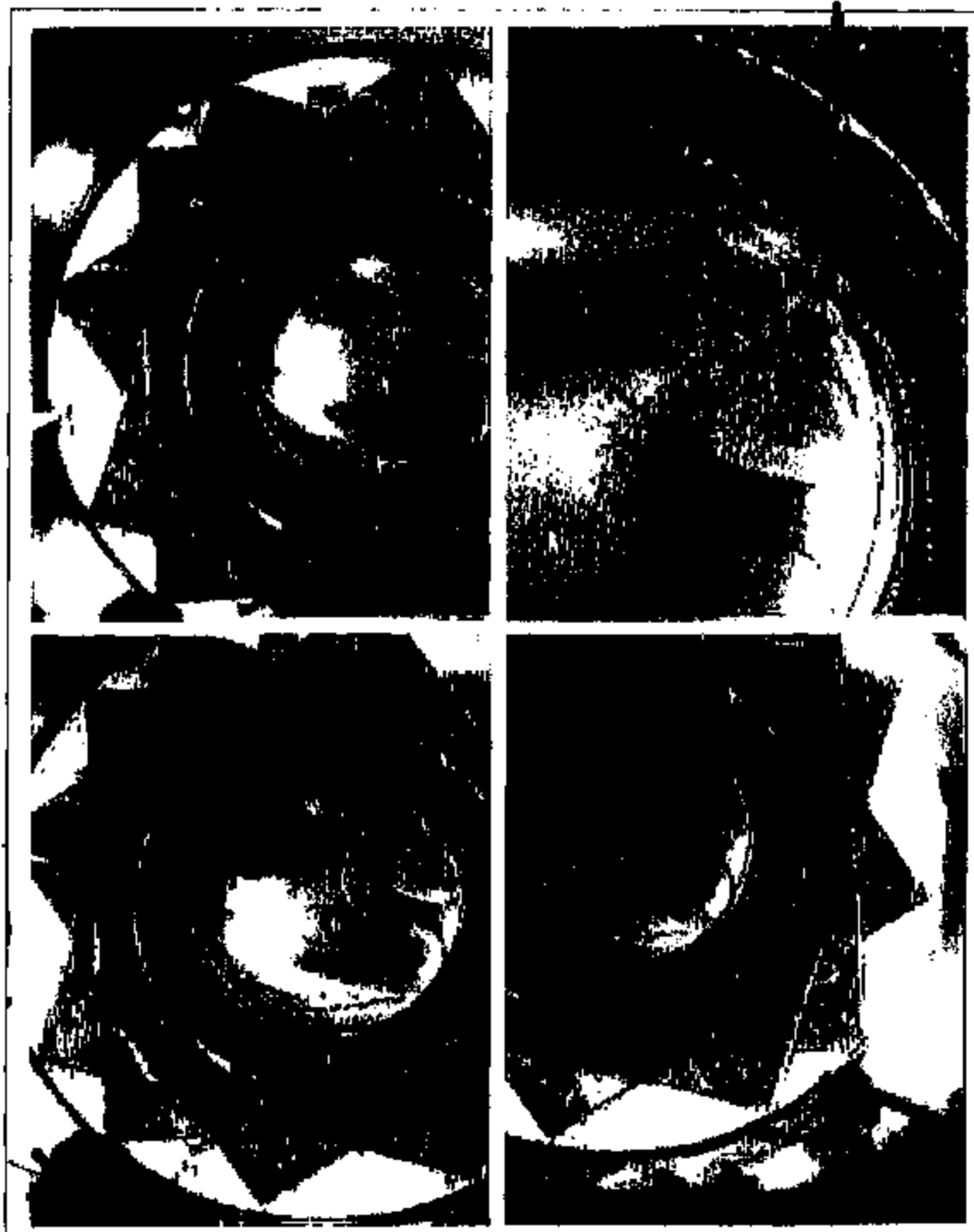


Figure - 088 -

47

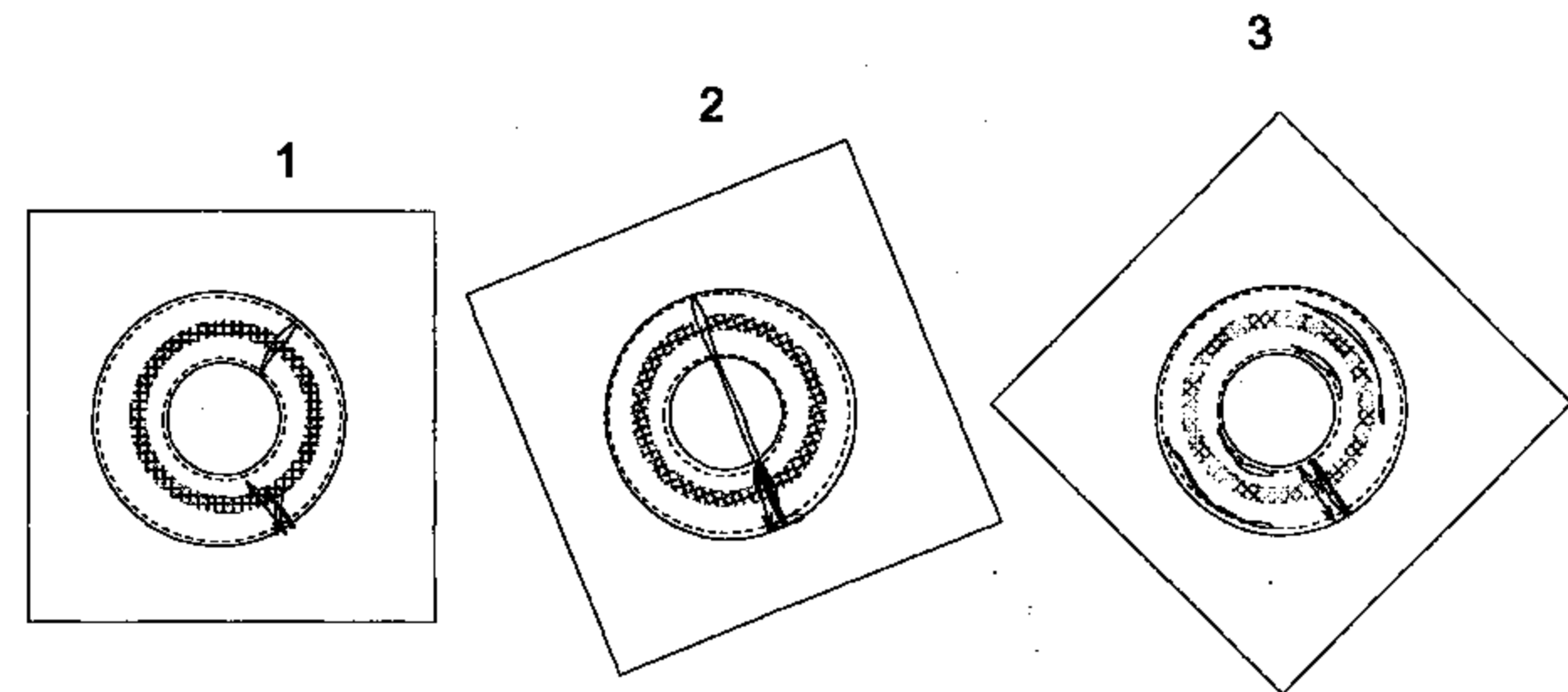
Washer (anomaly in upper right image)

Switch Sample 11

# Central Laboratory

Report 9903244

Attachment 073 of 105



- ← Indicates buckle in Kapton.
- Indicates crack in Kapton
- Indicates tear in Teflon
- Indicates area in which Teflon has delaminated from Kapton

#2  
Viewed from  
Hexport Side

- Figure: 089 -

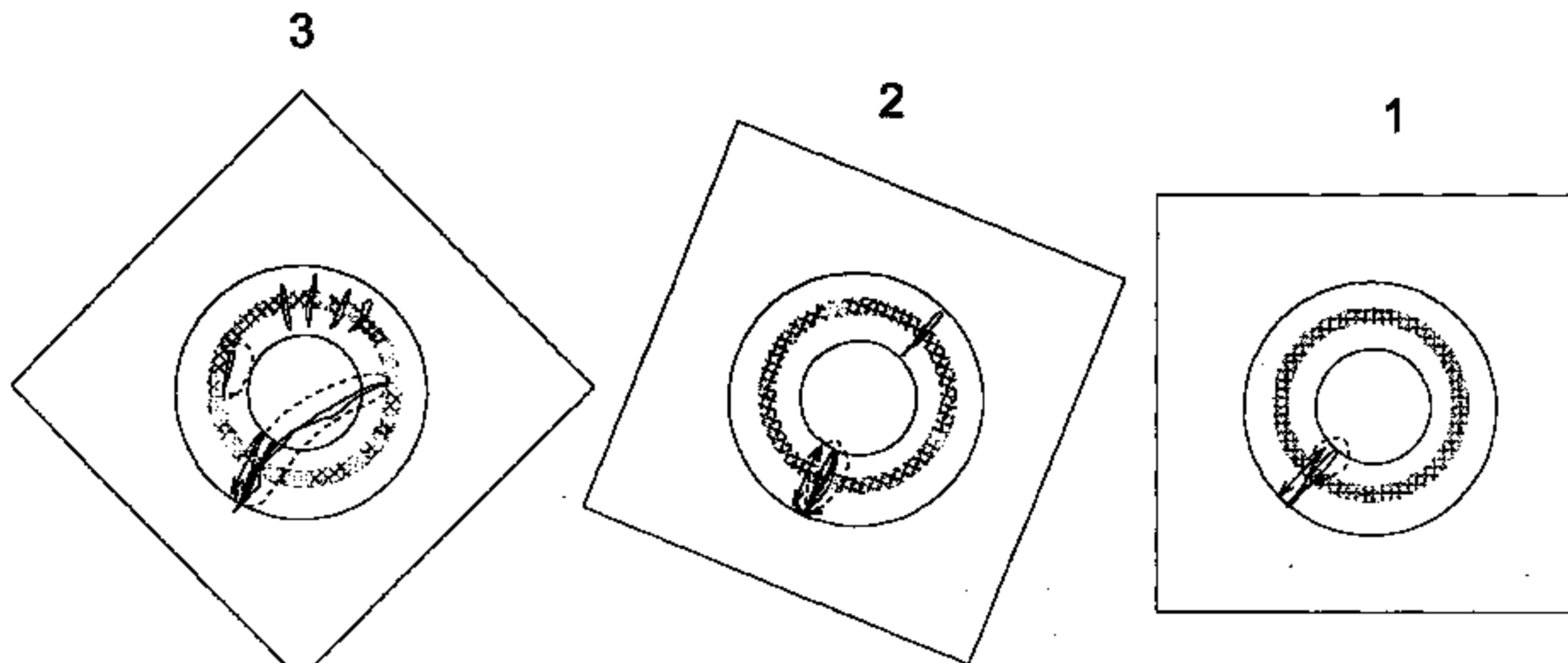
3713 8063



# Central Laboratory

Report 9903244

Attachment 074 of 105



← Indicates buckle in Kapton.

— Indicates crack in Kapton

- Indicates tear in Teflon

- Indicates area in which Teflon has delaminated from Kapton

#2

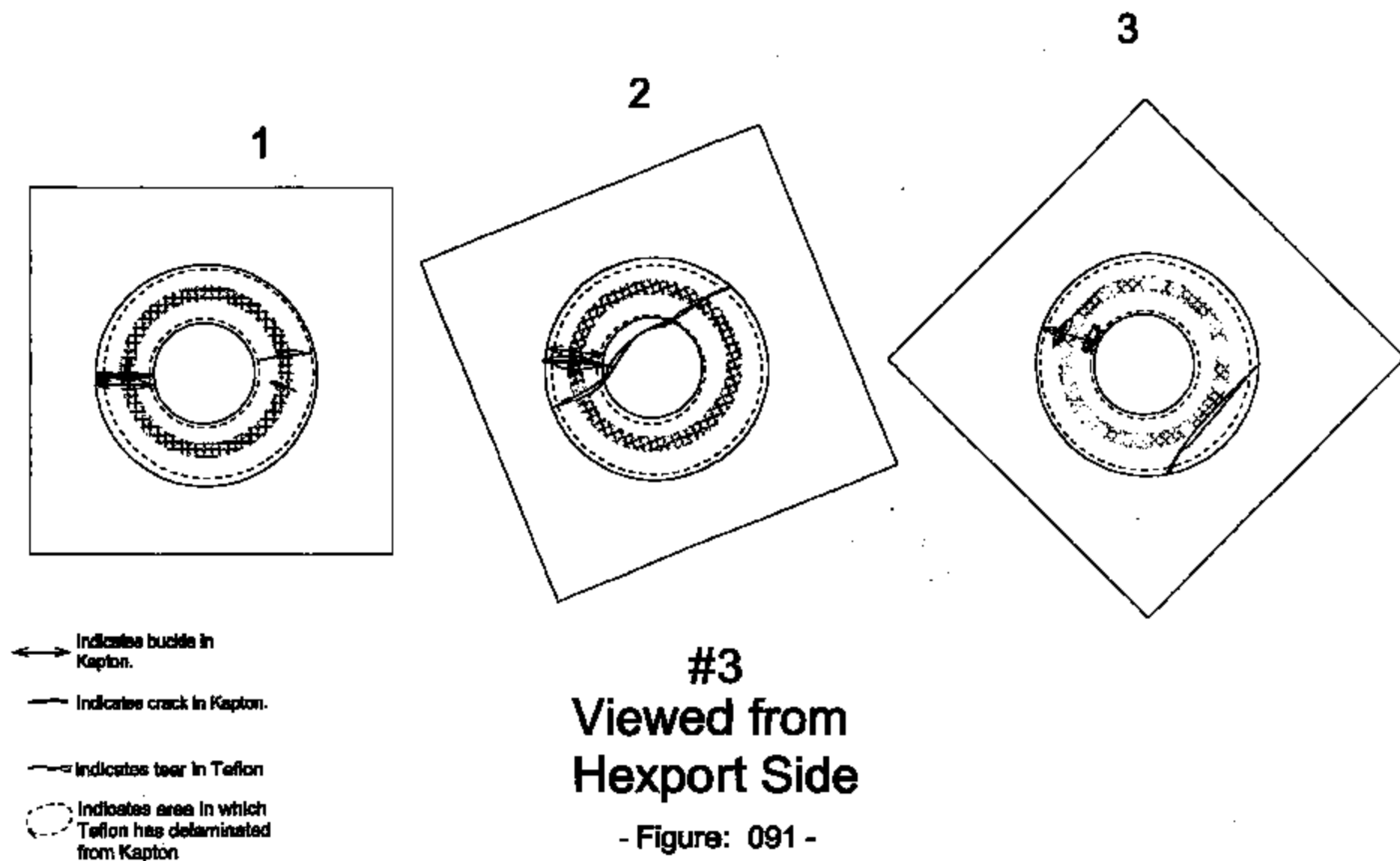
Viewed from  
Converter Side

- Figure: 090 -

# Central Laboratory

Report 9903244

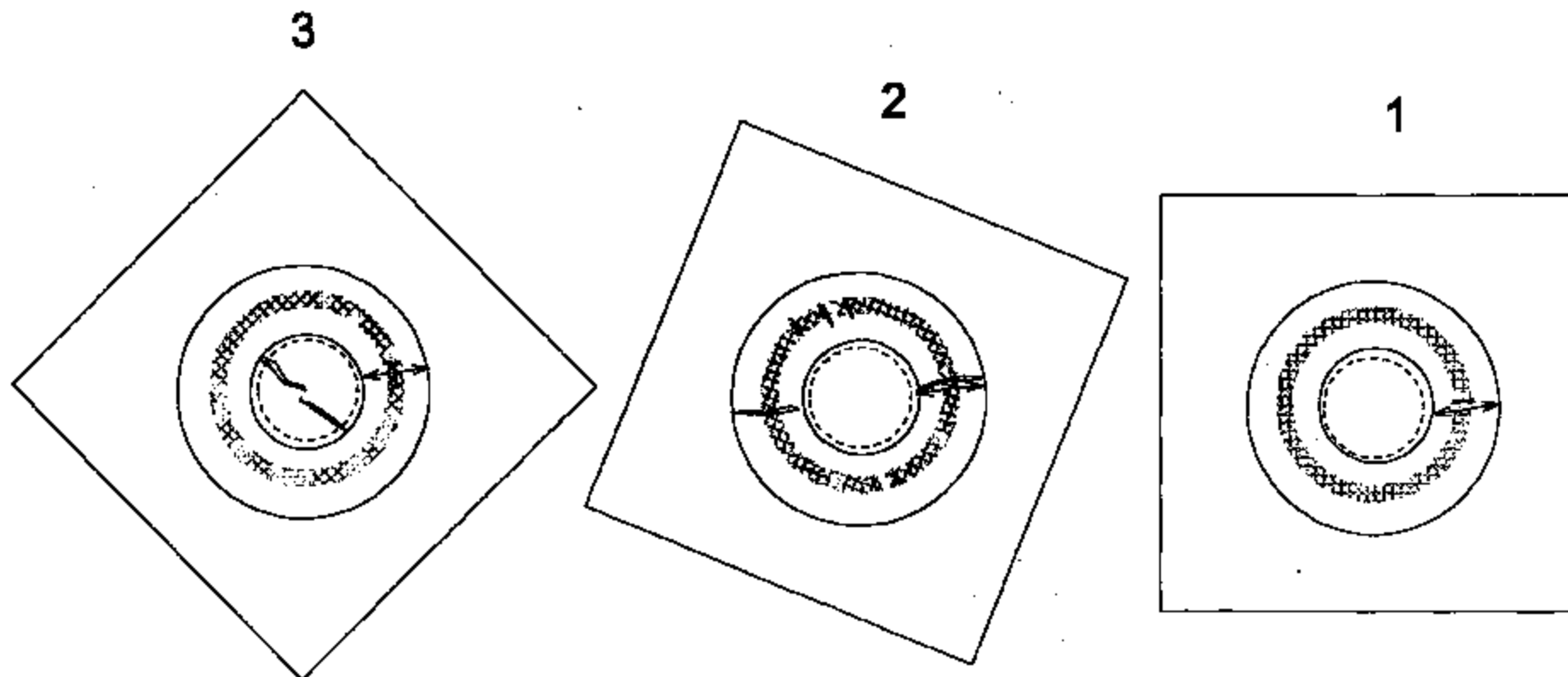
Attachment 075 of 105



# Central Laboratory

Report 9903244

Attachment 076 of 105



- ← Indicates buckle in Kapton.
- Indicates crack in Kapton.
- Indicates tear in Teflon
- Indicates area in which Teflon has delaminated from Kapton

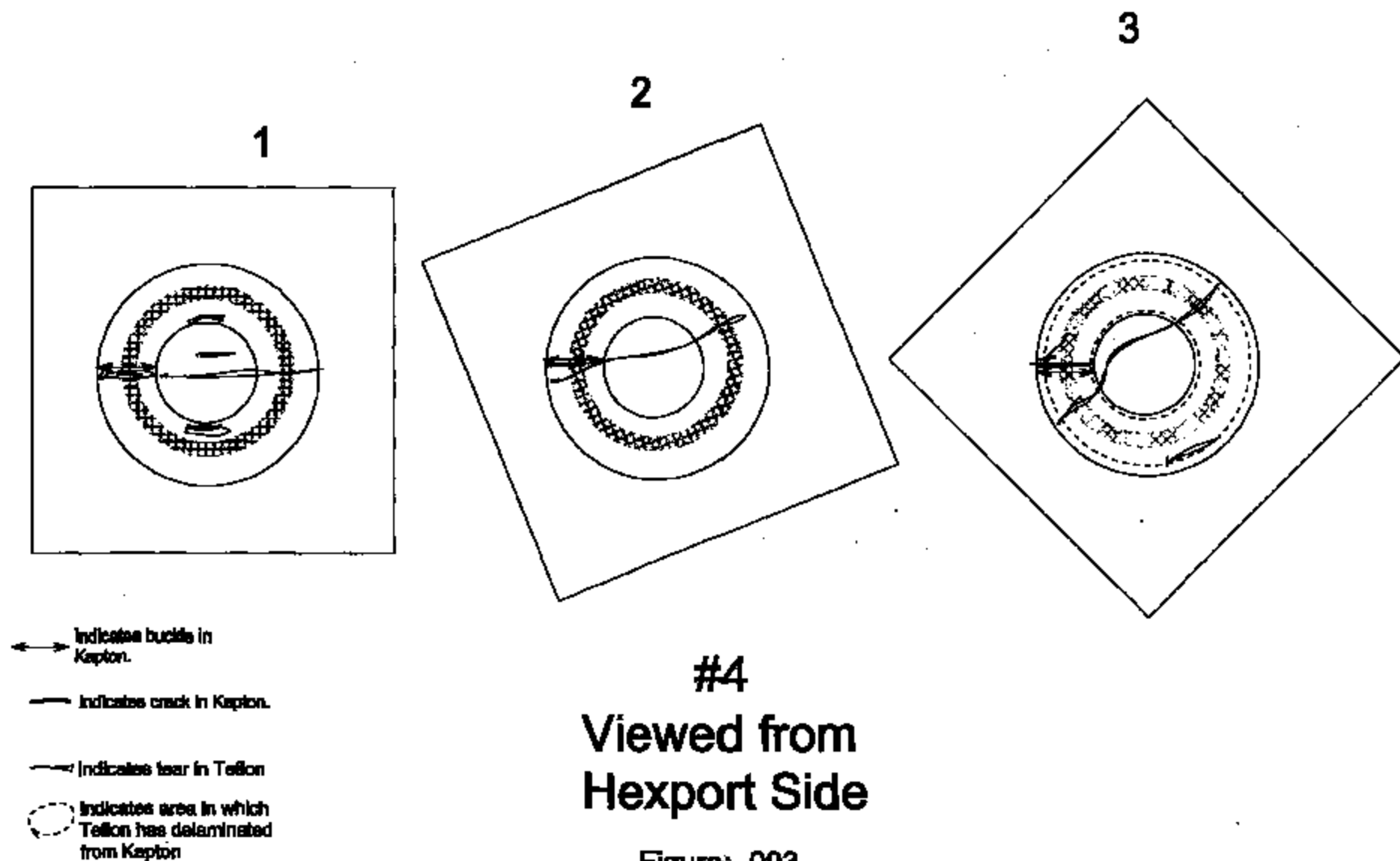
#3  
Viewed from  
Converter Side

- Figure: 092 -

# Central Laboratory

Report 9903244

Attachment 077 of 105

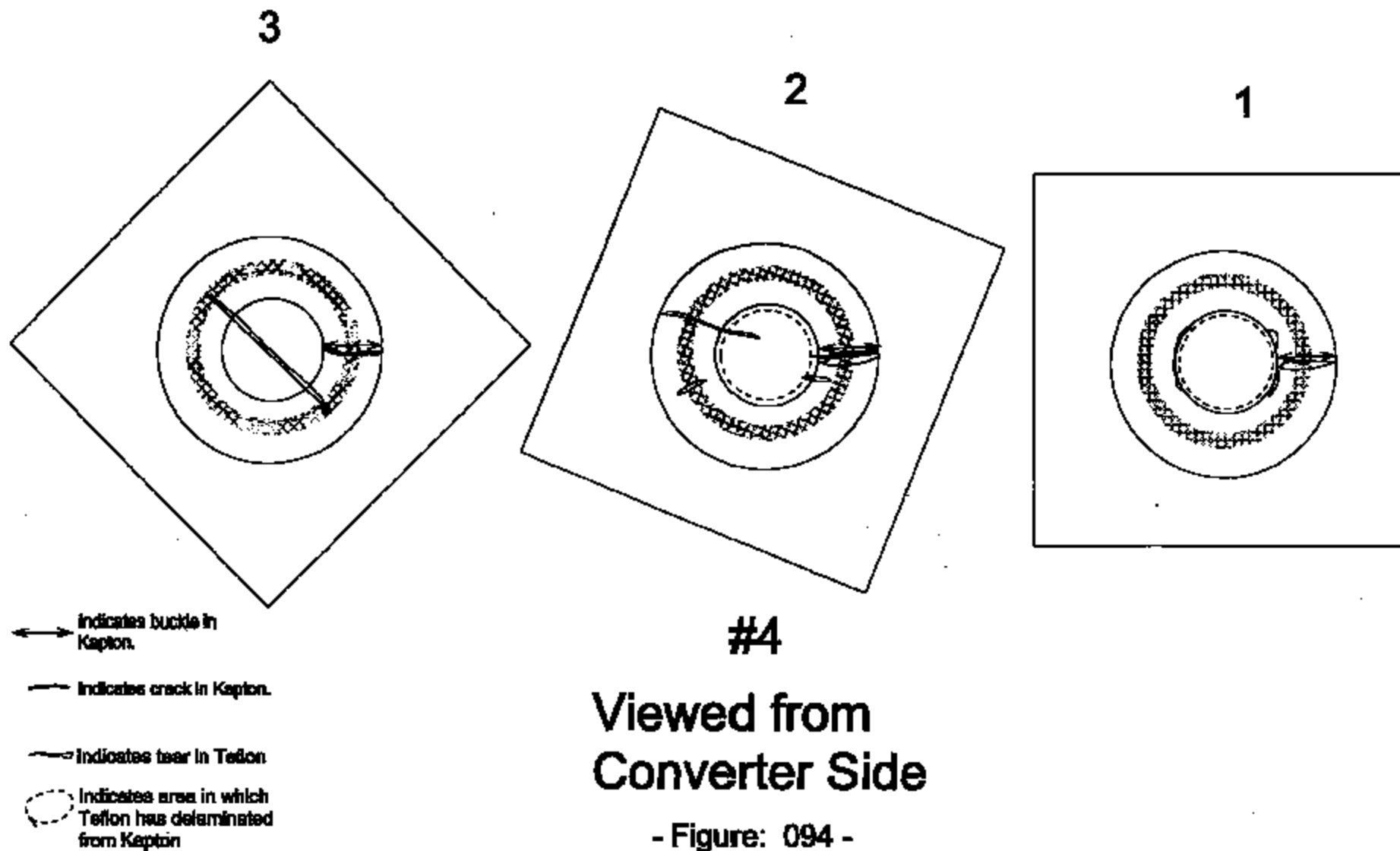


- Figure: 093 -

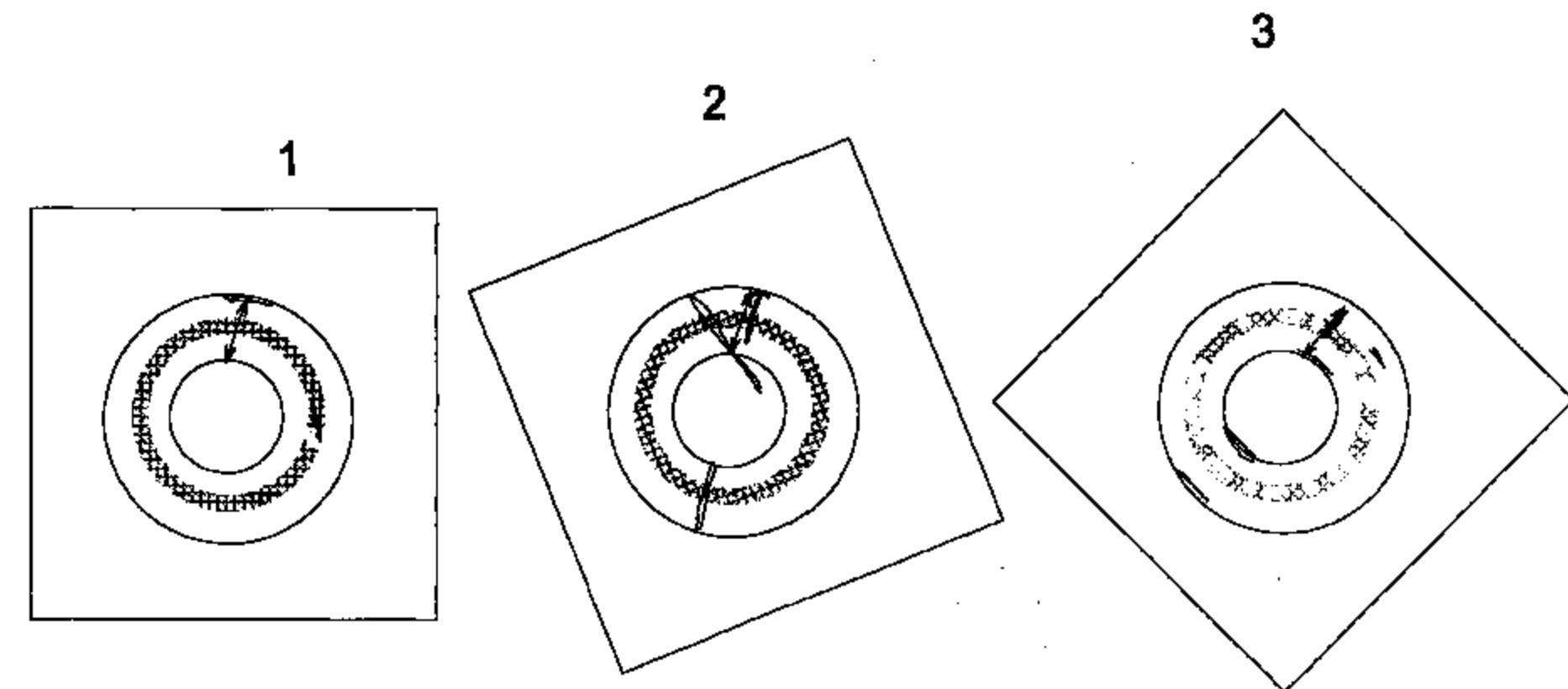
# Central Laboratory

Report 9903244

Attachment 078 of 105



# Central Laboratory



←→ Indicates buckle in Kapton.

— Indicates crack in Kapton

— Indicates tear in Teflon

--- Indicates area in which Teflon has delaminated from Kapton

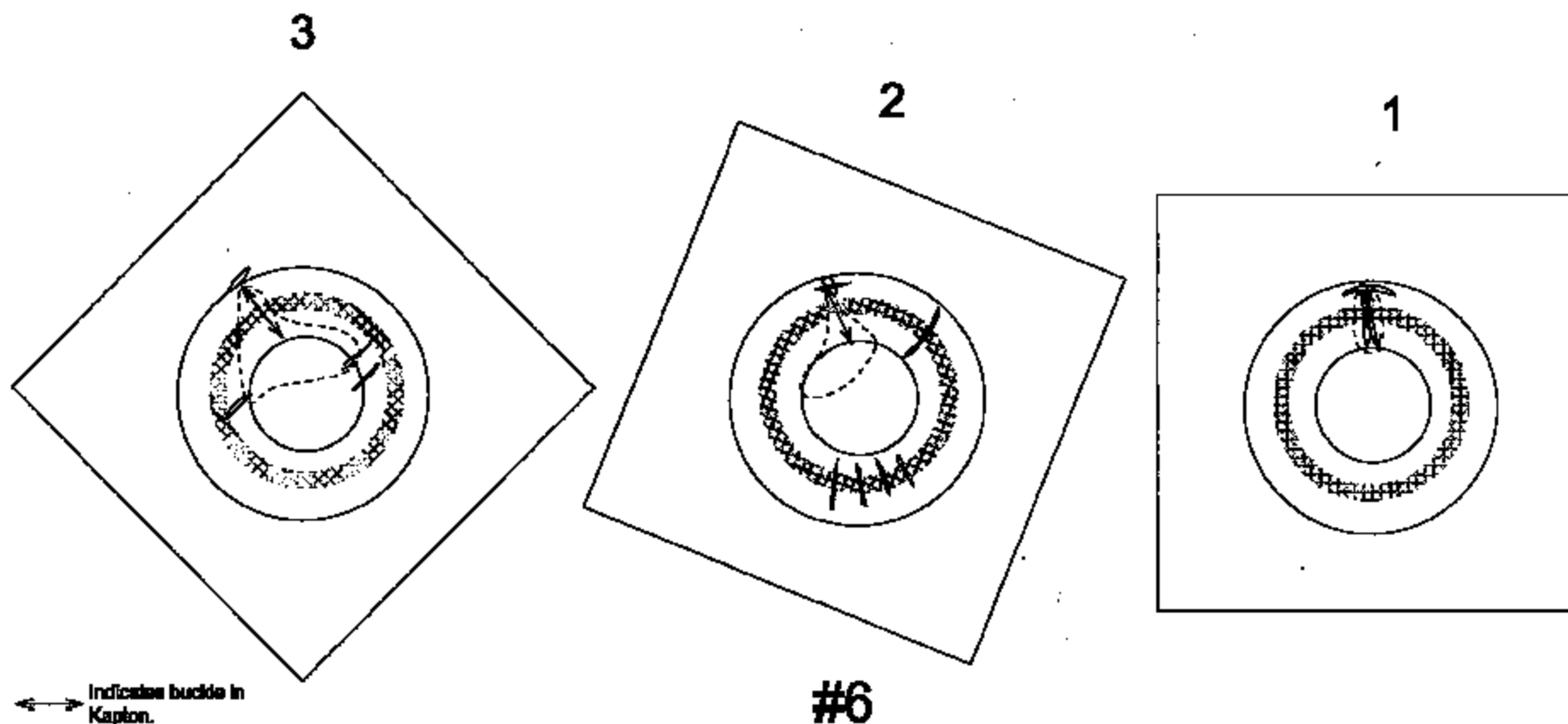
#6  
Viewed from  
Hexport Side

- Figure: 095 -

# Central Laboratory

Report 9903244

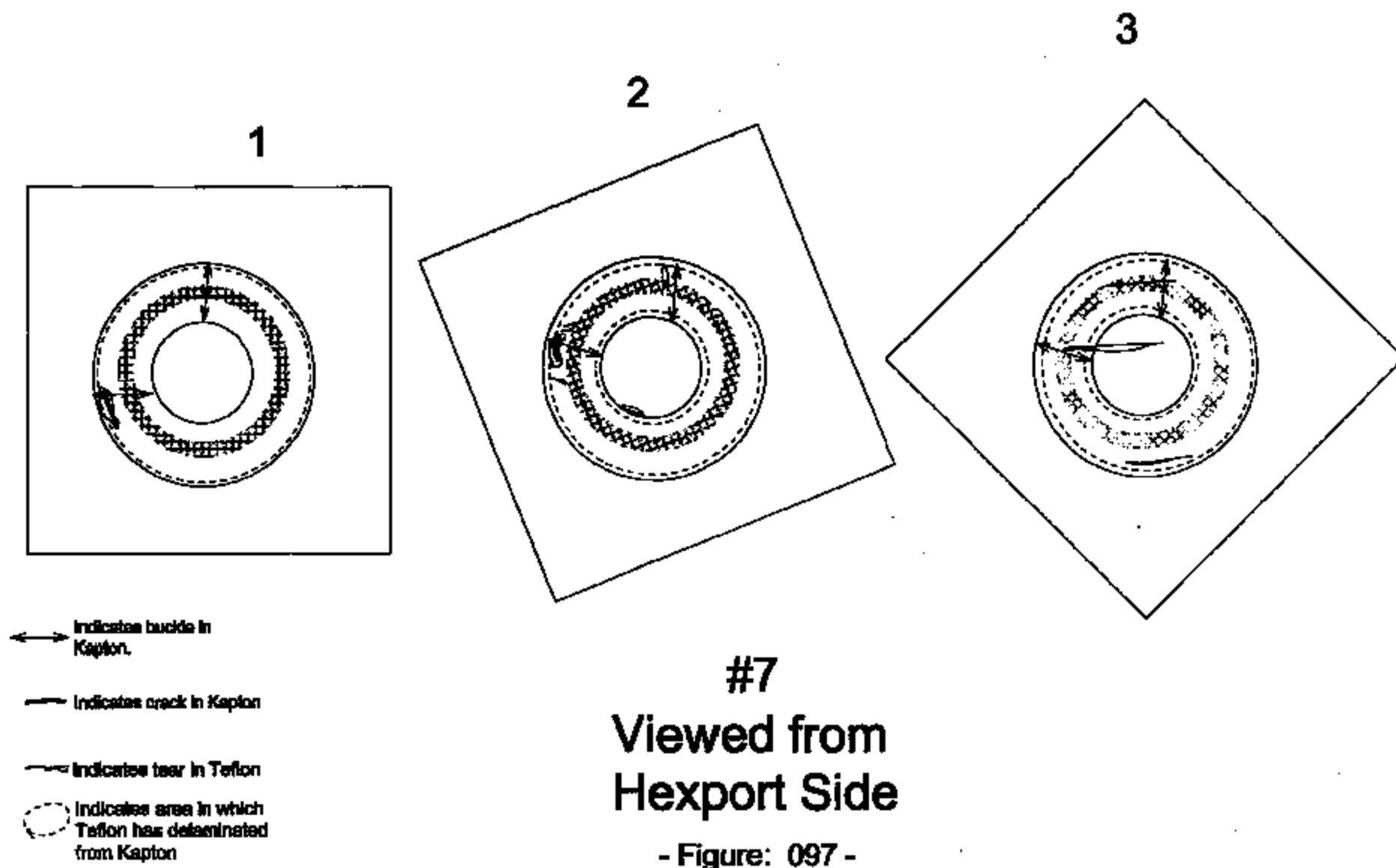
Attachment 080 of 105



Viewed from  
Converter Side

- Figure: 096 -

# Central Laboratory

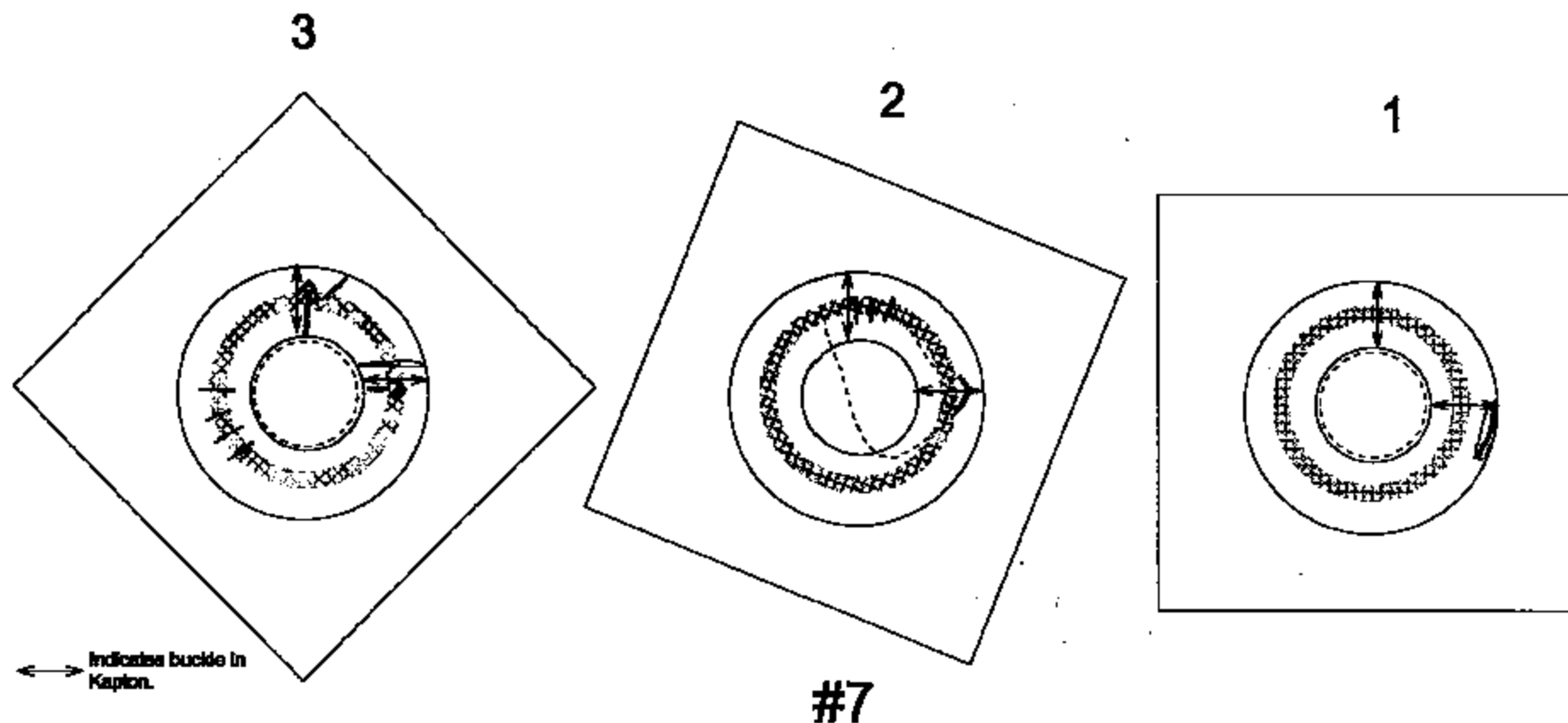




# Central Laboratory

Report 9903244

Attachment 062 of 105



- ←→ Indicates buckle in Kapton.
- Indicates crack in Kapton
- Indicates tear in Teflon
- Indicates area in which Teflon has delaminated from Kapton

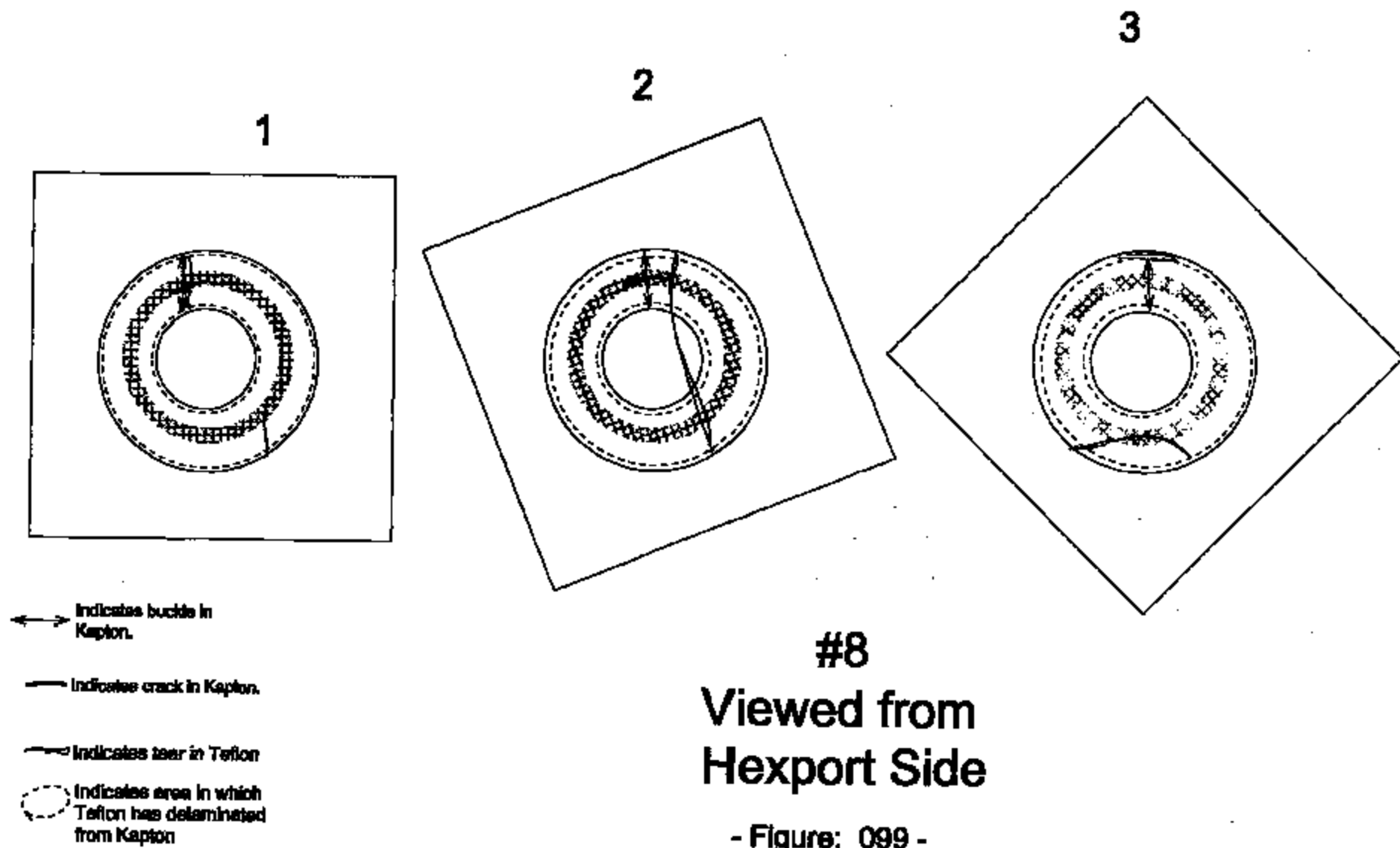
Viewed from  
Converter Side

- Figure: 098 -

# Central Laboratory

Report 9903244

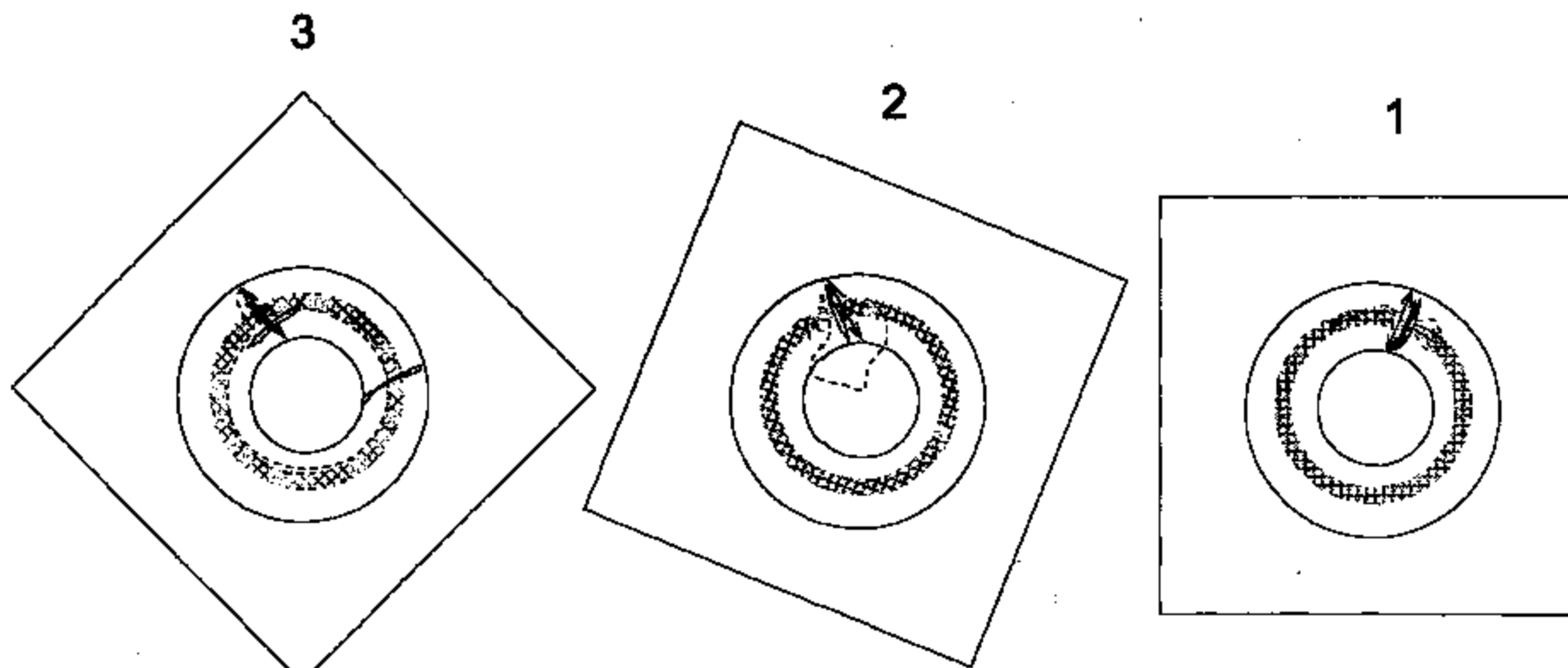
Attachment 083 of 106



# Central Laboratory

Report 9903244

Attachment 084 of 105



← Indicates buckle in Kapton.

— Indicates crack in Kapton.

— Indicates tear in Teflon

○ Indicates area in which Teflon has delaminated from Kapton

#8

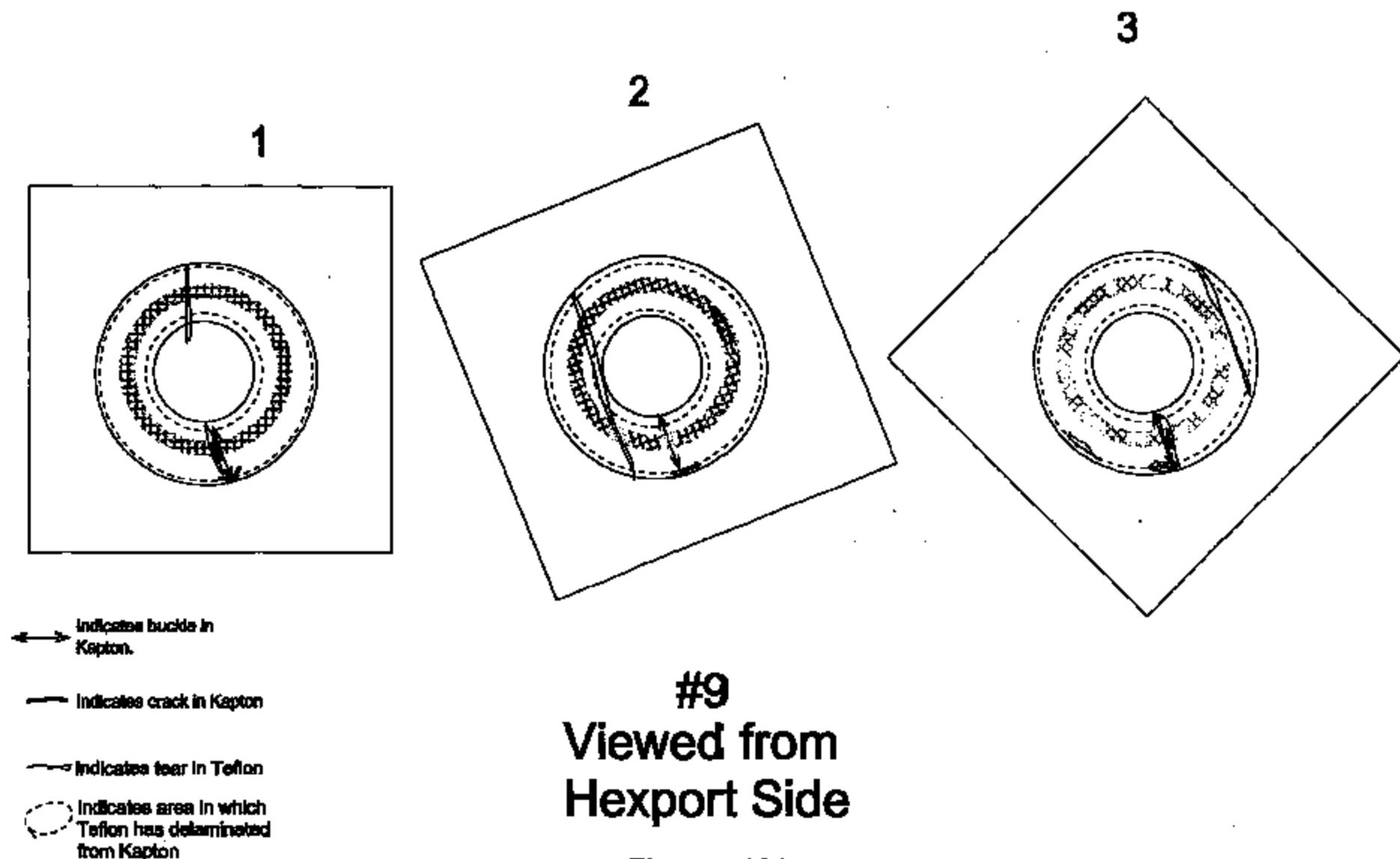
Viewed from  
Converter Side

- Figure: 100 -

# Central Laboratory

Report 9903244

Attachment 085 of 105

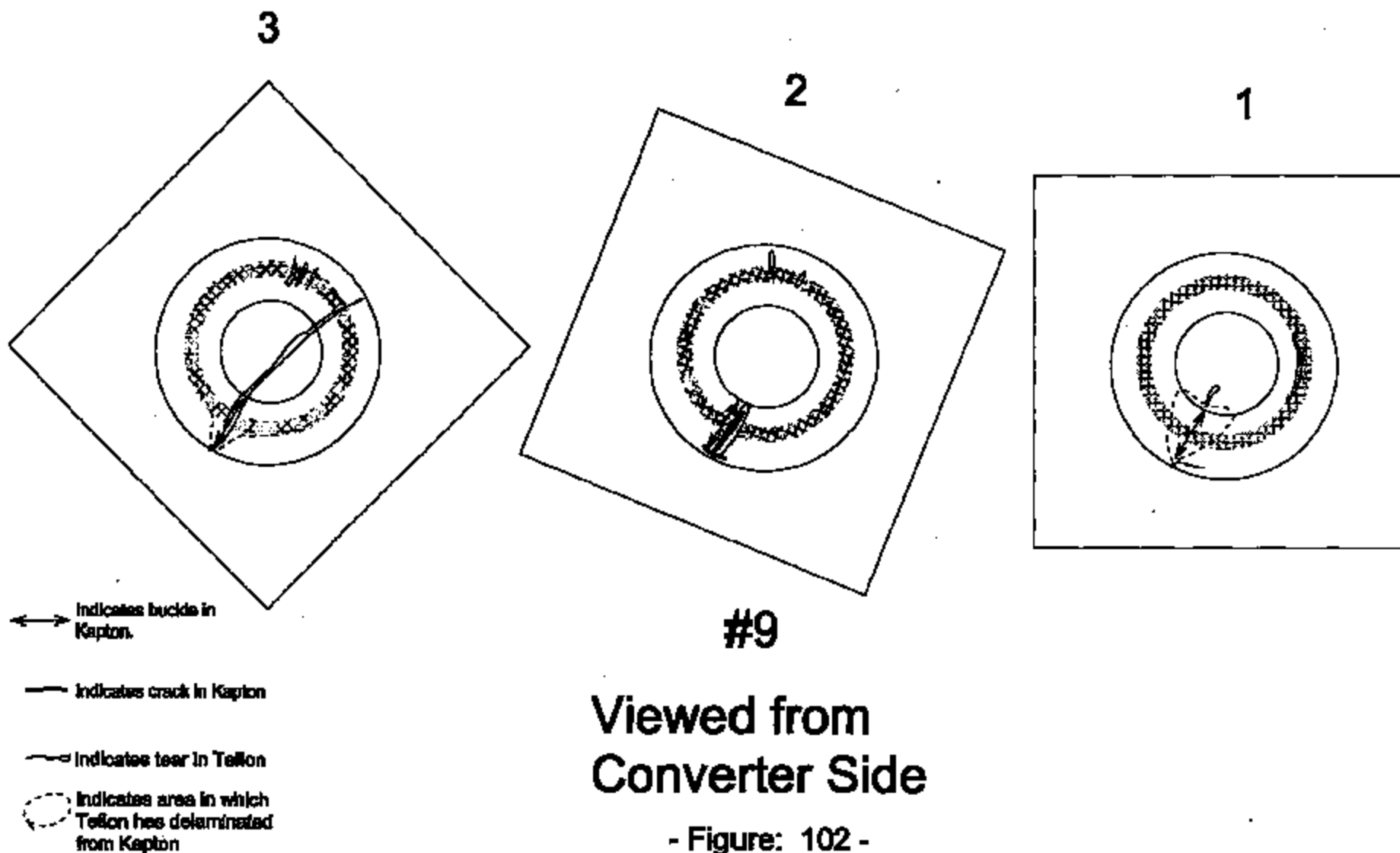


- Figure: 101 -

# Central Laboratory

Report 9903244

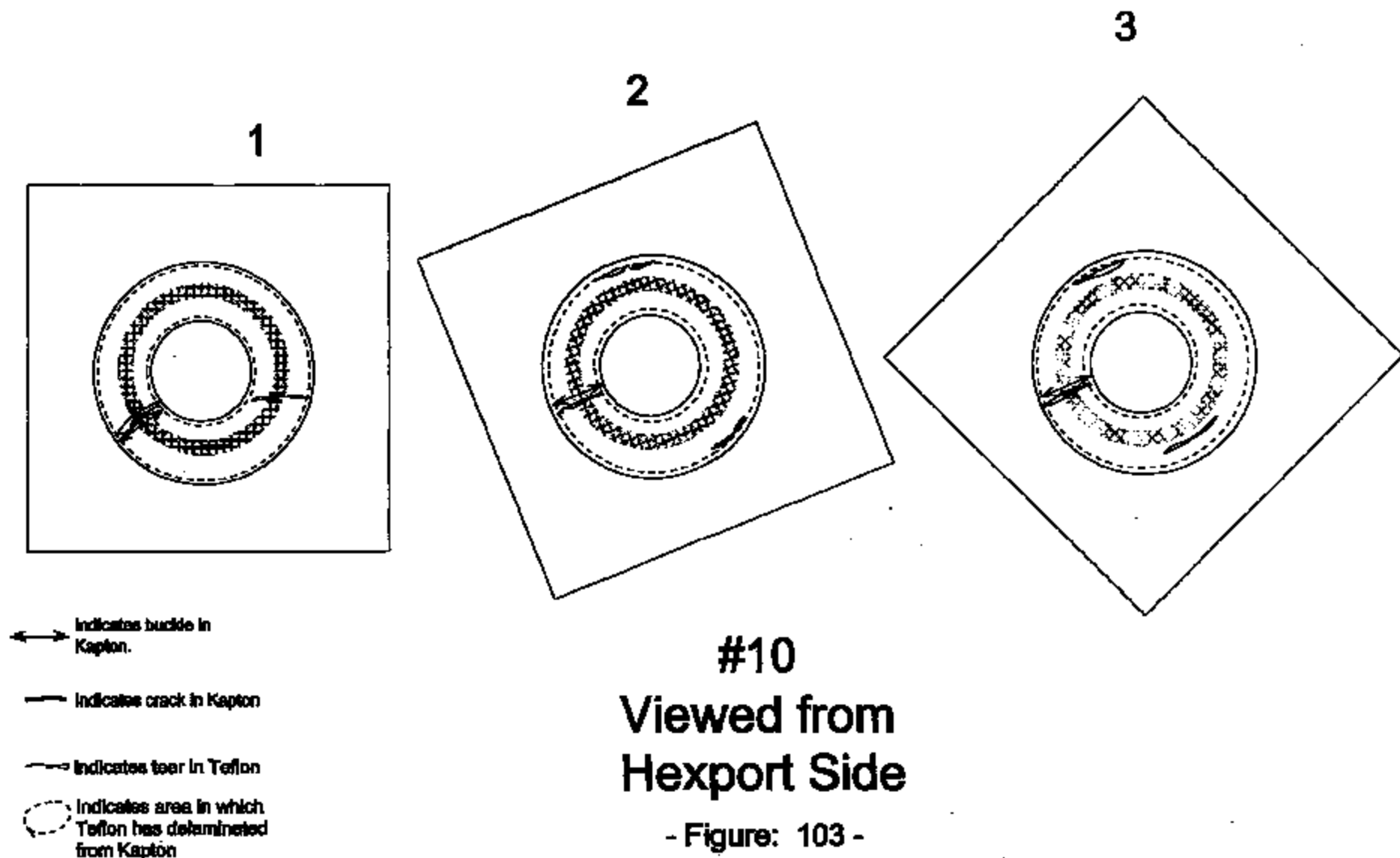
Attachment 088 of 105



# Central Laboratory

Report 9903244

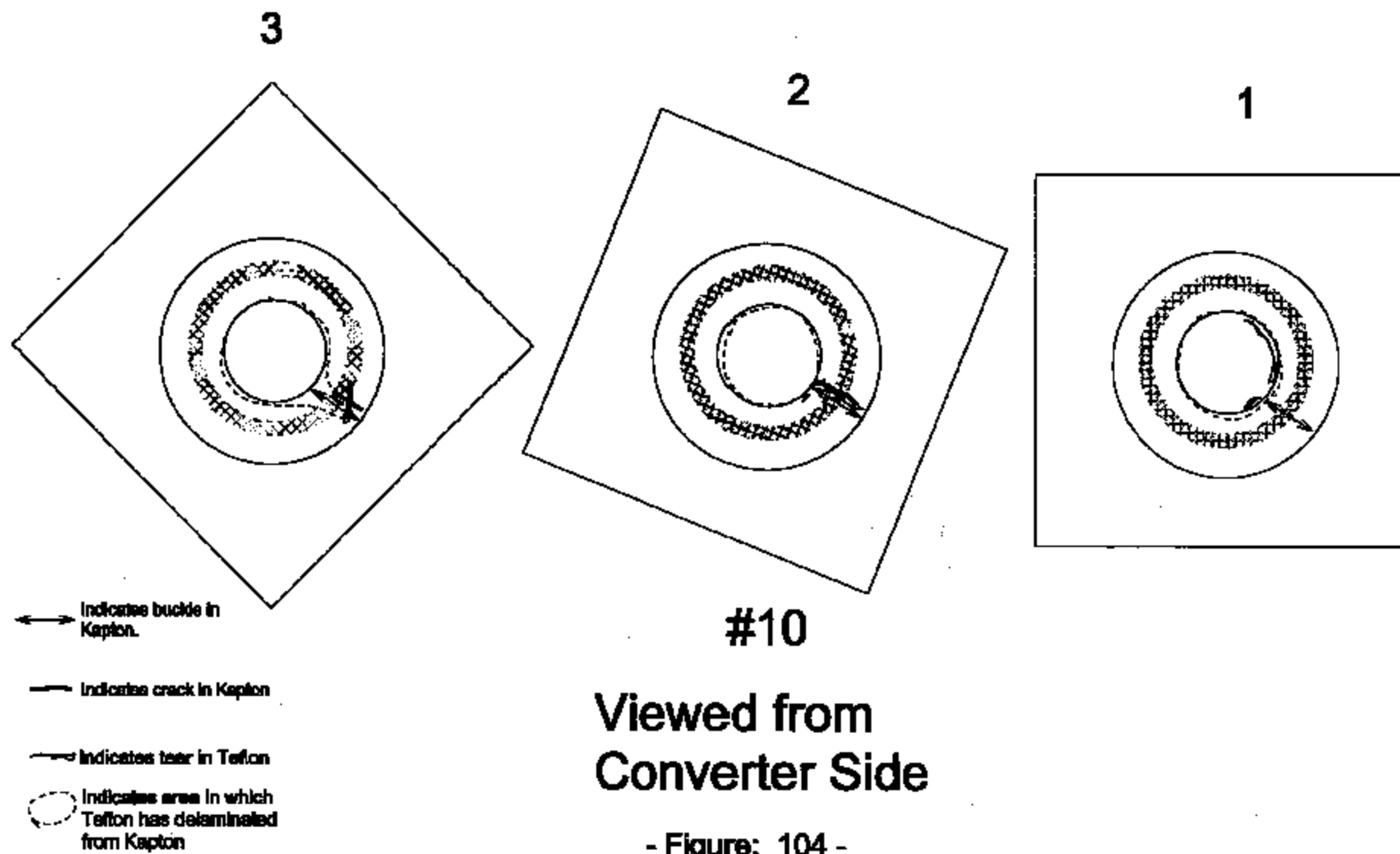
Attachment DB7 of 106



# Central Laboratory

Report 9903244

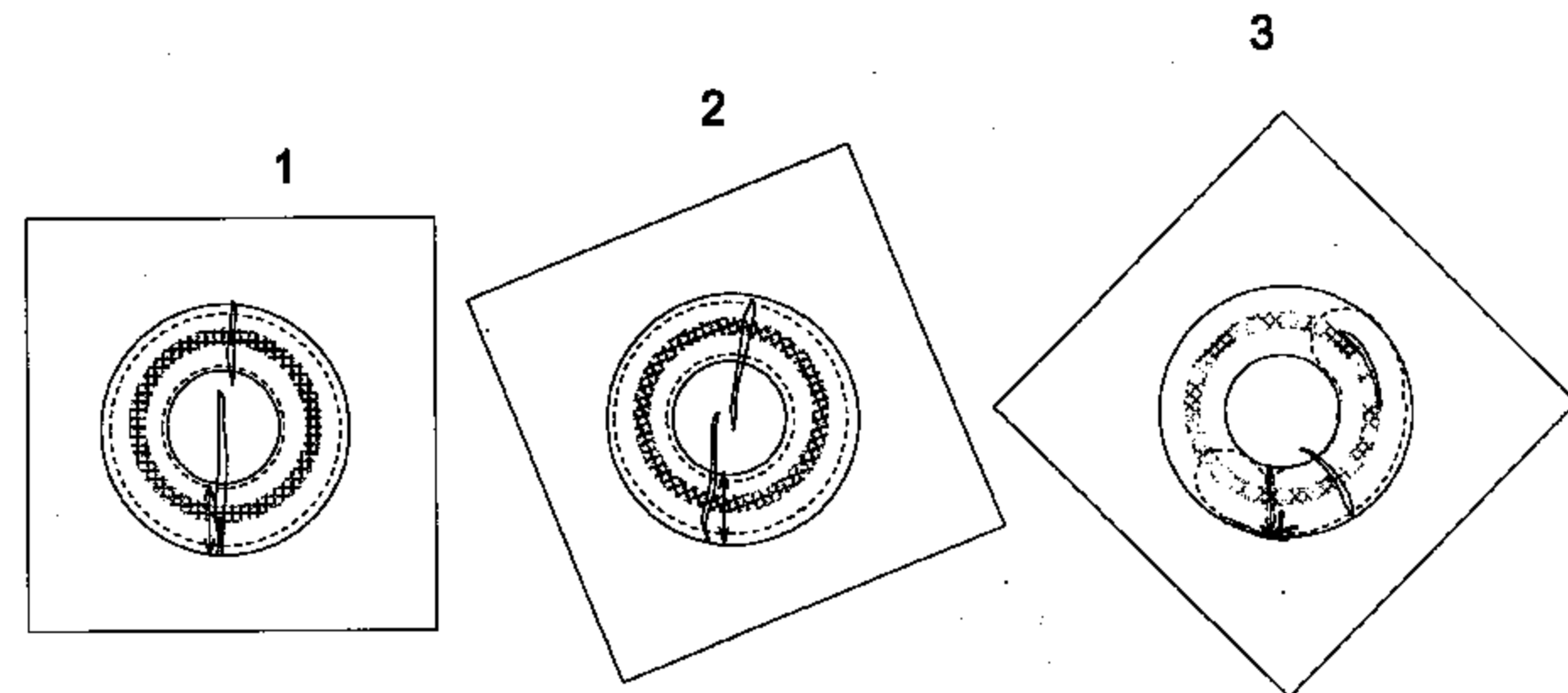
Attachment 088 of 106



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- ←→ Indicates buckle in Kapton.
- Indicates crack in Kapton
- Indicates tear in Teflon
- Indicates area in which Teflon has delaminated from Kapton

#11  
Viewed from  
Hexport Side

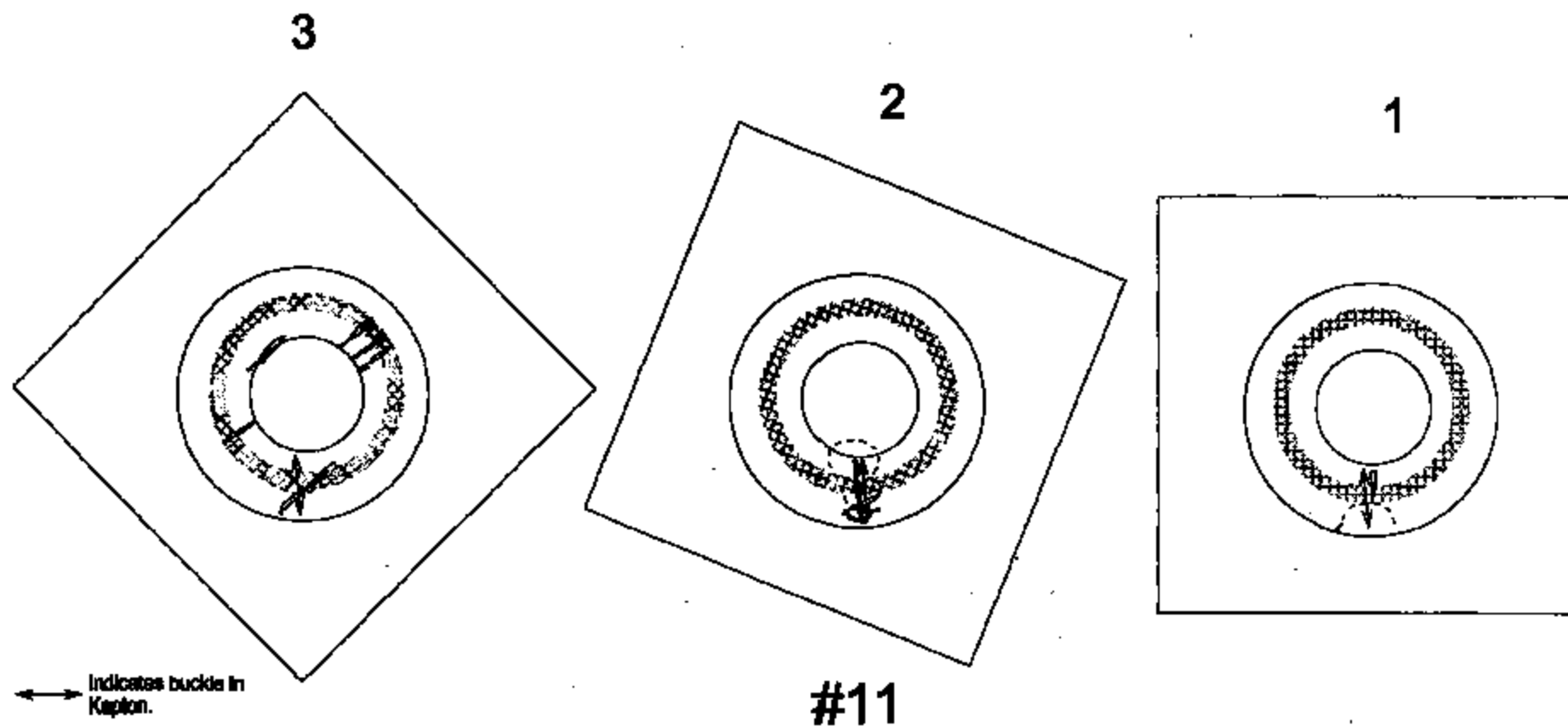
- Figure: 105 -



# Central Laboratory

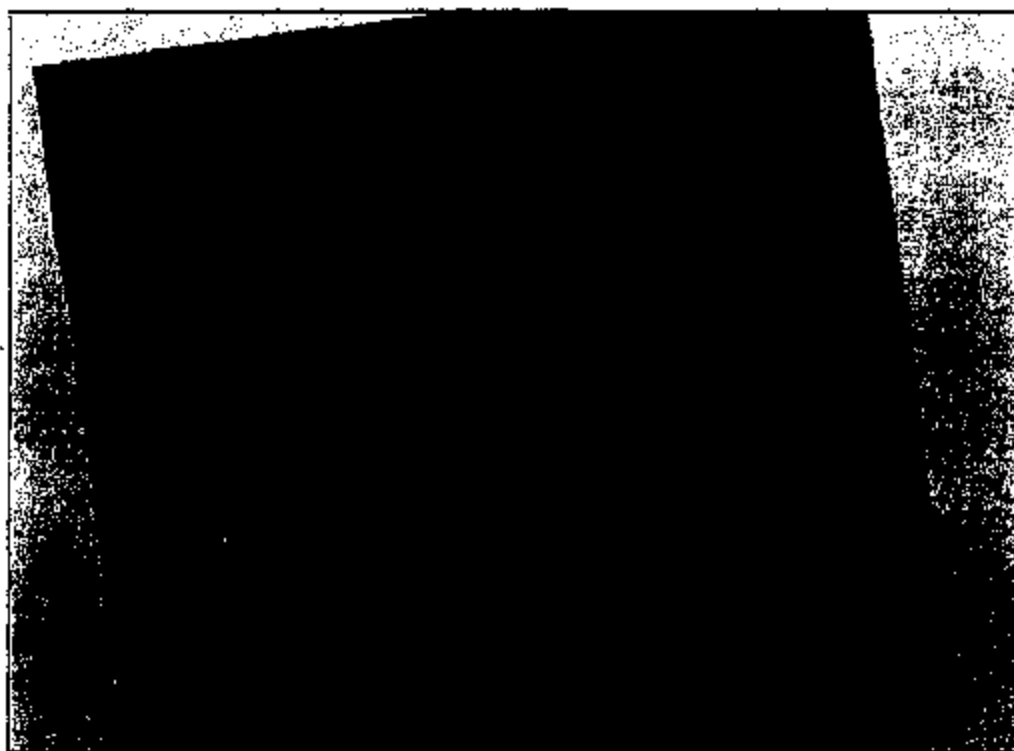
Report 9903244

Attachment 080 of 105



Viewed from  
Converter Side

- Figure: 106 -



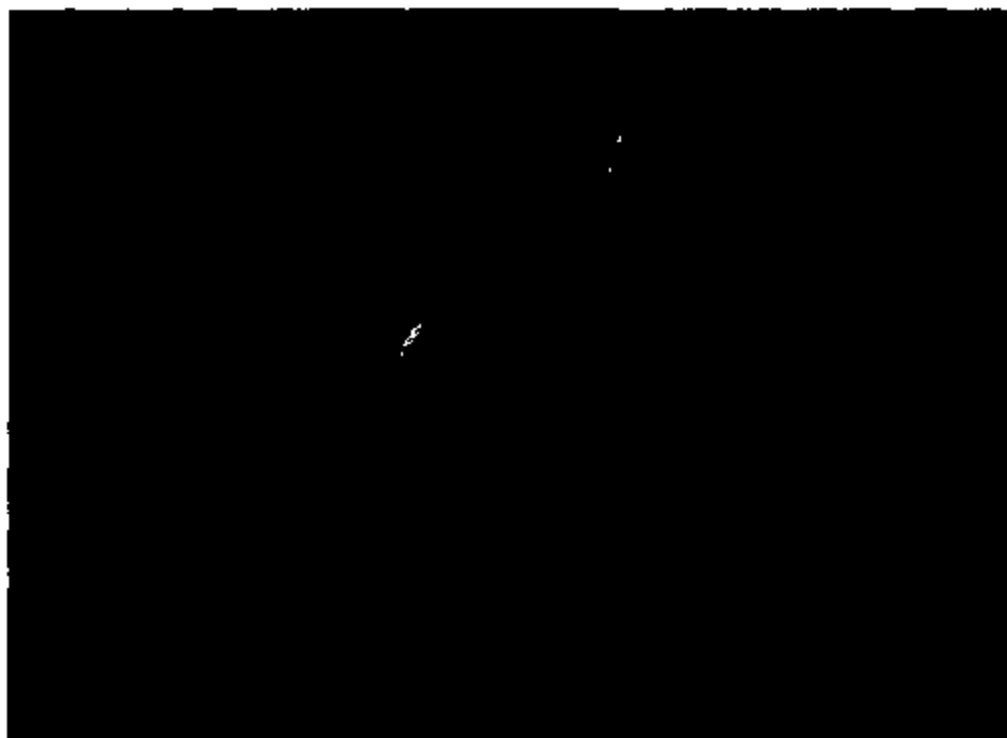
~ 5.8X

**Figure 107:** Image showing Kapton Seal #1 from Switch-06, viewed from converter side.



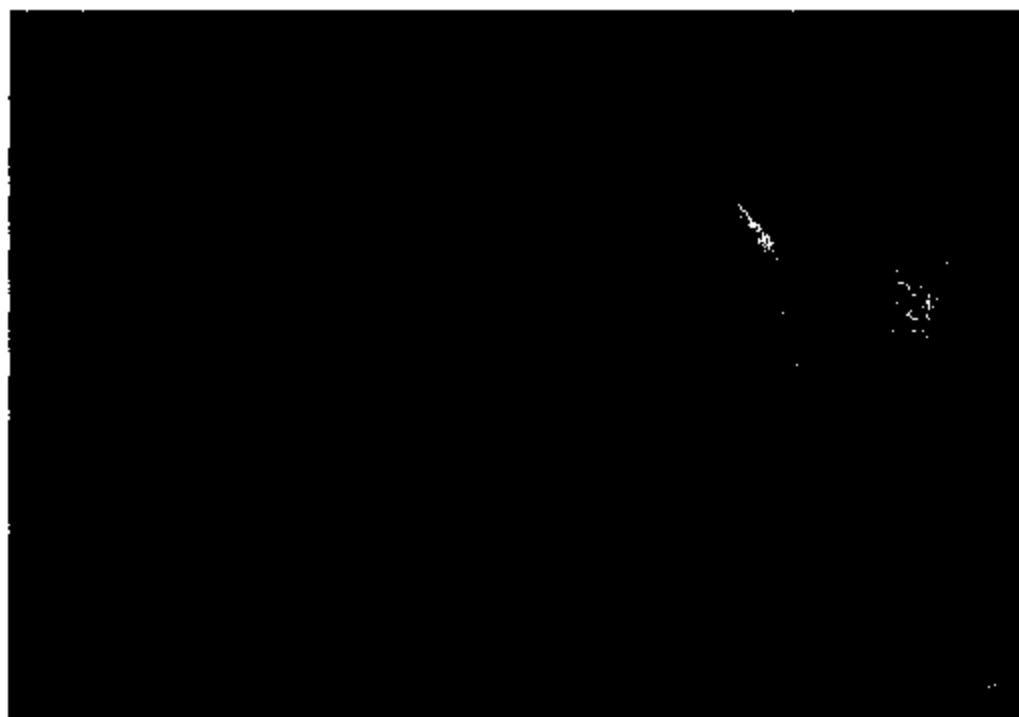
~ 9.3X

**Figure 108:** Close up view of Figure 107 showing delamination & tears in Teflon.



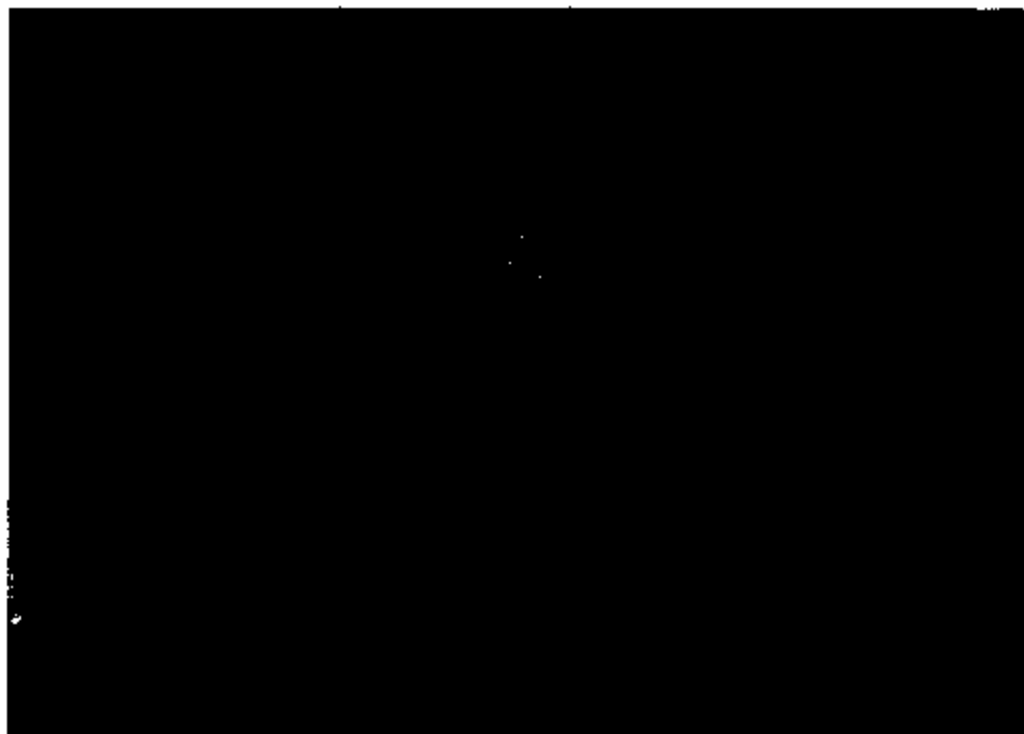
~ 5.1X

Figure 109: Image showing Kapton Seal #1 from Switch-08, viewed from Hexport side.



~ 5.1X

Figure 110: Close up view of Figure 110 showing delamination & tears in Teflon.



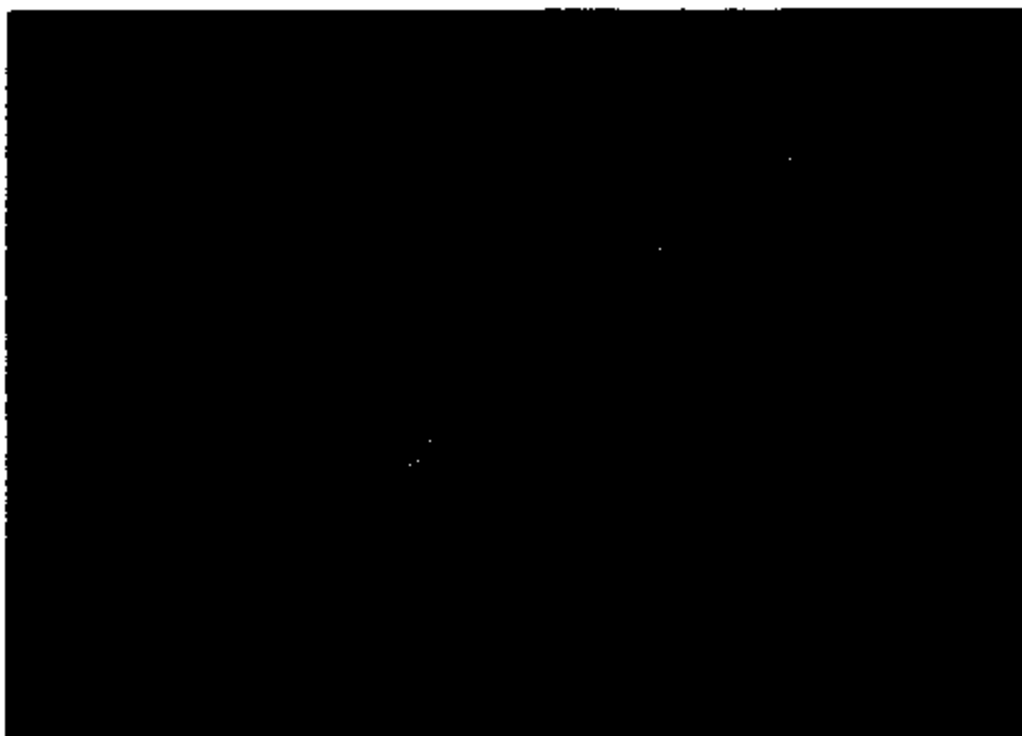
- 5.3X

Figure 111: Image showing Kapton Seal #2 from Switch-06, viewed from Converter side.



- 9.4X

Figure 112: Close up view of Figure 112 showing delamination & tears in Teflon.



~ 4.5X

Figure 113: Image showing Kapton Seal #2 from Switch-06, viewed from Hexport side.



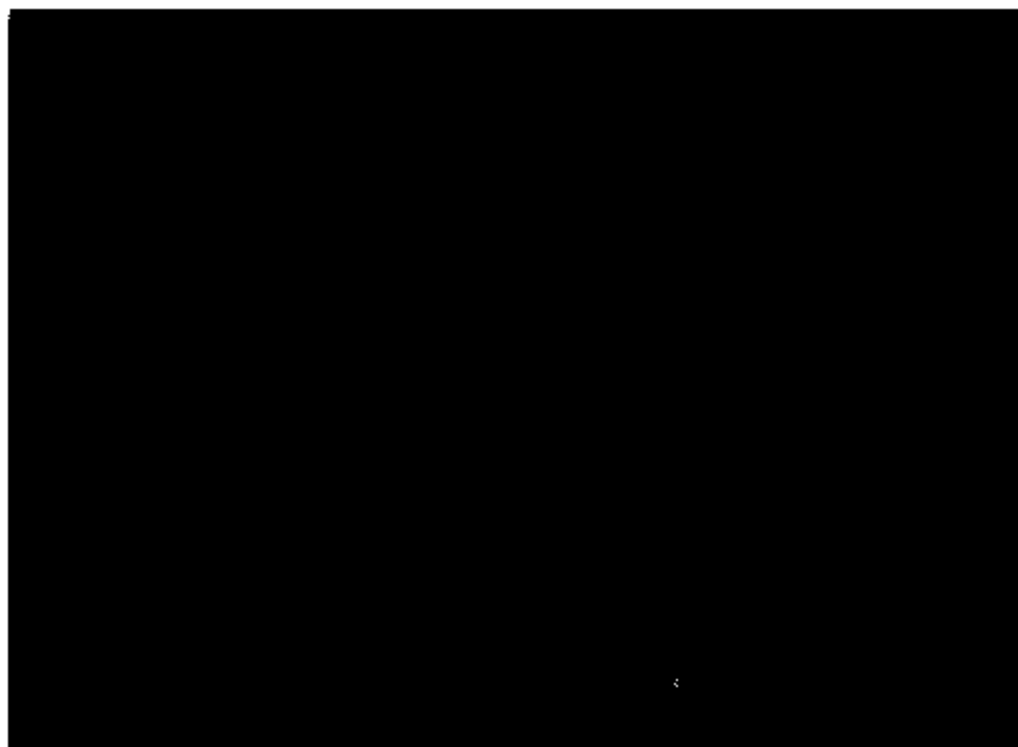
~ 9.5X

Figure 114: Close up view of Figure 114 showing delamination & tears in Teflon.



- 5.4X

Figure 115: Image showing Kapton Seal #2 from Switch-06, viewed from Converter side.



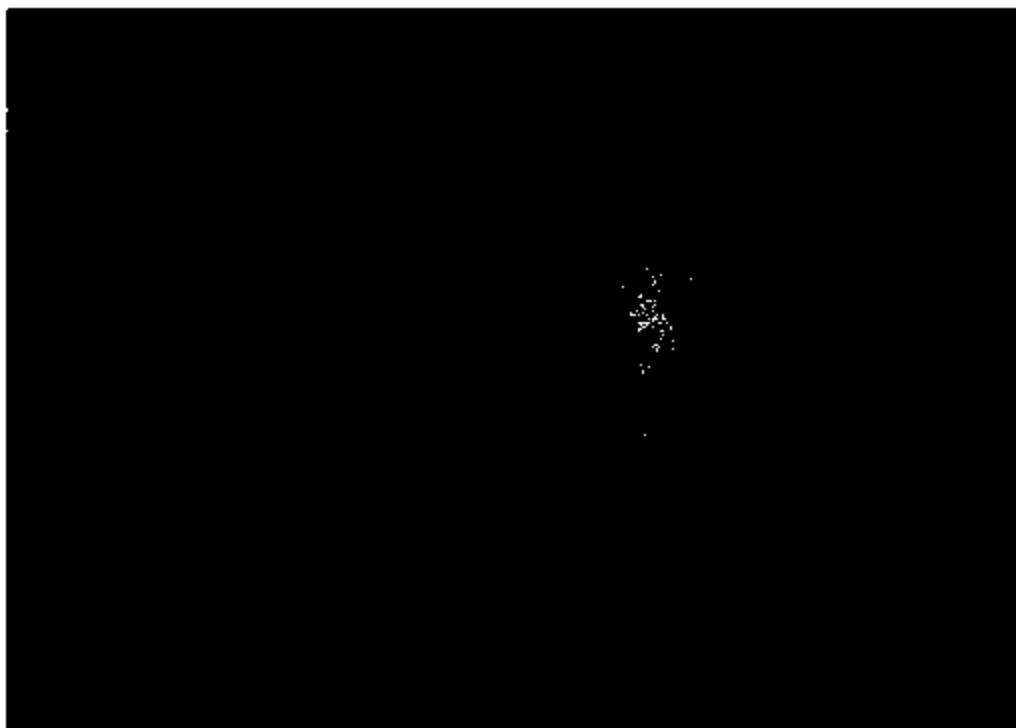
- 9.5X

Figure 116: Close up view of Figure 115 showing delamination & tears in Teflon.



~ 5.8X

Figure 117: Image showing Kapton Seal #3 from Switch-06, viewed from Hexport side.



~ 9.7X

Figure 118: Close up view of Figure 118 showing delamination & tears in Teflon.

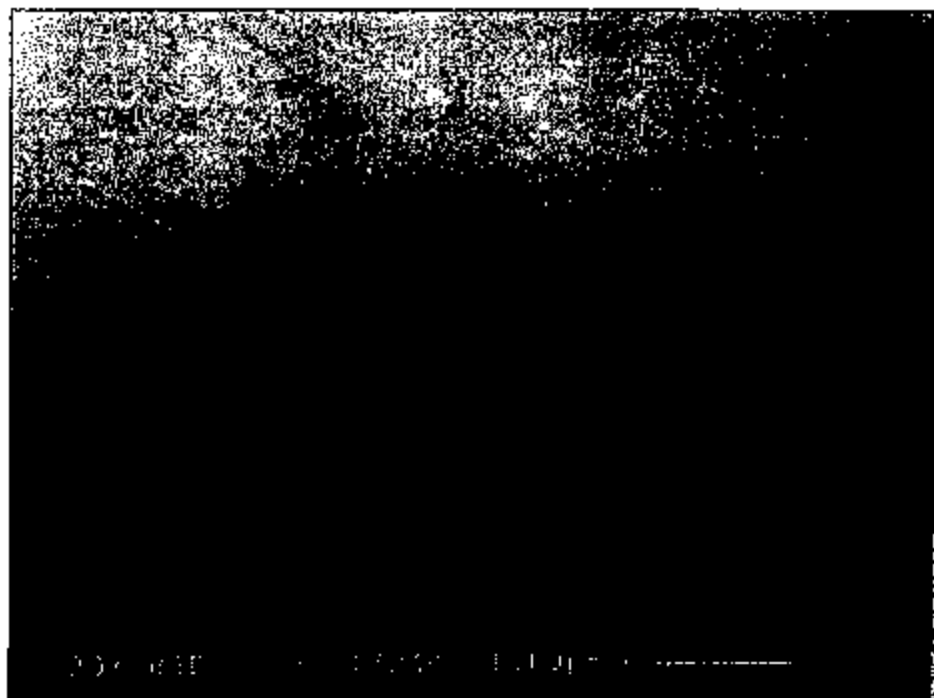


Figure 110: Sample 2 - typical surface condition of the bevel region.  
20X Backscattered Electron SEM Image

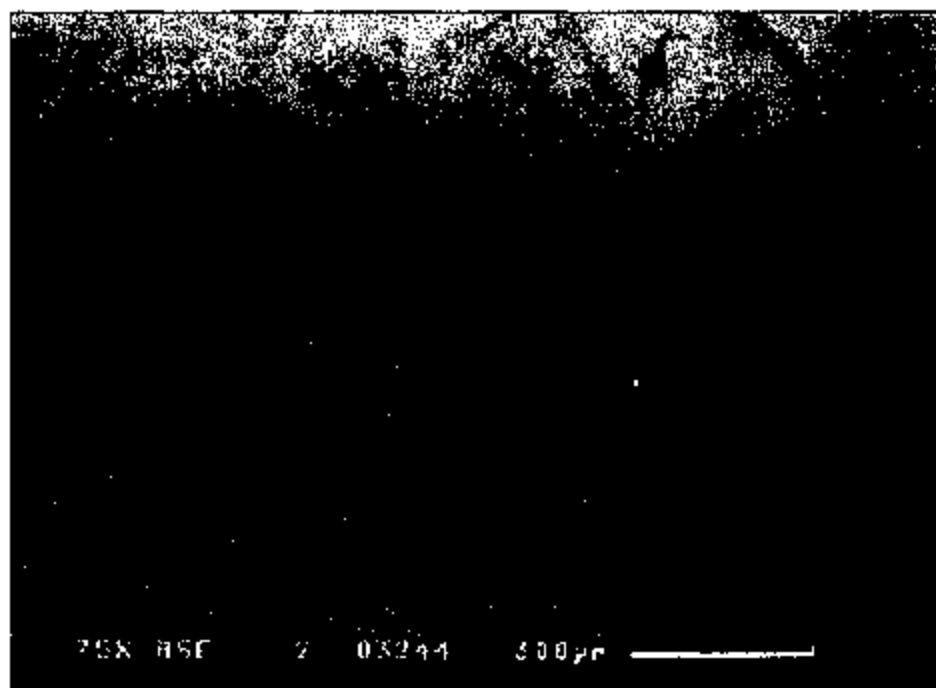


Figure 120: Sample 2 - higher magnification view of the rim of the bevel.  
75X Backscattered Electron SEM Image



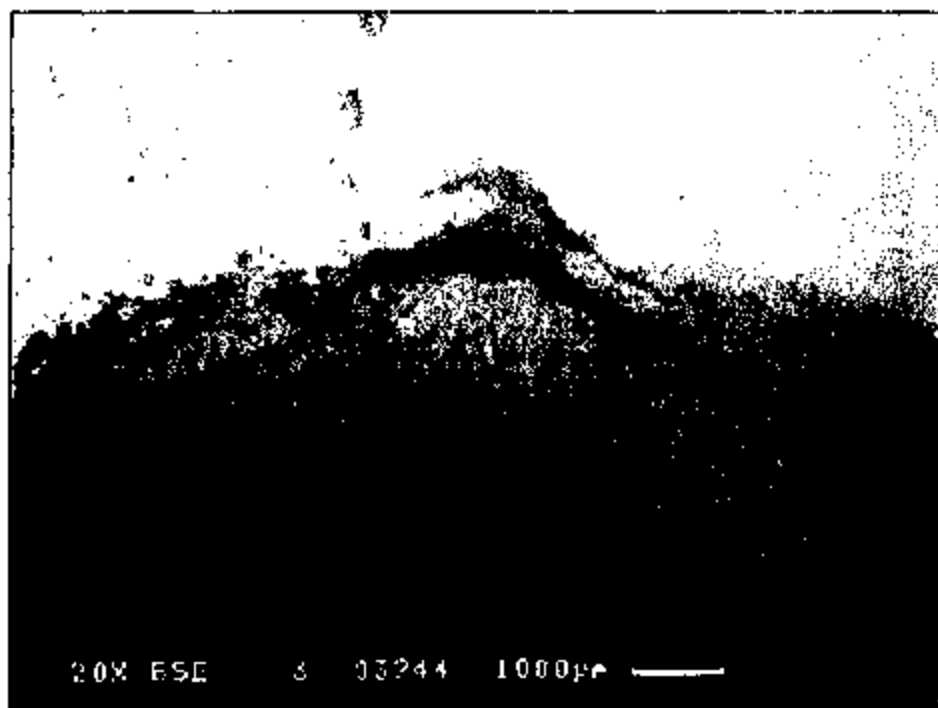


Figure 121: Sample 3 - surface condition of the bevel region, at the asperity.  
20X Backscattered Electron SEM Image

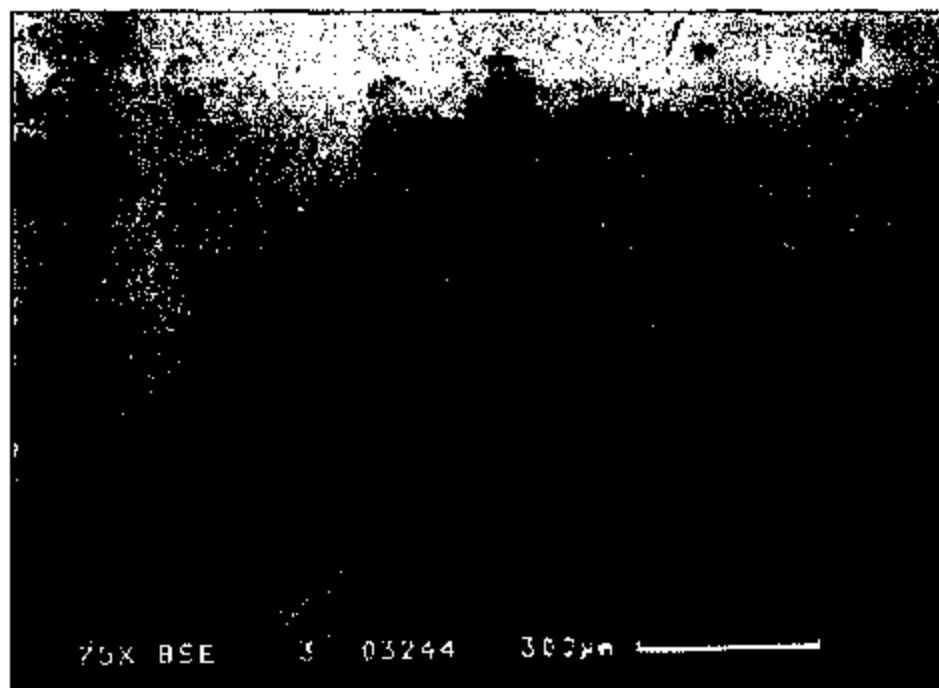


Figure 122: Sample 3- higher magnification view at the asperity, showing rust and copper build up.  
75X Backscattered Electron SEM Image

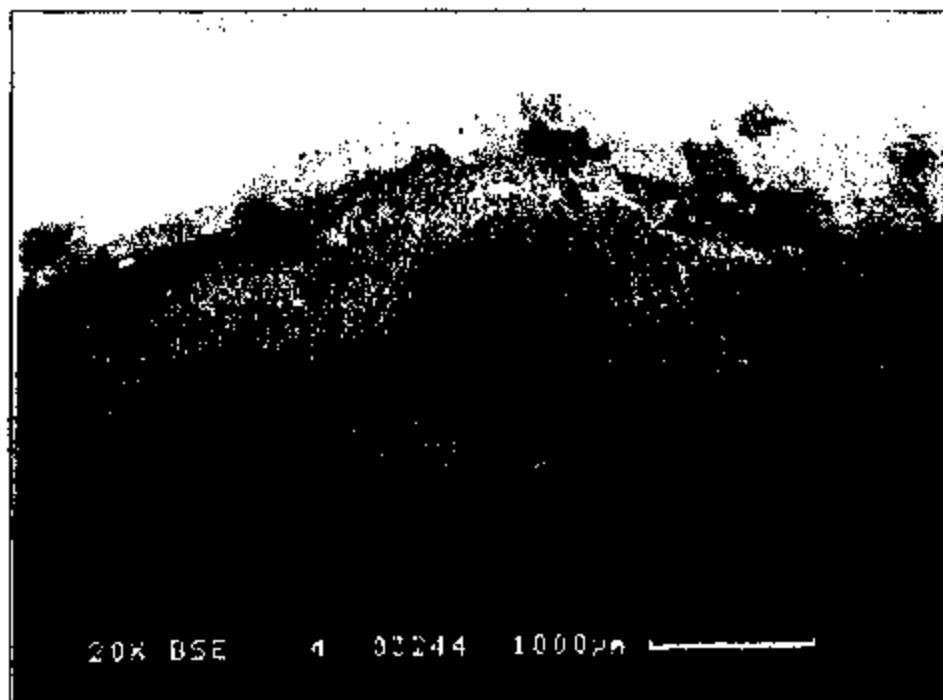


Figure 123: Sample 4 - typical surface condition of the bevel region, showing some copper flaking.  
20X Backscattered Electron SEM Image

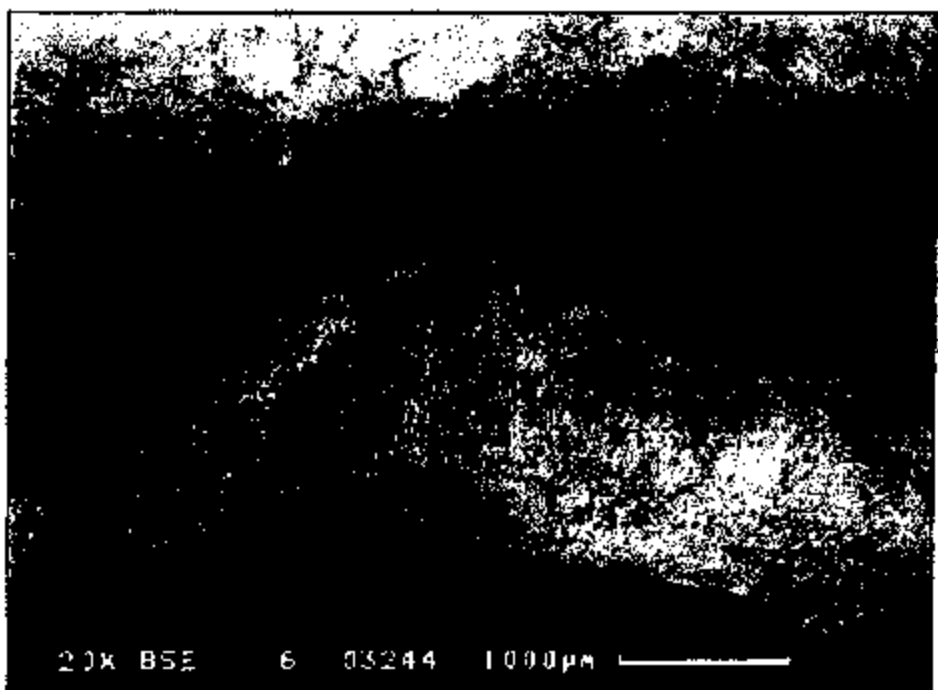


Figure 124: Sample 6 - typical surface condition of the bevel region, showing some copper build up.  
Backscatte 75X 20X

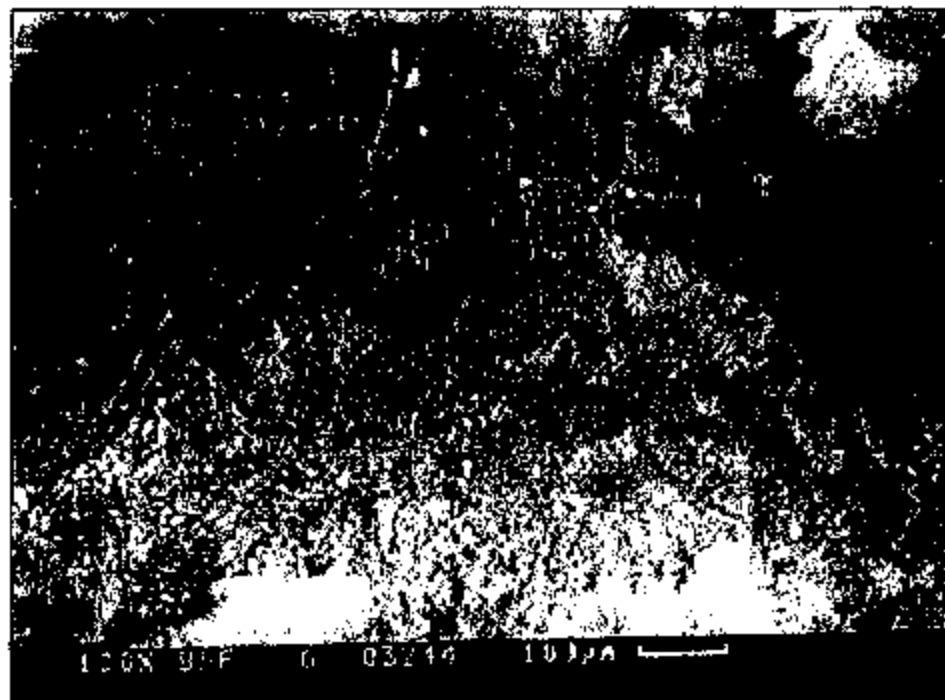


Figure 125: Sample 6 - higher magnification view at the asperity, showing some copper build up.  
100X Backscattered Electron SEM

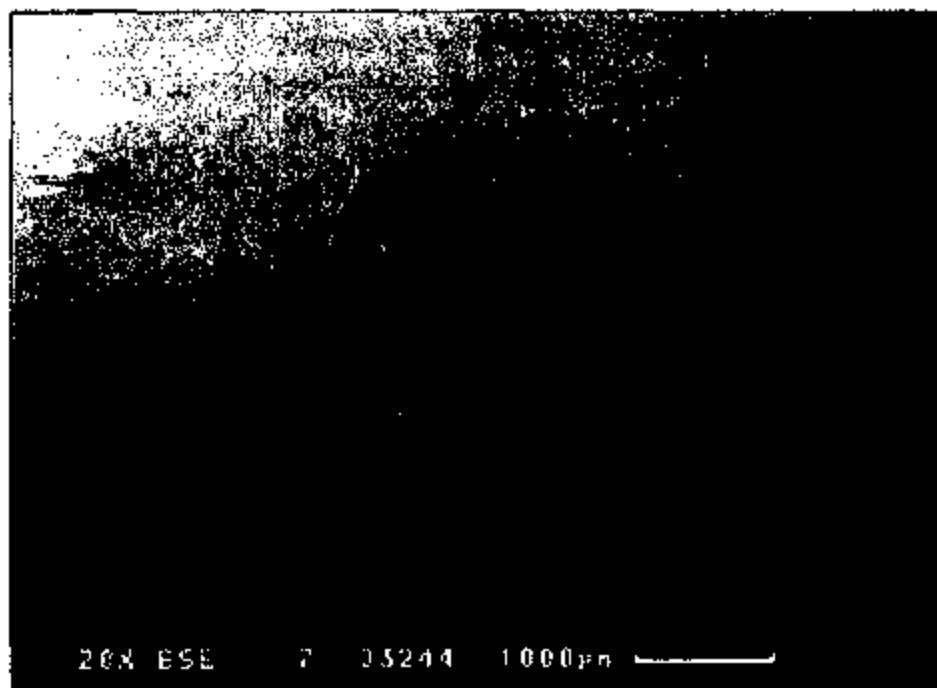


Figure 126: Sample 7 - typical surface condition of the bevel region, showing some copper flaking.  
20X Backscattered Electron SEM Image

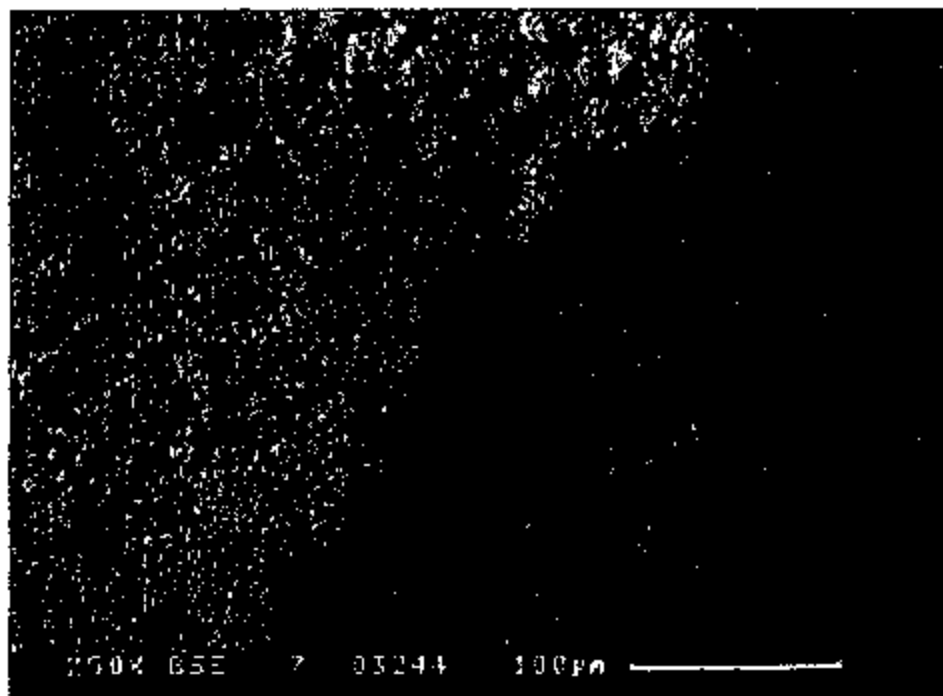


Figure 127: Sample 7 - higher magnification view, showing the copper build up (left) and the bare metal (right).  
250X Backscattered Electron SEM Image

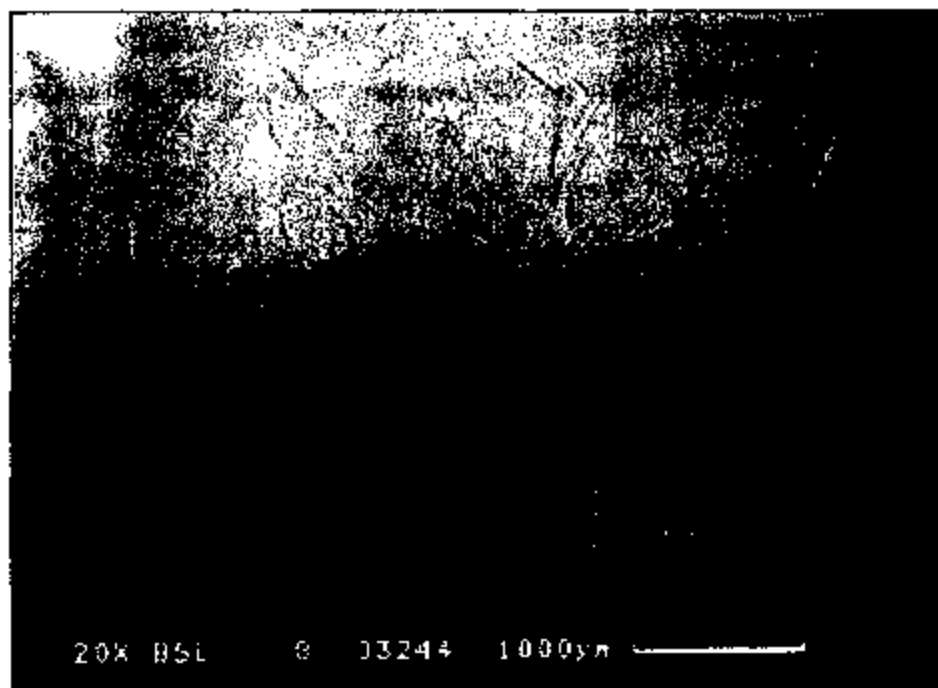


Figure 128: Sample 8 - typical surface condition of the bevel region, showing some rust.  
20X Backscattered Electron SEM Image

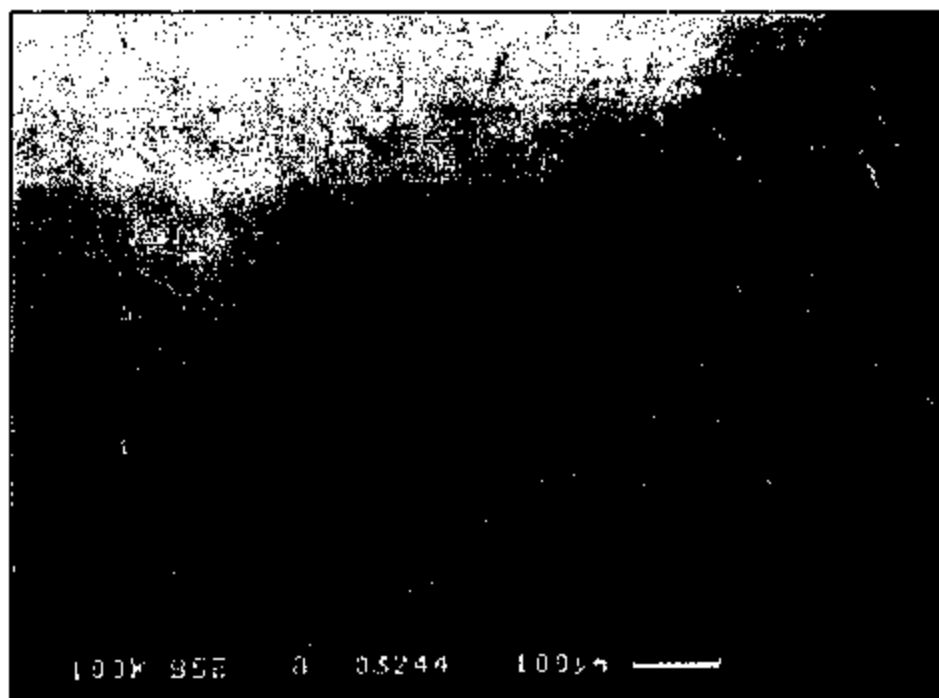


Figure 129: Sample 8 - the black material is rust along the rim of the bevel.  
100X Backscattered Electron SEM Image

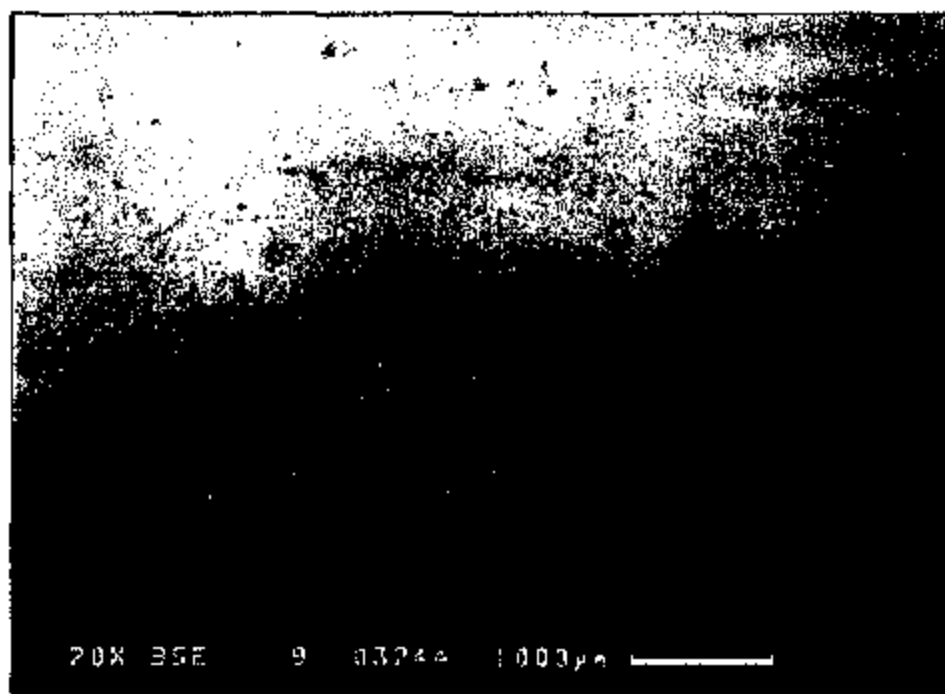
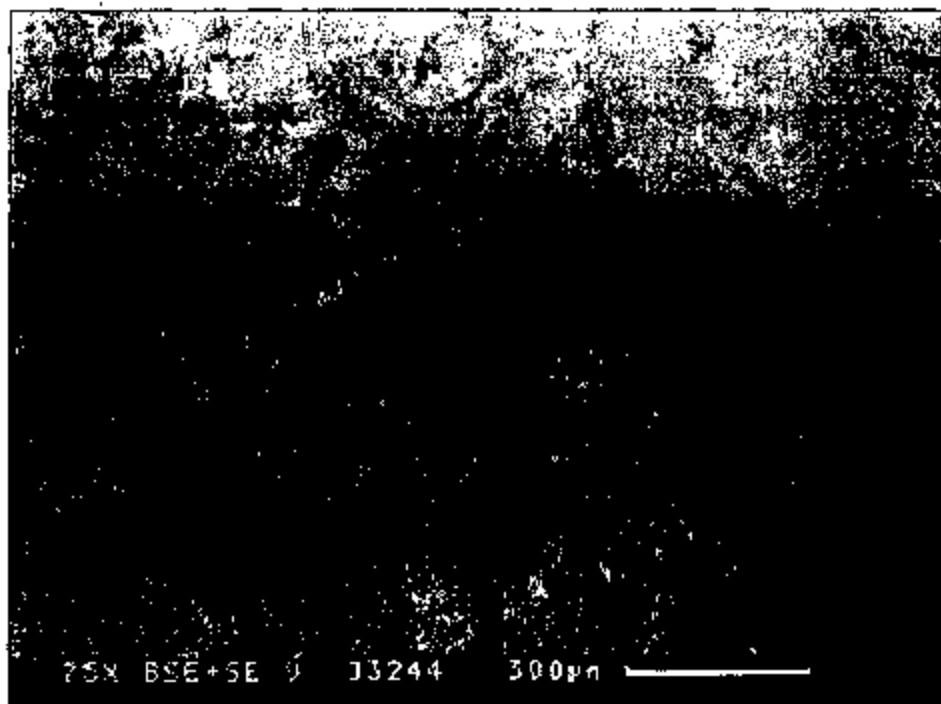
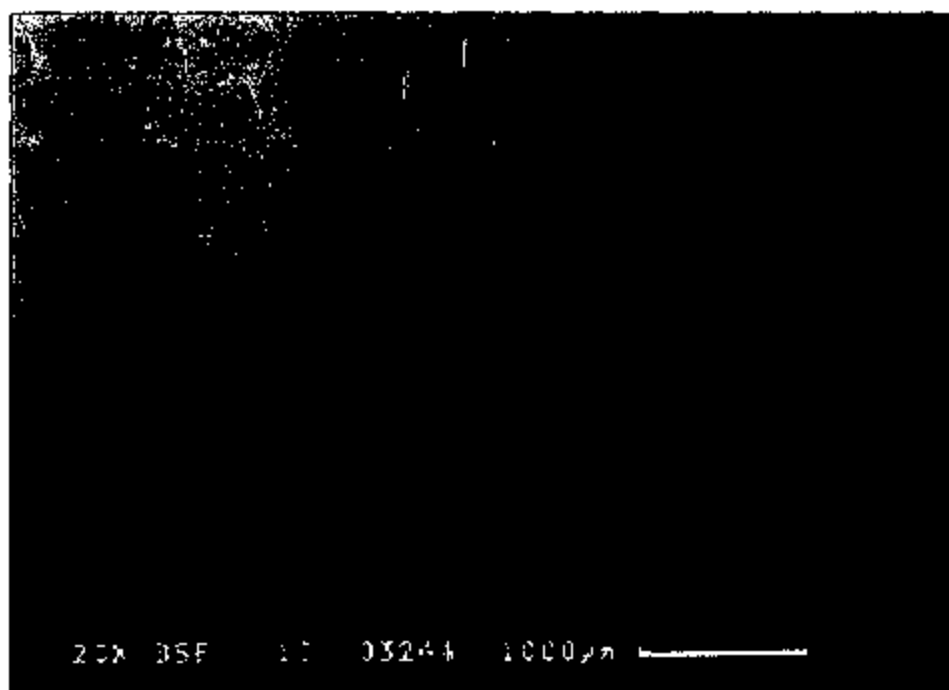


Figure 130: Sample 9 - typical surface condition of the bevel region, showing some copper flaking.  
20X Backscattered Electron SEM Image



75X Figure 131: Sample 9 - higher magnification view of the copper build up.  
Backscattered Electron + Secondary Electron SEM Image



20X Figure 132: Sample 10 - typical surface condition of the bevel region.  
Backscattered Electron SEM Image

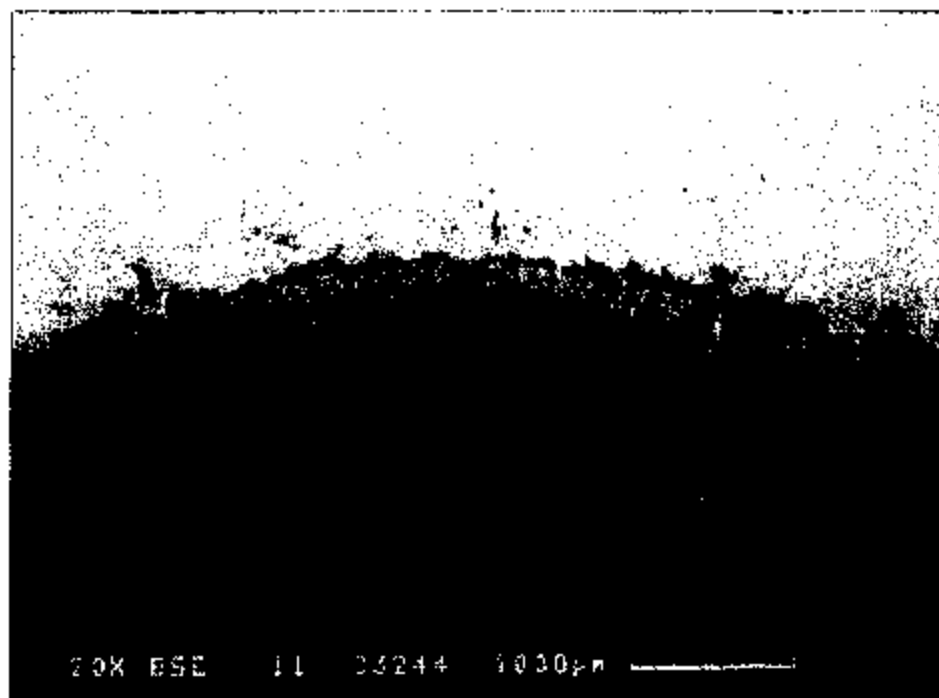


Figure 133: Sample 11 - typical surface condition of the bevel region, showing some copper build up.  
20X Backscattered Electron SEM image

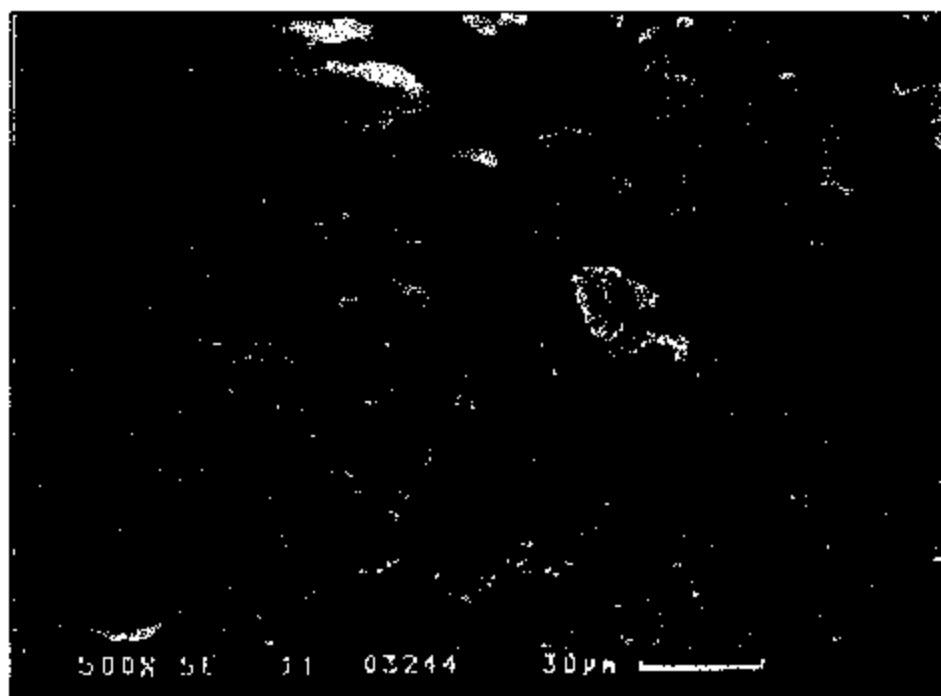


Figure 134: Sample 11 - typical structure of the copper build up.  
500X Secondary Electron SEM image





|                | <b>Brake Pressure Switch Usage Thru MY99</b> |           |           |           |           |           |           |           |  |
|----------------|----------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
|                | <b>(by NAVIS start date)</b>                 |           |           |           |           |           |           |           |  |
| <b>VL / MY</b> | <b>92</b>                                    | <b>93</b> | <b>94</b> | <b>95</b> | <b>96</b> | <b>97</b> | <b>98</b> | <b>99</b> |  |
| town           | 11/04/91                                     |           |           |           |           |           |           |           |  |
| crown vic      | 02/05/92                                     |           |           |           |           |           |           |           |  |
| grand marquis  | 02/05/92                                     |           |           |           |           |           |           |           |  |
| econo          | 04/22/91                                     |           |           |           |           |           |           |           |  |
| club wagon     | 04/22/91                                     |           |           |           |           |           |           |           |  |
| i-series       |                                              | 05/28/92  |           |           |           |           |           |           |  |
| bronco         |                                              | 05/28/92  |           |           |           |           |           |           |  |
| explor         |                                              |           |           | 08/11/94  |           |           |           |           |  |
| ranger         |                                              |           |           | 08/11/94  |           |           |           |           |  |
| exped          |                                              |           |           |           |           | 05/07/96  |           |           |  |
| navi           |                                              |           |           |           |           |           | 12/18/96  |           |  |
| sho            |                                              | 04/23/92  |           |           |           |           |           |           |  |
| mark VII       |                                              | 06/18/92  |           |           |           |           |           |           |  |
| windstar       |                                              |           |           | 12/15/93  |           |           |           |           |  |
| Capri          |                                              |           | 08/11/93  |           |           |           |           |           |  |
|                |                                              |           | Not used  |           |           |           |           |           |  |
|                |                                              |           |           |           |           |           |           |           |  |

3713 8096

From Docman 1/25/00

NUMBER  
VES ETSC-2B091-AA  
FRAME 1 OF 25 REV

| ENGINEERING SPECIFICATION                         |      |      |                         |      |     |                                            |     |           |     |
|---------------------------------------------------|------|------|-------------------------|------|-----|--------------------------------------------|-----|-----------|-----|
| PART NAME VALVE ASSY-<br>PROPORTIONING W/DISABLER |      |      |                         |      |     | PART NUMBER<br>VES-ETSC-2B091-AA           |     |           |     |
| LET.                                              | FR.  | LET. | FR.                     | LET. | FR. | LET.                                       | FR. | LET.      | FR. |
| DATE                                              | LET. | FR.  | REVISIONS               |      |     | DR.                                        | UT. | REFERENCE |     |
| 2-20-96                                           |      |      | RELEASED CSQ2-624660-CS |      |     | TS                                         | JUG |           |     |
|                                                   |      |      |                         |      |     | PREPARED/APPROVED BY<br><i>M. M. M. M.</i> |     |           |     |
|                                                   |      |      |                         |      |     | CHECKED BY<br><i>CH. W. C.</i>             |     |           |     |
|                                                   |      |      |                         |      |     | DESIGNED BY<br><i>J. J. J.</i>             |     |           |     |
|                                                   |      |      |                         |      |     | CONFORMANCE/APPROVAL<br>SIGNATURES         |     |           |     |
|                                                   |      |      |                         |      |     | PRINCIPAL DESIGN ENGINEER                  |     |           |     |
|                                                   |      |      |                         |      |     | SENIOR ENGINEERING MGT.                    |     |           |     |
|                                                   |      |      |                         |      |     | PROD MATERIAL ENGINEERING                  |     |           |     |
|                                                   |      |      |                         |      |     | PROD RELIABILITY ENGINEERING               |     |           |     |
|                                                   |      |      |                         |      |     | MANUFACTURING ENGINEERING                  |     |           |     |
|                                                   |      |      |                         |      |     | QUALITY CONTROL/QA                         |     |           |     |
|                                                   |      |      |                         |      |     | PURCHASING                                 |     |           |     |