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1. Preparation

1-1 Overview

The procedure is composed of a **first fit** which is performed **once per axis (X, Y and Z)**, and **refit(s)** which is (are) performed **as many times as necessary** until the results fit specification. (typically, a not previously calibrated system requires one or two refits per axis).

It is recommended that you perform first the fit and then the refits **completely for one axis first** before going to the next axis as shown in the flow chart. This procedure will prevent you from mixing up raw data files.

Note

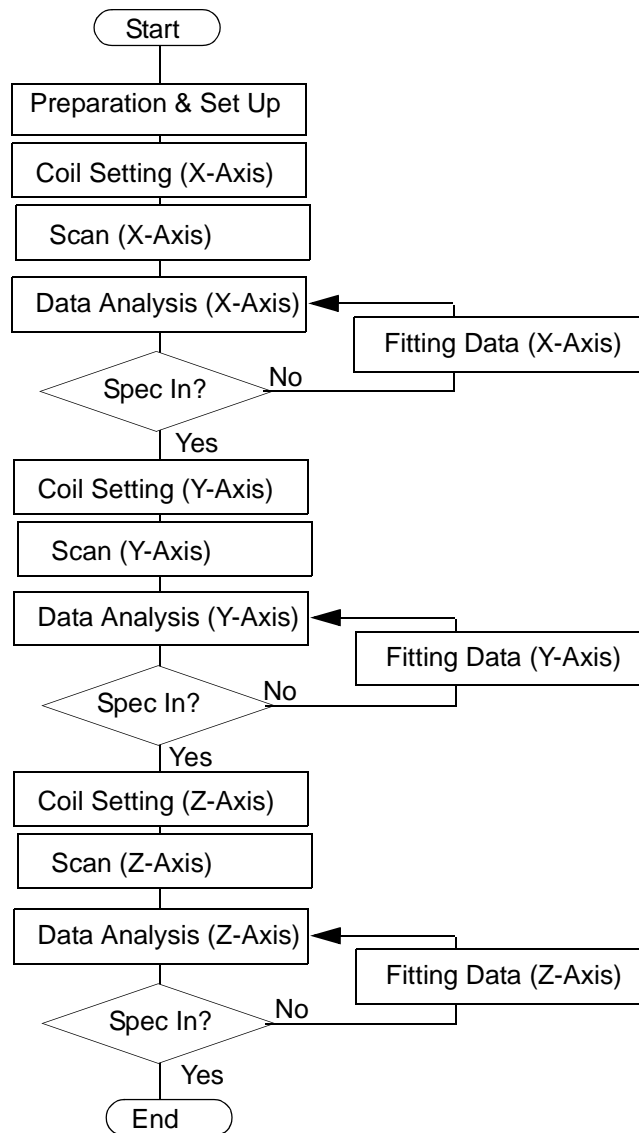
Center frequency should be centered before starting calibration.
Otherwise, bad calibration result will be obtained.

1-2 Required Tool

TABLE 1-1
REQUIRED TOOL

Item	Part Name	Part Number	FRU	Qty
1	Two Grafidy Coil with Case	2260785	2	1
	Case	2260780	2	1
	Grafidy Coil	2148508	2	2
	Grafidy Coil Holder	2148514	2	2
	Bottle Phantom	Z9807RP	2	2
	Grafidy Box	2148509	2	1
2	Attenuator (30 dB)	P9329VE	2	1
3	Attenuator (Variable) not used	P9309UE	2	1
4	Cable Assy (2 m)	Z9807PT	2	3
5	Adaptor (NJ-BNCJ)	Z9807DB	2	1
6	Adaptor (U12) not used	U1027FD	2	2
7	Pin Diode SW	46-288240G1	2	1
8	NMR Tool Grafidy II (Driver Box)	46-271472G1	N	1
9	Cable (10 m)	46-282803G14	2	4

1-3 Flowchart



GRAFIDY FLOWCHART
ILLUSTRATION 1

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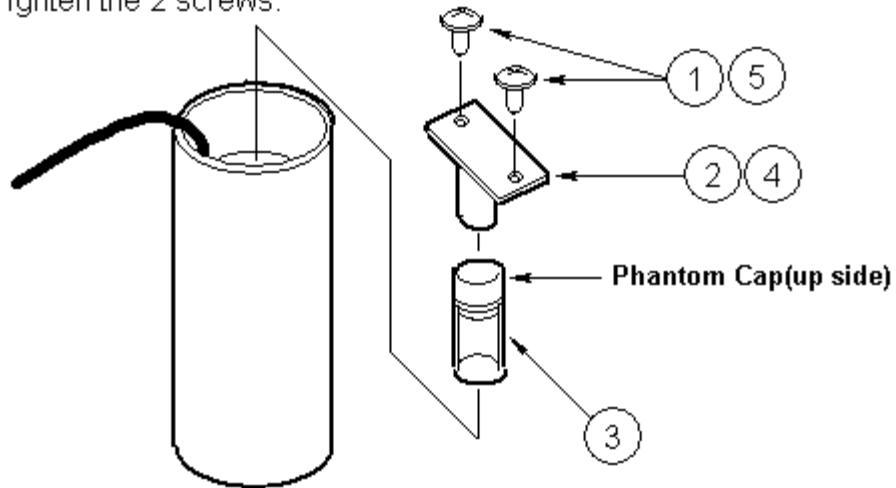
2. Setup

2-1 Hardware Setup

1. Set the phantom according to the following illustration.

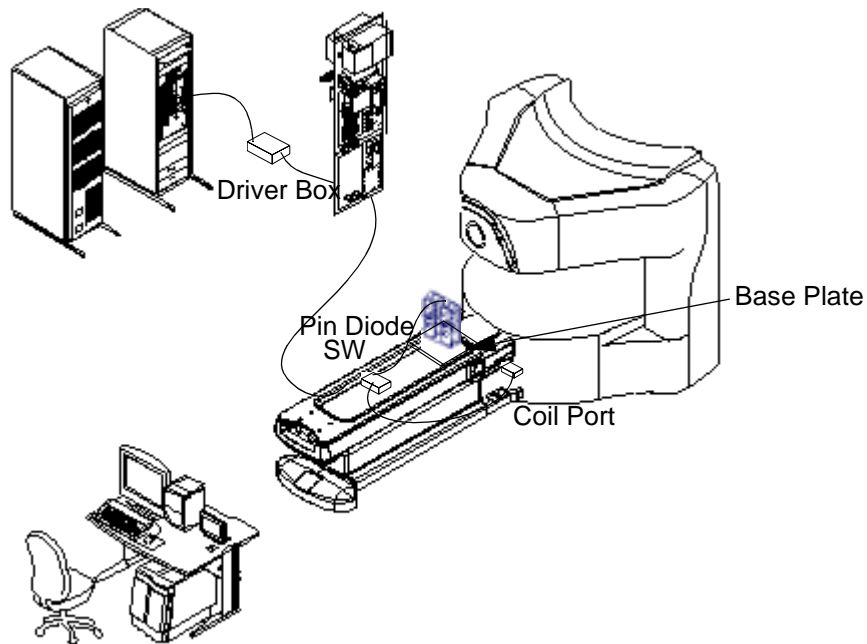
Phantom setup

1. Remove 2 screws from the Grafidy Coil Assy.
2. Remove the Cap.
3. Insert the Bottle Phantom into the Assy. Be sure that the Phantom white Cap is positioned up.
4. Install the Cap to the Grafidy Coil Assy.
5. Tighten the 2 screws.



**HARDWARE SETUP
ILLUSTRATION 2**

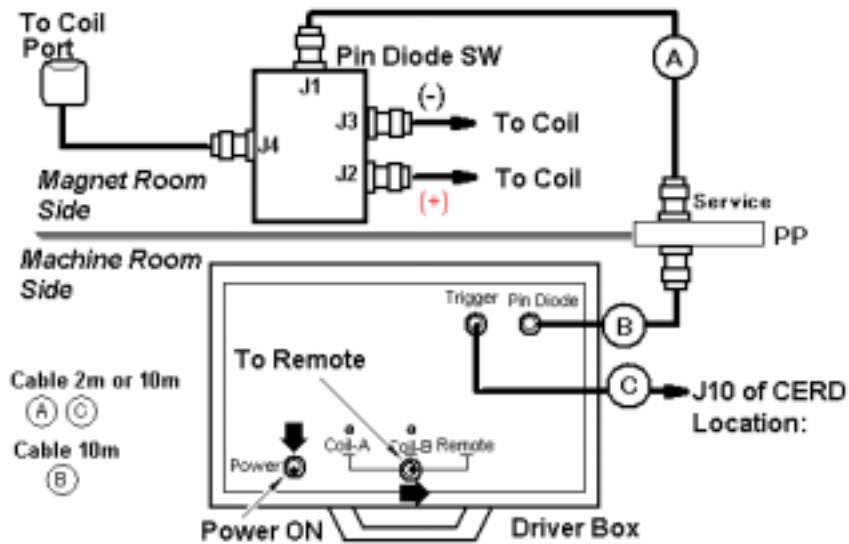
2. Set the hardware according to the following illustration.
See illustration 4 for detail connection.



**HARDWARE SETUP
ILLUSTRATION 3**

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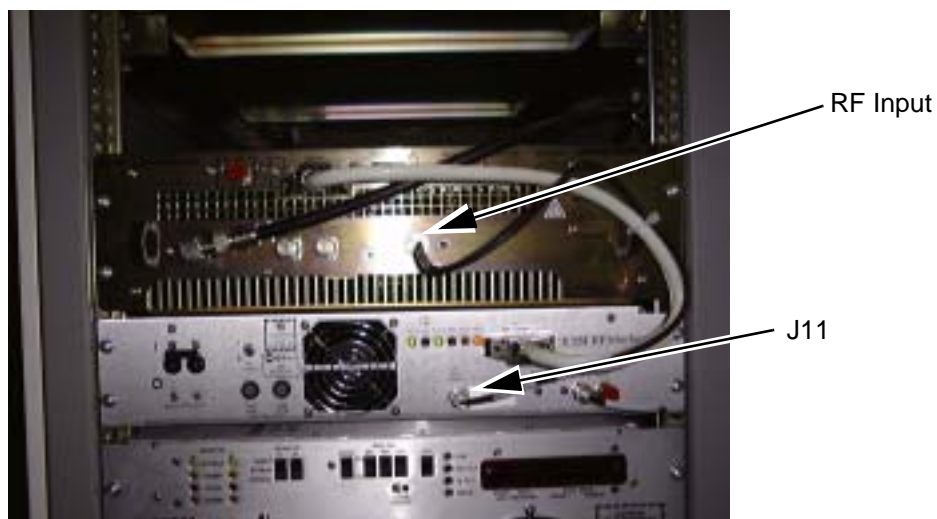
2-1 Hardware Setup



HARDWARE SETUP (DETAIL)
ILLUSTRATION 4

3. Connect the 30 db attenuation in between RFI(J11) and RF Amp(RF Input).

1. Disconnect cable from J11 of RFI.
2. Connect 2m male connector- male connector cable to J11.
3. Connect two 15dB attenuators between cables.

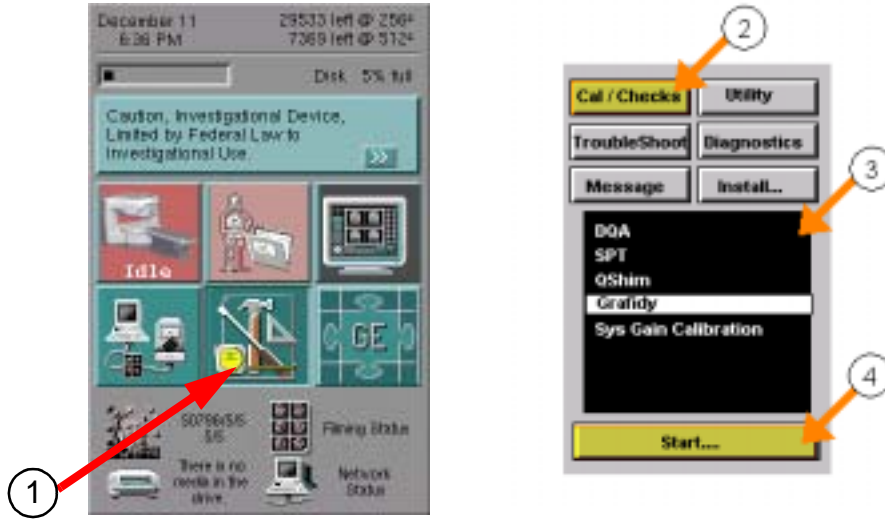


RFI AND RF AMP
ILLUSTRATION 5

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2-2 Start Grafidy Program

1. Select [**Service Desktop**] Icon.
2. Select [**Cal/Checks**].
3. Select [**Grafidy**].
4. Select [**Start...**].



**START GRAFIDY PROGRAM
ILLUSTRATION 6**

5. If Digital Grafidy is not performed before, enter as follows.
If Digital Grafidy is performed before, do not perform the following.

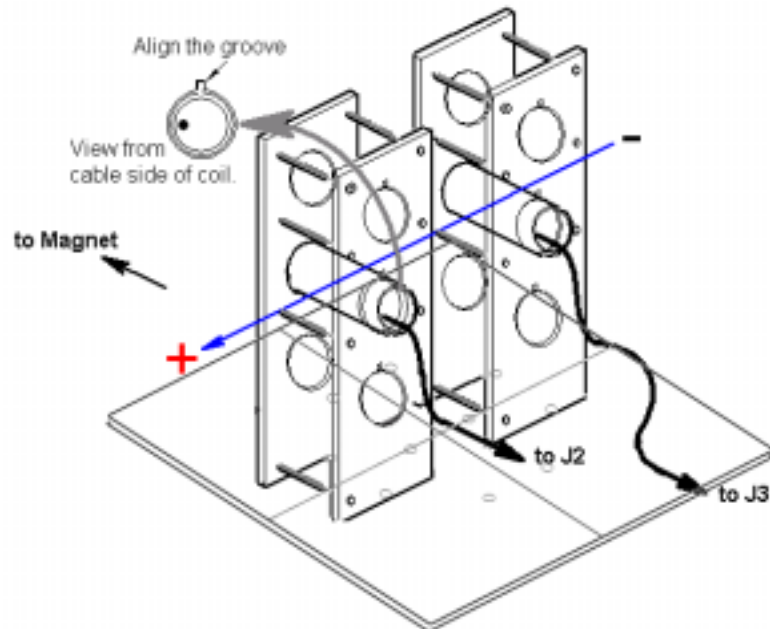
Output/Prompts	Input/Comments
GRAFIDY - Eddy Current Analysis	
1 - Read and Process Raw Data	
2 - Fit	
3 - Initialize Parameters	
4 - System Status	
S or Q - Exit to Tools Menu	
Enter Choice: (0..4) [1] : 3 [Return]	3 [Return]
Enter axis to clear (0=x,1=y,2=z,3=All): (0..3) [0] : 3	3 [Return]
Initialize B0 parameters ? (Y,N) [N] : y	y [Return]
Initialize linear long time constants parameters?(Y,N)[N]: y	y [Return]
Clear very long linear parameters?(Y,N)[N]: N	N [Return]
Clear very long B0 parameters?(Y,N)[N]: N	N [Return]
 New WARP coefficients created.	

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3. X-Axis Calibration

3-1 Coil Setting (X-Axis)

1. Set coil as following illustration.



X-AXIS COIL SETTING
ILLUSTRATION 7

2. Align the base plate to the positioning light beam and send it to the magnet center.

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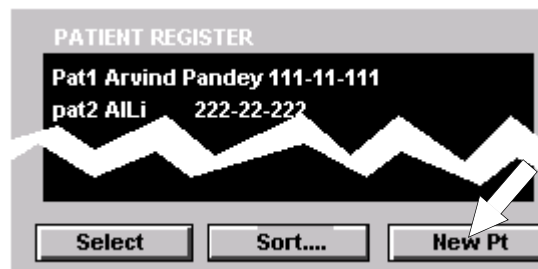
3-2 Scan (X-Axis)

1. Select [Scan Desktop] Icon.



SCAN DESKTOP
ILLUSTRATION 8

2. Click [New Patient] button in "PATIENT REGISTER".



NEW PATIENT
ILLUSTRATION 9

3. Input the following data on "patient information".

Patient Data	: geservice
Patient Name	: grafidy
Weight	: 50 (Kg)

PATIENT INFORMATION

Patient ID

Patient Name

Birth Date Age Sex

Weight (Lb) (Kg)

Rad Refer

Req Number Stastus

Description

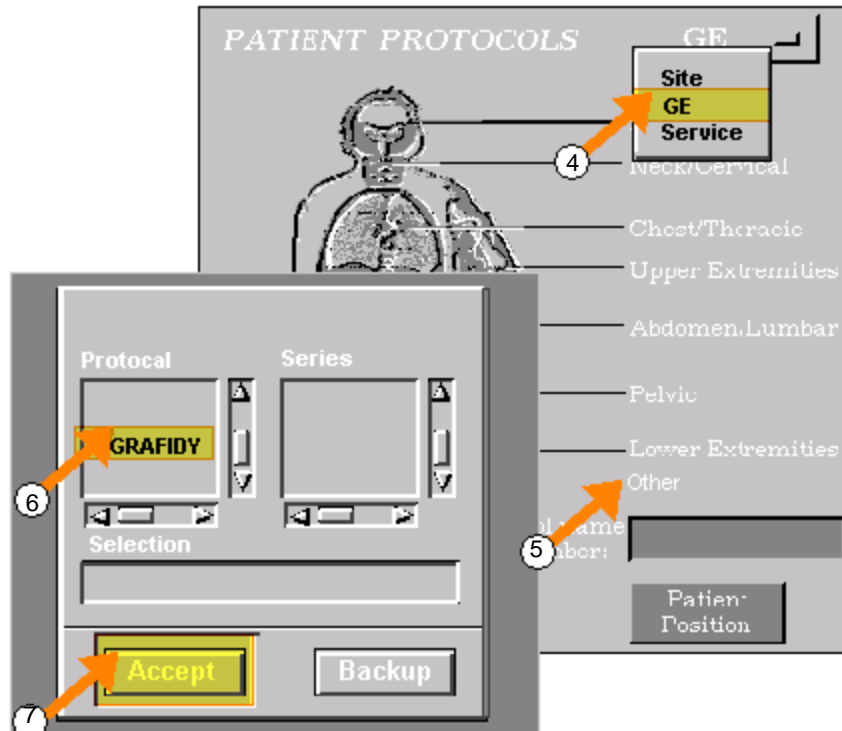
History

PATIENT INFORMATION
ILLUSTRATION 10

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3-2 Scan (X-Axis) (continued)

4. Choose **GE**.
5. Click [**Other**]. Protocols window comes Up.
6. Select [**GRAFIDY**] from protocol.
7. Select [**Accept**]. .



PATIENT PROTOCOLS
ILLUSTRATION 11

8. Select **Save Series**.

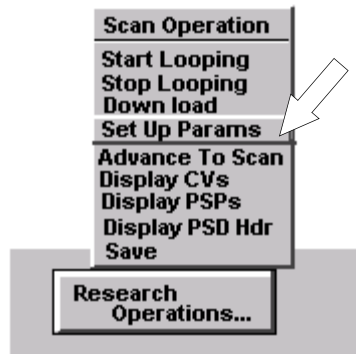


SAVE SERIES
ILLUSTRATION 12

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3-2 Scan (X-Axis) (continued)

9. Click **[Research Operation]** and select **[Set Up Program]** .



SET UP PROGRAMS
ILLUSTRATION 13

10. Set the following parameters. (Hit Return Key after entering the each parameter.)

```

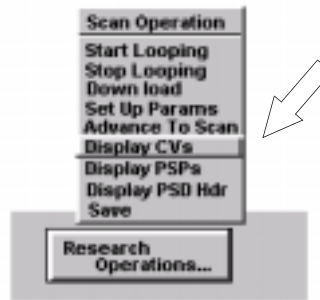
Number of Frame = 4 [Return]
Window one
  frame 1           frame 0 [Return] (2 → 0)
Window two
  frame 3 [Return] frame 0 [Return] (2 → 0)
    
```

MODIFY PARAMETER
ILLUSTRATION 14

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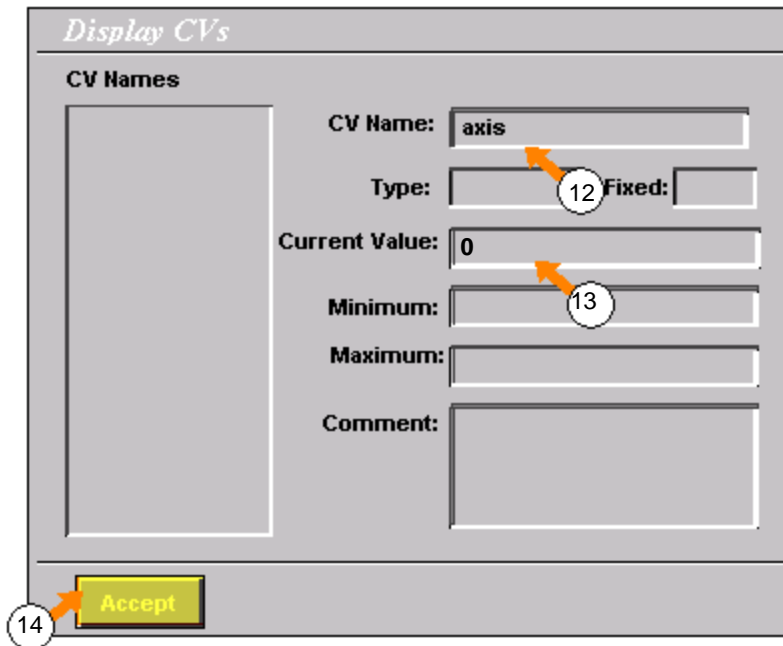
3-2 Scan (X-Axis) (continued)

11. Click **[Research Operation]** and select **[Display CVs]**.



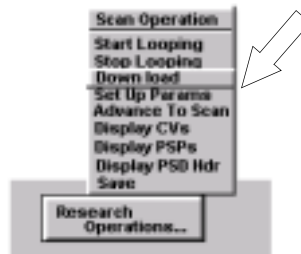
DISPLAY CVS
ILLUSTRATION 15

- 12. Input CV name as 'axis' and hit **[Return]** key.
- 13. Enter '0' as New Value and hit **[Return]** key. (0 means X-Axis).
- 14. Press **[Accept]** button. .



MODIFY CVS
ILLUSTRATION 16

15. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 17

Rev 6

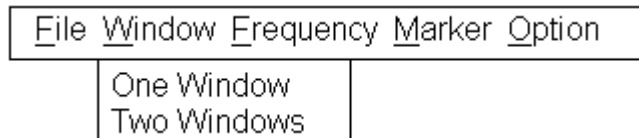
3-2 Scan (X-Axis) (continued)

16. Select [Manual Prescan].



MANUAL PRE-SCAN
ILLUSTRATION 18

17. Select "Window / Two Windows".



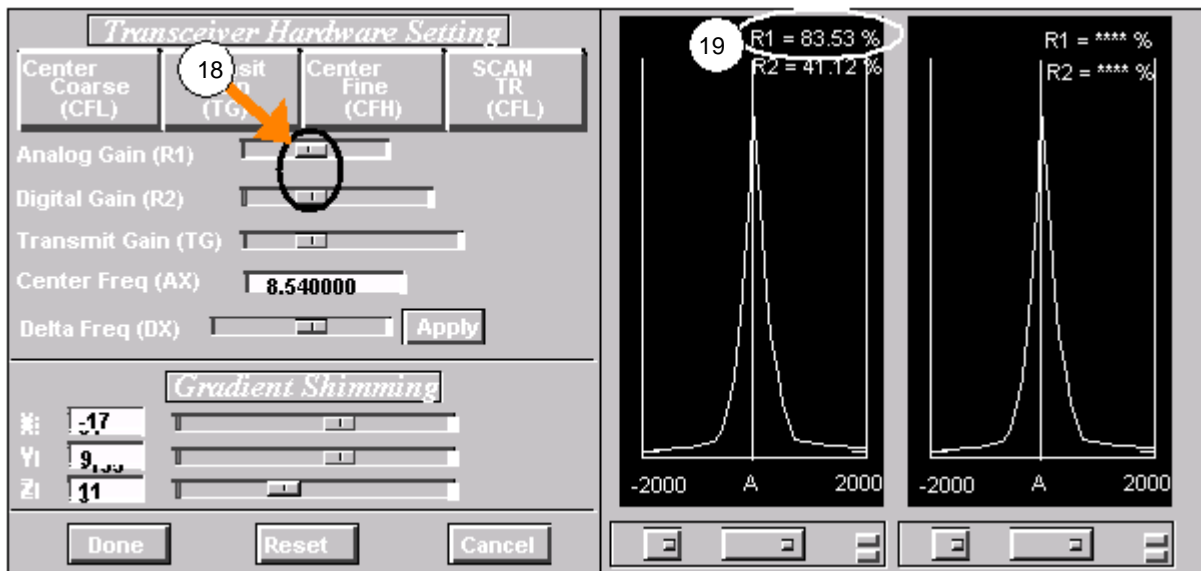
TWO WINDOWS
ILLUSTRATION 19

18. Set **R1 = 12** and **R2 = 13**.

If $R1(\%) \geq 100\%$, decrease R1 so as $R1(\%)$ becomes smaller than 100% (e.g. 80%).

Note: If $R1(\%)$ is oscillating between 2 numbers, consider the higher value.

19. Adjust TG so as to get the peak value for $R1(\%)$.



MANUAL PRESCAN
ILLUSTRATION 20

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3-2 Scan (X-Axis) (continued)

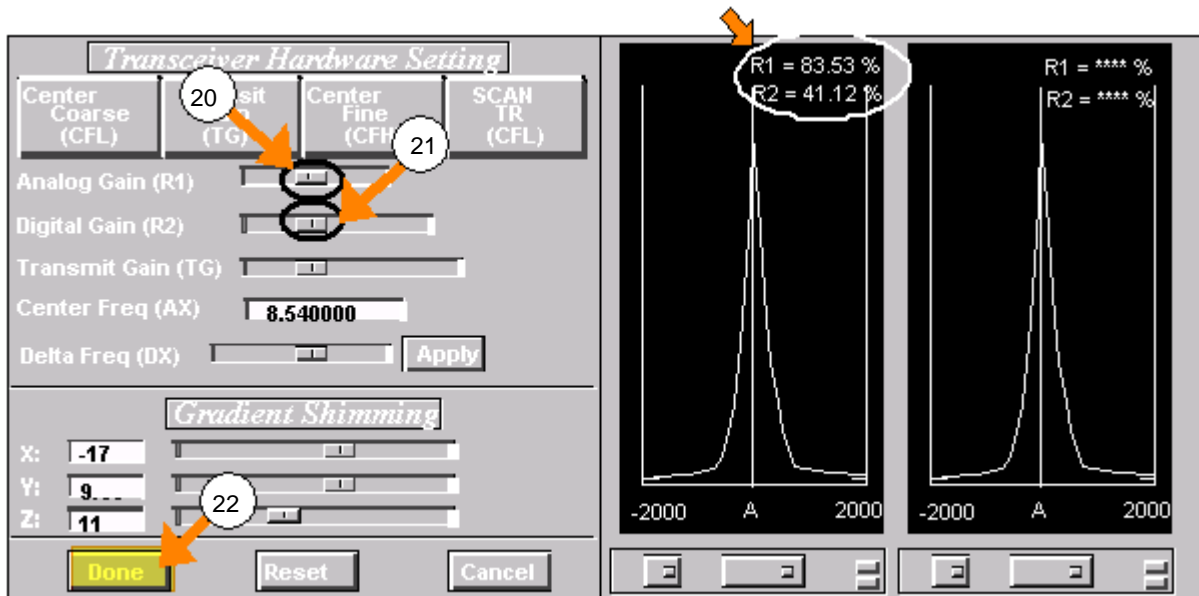
20. Adjust the R1 so as R1(%) will be approximately **40% ± 10%**.

Note: If R1(%) is oscillating between 2 numbers, consider the higher value.

21. Adjust the R2 so as R2(%) will be approximately **40% ± 10%**.

Note: If R2(%) is oscillating between 2 numbers, consider the higher value.

22. Click [**Done**].



MANUAL PRESCAN
ILLUSTRATION 21

23. Select [**Scan**] button



SCAN
ILLUSTRATION 22

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3-3 Data Analysis (X-Axis)

1. Click [Service Desktop] icon.



SERVICE DESKTOP
ILLUSTRATION 23

2. Enter as follows..

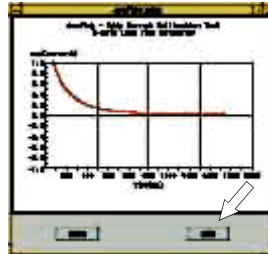
Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : Last run number used was : 2048 Please enter runfile number [2048] : Coils Along X-axis Coil A Position: -9.786242 cm Coil B Position: 9.919792 cm </pre>	<pre> [Return] [Return] </pre>

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3-3 Data Analysis (X-Axis) (continued)

3. Check that the obtained data satisfies the specification.
 - If the data is within specification, input the data into the Data Sheet. Then go to step6.
 - If the data is out of specification, go to step5.

 - a. Check the linear Eddy Current Performance data. Then Click [Exit] button of the graph.



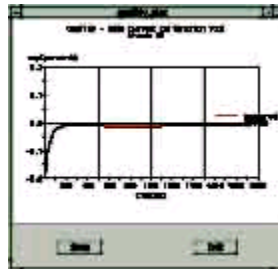
LINEAR DATA
ILLUSTRATION 24

Linear Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
1.067	0.911	0.447

Specification

Linear Eddy Current Performance(Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.1%	≤ 0.1%	≤ 0.1%

- b. Check the B0 Eddy Current Performance data. Then Click [Exit] button of the graph.



B0 DATA
ILLUSTRATION 25

B0 Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
-0.450	-0.310	0.170

Specification

B0 Eddy Current Performance (Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.15%	≤ 0.15%	≤ 0.15%

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3-4 Fitting Data (X-Axis)

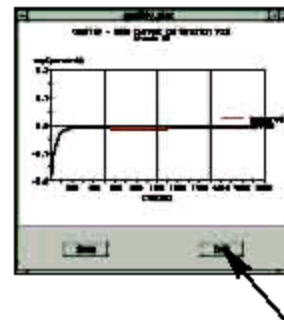
1. Enter the data as follows to update the X Fit Linear Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<p>2 [Return]</p> <p>[Return]</p>

2. Graph and Fit Linear Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long TC Linear Fit Results: X -> X
tau[1]= 13.86 ms   alpha[1]=0.04 percent
tau[2]= 52.14 ms   alpha[2]=0.35 percent
tau[3]= 170.95 ms  alpha[3]=0.59 percent
tau[4]=1091.15 ms  alpha[4]=0.41 percent
                    
```



FIT LINEAR DATA
ILLUSTRATION 26

3. Enter as follows..

Output/Prompts	Input/Comments
Do you want to plot linear data? (Y,N) [N] : y	y [Return]
Do you want to accept new fit parameters ? (Y,N) [N] : y	y [Return]
New WARP coefficients created.	

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3-4 Fitting Data (X-Axis) (continued)

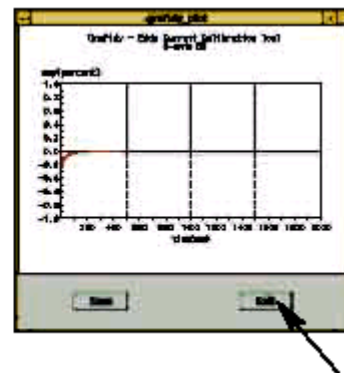
4. Enter the data as follows to update the X Fit B0 Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<p>2 [Return]</p> <p>[Return]</p>

5. Graph and Fit B0 Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long Time-Constant B0 Fit Results:
tau[1]= 15.92 ms   alpha[1]= 0.01 percent
tau[2]= 36.11 ms  alpha[2]=-0.96 percent
tau[3]= 119.56 ms alpha[3]= 0.38 percent
tau[4]= 451.75 ms alpha[4]= 0.14 percent
                    
```



FIT B0 DATA
ILLUSTRATION 27

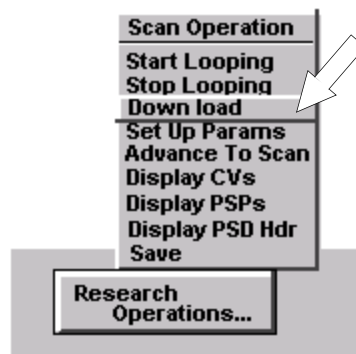
6. Enter as follows..

Output/Prompts	Input/Comments
<pre> Do you want to plot B0 data? (Y,N) [N] : y Do you want to accept new fit parameters ? (Y,N) [N] : y New WARP coefficients created. </pre>	<p>y [Return]</p> <p>y [Return]</p>

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3-4 Fitting Data (X-Axis) (continued)

7. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 28

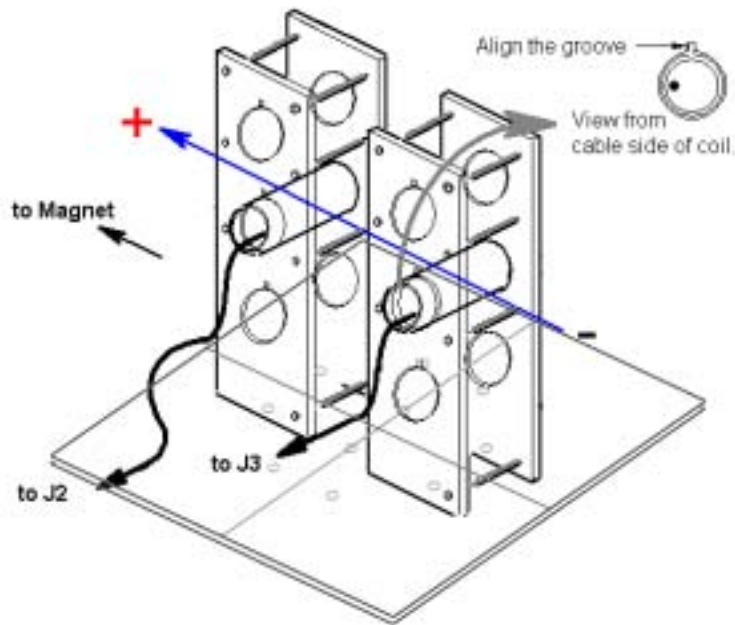
8. Go back to the beginning of the step3.

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4. Y-Axis Calibration

4-1 Coil Setting (Y-Axis)

1. Set coil as following illustration.



Y-AXIS COIL SETTING
ILLUSTRATION 29

2. Align the base plate to the positioning light beam and send it to the magnet center.

Rev 6

4-2 Scan (Y-Axis)

1. Select Scan Icon.



SCAN DESKTOP
ILLUSTRATION 30

2. Click [New Patient] button in "PATIENT REGISTER".



NEW PATIENT
ILLUSTRATION 31

3. Input the following data on "patient information".

Patient Data	: geservice
Patient Name	: grafidy
Weight	: 50 (Kg)

PATIENT INFORMATION

Patient ID

Patient Name

Birth Date Age Sex

Weight (Lb) (Kg)

Rad Refer

Req Number Stastus

Description

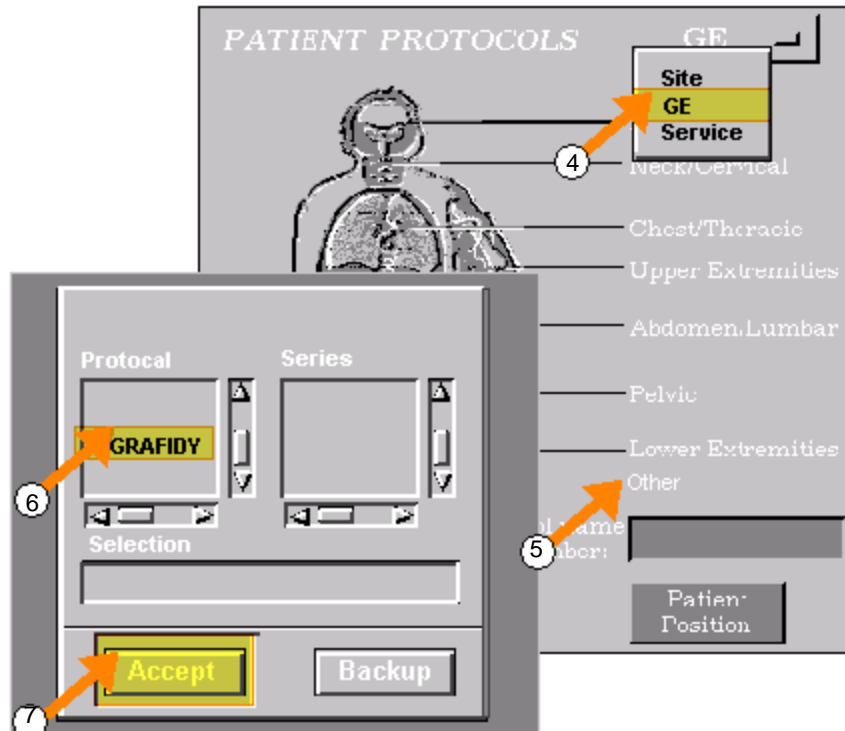
History

PATIENT INFORMATION
ILLUSTRATION 32

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4-2 Scan (Y-Axis) (continued)

4. Choose **GE**.
5. Click [**Other**]. Protocols window comes Up.
6. Select [**GRAFIDY**] from protocol.
7. Select [**Accept**]. .



PATIENT PROTOCOLS
ILLUSTRATION 33

8. Select **Save Series**.

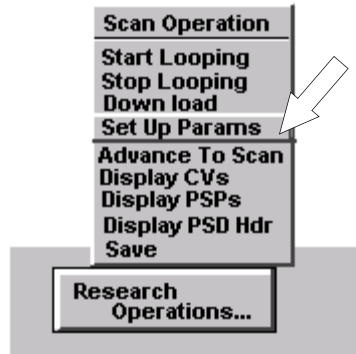


SAVE SERIES
ILLUSTRATION 34

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4-2 Scan (Y-Axis) (continued)

9. Click **[Research Operation]** and select **[Set Up Program]** .



SET UP PROGRAMS

ILLUSTRATION 35

10. Set the following parameters. (Hit Return Key after entering the each parameter.)

Number of Frame = **4** **[Return]**
 Window one
 frame 1 frame **0** **[Return]** (2 → 0)
 Window two
 frame **3** **[Return]** frame **0** **[Return]** (2 → 0)

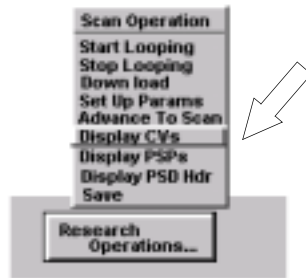
MODIFY PARAMETER

ILLUSTRATION 36

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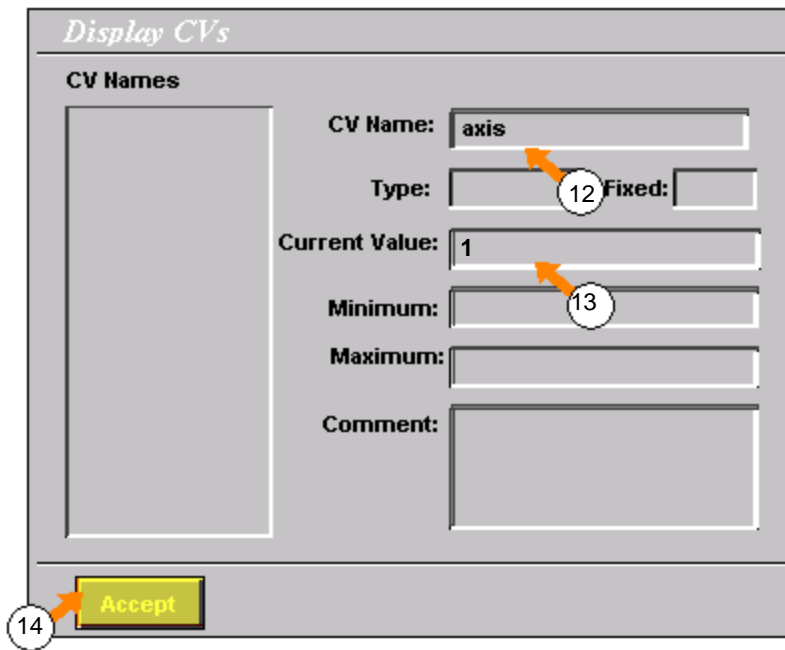
4-2 Scan (Y-Axis) (continued)

11. Click **[Research Operation]** and select **[Display CVs]**..



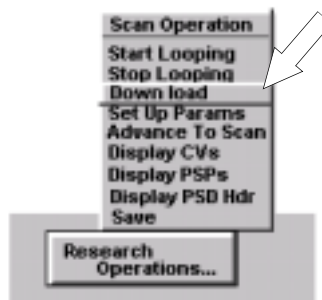
DISPLAY CVS
ILLUSTRATION 37

- 12. Input CV name as 'axis' and hit **[Return]** key.
- 13. Enter '1' as New Value and hit **[Return]** key. (1 means Y-Axis).
- 14. Press **[Accept]** button. .



MODIFY CVS
ILLUSTRATION 38

15. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 39

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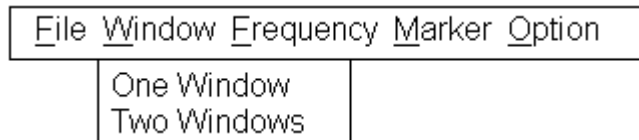
4-2 Scan (Y-Axis) (continued)

16. Select [Manual Prescan].



MANUAL PRESCAN
ILLUSTRATION 40

17. Select "Window / Two Windows".



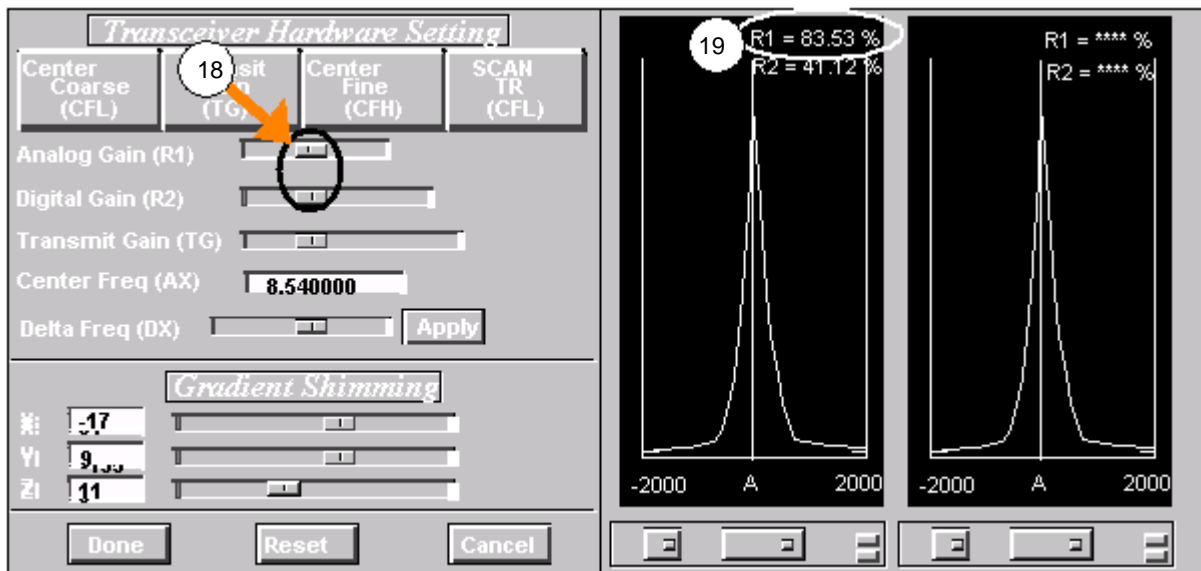
TWO WINDOWS
ILLUSTRATION 41

18. Set **R1 = 12** and **R2 = 13**.

If $R1(\%) \geq 100\%$, decrease R1 so as $R1(\%)$ becomes smaller than 100% (e.g. 80%).

Note: If $R1(\%)$ is oscillating between 2 numbers, consider the higher value.

19. Adjust TG so as to get the peak value for $R1(\%)$.



MANUAL PRESCAN
ILLUSTRATION 42

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4-2 Scan (Y-Axis) (continued)

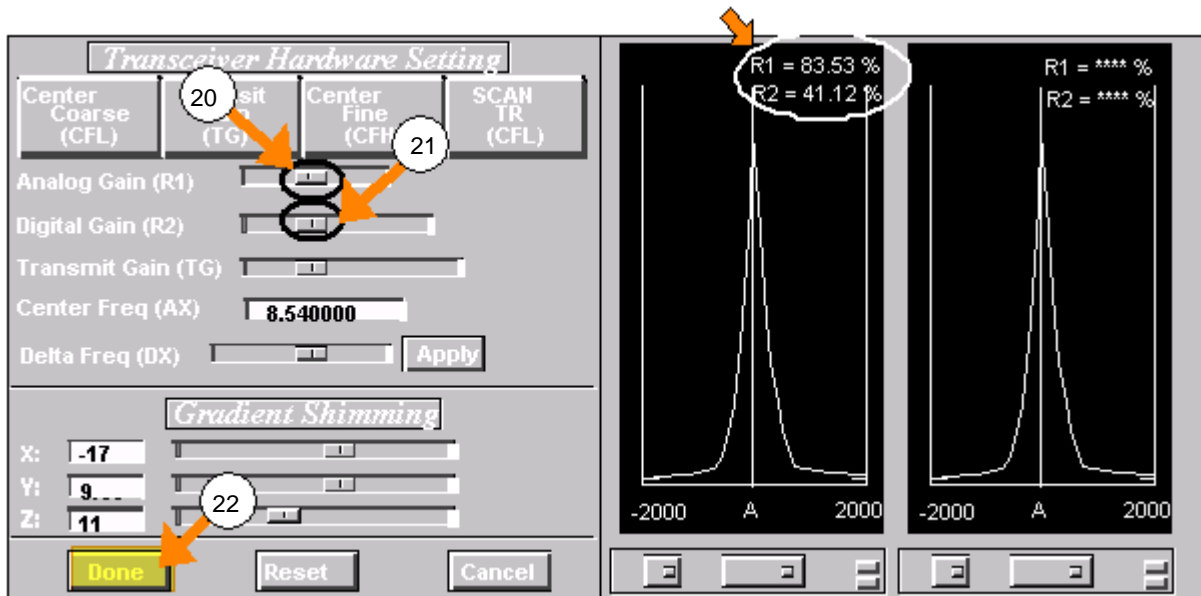
20. Adjust the R1 so as R1(%) will be approximately **40% ± 10%**.

Note: If R1(%) is oscillating between 2 numbers, consider the higher value.

21. Adjust the R2 so as R2(%) will be approximately **40% ± 10%**.

Note: If R2(%) is oscillating between 2 numbers, consider the higher value.

22. Click [**Done**].



MANUAL PRESCAN
ILLUSTRATION 43

23. Select [Scan] button



SCAN
ILLUSTRATION 44

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4-3 Data Analysis

1. Click [Service Desktop] icon.



SERVICE DESKTOP
ILLUSTRATION 45

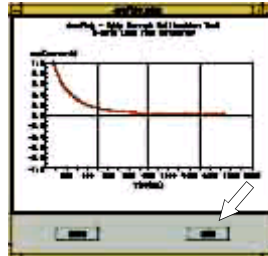
2. Enter as follows..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : Last run number used was : 2048 Please enter runfile number [2048] : Coils Along X-axis Coil A Position: -9.786242 cm Coil B Position: 9.919792 cm </pre>	<pre> [Return] [Return] </pre>

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4-3 Data Analysis (continued)

3. Check that the obtained data satisfies the specification.
 - If the data is within specification, input the data into the Data Sheet. Then go to step6.
 - If the data is out of specification, go to step5.
- a. Check the linear Eddy Current Performance data. Then Click [Exit] button of the graph.



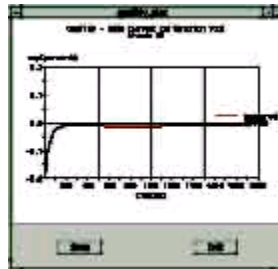
LINEAR DATA
ILLUSTRATION 46

Linear Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
1.067	0.911	0.447

Specification

Linear Eddy Current Performance(Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.1%	≤ 0.1%	≤ 0.1%

- b. Check the B0 Eddy Current Performance data. Then Click [Exit] button of the graph.



B0 DATA
ILLUSTRATION 47

B0 Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
-0.450	-0.310	0.170

Specification

B0 Eddy Current Performance (Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.15%	≤ 0.15%	≤ 0.15%

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4-4 Fitting Data (Y-Axis)

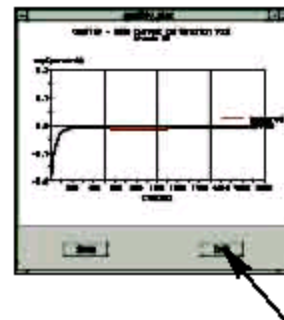
1. Enter the data as follows to update the X Fit Linear Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<p>2 [Return]</p> <p>[Return]</p>

2. Graph and Fit Linear Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long TC Linear Fit Results: X -> X
tau[1]= 13.86 ms   alpha[1]=0.04 percent
tau[2]= 52.14 ms   alpha[2]=0.35 percent
tau[3]= 170.95 ms  alpha[3]=0.59 percent
tau[4]=1091.15 ms  alpha[4]=0.41 percent
                    
```



FIT LINEAR DATA
ILLUSTRATION 48

3. Enter as follows..

Output/Prompts	Input/Comments
<pre> Do you want to plot linear data? (Y,N) [N] : y </pre>	<p>y [Return]</p>
<pre> Do you want to accept new fit parameters ? (Y,N) [N] : y New WARP coefficients created. </pre>	<p>y [Return]</p>

Rev 6

4-4 Fitting Data (Y-Axis) (continued)

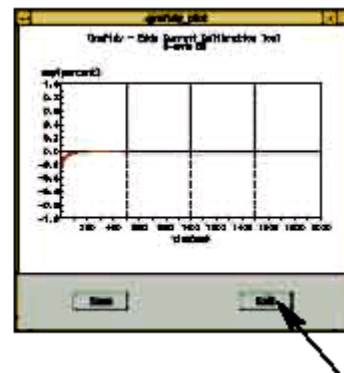
4. Enter the data as follows to update the X Fit B0 Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<p>2 [Return]</p> <p>[Return]</p>

5. Graph and Fit B0 Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long Time-Constant B0 Fit Results:
tau[1]= 15.92 ms   alpha[1]= 0.01 percent
tau[2]= 36.11 ms   alpha[2]=-0.96 percent
tau[3]= 119.56 ms  alpha[3]= 0.38 percent
tau[4]= 451.75 ms  alpha[4]= 0.14 percent
                    
```



FIT B0 DATA
ILLUSTRATION 49

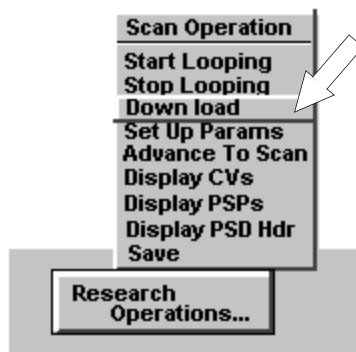
6. Enter as follows..

Output/Prompts	Input/Comments
<pre> Do you want to plot B0 data? (Y,N) [N] : y Do you want to accept new fit parameters ? (Y,N) [N] : y New WARP coefficients created. </pre>	<p>y [Return]</p> <p>y [Return]</p>

Rev 6

4-4 Fitting Data (Y-Axis) (continued)

7. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 50

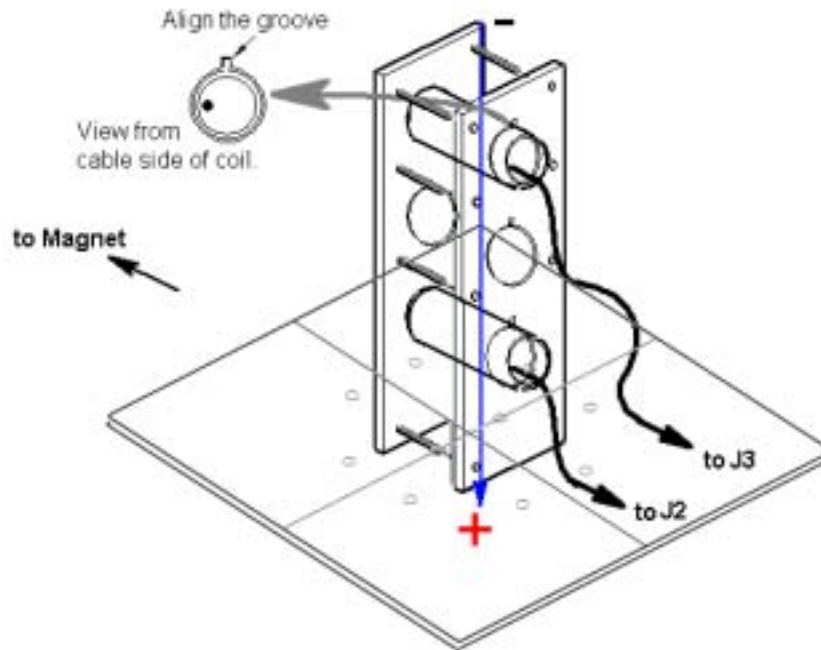
8. Go back to the beginning of the step3.

Rev 6

5. Z-Axis Calibration

5-1 Coil Setting (Z-Axis)

1. Set coil as following illustration.



Z-AXIS COIL SETTING
ILLUSTRATION 51

2. Align the base plate to the positioning light beam and send it to the magnet center.

Rev 6

5-2 Scan (Z-Axis)

1. Select Scan Icon.



SCAN DESKTOP
ILLUSTRATION 52

2. Click [New Patient] button in "PATIENT REGISTER".



NEW PATIENT
ILLUSTRATION 53

3. Input the following data on "patient information".

Patient Data	: geservice
Patient Name	: grafidy
Weight	: 50 (Kg)

PATIENT INFORMATION

Patient ID

Patient Name

Birth Date Age Sex

Weight (Lb) (Kg)

Rad Refer

Req Number Stastus

Description

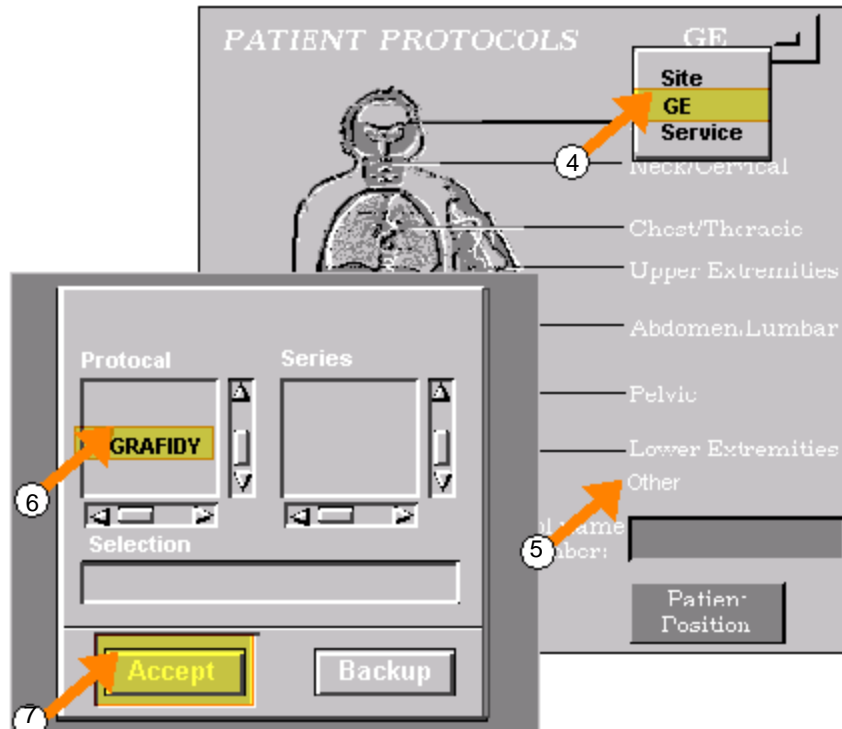
History

PATIENT INFORMATION
ILLUSTRATION 54

Rev 0

5-2 Scan (Z-Axis) (continued)

4. Choose **GE**.
5. Click [**Other**]. Protocols window comes Up.
6. Select [**GRAFIDY**] from protocol.
7. Select [**Accept**]. .



PATIENT PROTOCOLS
ILLUSTRATION 55

8. Select **Save Series**.

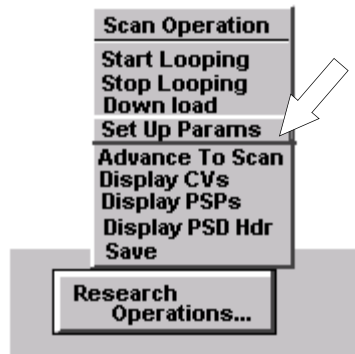


SAVE SERIES
ILLUSTRATION 56

Rev 6

5-2 Scan (Z-Axis) (continued)

9. Click **[Research Operation]** and select **[Set Up Program]** .



SET UP PROGRAMS

ILLUSTRATION 57

10. Set the following parameters. (Hit Return Key after entering the each parameter.)

Number of Frame = **4** [Return]
 Window one
 frame 1 frame **0** [Return] (2 → 0)
 Window two
 frame **3** [Return] frame **0** [Return] (2 → 0)

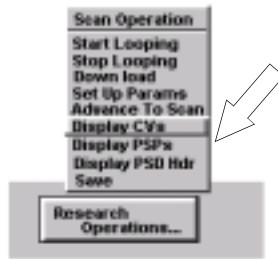
MODIFY PARAMETER

ILLUSTRATION 58

Rev 6

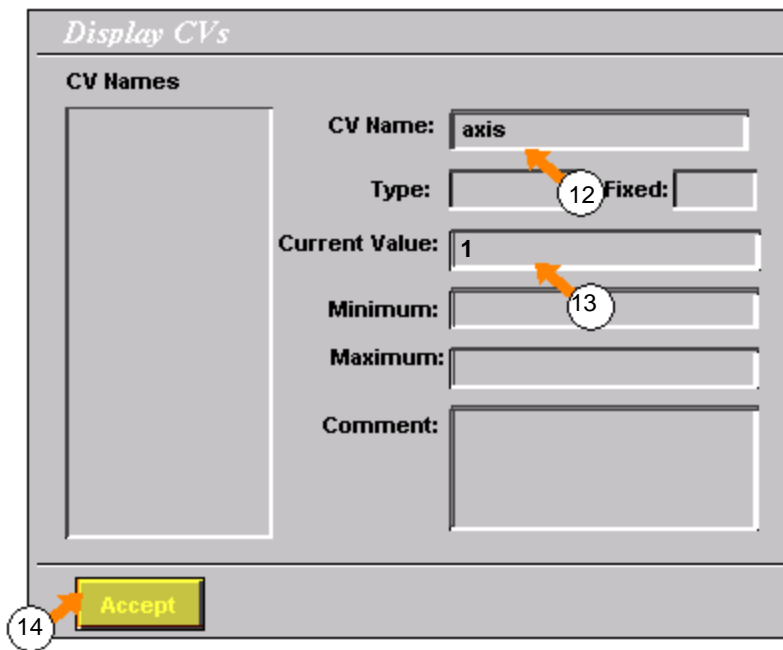
5-2 Scan (Z-Axis) (continued)

11. Click **[Research Operation]** and select **[Display CVs]**.



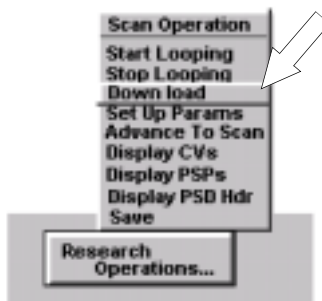
DISPLAY CVS
ILLUSTRATION 59

- 12. Input CV name as 'axis' and hit **[Return]** key.
- 13. Enter '2' as New Value and hit **[Return]** key. (2 means Z-Axis).
- 14. Press **[Accept]** button. .



MODIFY CVS
ILLUSTRATION 60

15. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 61

Rev 6

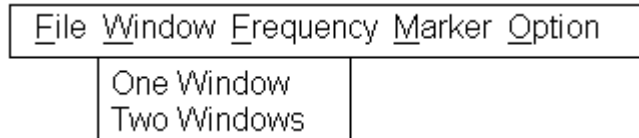
5-2 Scan (Z-Axis) (continued)

16. Select [Manual Prescan].



MANUAL PRESCAN
ILLUSTRATION 62

17. Select "Window / Two Windows".



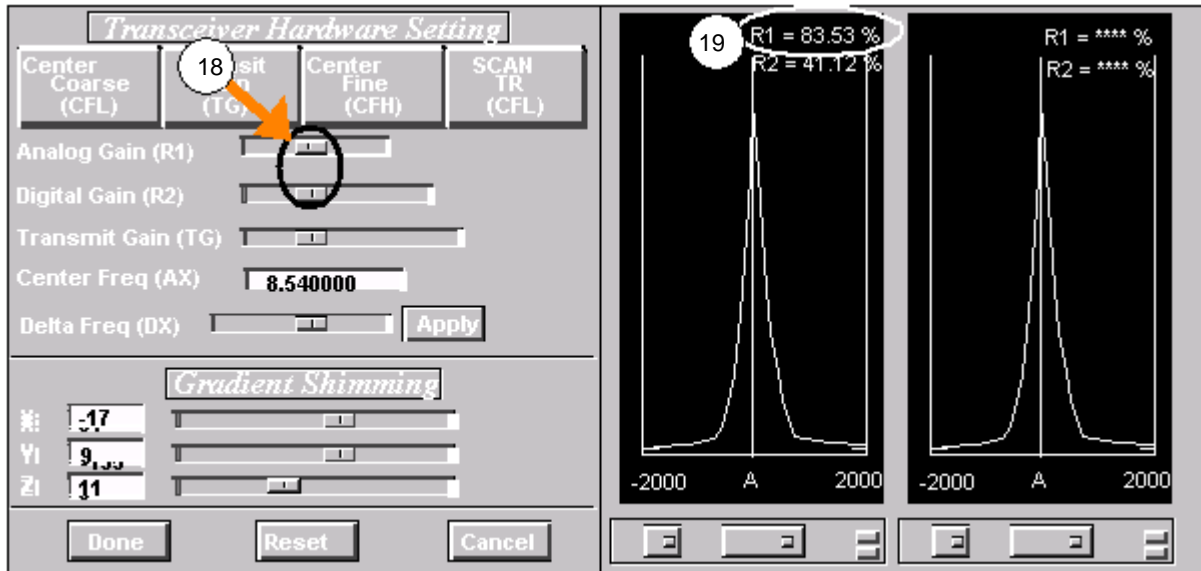
TWO WINDOWS
ILLUSTRATION 63

18. Set R1 = 12 and R2 = 13.

If R1(%) ≥ 100%, decrease R1 so as R1(%) becomes smaller than 100% (e.g. 80%).

Note: If R1(%) is oscillating between 2 numbers, consider the higher value.

19. Adjust TG so as to get the peak value for R1(%).



MANUAL PRESCAN
ILLUSTRATION 64

Rev 6

5-2 Scan (Z-Axis) (continued)

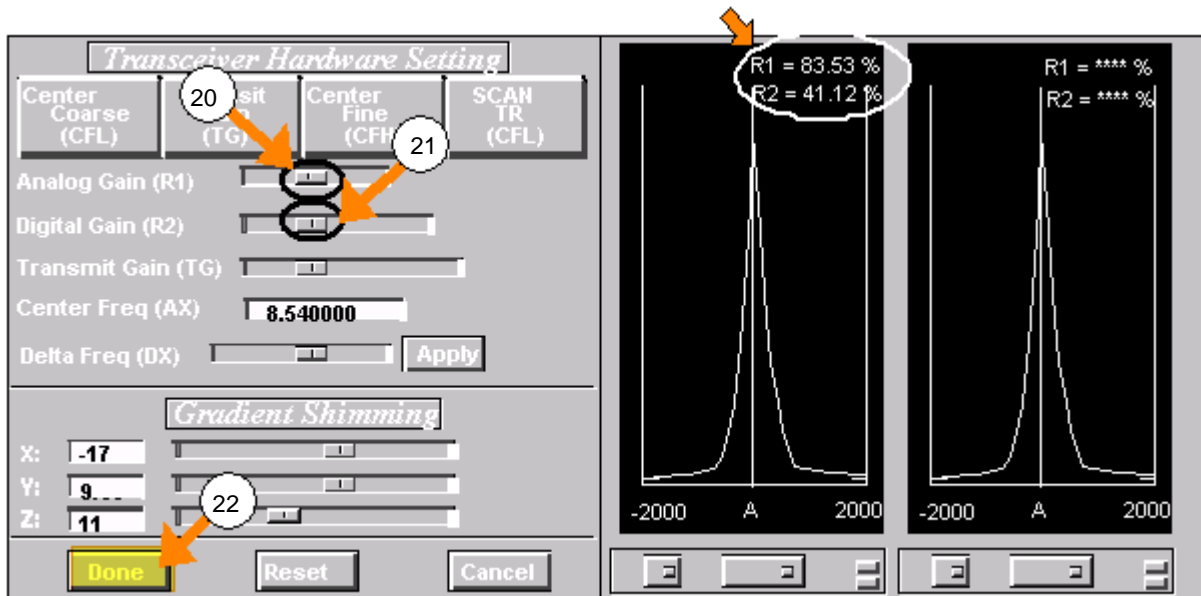
20. Adjust the R1 so as R1(%) will be approximately **40% ± 10%**.

Note: If R1(%) is oscillating between 2 numbers, consider the higher value.

21. Adjust the R2 so as R2(%) will be approximately **40% ± 10%**.

Note: If R2(%) is oscillating between 2 numbers, consider the higher value.

22. Click [**Done**].



MANUAL PRESCAN
ILLUSTRATION 65

23. Select [**Scan**] button



SCAN
ILLUSTRATION 66

Rev 6

5-3 Data Analysis (Z-Axis)

1. Click [Service Desktop] icon.



SERVICE DESKTOP
ILLUSTRATION 67

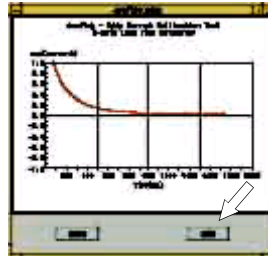
2. Enter as follows..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : Last run number used was : 2048 Please enter runfile number [2048] : Coils Along X-axis Coil A Position: -9.786242 cm Coil B Position: 9.919792 cm </pre>	<pre> [Return] [Return] </pre>

Rev 6

5-3 Data Analysis (Z-Axis) (continued)

3. Check that the obtained data satisfies the specification.
 - If the data is within specification, input the data into the Data Sheet. Then go to step6.
 - If the data is out of specification, go to step5.
- a. Check the linear Eddy Current Performance data. Then Click [Exit] button of the graph.



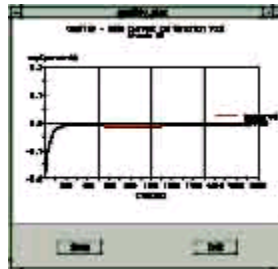
LINEAR DATA
ILLUSTRATION 68

Linear Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
1.067	0.911	0.447

Specification

Linear Eddy Current Performance(Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.1%	≤ 0.1%	≤ 0.1%

- b. Check the B0 Eddy Current Performance data. Then Click [Exit] button of the graph.



B0 DATA
ILLUSTRATION 69

B0 Eddy Current Performance:		
Max Deviation:		
2.50ms to 10.00ms/	10.00ms to 100.00ms/	100.00ms to 2000.00ms/
-0.450	-0.310	0.170

Specification

B0 Eddy Current Performance (Max Deviation):		
2.50ms to 10.00ms	10.00ms to 100.00ms	100.00ms to 2000.00ms
≤ 0.15%	≤ 0.15%	≤ 0.15%

Rev 6

5-4 Fitting Data (Z-Axis)

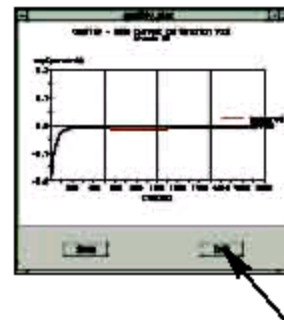
1. Enter the data as follows to update the X Fit Linear Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<pre> 2 [Return] [Return] </pre>

2. Graph and Fit Linear Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long TC Linear Fit Results: X -> X
tau[1]= 13.86 ms   alpha[1]=0.04 percent
tau[2]= 52.14 ms   alpha[2]=0.35 percent
tau[3]= 170.95 ms  alpha[3]=0.59 percent
tau[4]=1091.15 ms  alpha[4]=0.41 percent
                    
```



FIT LINEAR DATA
ILLUSTRATION 70

3. Enter as follows..

Output/Prompts	Input/Comments
<pre> Do you want to plot linear data? (Y,N) [N] : y </pre>	<pre> y [Return] </pre>
<pre> Do you want to accept new fit parameters ? (Y,N) [N] : y New WARP coefficients created. </pre>	<pre> y [Return] </pre>

Rev 6

5-4 Fitting Data (Z-Axis) (continued)

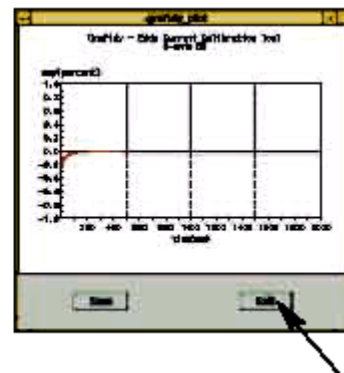
4. Enter the data as follows to update the X Fit B0 Data..

Output/Prompts	Input/Comments
<pre> GRAFIDY - Eddy Current Analysis 1 - Read and Process Raw Data 2 - Fit 3 - Initialize Parameters 4 - System Status S or Q - Exit to Tools Menu Enter Choice: (0..4) [1] : [Return] GRAFIDY - Fit Menu 1 - Fit Linear Data 2 - Fit B0 Data S or Q - Exit Fit Menu Enter Choice: (1..2) [1] : [Return] </pre>	<p>2 [Return]</p> <p>[Return]</p>

5. Graph and Fit B0 Data is displayed. Click [Exit] of the Graph.

```

Initial fit: Initial fit in progress..
*****
Long Time-Constant B0 Fit Results:
tau[1]= 15.92 ms   alpha[1]= 0.01 percent
tau[2]= 36.11 ms  alpha[2]=-0.96 percent
tau[3]= 119.56 ms alpha[3]= 0.38 percent
tau[4]= 451.75 ms alpha[4]= 0.14 percent
                    
```



FIT B0 DATA
ILLUSTRATION 71

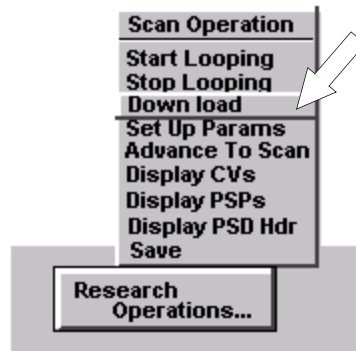
6. Enter as follows..

Output/Prompts	Input/Comments
<pre> Do you want to plot B0 data? (Y,N) [N] : y Do you want to accept new fit parameters ? (Y,N) [N] : y New WARP coefficients created. </pre>	<p>y [Return]</p> <p>y [Return]</p>

Rev 6

5-4 Fitting Data (Z-Axis) (continued)

7. Click **[Research Operation]** and select **[Down load]**.



DOWN LOAD
ILLUSTRATION 72

8. Go back to the beginning of the step3.

6. Restoration

After Grafidy was completed, restore the hardware setting.

Revision History

Rev	Date	Author	Primary Reasons For Change
0	Jan 26, 2001	Y. Masumo	Initial Release
1	May 16, 2001	Y. Masumo	Added 30db Attenuation between RFI and RF AMP.
2	Oct 22, 2001	Y. Masumo	Page 4: Added Phantom setting procedure.
3	Jun 13th, 2002	Y. Masumo	Page 2: Added Note according to the feedback. Page 3: Deleted Probe Setup from Flowchart.
4	Aug 22nd, 2002	Y. Masumo	Page 6: Error Correction.
5	Oct 11th, 2002	Y. Masumo	Page 6: Corrected Misspelling.
6	Nov 7th, 2002	Y. Masumo	Page 7, 19, 31: Updated Setting illustration.