



**Fermi National Accelerator Laboratory  
Batavia, IL 60510**

**FERMI MAIN INJECTOR**

**3Q60 HALF MAGNET ASSEMBLY  
TRAVELER**

**Reference Drawing(s)**

**3Q60 Magnet Quarter Yoke & Coil Assembly  
Quadrant 1 & 3 5520-ME-331962**

**3Q60 Magnet Quarter Yoke & Coil Assembly  
Quadrant 2 & 4 5520-ME-331963**

**3Q60 Half Yoke Assembly 5520-ME-331964**

**3Q60/3Q120 Magnet Manifold Assembly 8020-ME-351004**

**Budget Code: MYI Project Code: MAI**

**Released by: Date:**

**Prepared by: W. L. Isiminger**

| <b>Title</b>                          | <b>Signature</b>       | <b>Date</b> |
|---------------------------------------|------------------------|-------------|
| TD / E&F Process Engineering          | <i>Bob Jones</i>       | 7/20/98     |
| TD / E&F Assembly                     | <i>James Kyo</i>       | 7-24-98     |
| TD / E&F Tooling                      | <i>Blairson</i>        | 7/23/98     |
| TD / E&F Fabrication Manager          | <i>Blairson</i>        | 7/23/98     |
| TD / E&F Device Design                | <i>W. L. Isiminger</i> | 7/23/98     |
| TD / E&F Department Head              | <i>V. G. Park</i>      | 7/23/98     |
| TD / QA/QC Manager                    | <i>M. N. Stroh</i>     | 7-23-98     |
| TD / Magnet Project Manager           | <i>R. J. Hardy</i>     | 7/23/98     |
| BD / Magnet Liaison Project Physicist | <i>R. J. Hardy</i>     | 7/23/98     |

Revision Page

| <u>Revision</u> | <u>Revision Description</u>  | <u>Date</u> |
|-----------------|--|-------------|
| A               | Step 6.20: Changed 18.6 mΩ to 19.0 mΩ per new release of ES-331810 Rev. "D".<br>Step 8.2: Changed 18.6 mΩ to 19.0 mΩ per new release of ES-331810 Rev. "D".<br>Step 10.2: Changed 18.6 mΩ to 19.0 mΩ per new release of ES-331810 Rev. "D".<br>TRR. No. 0862 | 7/20/98     |

Ensure appropriate memos and specific instructions are placed with the traveler before issuing the sub traveler binder to production.

1.0 General Notes

- 1.1 White (Lint Free) Gloves (Fermi stock 2250-1800) or Surgical Latex Gloves (Fermi stock 2250-2494) 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/Inspectors first initial and full last name.
- 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 All Discrepancy Reports issued shall be recorded in the left margin next to the applicable step.
- 1.5 All personnel performing steps in this traveler must have documented training for this traveler and associated operating procedures.
- 1.6 Personnel shall perform all tasks in accordance with current applicable ES&H guidelines and those specified within the step.
- 1.7 Cover the 3Q60 Half Magnet Assemblies with green Herculite (Fermi stock 1740-0100) when not being serviced or assembled. Completed assemblies are to be stored in the 3Q60 Magnet Storage Area.

2.0 Parts Kit List

- 2.1 Attach the completed Parts Kit List for the 3Q60 Half Magnet to this traveler. Ensure that the serial number on the Parts Kit List matches the serial number of this traveler. Verify that the Parts Kit received is complete.

\_\_\_\_\_  
Process Engineering/Designee

\_\_\_\_\_  
Date

3.0 Pre-Assembly Inspection

- X 3.1 Transport two (2) 3Q60 Coil Assemblies (MD-331966) supported on tape wrapped 2 x 4's from the coil storage area on a coil transport cart to the half magnet assembly area. Record the serial numbers of the coils below:

|                            |  |
|----------------------------|--|
| <b>Coil Serial Number:</b> |  |
| <b>Coil Serial Number:</b> |  |

\_\_\_\_\_  
Lead Person \_\_\_\_\_  
Date

- X 3.2 Verify that the "OK to Proceed" tags are attached to the coils. Remove the tags and attach them to this traveler.

\_\_\_\_\_  
Lead Person \_\_\_\_\_  
Date

- X 3.3 Using the overhead crane and approved lifting method, transport two (2) 3Q60 Quarter Yoke Assemblies (MC-331961) to the half magnet assembly area. Record the serial numbers of the yokes below.

|                            |  |
|----------------------------|--|
| <b>Yoke Serial Number:</b> |  |
| <b>Yoke Serial Number:</b> |  |

\_\_\_\_\_  
Lead Person \_\_\_\_\_  
Date

- X 3.4 Verify that the "OK to Proceed" tags are attached to the yokes. Remove the tags and attach them to this traveler.

\_\_\_\_\_  
Lead Person \_\_\_\_\_  
Date

X 3.5 Visually inspect the ground wrap insulation to ensure uniform application. Perform a visual inspection of the assembly and Electrical inspection, record the results below. The coils are not to be clamped for the following tests.

| Full Coil Serial No. |                         | Inner ID# 2 Coil Serial No.                        |                    |      |      |                  |
|----------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test      | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance           |                         | 6.0 mΩ to 6.8 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz           |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz          |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz           |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring        |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |

| Full Coil Serial No.                     |                         | Outer ID# 1 Coil Serial No.                        |                    |      |      |                  |
|--|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test                          | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                               |                         | 3.3 mΩ to 3.7 mΩ                                   |                    |      |      |                  |
| ES @ 1 KHz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                                |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                              |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Inner Coil to Outer Coil @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

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| Full Coil Serial No. |                         | Inner ID# 4 Coil Serial No.                           |                    |      |      |                  |
|----------------------|-------------------------|---|--------------------|------|------|------------------|
| Electrical Test      | Equipment Serial Number | Limit   | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance           |                         | 6.0 mΩ to<br>6.8 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz           |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 1 KHz            |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| LS @ 100 Hz          |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 100 Hz           |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| 100 Volt Ring        |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |

| Full Coil Serial No.                              |                         | Outer ID# 3 Coil Serial No.                           |                    |      |      |                  |
|---|-------------------------|---|--------------------|------|------|------------------|
| Electrical Test                                   | Equipment Serial Number | Limit   | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance  |                         | 3.3 mΩ to<br>3.7 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz  |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 1 KHz   |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| LS @ 100 Hz                                       |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 100 Hz  |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| 100 Volt Ring                                     |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Hipot Inner<br>Coil to Outer<br>Coil @<br>100 Vdc |                         | < 5μA   |                    |      |      |                  |
| Hipot Inner<br>Coil to Inner<br>Coil @<br>100 Vdc |                         | < 5μA   |                    |      |      |                  |

## Continued On The Next Page

**Continued From The Previous Page (Coil Set #2)**

| Full Coil Serial No. |                         | Inner ID# 2 Coil Serial No.                        |                    |      |      |                  |
|----------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test      | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance           |                         | 6.0 mΩ to 6.8 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz           |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz          |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz           |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring        |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |

| Full Coil Serial No.                     |                         | Outer ID# 1 Coil Serial No.                        |                    |      |      |                  |
|--|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test                          | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                               |                         | 3.3 mΩ to 3.7 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                                |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                              |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Inner Coil to Outer Coil @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

**Continued On The Next Page**

**Continued From The Previous Page (Coil Set #2)**

| Full Coil Serial No. |                         | Inner ID# 4 Coil Serial No.                           |                    |      |      |                  |
|----------------------|-------------------------|---|--------------------|------|------|------------------|
| Electrical Test      | Equipment Serial Number | Limit   | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance           |                         | 6.0 mΩ to<br>6.8 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz           |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 1 KHz            |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| LS @ 100 Hz          |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 100 Hz           |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| 100 Volt Ring        |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |

| Full Coil Serial No.                              |                         | Outer ID# 3 Coil Serial No.                           |                    |      |      |                  |
|---|-------------------------|---|--------------------|------|------|------------------|
| Electrical Test                                   | Equipment Serial Number | Limit   | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance  |                         | 3.3 mΩ to<br>3.7 mΩ                                   |                    |      |      |                  |
| LS @ 1 KHz  |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 1 KHz   |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| LS @ 100 Hz                                       |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Q @ 100 Hz  |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| 100 Volt Ring                                     |                         | Reference Test Only<br>Not Subject to Limit<br>Values |                    |      |      |                  |
| Hipot Inner<br>Coil to Outer<br>Coil @<br>100 Vdc |                         | < 5μA   |                    |      |      |                  |
| Hipot Inner<br>Coil to Inner<br>Coil @<br>100 Vdc |                         | < 5μA   |                    |      |      |                  |

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Visually inspect the coils for the following, which will include but not be limited to:

| (Coil Set #1) Coils ID# Number  | 1 & 2 |      | 3 & 4 |      |
|---|-------|------|-------|------|
| Operation   | Pass  | Fail | Pass  | Fail |
| All materials must be clean, dry, free from grease, oils, etc.          |       |      |       |      |
| The insulation is free of damage and there is no exposed copper.        |       |      |       |      |
| The coils serial numbers are not covered by insulation.                 |       |      |       |      |
| The tie wrap containing the coil serial number is attached to the coil. |       |      |       |      |

| (Coil Set #2) Coils ID# Number  | 1 & 2 |      | 3 & 4 |      |
|---|-------|------|-------|------|
| Operation   | Pass  | Fail | Pass  | Fail |
| All materials must be clean, dry, free from grease, oils, etc.          |       |      |       |      |
| The insulation is free of damage and there is no exposed copper.        |       |      |       |      |
| The coils serial numbers are not covered by insulation.                 |       |      |       |      |
| The tie wrap containing the coil serial number is attached to the coil. |       |      |       |      |

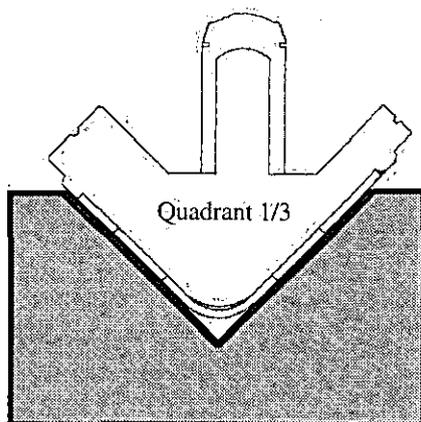
Inspector \_\_\_\_\_ Date \_\_\_\_\_

XX 3.6 Verify that the recorded results are in compliance with MD-331966 and ES-331810.

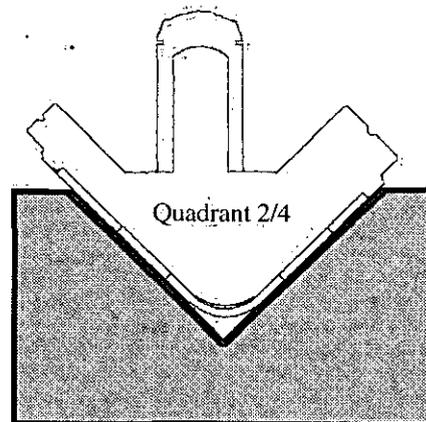
Lead Inspector \_\_\_\_\_ Date \_\_\_\_\_

Crew Chief \_\_\_\_\_ Date \_\_\_\_\_

3.7 Using the overhead crane, the appropriate slings, and the Flip-Rite (Model 8F7.5T or equivalent), roll - over the quarter yoke assemblies so that the pole tip is facing up (perpendicular) to the table and position quarter yokes on the two (2) Steel Supports.



Fixed End  
View



Floating End  
View

Technician \_\_\_\_\_ Date \_\_\_\_\_

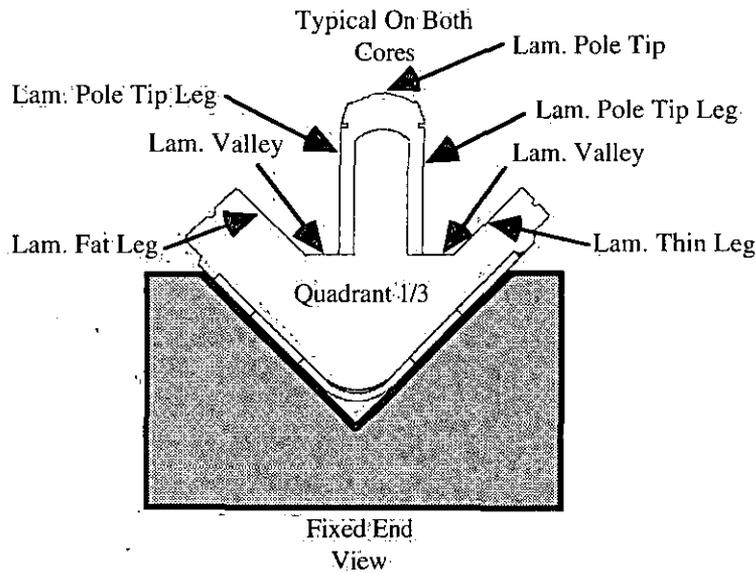
- 3.8 Using Isopropyl Alcohol (Fermi stock 1920-0300) and Heavy Disposable Wipers (Fermi stock 1660-2600 or equivalent), clean all areas of the quarter yokes that will or may come into contact with the coil assembly or G-10 insulation.

\_\_\_\_\_  
Technician

\_\_\_\_\_  
Date

- 3.9 Using adhesive backed Kapton Tape 4 3/4" X .005" (MA-331642) cover the fat leg, thin leg, valley, pole tip legs and pole tips of the cores/laminations per ME-331962/ME-331963. Trim the tape as required to fit. Do not however cover the end plates.

| Location               | Quad 1/3 | Installed | Quad 2/4 | Installed |
|------------------------|----------|-----------|----------|-----------|
| Lam. Thin Leg          | X        |           | X        |           |
| Lam. Valley Both Sides | X        |           | X        |           |
| Lam. Fat Leg           | X        |           | X        |           |
| Lam. Pole Tip Legs     | X        |           | X        |           |
| Lam. Pole Tips         | X        |           | X        |           |



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- XX 3.10 Visually verify that the Kapton tape is positioned and trimmed within the quarter yokes and that the previous steps have been completed and comply with the applicable prints ME-331962/ME-331963.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

4.0. 1/4 Yoke & Coil Assembly Quadrant 1&3 (ME-331962)

**Note(s):**

The critical difference between the quadrant 1 & 3 quarter magnet and the 2 & 4 quadrant quarter magnet is the lead locations/orientations with respect to the fixed end or non-fixed end. The leads on a quadrant 1 & 3 are to be located at the fixed end of the core. The leads on a quadrant 2 & 4 are to be located at the non-fixed end of the core.

- XX** 4.1 List the components being used to construct this quarter magnet for quadrant 1 & 3. Visually inspect the components to ensure no damage has occurred to the insulation on the coil assembly and that the Kapton is in position and has not come loose.

|                          |  |      |  |      |  |
|--------------------------|--|------|--|------|--|
| Quarter Yoke Serial No.  |  | Pass |  | Fail |  |
| Coil Assembly Serial No. |  | Pass |  | Fail |  |

Lead Inspector \_\_\_\_\_

Date \_\_\_\_\_

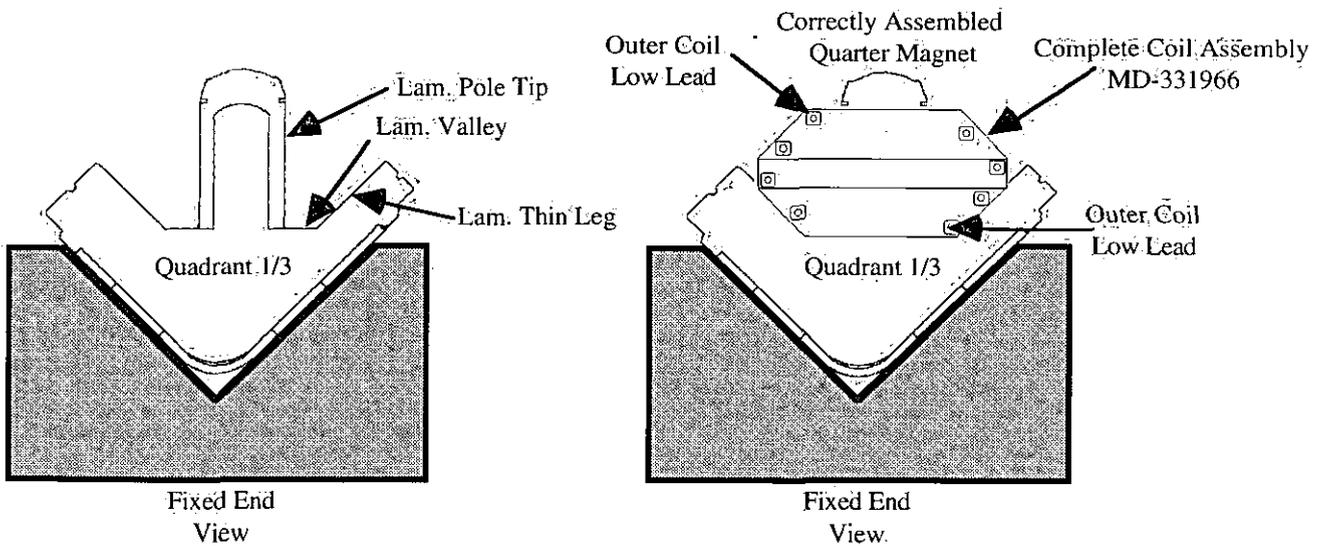
Crew Chief \_\_\_\_\_

Date \_\_\_\_\_

- 4.2 Using the overhead crane and approved lifting methods, lift the coil in such a manner as to facilitate installation into the quarter core with the leads exiting the fixed end of the quarter core. Center the coil within the core equidistant with respect to the pole tips to 1/16".

**Note(s):**

The lowest lead of the outer coil (on the complete coil assembly) is to be located in the valley on the thin leg side of the quarter core.



Technician(s) \_\_\_\_\_

Date \_\_\_\_\_

- X 4.3. Verify that all the G-10 pieces about to be attached to the quarter yoke have been roughed to enhance bonding with the epoxy; use sandpaper (Fermi stock 1202-2560) if the G-10 is not roughed to enhance bonding with epoxy.

**Note(s):**

**Ensure the G-10 pieces have been roughed to enhance bonding with the epoxy.**

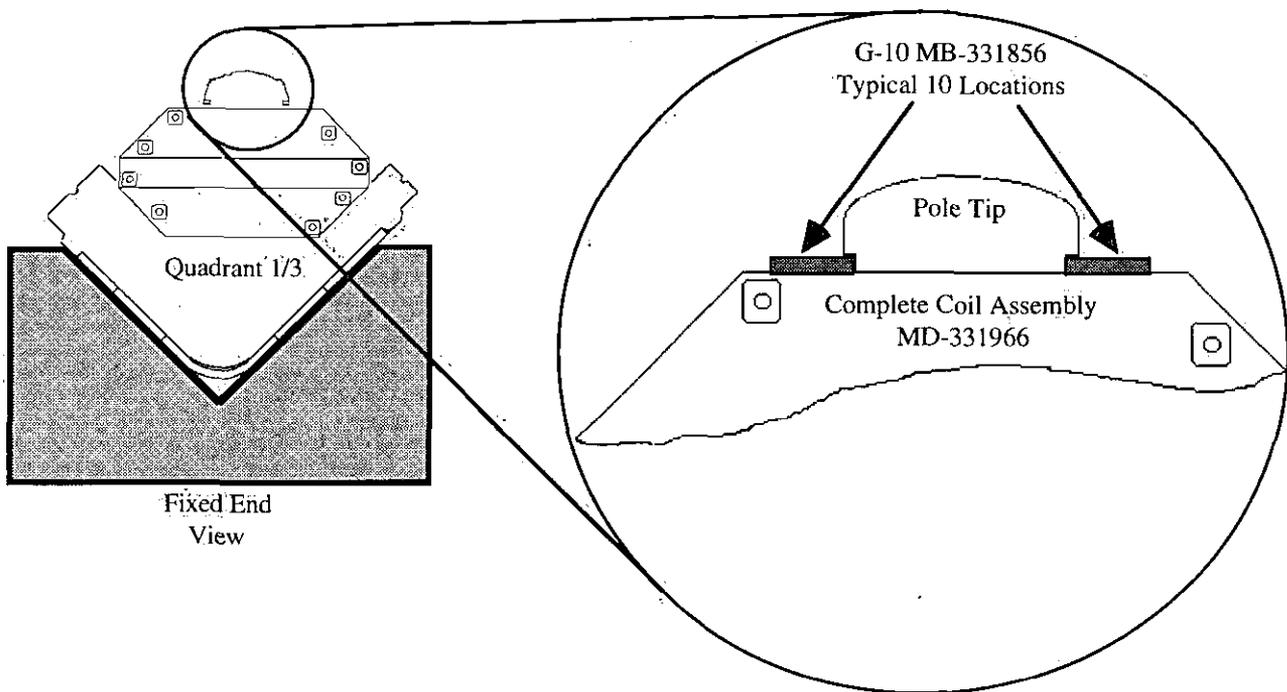
**Ensure that the part numbers have been removed. Ensure that the area about to be covered with the G-10 is clean, dry, free from grease, oils, etc...**

**Ensure that the G-10 parts are clean, if not use Isopropyl Alcohol (Fermi stock 1920-0300) and Heavy Disposable Wipers (Fermi stock 1660-2600 or equivalent).**

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

- 4.4 Using Sicomet #77 Adhesive (MA-274442), glue into position the G-10 Pieces (MB-331856) used to hold the complete coil assembly into the core along the pole tips in six (6) locations per ME-331962.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- XX 4.5 Visually verify that the G-10 insulation is positioned within the pole tips of the core and that the previous steps have been completed and comply with ME-331962.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

5.0 1/4 Yoke & Coil Assembly Quadrant 2&4 (ME-331963)

**Note(s):**

The critical difference between the quadrant 1 & 3 quarter magnet and the 2 & 4 quadrant quarter magnet is the lead locations/orientations with respect to the fixed end or non-fixed end. The leads on a quadrant 1 & 3 are to be located at the fixed end of the core. The leads on a quadrant 2 & 4 are to be located at the non-fixed end of the core.

- X:X** 5.1 List the components being used to construct this quarter magnet for quadrant 2 & 4. Visually inspect the components to ensure no damage has occurred to the insulation on the coil assembly and that the Kapton is in position and has not come loose.

|                          |  |      |  |      |  |
|--------------------------|--|------|--|------|--|
| Quarter Yoke Serial No.  |  | Pass |  | Fail |  |
| Coil Assembly Serial No. |  | Pass |  | Fail |  |

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

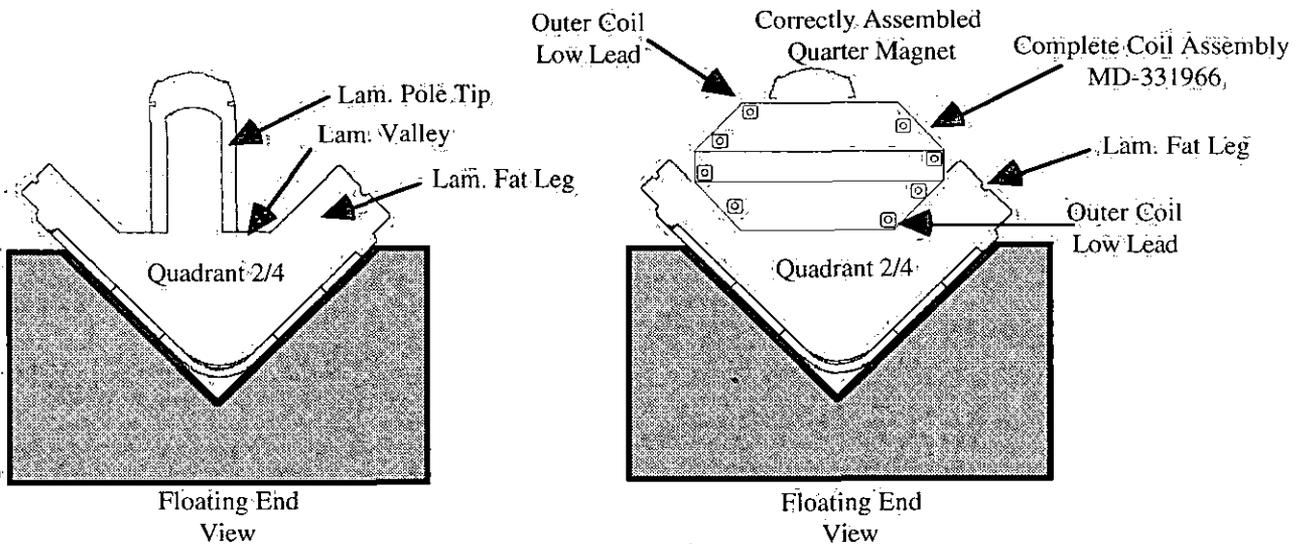
\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

- 5.2 Using the overhead crane and approved lifting methods, lift the coil in such a manner as to facilitate installation into the quarter core with the leads exiting the non-fixed end of the quarter core.

**Note(s):**

The lowest lead of the outer coil (on the complete coil assembly) is to be located in the valley on the fat leg side of the quarter core.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- X 5.3 Verify that all the G-10 pieces about to be attached to the quarter yoke have been roughed to enhance bonding with the epoxy, use sandpaper (Fermi stock 1202-2560) if the G-10 is not roughed to enhance bonding with epoxy.

**Note(s):**

Ensure the G-10 pieces have been roughed to enhance bonding with the epoxy.

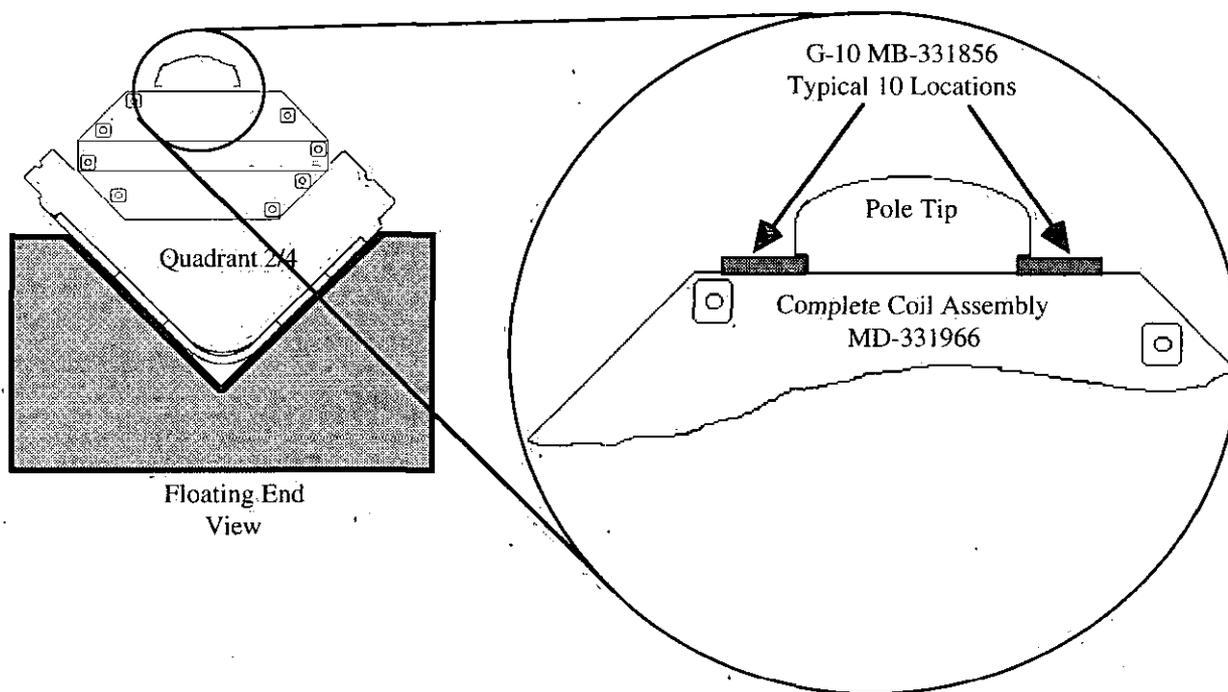
Ensure that the part numbers have been removed. Ensure that the area about to be covered with the G-10 is clean, dry, free from grease, oils, etc...

Ensure that the G-10 parts are clean, if not use Isopropyl Alcohol (Fermi stock 1920-0300) and Heavy Disposable Wipers (Fermi stock 1660-2600 or equivalent).

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

- 5.4 Using Sicomet #77 Adhesive (MA-274442), glue into position the G-10 Pieces (MB-331856) used to hold the complete coil assembly into the core along the pole tips in six (6) locations per ME-331963.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- XX 5.5 Visually verify that the G-10 insulation is positioned within the pole tips of the core and that the previous steps have been completed and comply with ME-331963.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

6.0 Quadrant Pre-Manifolding:

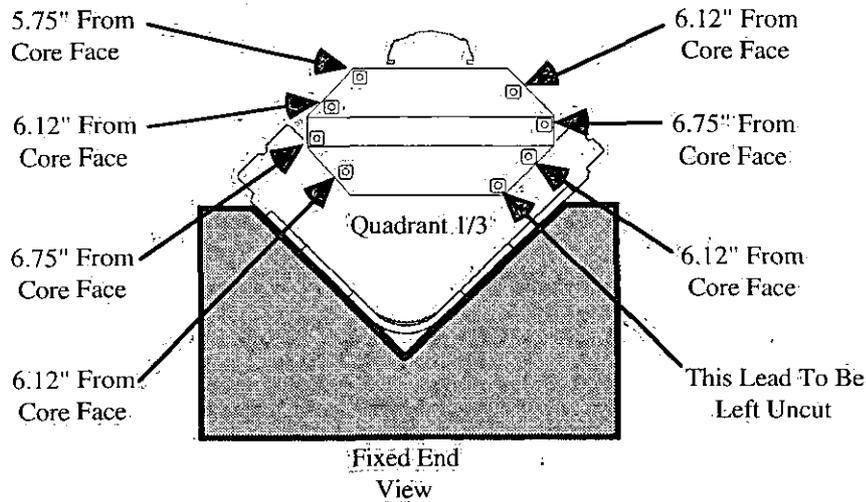
**Note(s):**

**Prior to scribing the leads to be cut verify with your supervisor that the print being used is the most current print available. All scribe leads are to be per the most currently released print!**

- 6.1 Using a twelve inch rule (Starrett C304SRE-12 or equivalent) and Scribe (Fermi stock 1246-4100 or equivalent), measure from the cores face of the quadrant 1 & 3 assembly and scribe the length each lead is to be cut to per print ME-331962.

**Warning:**

**At no time is the diagram below to be used for determining the correct lead lengths. This diagram is strictly a reference diagram and is to be used as such.**



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

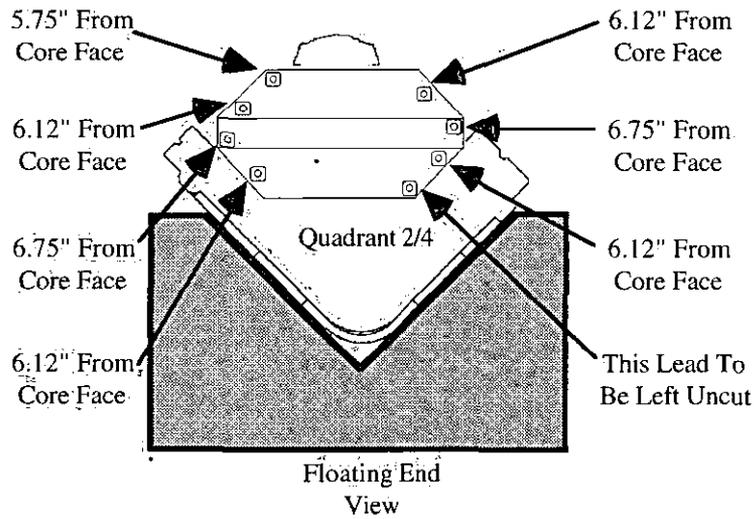
**Note(s):**

Prior to scribing the leads to be cut verify with your supervisor that the print being used is the most current print available. All scribe leads are to be per the most currently released print!

- 6.2 Using a twelve inch rule (Starrett C304SRE-12 or equivalent) and Scribe (Fermi stock 1246-4100 or equivalent), measure from the cores face of the quadrant 2 & 4 assembly and scribe the length each lead is to be cut per print ME-331963.

**Warning:**

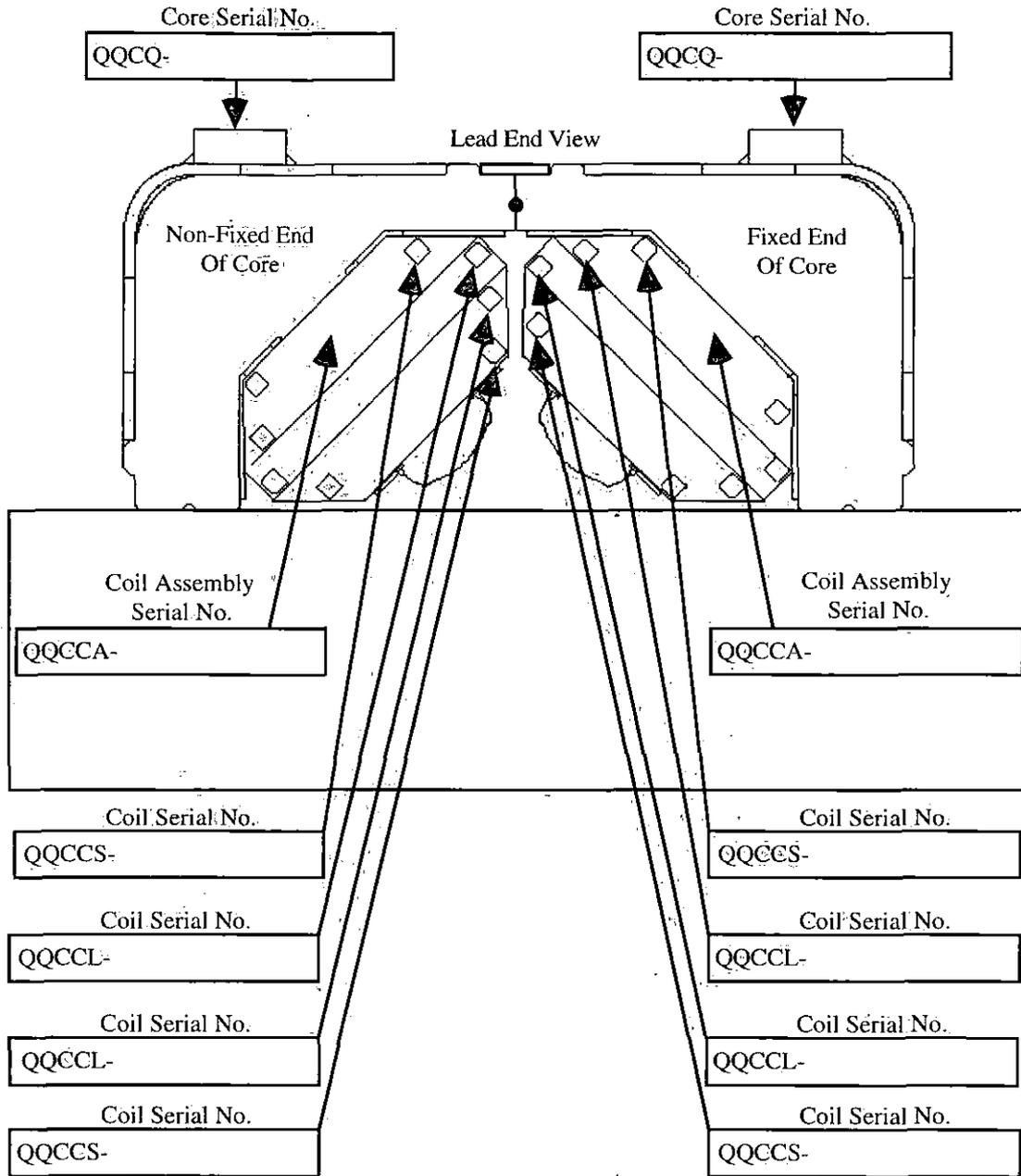
At no time is the diagram below to be used for determining the correct lead lengths. This diagram is strictly a reference diagram and is to be used as such.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X. 6.3 Record in the diagram provided the item serial numbers as they appear in the welded configuration.



Inspector

Date

6.4 Using the green Herculite (Fermi stock 1740-0100) or equivalent, cover and seal all areas of the exposed coils except for the leads and or other items that may be damaged by the cutting of the leads on both assemblies. Secure the cover into place using Pressure Sensitive Green Tape (Fermi stock 1365-1020) or equivalent.

Technician(s)

Date

XX

6.5 Verify that the leads have been correctly scribed with respect to the quadrants and applicable prints ME-331962/ME-331963. Visually verify that all the coils and associated items that could be damaged by the cutting of leads are completely covered/sealed and protected by the Herculite.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

6.6 The following is the sequence of events for cutting the coil leads.

**Warning:**

**At no time is the lead to be cut shorter than the scribe mark of that lead.**

**Note(s):**

**This process must be repeated for the remaining quarter magnet.**

6.6.1 Select a quarter magnet. Choose a lead which is most convenient for the use of a Portaband or equivalent to cut the lead to length.

**Note(s):**

**When making the cut, every effort to maintain a reasonably straight cut should be made.**

6.6.2 Cut the lead at the scribe mark.

6.6.3 Using a Deburring Tool (Fermi stock 1246-0960) or equivalent, debur the water passage and remove any excess material about the outside of the conductor due to cutting.

6.6.4 Using a vacuum and house air, position the vacuum at the cut lead, at the opposite lead of that same coil blow through the water passage house air until all debree from the cutting of the lead is clear of the water passage.

6.6.5 Repeat the above operations until all leads marked to be cut have been cut, deburred and cleaned.

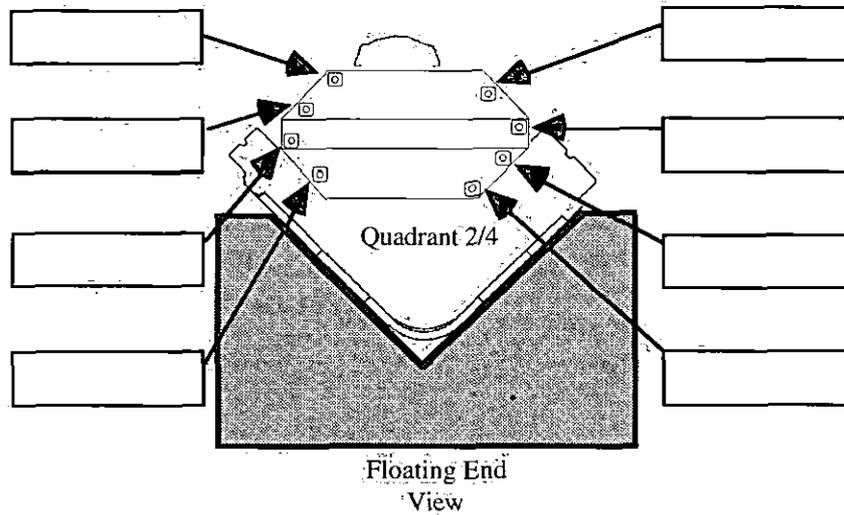
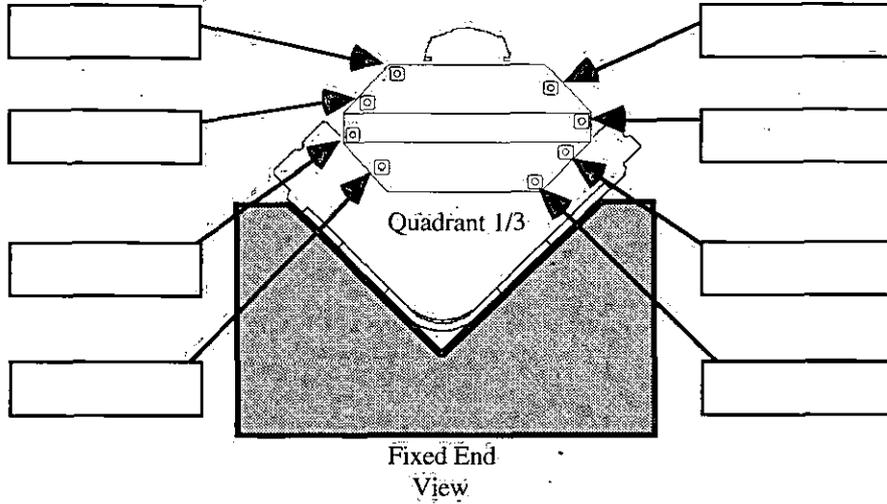
| Quartet Magnet | Completed |
|----------------|-----------|
| Quadrant 1/3   |           |
| Quadrant 2/4   |           |

6.6.6 Clean any remaining debree from the Herculite and carefully remove the Herculite.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X 6.7 Verify that the leads have been cut to there respective lengths. Record the lengths below.



Inspector \_\_\_\_\_

Date \_\_\_\_\_

XX: 6.8 Verify that the measurements recorded in step 6.7 are correct and that the previous steps 6.1 through 6.7 have been completed.

Lead Inspector \_\_\_\_\_

Date \_\_\_\_\_

Crew Chief \_\_\_\_\_

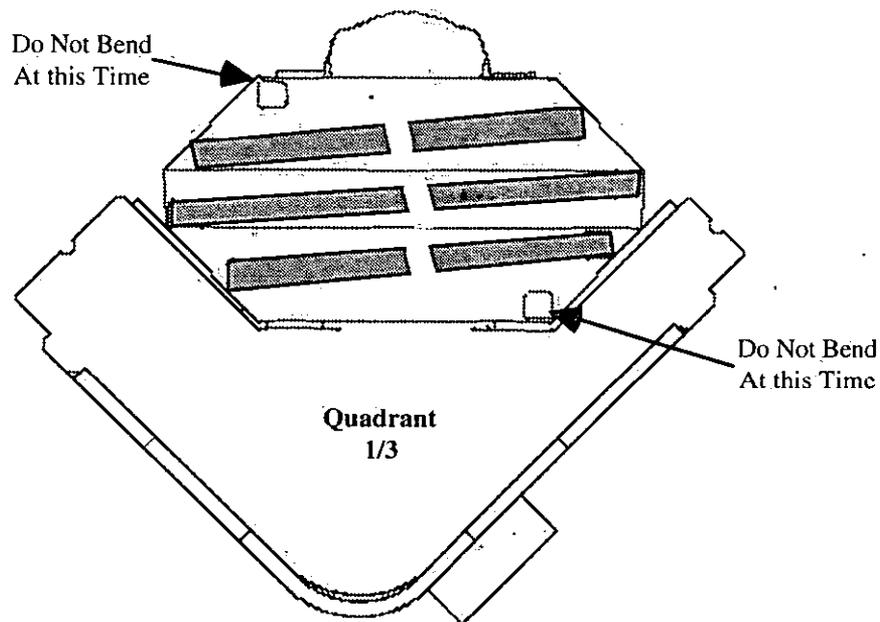
Date \_\_\_\_\_

- 6.9 Bend the leads of the quarter magnet quadrant 1/3 per print ME-351004 using the R.H. and L.H. Forming Tool (MD-351564):

**Note(s):**

At no time is the picture included within this traveler to be used in place of the latest released print. All diagrams within are strictly for reference use only.

All completed bends when measured from the core face to the inside of the bent lead shall be no closer than 3 3/4" to the cores face.



\_\_\_\_\_  
Technician(s)

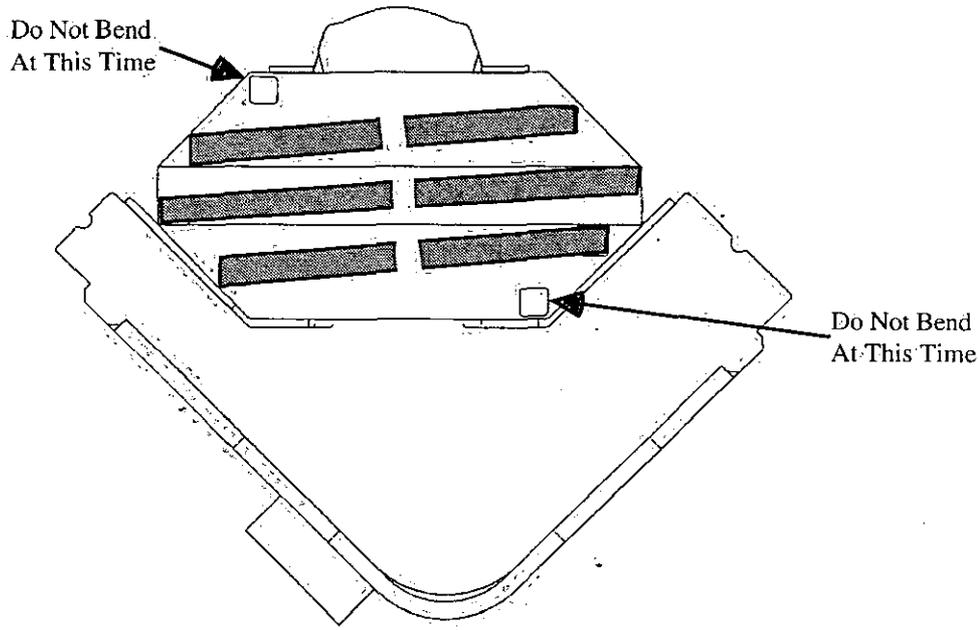
\_\_\_\_\_  
Date

6.10 Bend the leads of the quarter magnet quadrant 2/4 per print ME-351004 using the R.H. and L.H. Forming Tool (MD-351564).

**Note(s):**

At no time is the picture included within this traveler to be used in place of the latest released print. All diagrams within are strictly for reference use only.

All completed bends when measured from the core face to the inside of the bent lead shall be no closer than 3 3/4" to the cores face.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

**Note(s):**

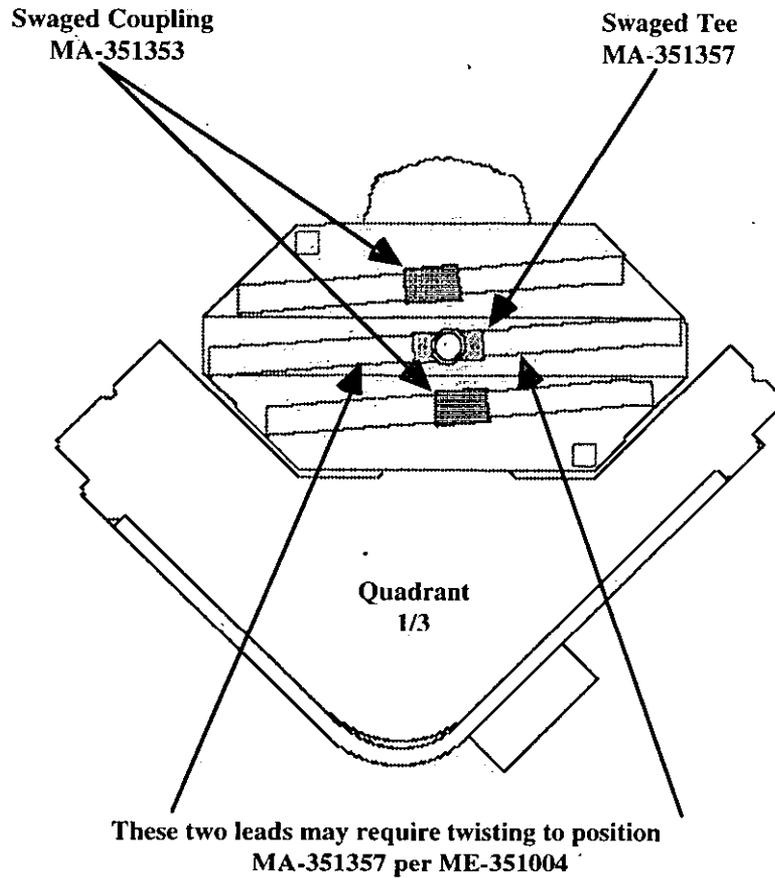
The following is strictly a dry stacking of the intended coil manifold layout prior to the actual soft soldering of the assembly.

- 6.11 Attach the couplings (MA-351353/MA-351357) to the cut leads of quadrant 1/3 per ME-351004.

**Note(s):**

During the assembly of the Swaged Couplings (MA-351353) to the coil leads a gap of .060" to .120" must be maintained between the leads of the coil within the coupling.

Leads attached to Coupling MA-351357 may require twisting to ensure proper orientation per print ME-351004.



\_\_\_\_\_  
Technician(s)

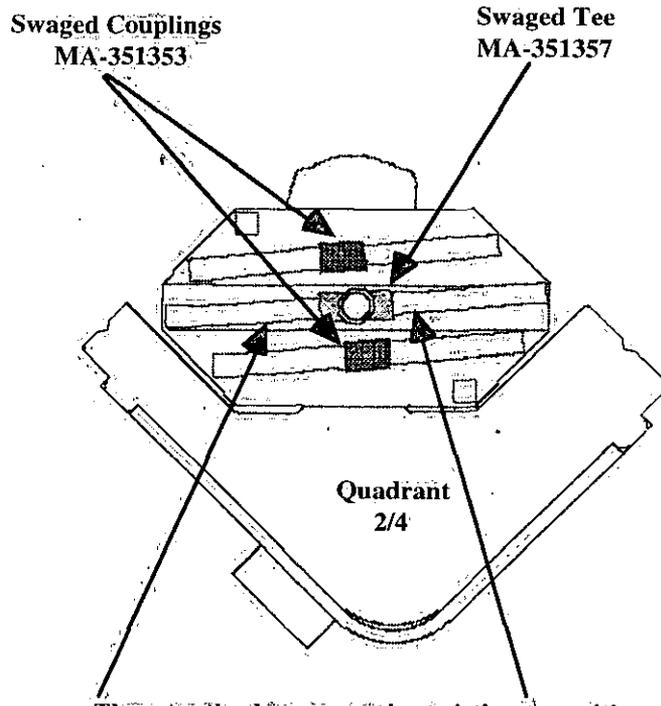
\_\_\_\_\_  
Date

6.12 Attach the couplings (MA-351353/MA-351357) to the cut leads of quadrant 2/4 per ME-351004.

Note(s):

During the assembly of the Swaged Couplings (MA-351353) to the coil leads a gap of .060" to .120" must be maintained between the leads of the coil within the coupling.

Leads attached to Coupling MA-351357 may require twisting to ensure proper orientation per print ME-351004.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X

6.13 Visually verify that the quarter magnet manifolds for quadrants 1/3 and 2/4 are dry stacked in accordance with ME-351004. Ensure that the gaps between the leads of the coils and the swaged couplings are .060" to .120" per ME-351004.

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

6.14 At the operators discretion the manifold may be marked as to each parts location and removed, then reassembled once the protective compounds called out are in place. If not, use Dura Board Ceramic Fiber Insulation (MA-225571) or equivalent and Super 8 Cement (MA-116559) or equivalent in the areas of the coils to protect the coils from the heat during the soft soldering operation.

**Note(s):**

**During the insulation process being performed prior to soft soldering, make every effort to ensure that no water gets onto the insulated coils.**

\_\_\_\_\_  
Technician(s) Date

**XX** 6.15 Visually verify that the manifold is dry assembled in accordance with ME-351004. Ensure that the gaps between the leads of the coils and the swaged couplings are .060" to .120" per ME-351004. Verify that all the areas requiring protection during the soft soldering operation are protected.

\_\_\_\_\_  
Lead Inspector Date

\_\_\_\_\_  
Crew Chief Date

6.16 Soft solder the manifold assembly in accordance with ME-351004 and the General Brazing Specification (ES-318973) using only 95/5 Solder (Fermi stock 1070-8110) and Acid Paste Flux (Fermi stock 1070-2422).

**Warning:**

**All soft solder joints are to air cool, at no time is water to be used to cool the soft soldered joints.**

\_\_\_\_\_  
Technician(s) Date

**X** 6.17 Visually verify that the manifold is soft soldered in accordance with ME-351004.

\_\_\_\_\_  
Lead Person Date

6.18 Clean the manifold assembly, removing the insulation used to protect the coils. Using Scotch-Brite no. 7447 (Fermi stock 1202-2020 or equivalent), KPC 820N (Fermi stock 1920-0705 or equivalent) and Heavy Disposable Wipers (Fermi stock 1660-2600 or equivalent) clean the manifold assembly.

\_\_\_\_\_  
Technician(s) Date

**X** 6.19 Visually inspect the coils for the following, which will include but not be limited to:

| (Quadrant Set)<br>Operation   | 1/3  |      | 2/4  |      |
|---|------|------|------|------|
|   | Pass | Fail | Pass | Fail |
| All materials must be clean, dry, free from grease, oils, etc.          |      |      |      |      |
| The insulation is free of damage and there is no exposed copper.        |      |      |      |      |
| The tie wrap containing the coil serial number is attached to the coil. |      |      |      |      |

\_\_\_\_\_  
Inspector Date

X 6.20 Perform an Electrical inspection, record the results below. No clamps are to be used for the following tests other than that associated with the half magnet assembly table.

### Quadrant 1/3 Set

| Core Serial No.               |                         | Full Coil Serial No.                               |                    |      |      |                  |
|-------------------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test               | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                    |                         | 19.0 mΩ to 21.0 mΩ                                 |                    |      |      |                  |
| LS @ 1 KHz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                     |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                   |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                 |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

### Quadrant 2/4 Set

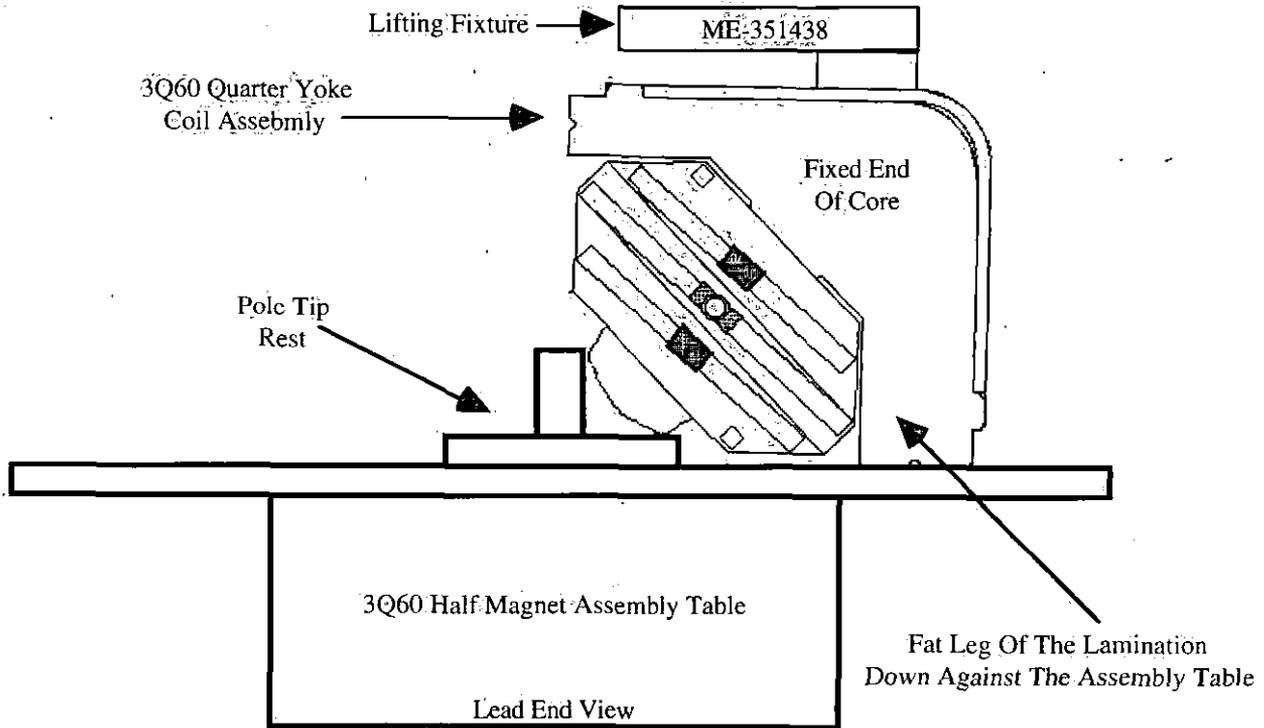
| Core Serial No.               |                         | Full Coil Serial No.                               |                    |      |      |                  |
|-------------------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test               | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                    |                         | 19.0 mΩ to 21.0 mΩ                                 |                    |      |      |                  |
| LS @ 1 KHz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                     |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                   |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                 |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

Inspector \_\_\_\_\_

Date \_\_\_\_\_

7.0 Half Magnet Assembly

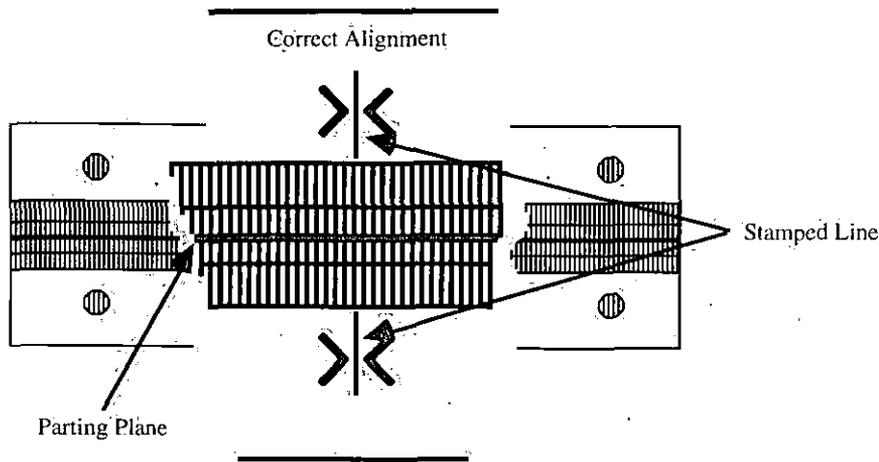
- 7.1 Using the overhead crane, the appropriate slings, and the Flip-Rite (Model 8F7.5T or equivalent), roll - over the quarter yoke and coil assembly so that the fat leg of the lamination is facing down. Using the overhead crane and the 1/4 core Lifting Fixture (ME-351438), position the quarter yoke and coil assembly onto the Half Magnet Assembly Table (ME-115466) with the pole tip firmly seated against the pole tip rest and temporarily clamp the assembly into place.



\_\_\_\_\_  
Technician(s)

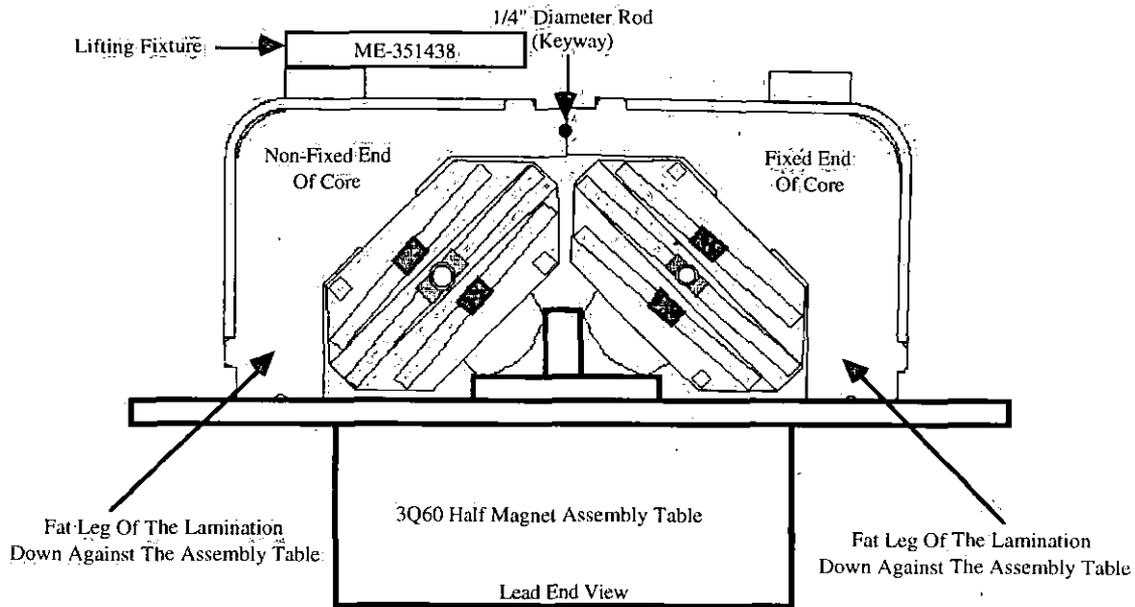
\_\_\_\_\_  
Date

7.2 Position the 1/4" diameter rod (key) (MA-331951) into the key way of the quarter yoke on the half magnet assembly table. Using the overhead crane, the appropriate slings, and the Flip-Rite (Model 8F7:5T or equivalent), roll - over the 2/4 quadrant quarter yoke and coil assembly so that the fat leg of the lamination is facing down. Using the overhead crane and the 1/4 core Lifting Fixture (ME-351438), position the quarter yoke and coil assembly onto the Half Magnet Assembly Table (ME-115466) with the pole tip firmly seated against the pole tip rest and temporarily clamp the assembly into place. Align the two (2) yoke assemblies so that the two stamped lines at the center of the cores align within a 1/32".



**Note(s):**

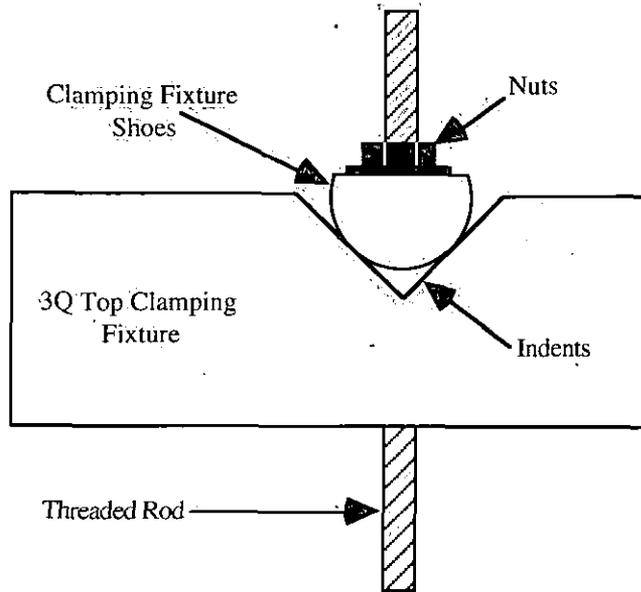
When positioning the quarter yoke onto the half magnet assembly table ensure that the leads are exiting the same end as the quarter yoke assembly previously positioned on the half magnet assembly table.



Technician(s) \_\_\_\_\_

Date \_\_\_\_\_

- 7.3 Using the overhead crane and the appropriate slings, position the 3Q top clamping fixture of the assembly table on to the half magnet assembly aligning the positioning clamps with the Enerpac on the base of the assembly table. Set the clamping fixture shoes into the indents of the top clamping fixture. Feed the threaded rods (with nuts attach to the tops) through the shoes and attach the nuts to the bottoms of the threaded rods at the bottom of the Enerpac.



\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- X 7.4 Using the Assembly Table (ME-115466) draw core quarters together by applying pressure to the side Enerpac (1500 psi)  $\pm$  100 psi then draw the assembly down onto the assembly table ensuring that the pole tips do not lose contact with the pole tip rest by applying pressure to the top Enerpac (1100 psi)  $\pm$  100 psi. Record the pressure applied in the table below.

| Side Enerpac Pressure<br>1500 Lbs. $\pm$ 100 | Top Enerpac Pressure<br>1100 Lbs. $\pm$ 100 |
|--|---|
|  |   |

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

- 7.5 Ensure that the two quarter yokes are aligned so that the stamped lines at the center of the cores are aligned within .030".

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

- 7.6 Using Isopropyl Alcohol (Fermi stock 1920-0300) and Heavy Disposable Wipers (Fermi stock 1660;2600 or equivalent), clean the quarter yokes' tie strap valley, the Tie Strap (MB-331950) and all areas that will or may come into contact with the tie strap.

\_\_\_\_\_  
 Technician Date

- 7.7 Centrally position one (1) Tie Strap (MB-331950) within the yoke tie strap valley. Tighten the yoke tie down bolts to hold the tie strap in position. Ensure that during the tightening process that the tie strap does not move from its centrally located position.

**Note(s):**  
**Added force may be used on the hand knobs via a 12" wrench or rubber mallet.**

\_\_\_\_\_  
 Technician(s) Date

- 7.8 Using white chalk indicate the locations of the welds and the lengths of the welds as per ME-331964. Using Aluminum Foil (Fermi stock 1750-0350) cover all exposed areas of the hydraulics or assembly table that may come in contact with weld spatter resulting in damage. Coat the top of the quarter yokes with Ultra Brand Anti-Spatter (MA-116561/MA-274985) or equivalent.

**Note(s):**  
**Do not apply any Anti-Spatter to the area about to be welded.**

\_\_\_\_\_  
 Technician Date

8.0 Pre-Weld Inspection

X 8.1 Visually inspect the following. Record in the table provided the pressure that is applied to the assembly table by the Enerpac's.

| Inspect  | Pass | Fail |
|--|------|------|
| The cores are correctly positioned on the assembly table   |      |      |
| The coils are correctly positioned within the cores per ME-331964  |      |      |
| The 1/4" Rod (key) is tight within the core  |      |      |
| The leads are all located at the same end of the assembly  |      |      |
| The two 1/4 yokes are aligned at the stamped marks located at the center of the cores within .030"                             |      |      |
| Tie strap is positioned in .500" off of both ends of the 1/4 yokes with any difference equally split on both ends within .030" |      |      |
| There is no exposed copper on any of the coils.  |      |      |
| The insulation of the coils is free of dirt, grease, oil, damage, etc...   |      |      |
| The tie wraps containing the coil serial number is attached to the coils.  |      |      |
| The weld pattern on the assembly is per ME-331964  |      |      |
| All the sensitive items of the assembly table that maybe damaged by weld splatter are covered                                  |      |      |
| The assembly table is under pressure and all the associated clamps are tight   |      |      |
| The pole tips of the 1/4 yokes are in contact with the pole tip rest of the assembly table                                     |      |      |

| Side Enerpac Pressure<br>1500 Lbs. ±100 | Top Enerpac Pressure<br>1100 Lbs. ±100 |
|---|--|
|   |  |

\_\_\_\_\_  
Inspector

\_\_\_\_\_  
Date

X 8.2 Perform an Electrical inspection, record the results below. No clamps are to be used for the following tests other than that associated with the half magnet assembly table.

### Quadrant 1/3 Set

| Core Serial No.                          |                         | Full Coil Serial No.                               |                    |      |      |                  |
|--|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test                          | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                               |                         | 19.0 mΩ to<br>21.0 mΩ                              |                    |      |      |                  |
| LS @ 1 KHz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                                |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                              |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc            |                         | < 5μA  |                    |      |      |                  |
| Hipot Q 1/3 Coil to Q 2/4 Coil @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

### Quadrant 2/4 Set

| Core Serial No.               |                         | Full Coil Serial No.                               |                    |      |      |                  |
|-------------------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test               | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                    |                         | 19.0 mΩ to<br>21.0 mΩ                              |                    |      |      |                  |
| LS @ 1 KHz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                     |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                   |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                 |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

Inspector \_\_\_\_\_

Date \_\_\_\_\_

- X 8.3 Starting at the lead end of the half magnet assembly on the end pack, measure and record in the table below the backleg gap in seven (7) locations. Except for the end pack measurements, all other measurements are to be taken through the holes in the tie strap.

| Location            | Measurement | Limit   | Pass | Fail |
|---------------------|-------------|---------|------|------|
| Lead End End Pack   |             | ≤ .020" |      |      |
| 6"                  |             | ≤ .010" |      |      |
| 18"                 |             | ≤ .010" |      |      |
| 30"                 |             | ≤ .010" |      |      |
| 42"                 |             | ≤ .010" |      |      |
| 54"                 |             | ≤ .010" |      |      |
| Return End End Pack |             | ≤ .020" |      |      |

\_\_\_\_\_  
Inspector

\_\_\_\_\_  
Date

- XX 8.4 Verify that the recorded results in steps 8.1 through 8.3 are in compliance with ME-331964 and ES-331810.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

9.0 Welding Procedure

9.1 Using the Blue Thermo Shield (Frommelt Industries # M1089) or equivalent, cover and seal all areas of the exposed coils or other items that may be damaged by weld spatter and secure the shield into place using Pressure Sensitive Green Tape (Fermi stock 1365-1020) or equivalent.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

**Note(s):**

**At no time during the following steps is the Assembly Fixture to have the pressure released.**

XX 9.2 Visually verify that all the coils and associated items that could be damaged by weld spatter are completely covered/sealed and protected by the Blue Thermo Shield.

\_\_\_\_\_  
Lead Inspector

\_\_\_\_\_  
Date

\_\_\_\_\_  
Crew Chief

\_\_\_\_\_  
Date

9.3 Weld the half magnet assembly in accordance with the 3Q60 Magnet 1/2 Yoke Assembly drawing ME-331964.

\_\_\_\_\_  
Welder

\_\_\_\_\_  
Date

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X 9.4 Record in the table provided the pressure that is applied to the assembly table by the Enerpac's.

| Side Enerpac Pressure<br>1500 Lbs. ±100 | Top Enerpac Pressure<br>1100 Lbs. ±100 |
|---|--|
|   |  |

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

9.5 Remove the Thermo Shield and tape. Release the pressure on the half yoke assembly.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

9.6 Remove the threaded rods and clamping shoes from the assembly table. Using the overhead crane and the appropriate slings, remove the 3Q top clamping fixture from the assembly table.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

9.7 Remove all weld spatter and clean the welded assembly. Stamp the assembly serial number (indicated at the base of this traveler) in 1/2 inch high characters at the lead end of the core on the tie strap.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X 9.8 Visually check the half yoke assembly for excessive weld spatter. Verify that the assembly serial number was stamped properly on the tie strap per ES-331729.

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

9.9 Attach the 1/2 Core Lifting Fixture (ME-351438) to the ball mount tabs. Using the overhead crane, the appropriate slings, lift and move the assembly to the designated area to be supported by wooden 4 X 4's.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

9.10 Using the overhead crane, the 1/2 Core Lifting Fixture (ME-351438) with Restraining Device, the appropriate slings, and the Flip-Rite (Model 8F7.5T or equivalent), roll - over the half yoke assembly so that the pole tips are facing up and support the assembly with wooden 4 X 4's.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

9.11 Slide into position the five (5) Pole Tip Spacers (MA-115391). Position them with respect to the lead end of the assembly at the following locations.

| Location | Installed |
|----------|-----------|
| 6"       |           |
| 18"      |           |
| 30"      |           |
| 42"      |           |
| 54"      |           |

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

X 9.12 Verify that the installation of the pole tip spacers are in accordance with ME-331964.

\_\_\_\_\_  
Lead Person

\_\_\_\_\_  
Date

9.13 Using the overhead crane, the 1/2 Core Lifting Fixture (ME-351438) with Restraining Device, the appropriate slings, and the Flip-Rite (Model 8F7.5T or equivalent), roll - over the half yoke assembly so that the pole tips are facing down and support the assembly with wooden 4 X 4's. Attach the 1/2 Core Lifting Fixture (ME-351438) to the ball mount tabs. Using the overhead crane, the appropriate slings, lift and move the assembly to the inspection table, surface plate, or equivalent, allowing the assembly to come to rest on the parting plane surface. Remove the lifting fixture from the assembly.

\_\_\_\_\_  
Technician(s)

\_\_\_\_\_  
Date

10.0 Post-Weld Inspection

X 10.1 Visually inspect the following.

| Inspect  | Pass | Fail |
|--|------|------|
| The 1/4" Rod (key) is tight within the core  |      |      |
| The leads are all located at the same end of the assembly  |      |      |
| The two 1/4 yokes are aligned at the stamped marks located at the center of the cores within .030"                             |      |      |
| Tie strap is positioned in .500" off of both ends of the 1/4 yokes with any difference equally split on both ends within .030" |      |      |
| There is no exposed copper on any of the coils.  |      |      |
| The insulation of the coils is free of dirt, grease, oil, damage, etc...   |      |      |
| The tie wraps containing the coils serial numbers are attached to the coil.  |      |      |
| The weld pattern on the assembly is per ME-331964.   |      |      |

Inspector \_\_\_\_\_

Date \_\_\_\_\_

X 10.2 Perform an Electrical inspection, record the results below. The half magnet assembly is to be in the free state, no clamps are to be used for the following tests.

### Quadrant 1/3 Set

| Core Serial No.                          |                         | Full Coil Serial No.                               |                    |      |      |                  |
|--|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test                          | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                               |                         | 19.0 mΩ to 21.0 mΩ                                 |                    |      |      |                  |
| LS @ 1 KHz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                                |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                              |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                               |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                            |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc            |                         | < 5μA  |                    |      |      |                  |
| Hipot Q 1/3 Coil to Q 2/4 Coil @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

### Quadrant 2/4 Set

| Core Serial No.               |                         | Full Coil Serial No.                               |                    |      |      |                  |
|-------------------------------|-------------------------|--|--------------------|------|------|------------------|
| Electrical Test               | Equipment Serial Number | Limit  | Actual Measurement | Pass | Fail | Out of Tolerance |
| Resistance                    |                         | 19.0 mΩ to 21.0 mΩ                                 |                    |      |      |                  |
| LS @ 1 KHz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 1 KHz                     |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| LS @ 100 Hz                   |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Q @ 100 Hz                    |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| 100 Volt Ring                 |                         | Reference Test Only<br>Not Subject to Limit Values |                    |      |      |                  |
| Hipot Coils to Core @ 100 Vdc |                         | < 5μA  |                    |      |      |                  |

\_\_\_\_\_  
Inspector

\_\_\_\_\_  
Date

- X 10.4 Starting at the lead end of the half magnet assembly on the end pack, measure and record in the table below the backleg gap in seven (7) locations. Except for the end pack measurements, all other measurements are to be taken through the holes in the tie strap.

| Location            | Measurement | Limit   | Pass | Fail |
|---------------------|-------------|---------|------|------|
| Lead End End Pack   |             | ≤ .020" |      |      |
| 6"                  |             | ≤ .010" |      |      |
| 18"                 |             | ≤ .010" |      |      |
| 30"                 |             | ≤ .010" |      |      |
| 42"                 |             | ≤ .010" |      |      |
| 54"                 |             | ≤ .010" |      |      |
| Return End End Pack |             | ≤ .020" |      |      |
| Total               |             |         |      |      |
| Divided by          | 7           |         |      |      |
| Average gap         |             | < .005" |      |      |

Inspector \_\_\_\_\_

Date \_\_\_\_\_

- XX 10.5 Verify that the recorded results in steps 10.1 through 10.4 are in compliance with ME-331964 and ES-331810.

Lead Inspector \_\_\_\_\_

Date \_\_\_\_\_

Crew Chief \_\_\_\_\_

Date \_\_\_\_\_

- 10.6 Using the overhead crane, the Half Magnet Lifting Fixture (ME-351438) and the appropriate slings, move the half magnet assembly to the staging area and place on two (2) wooden 4 X 4's or on the 3Q60/120 Magnet Assembly Table (ME-115479).

Technician(s) \_\_\_\_\_

Date \_\_\_\_\_

- 10.7 Cover the half magnet assembly with green Herculite (Fermi stock 1740-0100).

Technician(s) \_\_\_\_\_

Date \_\_\_\_\_

11.0 Production Complete

XXX 11.1 Process Engineering verify that the 3Q60 Half Magnet Assembly Traveler (5520-TR-333292) is accurate and complete. This shall include a review of all steps to ensure that all operations have been completed and signed off. Ensure that all Discrepancy Reports, Reports, Repair/Rework Forms, Deviation Index and dispositions have been reviewed by the Responsible Authority for conformance before being approved.

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Process Engineering/Designee

\_\_\_\_\_  
Date

XXX 11.2 Assembly verify that the 3Q60 Half Magnet Assembly Traveler (5520-TR-333292) is accurate and complete. This shall include a review of all steps to ensure that all operations have been completed and signed off. Ensure that all Discrepancy Reports, Nonconformance Reports, Repair/Rework Forms, Deviation Index and dispositions have been reviewed by the Responsible Authority for conformance before being approved.

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Assembly/Designee

\_\_\_\_\_  
Date

12.0 Attach the Process Engineering "Okay to Proceed" Tag to the half magnet assembly.

\_\_\_\_\_  
Process Engineering/Designee

\_\_\_\_\_  
Date

13.0 Proceed to the next major assembly operation - 3Q60 Magnet Assembly/Manifolding Traveler (5520-TR-333293).