

Alpha Magnetics S.O. _____
Revision _____
Date _____

Check applicable drawing below, insure that the drawing is legible.

- Coil No. 1 Upper 10-layer coil - 3832.252-ME-267045 Rev. C
- Coil No. 2 Upper 10-layer coil - 3832.252-ME-267045 Rev. C
- Coil No. 3 Lower 10-layer coil - 3832.252-ME-267046 Rev. C
- Coil No. 4 Lower 10-layer coil - 3832.252-ME-267046 Rev. C

Alpha Magnetics S.O. _____
Revision _____
Date _____

ALPHA MAGNETICS, INC.
KTeV ANALYSIS MAGNET TRAVELER
FOR THE 10-LAYER COIL

- ✓Coil No. 1 Upper 10-Layer Coil 3832.252-ME-267045 Rev. C
- Coil No. 2 Upper 10-Layer Coil 3832.252-ME-267045 Rev. C
- Coil No. 3 Lower 10-Layer Coil 3832.252-ME-267046 Rev. C
- Coil No. 4 Lower 10-Layer Coil 3832.252-ME-267046 Rev. C

Prepared by Don Klein/Dennis Klein

KTeV Analysis Magnet Traveler for 10-Layer Coil

Alpha Magnetics S.O. _____
Revision _____
Date _____

Tested By AL JOEY SADORITA
Organization ALPHA
Test Date 11-17-94

Insulation Technician

Date

Welding Technician

Date

Demmeler
QA/QC Inspector

11-17-94
Date

1.0 Use Same As In Other Travelers

- 1.1 White (lint free) gloves or surgical latex gloves shall be worn by all personnel when handling all product parts after the parts have been prepared/cleaned.
- 1.2 All steps that require a sign-off shall include the Technician/Inspector's first initial and full last name. All entries in the Traveler are to be in black ink.
- 1.3 No erasures or white-out will be permitted to any documentation. All incorrectly entered data shall be corrected by placing a single line through the error, initial and date the error before adding the correct data.
- 1.4 Any and all data, signatures or written notes shall be legible by others.
- 1.5 Half-lap = 40% to 50% coverage (overlap).
- 1.6 If damage or a deviation from the specifications are found a Discrepancy Report Form must be completed and attached behind the page in which the discrepancy occurred before production can proceed. All Discrepancy Reports issued shall be recorded in the left margin next to the applicable step.
- 1.7 If coil is not being worked on it shall be protected from the elements and dust by wrapping it in an anti-static sheeting (such as Herculite).

Alpha Magnetics S.O. _____

Revision _____

Date _____

- 1.8 Attach to the appropriate traveler any requests for a variance from previously accepted procedures and the Fermilab approval.
- 1.9 Attach to the traveler a copy of that portion of the coil fabrication and testing plan which is relevant to the work covered by the traveler.

2.0 10-Layer Coil Assembly

- 2.1 Stack the five (5) appropriate double layers to form the 10-layer coil assembly.
- 2.2 As the double layers are being stacked, insulate between each double layer with .033" type 1003 Scotchply in accordance with drawing 3832.252-MC-267034.
- 2.3 Fill all void areas with Scotchply cloth or Res-i-flex tape.
- 2.4 Apply .033" Scotchply cloth and Res-i-flex tape ground wrap to 10-layer coil assembly per drawing 3832.252-MC-267034.
- 2.5 Make four (4) welded joints connecting all double layers as per drawing 3832.252-ME-267045B/267046B and 3832.252-MC-267072.
- 2.6 Perform dye penetrant test of welds.

Dye Penetrant Test -

Cracks longer than 1/16" shall be filed out and rewelded.
Attach results.

3.0 Post Ground Wrap Electrical Test Procedure of 10-Layer Coil

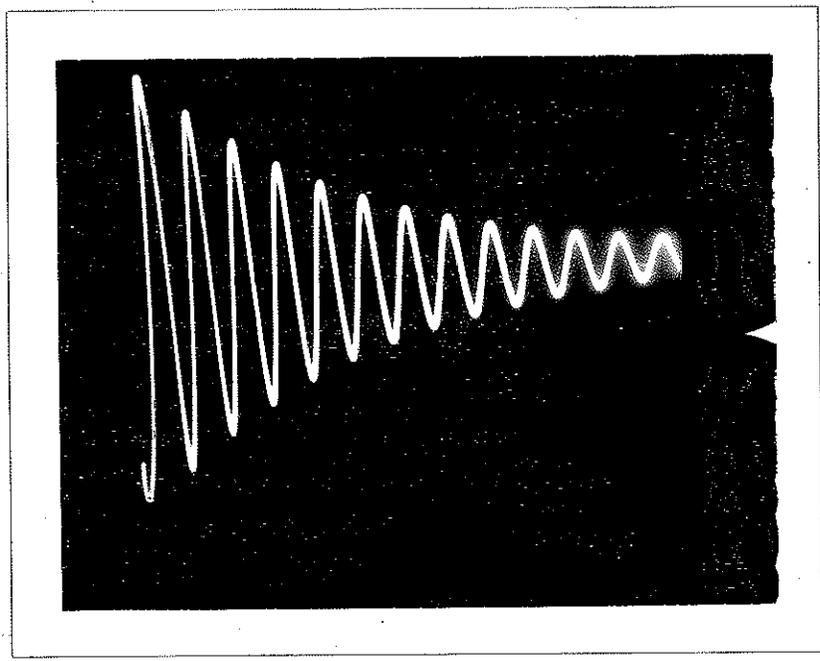
3.1 Repeat electrical test as in section 10.1 and 10.2. Use 400 volts for the ring test in 10.2

D.C. Resistance Test:

Bridge S/N or Model 1656R
Resistance 34.7 mΩ
Coil Temp 70°
Relative Humidity 60°

Ring Test:

Voltage 400 D.C.
Volts/Div .5
Sweep Rate 1



E. Gale
Test Technician

9-21-94
Date

Dennis Lee
QA/QC Inspector

9-21-94
Date

3.2 D.C. Hipot test (section 10.3) to be performed after 10-layer coil is in mold.

3.3 Install 10-layer coil in coil curing fixture. Prior to installing in fixture, coil shall be wrapped 1/4 lap with .002" by 1-1/2" Tedlar tape.

3.4 D.C. - Hipot Test:

Apply 200 volts D.C. between coil leads and coil curing fixture.

Instrument S/N or Model _____
Voltage 200 D.C.
Leakage Current 5 uA
Temperature 70° Degrees F
Relative Humidity 60°

Dennis Lee
Test Technician

11-7-94
Date

Dennis Lee
QA/QC Inspector

11-7-94
Date

4.0 10-Layer Coil Curing

4.1 Coil Curing Cycle.

- a) Heat coil and mold at rate of 2 to 10 degrees F/min. to temperature of 325 degrees F.
- b) Hold coil and mold at 325 degrees F for one (1) hour.
- c) Cool coil and mold to 150 degrees F in no less than three (3) hours.

4.2 Attach hard copy of oven curing cycle to shop traveler.

5.0 Final Testing and Inspection

5.1 Perform D.C. Hipot test after curing as in section 3.4 using 2,000 volts D.C. before removing coil from mold.

Instrument S/N or Model _____

Voltage 2000

Leakage Current 2 uA

Temperature 65°

Relative Humidity 70°

Dennis Blair

Test Technician

11-7-94

Date

Dennis Blair

QA/QC Inspector

11-7-94

Date

5.2 Remove coil from mold, remove Tedlar tape and clean coil as required.

5.3 Verify dimensional compliance of 10-layer coil using appropriate drawings. Attach dimensional record to traveler.

5.4 Perform final electrical tests as in section 9.1 and 9.2 of coil fabrication plan. Apply 400 volts for ring test.

D.C. Resistance:

Instrument S/N or Model _____

Resistance 0.0327 Ω

Coil Temperature 63.2°

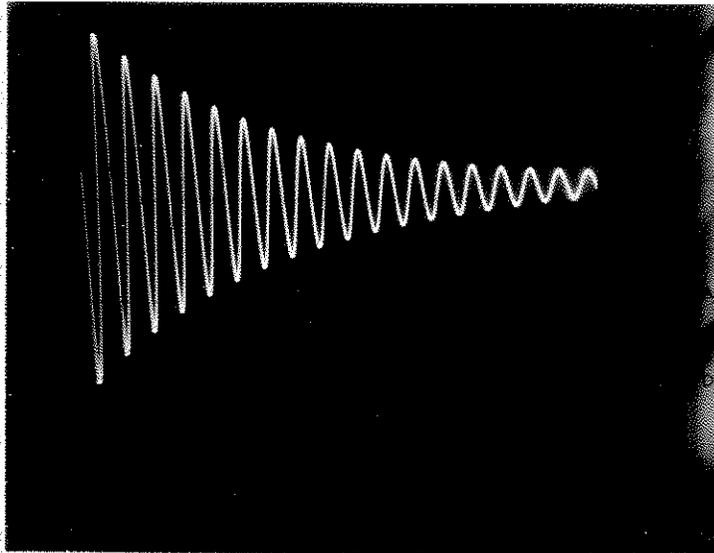
Relative Humidity 70°

Ring Test:

Voltage 400

Volts/Div. .5

Sweep Rate 1



Devin Allen
Test Technician

11-17-94
Date

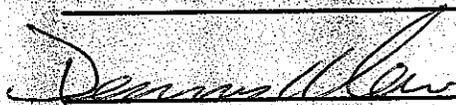
Devin Allen
QA/QC Inspector

11-17-94
Date

6.0 10-Layer Coil Production Complete

6.1 QA/QC Inspector verify that sections 1 through 5 are accurate and complete and that all Discrepancy Reports have had disposition made.

Comments:



QA/QC Inspector

1-23-95
Date

6.2 Production Supervisor verify that section 1 through 5 are accurate and complete.

Comments:



Production Manager

1-23-95
Date

6.3 Fermilab representative verify that section 1 through 5 are accurate and correct.

Fermilab Representative

Date

Alpha Magnetics S.O. _____
Revision _____
Date _____

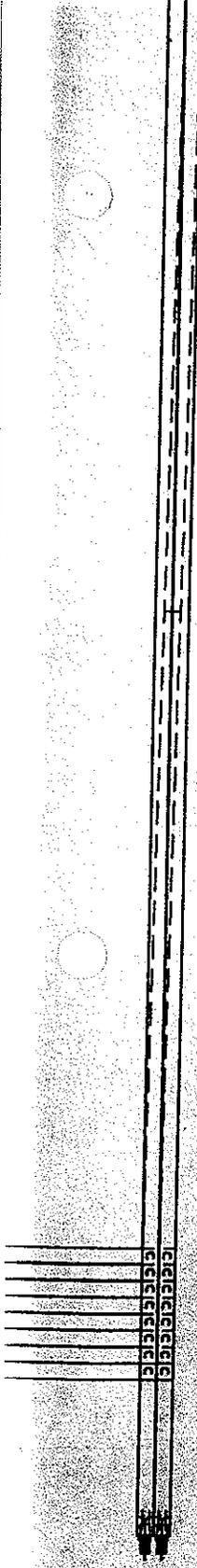
5.5 Examine coil for surface defects.

Tracy Fathin
Technician

1-10-95
Date

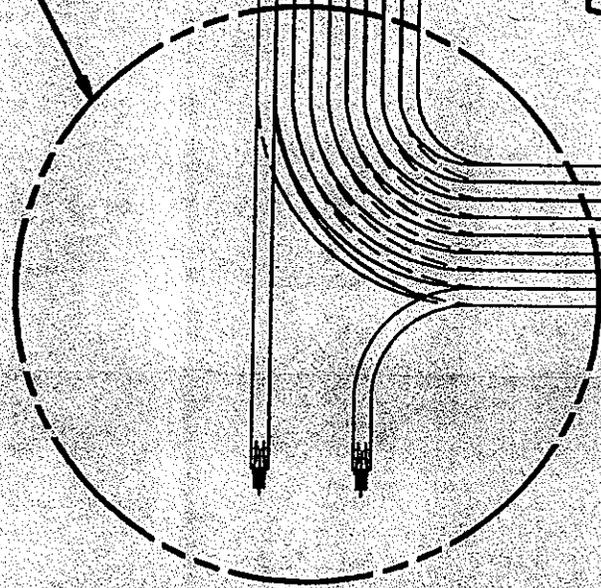
Dennette
QA/QC Inspector

1-10-95
Date



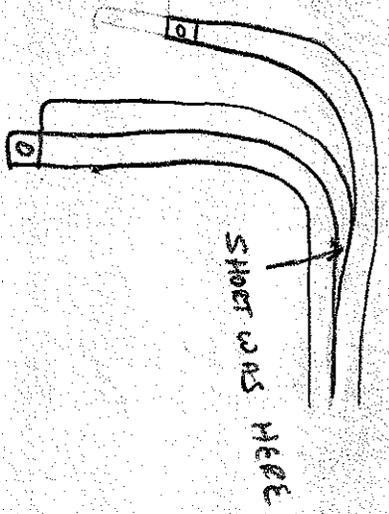
Layer 9 of 10

DETAIL D-D



DETAIL B-B

LEADS TO
PULLED UP
CLEAN SHORT



SHORT

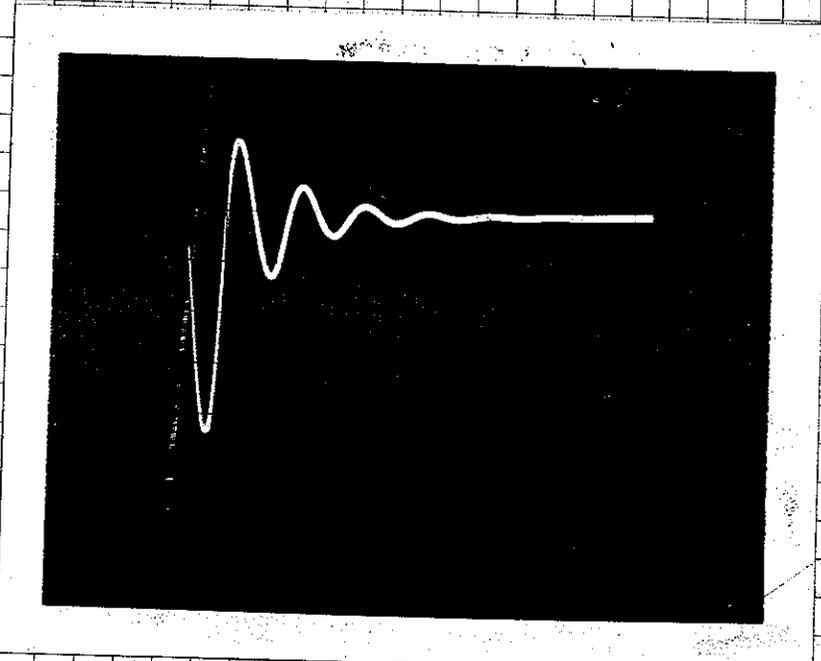
SIDE
VIEW

SHORT

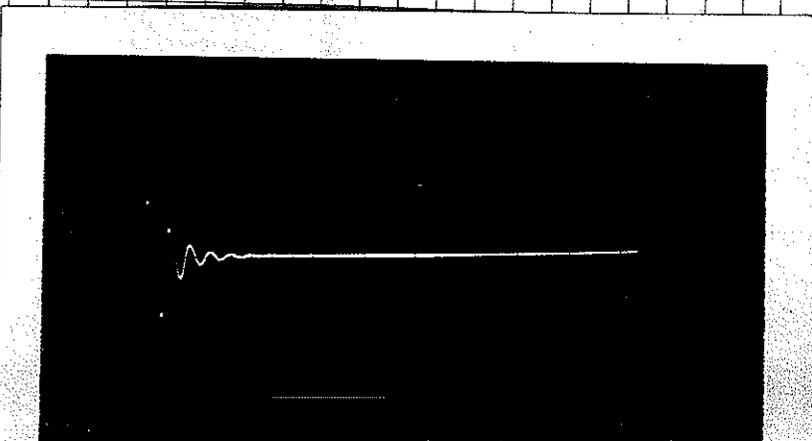
B

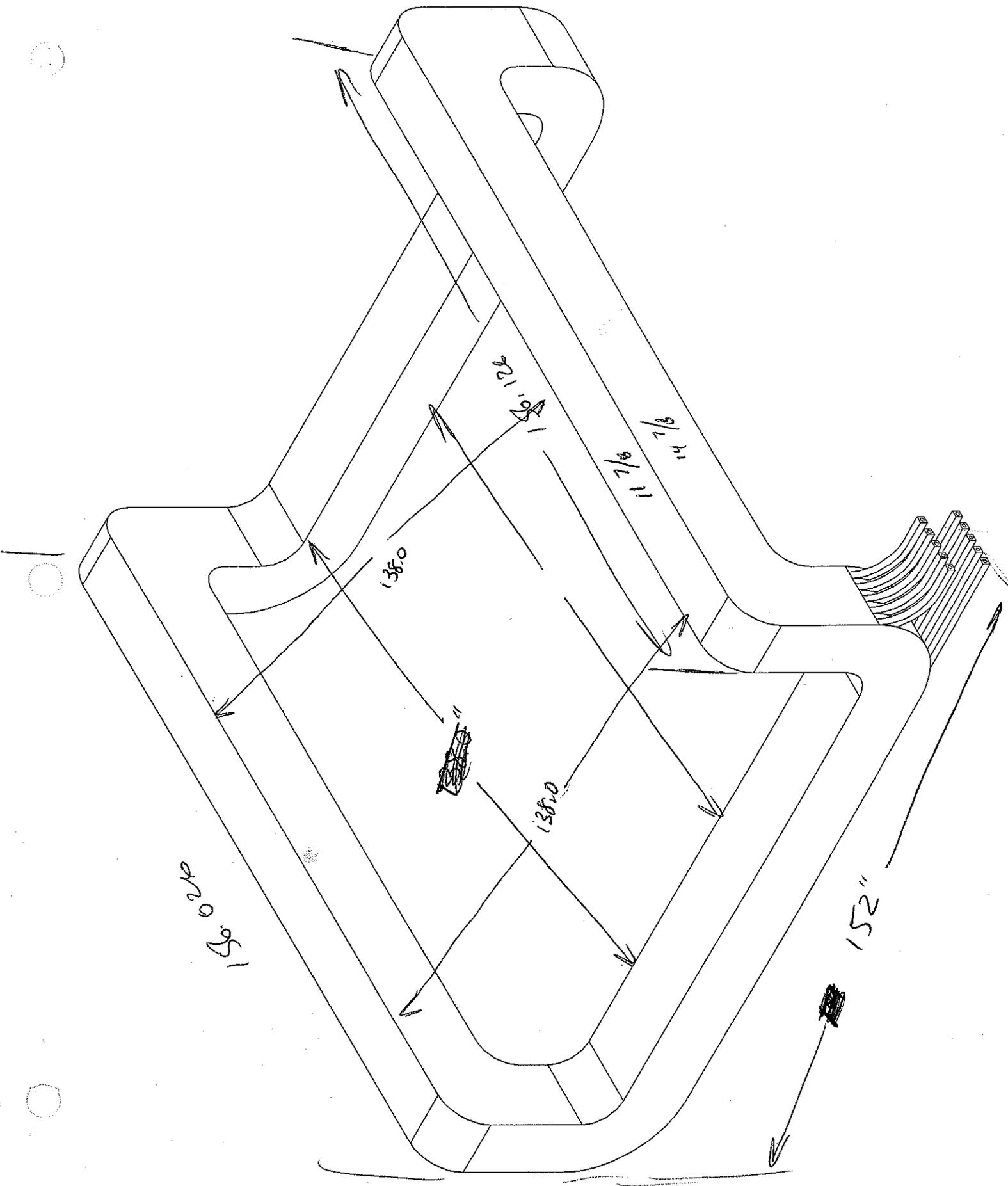
11-17-94

18-10-94



ORIGINAL SHORT TEST TO
 TURN LAYER #9 TO
 UPPER COIL ASSY #4
 (10 LAYER)







alpha magnetics, inc.

1876 sabre street, hayward, california 94545 • 510/752-6698 • fax 510/732-6185

**PROPOSED PROCEDURE TO REPAIR SHORT IN
LEAD OF FERMILAB KTEV UPPER INNER 10-LAYER COIL**

November 16, 1994

1. Cut ground wrap insulation and pull up lead to clear short.
2. Remove old insulation from lead.
3. Check lead and turn underneath for any burrs or sharp corners and remove if necessary.
4. Wrap lead with .007 x 1" glass tape, half-lapped.
5. Coat lead and adjacent turns with epoxy as specified. Lay a sheet of .030" DMD along edge of turn to replace Scotch Ply.
6. Push turn down and clamp in place.
7. Ground wrap lead area with 2 layers of .007 x 2" fiberglass tape in a wet lay-up fashion.
8. Wrap wet area with a layer of heat shrink mylar to contain epoxy.
9. Cure epoxy using heat lamps.
10. After cure, remove mylar and retest coil.

(156.026)
BACK

(156.026) 373
LEAD

.006

156.292 ±.188

367

.013

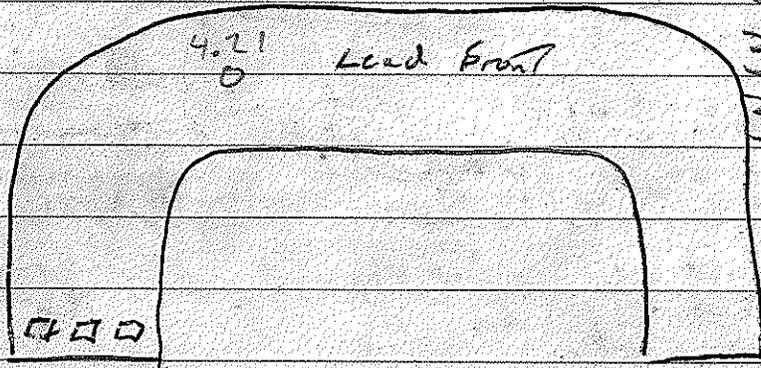
354

.020

334

.015

319



LEAD SIDE

6.21
6.2
6.21
6.23
6.275

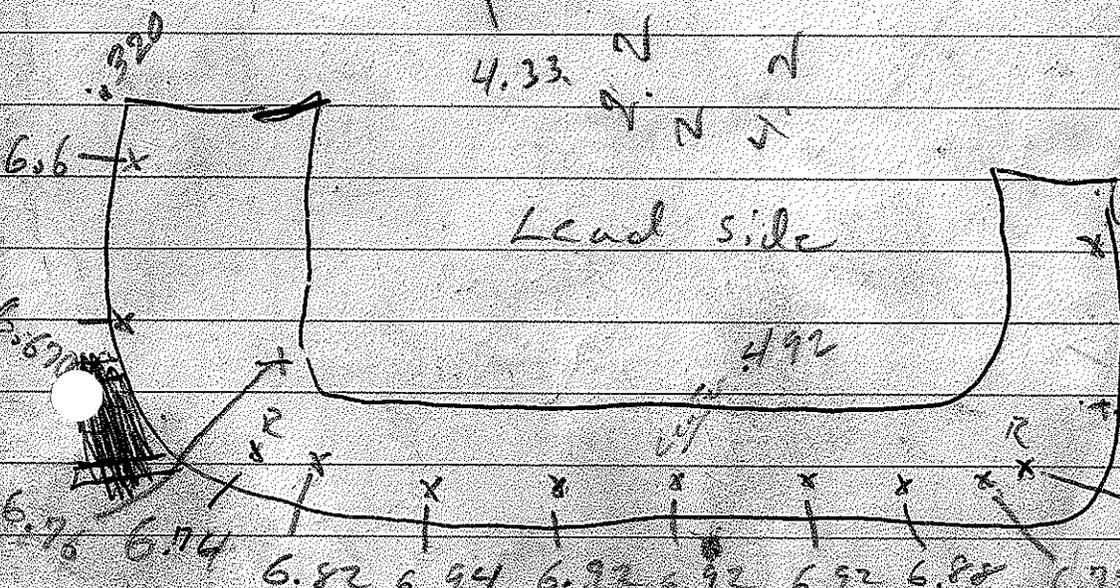
20.95
6.1
6.12
6.15
Back End

(156.186) BACK

21.150
6.310
6.33
6.36
6.38
6.35
6.33
6.32
6.230
6.180

2.50
15.9 2 1/32
4.20
155.456
986

4.33 N N N



6.39
Lead End
6.54
6.77

6.82 6.94 6.92 6.92 6.92 6.88 6.79

155.456
3500
1556.026