

TABLE OF CONTENTS

TABLE OF CONTENTS	1
1- DESCRIPTION	2
2- LIST OF EQUIPMENT & PARTS	2
3- REMOVING THE TRM	4
4- INSTALLING THE TRM	22
5- RETURNING PLATES TO GRADIENT INSERTION TOOL KIT	35
REVISION HISTORY	39

1- DESCRIPTION

This procedure describes the removal and replacement of the Twin Resonator Module (TRM) in systems **with** LCC, and WideOpen Enclosure Magnets. The TRM uses the BRM-D parts for installation/removal.

2- LIST OF EQUIPMENT & PARTS**Note**

There are 2 revisions of Gradient Insertion tools. The original kit (2164744) is used to replace a BRM coil. The upgraded kit (2164744-4) can be used to replace BRM, coils, CRM coils, BRM-D coils, and TRM coils.

Item #	Description	Quantity	Part Number
1.	Gradient Insertion Tool & Lift Kit	1	2164744-4
	<u>Kit contents:</u>		
	Tube Support Plate Assembly	1	2284928
	Male Support Tube Assembly (weighs 80 lbs)	1	2284929
	Female Support Tube Assembly (weighs 60lbs)	1	2284930
	Tube Guide Roller Assembly	2	2164707
	Tube Jacking Assembly	1	2290367
	Crate	1	2172196
	Hex Head cap screws M10 x 80 stainless	10	46-318508P59
	Hex Head cap screws M10 x 25 stainless	4	46-318508P20
	M10 x 120 stainless steel studs	16	2180498
	M10 stainless steel nuts	24	2109875-4
	M10 stainless steel flat washers	24	2109878-4
	Hex Head Cap Screw M10 x 50 stainless	10	46-318508P25
	Washer Plain – Normal 13 mm 24 mm	8	46-328430P8
	Hairpin Cotter, 1/8 Dia Wire, stainless	2	46-252065P118
	Stud stainless, M10 x 65	6	2116325-2
	BRM Roller/Bracket Assemblies	2	2121111
	CRM Roller/Bracket Assemblies	2	2187590
	BRM-D Roller/Bracket Assemblies (Pat. End)	1	2213270
	BRM-D Roller/Bracket Assemblies (Svc. End)	1	2213270-2
	Bolts for BRM Rollers	10	2109866-24
	3/8 x 3/4 x 3" Plain Steel Spacer	2	2224994
	3/8 – 16 Steel Nut Wing	8	2224996
	Rope (10 ft long with snap clips)	1	2188986
	BRM Insertion Tool Ident Label	1	2280510
	Gradient Coil Lift Kit	1	2326753
	Stainless Steel Sleeve Spacer	8	2315733
2.	BRM/BRM-D/CRM Cart	1	2134810
3.	Aluminum Cradle	1	2134810-2
4.	Cable Crimper/Stripper Kit	1	2134776
5.	Poron Seal, for air cover	1	2185175
6.	Poron Seal,	4	2181231
7.	Poron Seal	8	2181231-2
8.	Red Loctite # 271	1	46-170686p3
9.	Blue Loctite # 242	1	46-170684p2
10.	Alcohol	1	Field Supplied
11.	Ty-wraps	5	Field Supplied

Item #	Description	Quantity	Part Number
12.	Splice kit	1	2241521
<u>From the TRM LCC Gradient ISO Install Kit 2297692:</u>			
	SUPPORT MOUNTING, TRM	2	2272016
	SPACER SHIM 1.5MM THK	2	2238908
	SPACER SHIM 2.4MM THK	6	2238908-2
	SPACER SHIM 16MM THK	2	2238908-3
	RUBBER ISOLATION PAD	2	2241176
	SCREW SET SCREW 10 MM 25 MM--Grub	2	2251295
	SCREW SET SCREW 10 MM 30 MM--Grub	1	2251295-2
	MTG PAD, 1/4" THICK NEOPRENE	4	2131953-5
	SET SCREW- MTG.PAD	4	2293535
	RADIAL SHIM SPACER 1.5MM THK	4	2293771
	RADIAL SHIM SPACER 0.8MM THK	8	2293771-2

List of Non-Magnetic Tools

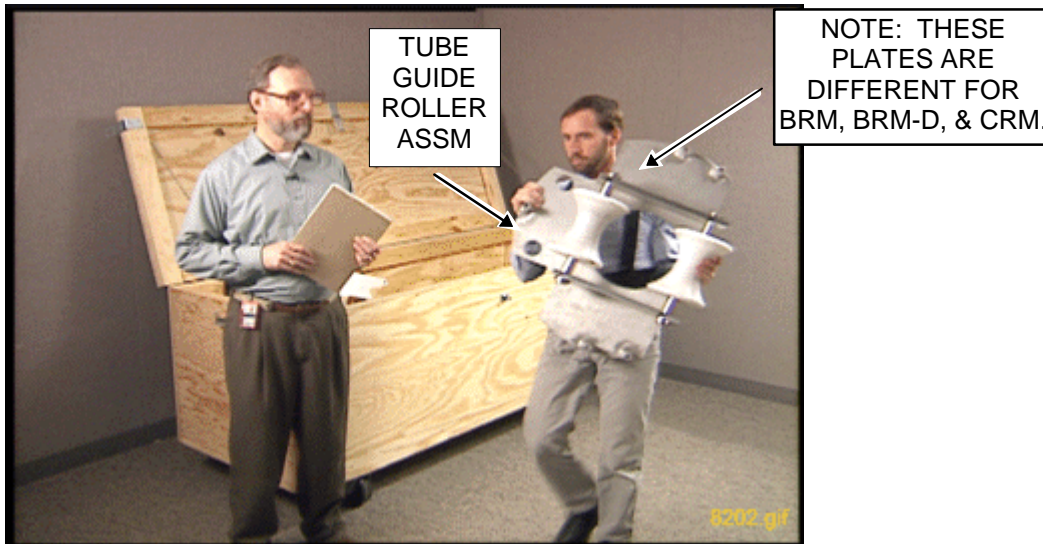
1. 3/8 inch T-bar allen wrench
2. 5/16 inch right angle allen wrench
3. 8 mm allen wrench
4. 8 inch adjustable wrench
5. 17 mm open end wrench
6. 10 mm socket
7. 13 mm socket
8. 17 mm socket
9. 19 mm socket
10. 24 mm socket
11. 3/8 inch drive ratchet
12. 1/2 inch drive ratchet
13. 3 inch long extension for 1/2 inch drive
14. 3 Foot Long Level
15. Phillips Head Screwdriver
16. Standard Flat Head Screwdriver

3- REMOVING THE TRM

1. Remove the bridge and the front and rear end bells. See procedures ME2REA11, *Front End Bell Removal*, ME2REA12, *Rear End Bell Removal*, and MERE13, *Split Bridge Replacements*.
2. Remove the two Tube Guide Roller Assemblies from the crate. You may need to exchange the rollers to the appropriate Plate Assembly; the TRM uses the BRM-D plates. See Illustration 3-1. Install the Patient End Assembled Tube Guide Roller Assembly onto Patient End of the Gradient Coil. See Illustration 3-3. The kit contains 2 M10 x 120 studs. Use these studs at the top-hole location. The stud will support the Tube Guide Roller Assembly and will assist the alignment of the remaining bolts. Use the M10 x 80 bolts supplied in the kit. Tool to use: 17 mm socket and ratchet.

Note

When using the BRM-D Plate Assemblies, the M10 x 120mm studs must be used.



**TUBE GUIDE ROLLER ASSEMBLY
ILLUSTRATION 3-1**

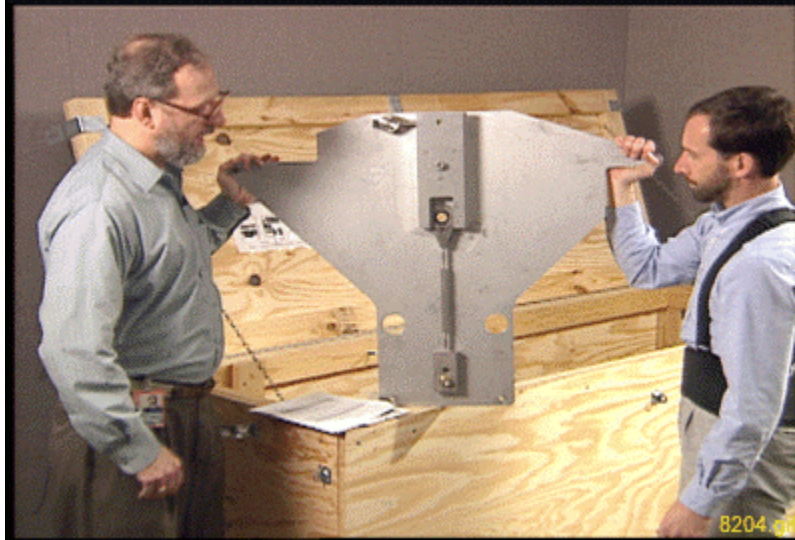


**BRM-D PLATE ASSEMBLY INSTALLED ON PATIENT END
ILLUSTRATION 3-2**

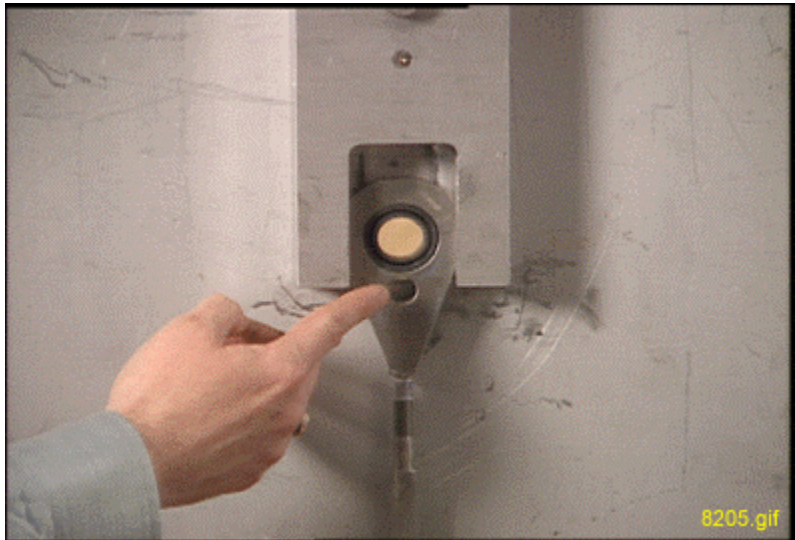
Note

Each assembly requires 4 bolts and 1 stud.

3. Remove the Tube Support Plate Assembly from the crate. See Illustration 3-3. Adjust the alignment bearing for center position as viewed from the side with the round cut out. See Illustration 3-4.



TUBE SUPPORT PLATE ASSEMBLY
ILLUSTRATION 3-3



ALIGNMENT BEARING TO CENTER POSITION
ILLUSTRATION 3-4

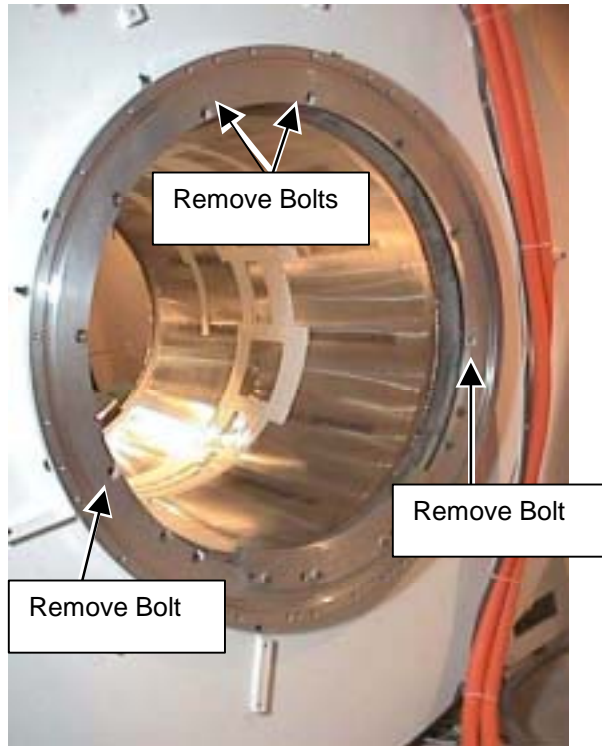
Note

For the vertical adjustment a clockwise rotation results in the alignment bearing moving down. Use an adjustable wrench for the vertical adjustment. For the horizontal adjustment a clockwise rotation results in the alignment bearing moving to the left. Use the 3/8 inch T-bar allen wrench for the horizontal adjustment.

CAUTION

Do NOT use force on any stud or bolt used to secure the insertion tool hardware to the magnet interface ring or Gradient Coil. The potential exists for a stud or bolt to gall the threads on the interface ring or Gradient Coil.

4. Go to the rear of the magnet and Install the Tube Support Plate onto the magnet interface rings by performing the following steps.
 - a. Remove screws from the interface ring so the Tube Support Plate can be installed. See Illustration 3-5.



**LOCATION OF BOLTS TO BE REMOVED ON REAR OF MAGNET INTERFACE RING
ILLUSTRATION 3-5**

- b. Install four of the M10 x 60 studs in the interface ring openings as shown in step a, see Illustration 3-6.



PLACEMENT OF STUD ON THE INTERFACE RING
ILLUSTRATION 3-6

- c. Place bushing on stud. See Illustration 3-7.

IMPORTANT
YOU MUST USE BUSHINGS, OR DAMAGE COULD OCCUR.



PLACING BUSHING ON STUD
ILLUSTRATION 3-7

- d. Tighten the stud that will support the weight of the Tube Support Plate Assembly, see Illustration 3-8.



TIGHTENING STUD
ILLUSTRATION 3-8

- e. Place the Tube Support Plate Assembly from the Rear of the Magnet. See Illustration 3-9.



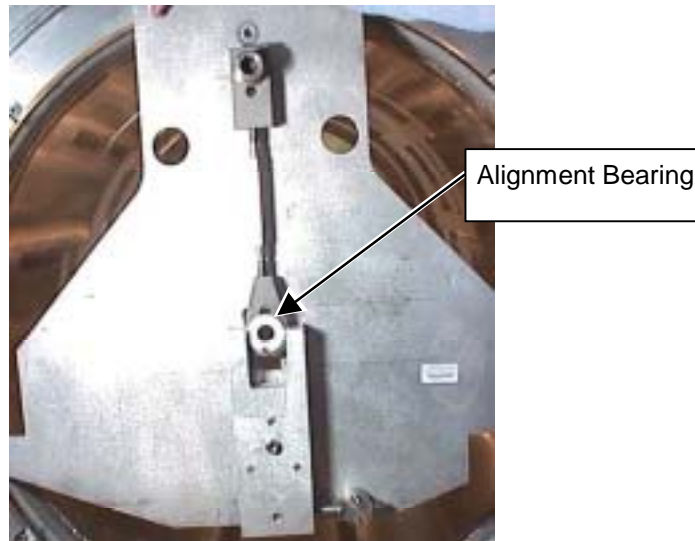
TUBE SUPPORT PLATE ASSEMBLY ON REAR OF MAGNET
ILLUSTRATION 3-9

- f. Place the washer and nut on each stud from the Plate Assembly and secure the plate. See Illustration 3-10.



PLACING WASHER AND NUT ON STUD
ILLUSTRATION 3-10

- g. Adjust the alignment bearing for center position as viewed from the side with the square cut out. See Illustration 3-11.



ALIGNMENT BEARING TO CENTER POSITION
ILLUSTRATION 3-11

- 8. Remove the Male Tube Assembly from the crate and remove the cotter pin from the shaft. Slowly install the tube, shaft end first, through the front Tube Guide Roller Assembly on the patient end and guide the shaft through the alignment bearing that is located on the Tube Support Plate on the Service end of the magnet. View video of tube insertion of the BRM to become familiar with the process.

Note

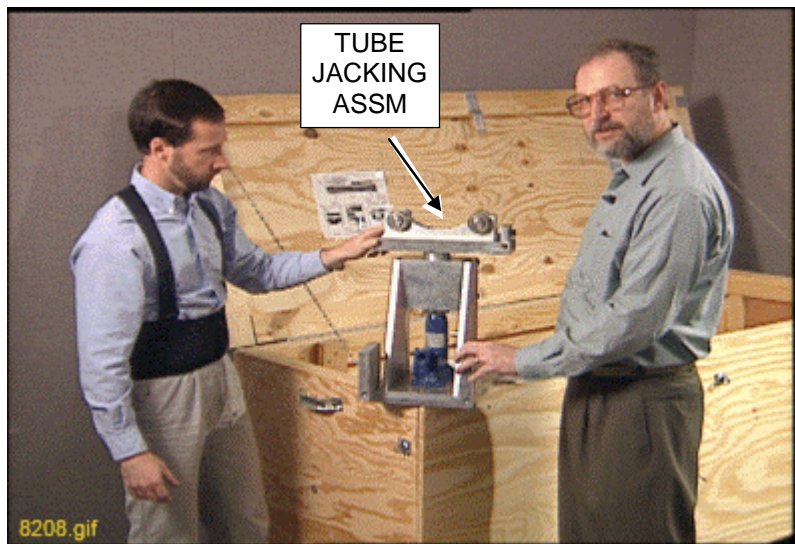
Be very careful not to force the shaft through the alignment bearing. Make vertical or horizontal adjustments to bring the alignment bearing in alignment with the tube shaft.

- 9. Install the cotter pin after the shaft is in place.

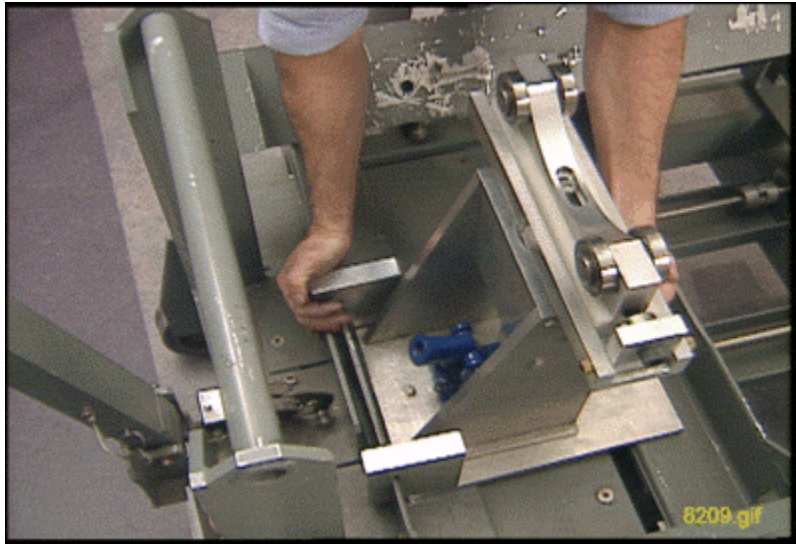


The jack on the Tube Jacking Assembly is ferrous. Personal injury or equipment damage may result if taken too close to the magnet. Always keep the Tube Jacking Assembly mounted and screwed to the aluminum coil cradle when used in the magnet room.

- 10. Remove the Tube Jacking Assembly from the crate. See Illustration 3-12. Install it onto cradle/cart. Secure with bolt through Tube Jack Assembly Base Plate. See Illustration 3-13.

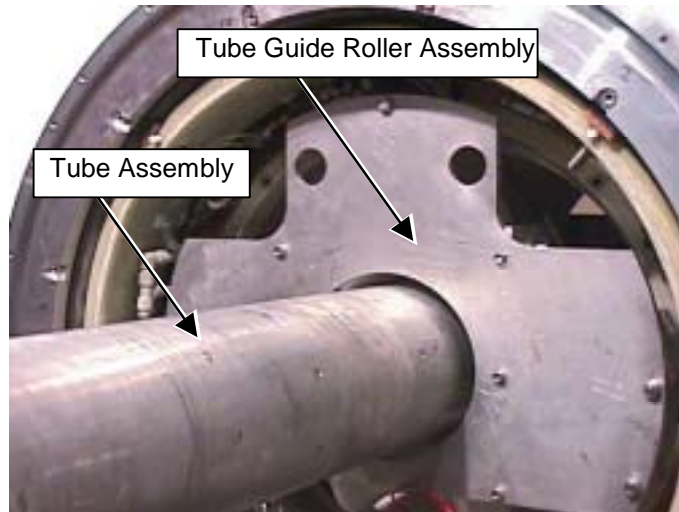


TUBE JACKING ASSEMBLY
ILLUSTRATION 3-12



SECURE TUBE JACKING ASSEMBLY
ILLUSTRATION 3-13

11. Move the empty cradle/cart assembly into the magnet room. Position the cart in front of the magnet and center the cart left/right in respect to the patient bore. Make sure the Tube Jack Assembly is physically centered and the left/right adjustments are at a nominal setting before starting the next step. Use a 5/16 inch right angle allen wrench to tighten the Tube Jack Assembly to the cart.
12. Remove the Female Tube Assembly from the crate. Support the Female Tube Assembly on the Tube Jack Assembly and then thread it onto the Male Tube Assembly. See Illustration 3-14.



TUBE ASSEMBLY IN THE TUBE GUIDE ROLLER ASSEMBLY
ILLUSTRATION 3-14

13. Remove the Gradient Coil cradle fasteners, two per side, from the cradle. See Illustration 3-15.

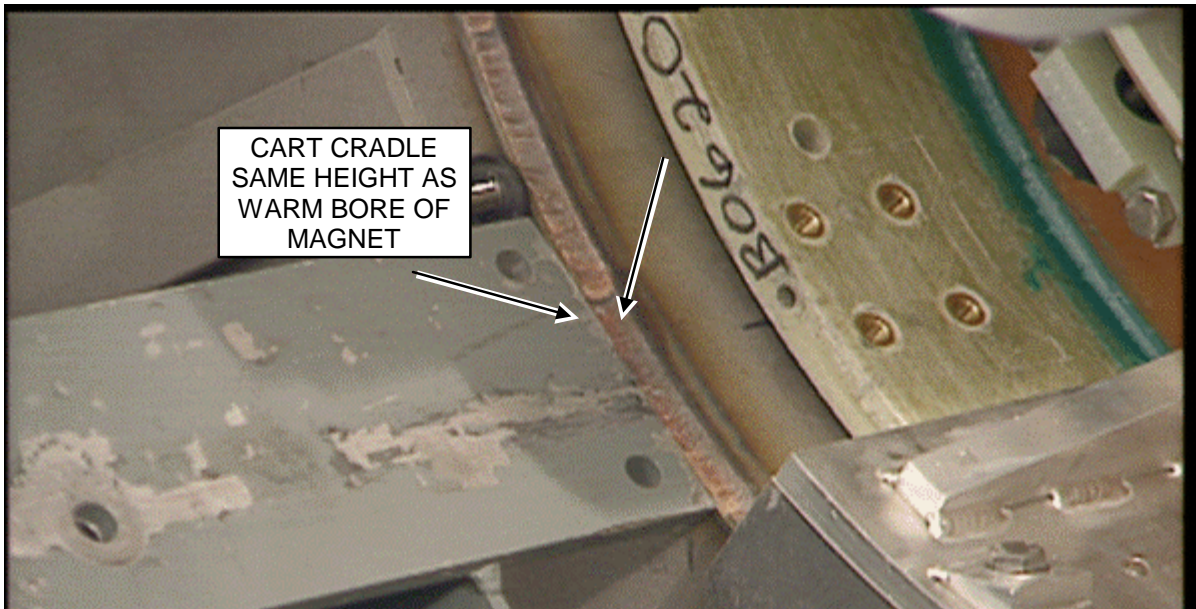


REMOVE GRADIENT COIL CRADLE FASTENERS
ILLUSTRATION 3-15

14. Adjust the height of the cart as shown in Illustration 3-16. Tool to use: 19mm socket. Adjust height so the end of the cradle is the same height as the warm bore of the magnet and flush against the end flange See Illustration 3-17.



ADJUST CART HEIGHT
ILLUSTRATION 3-16



ADJUST CART HEIGHT TO WARM BORE HEIGHT
ILLUSTRATION 3-17

15. Release the hand lever on the cart handle to set the brakes so the cart will not move after the cart is aligned to the magnet bore.

CAUTION

For the next two steps, the coil is still attached to the magnet interface rings of the magnet with the gradient isolation brackets. Do not attempt to raise the coil with the jack. The next two steps prepare the roller assemblies to take the Gradient Coil weight when transferred from the magnet to the rollers. Do not attempt to loosen any of the bracket bolts when the Gradient Coil is supported by the tool. Damage to the bolts will result.

16. Operate the jack to raise the tube and watch for the tube to make contact to the upper roller on the front Tube Guide Roller Assembly.

Note

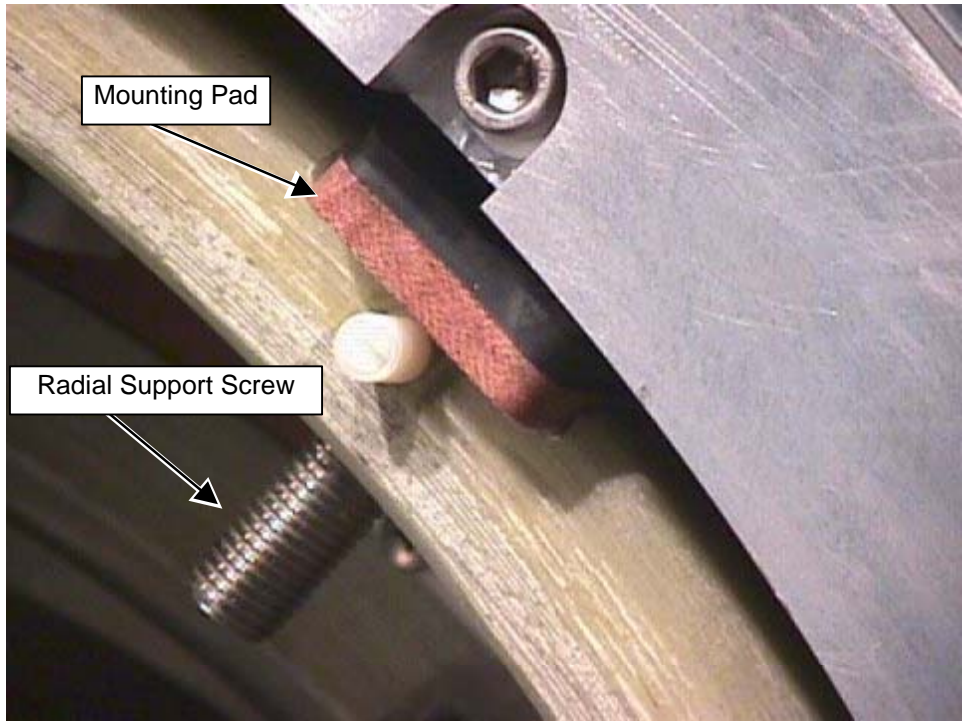
Make sure there is a small amount of resistance to the upward movement of the tube. The top roller should not be able to rotate.

31. Go to the rear of the magnet. Adjust the Alignment Bearing in the vertical direction and watch for the tube to make contact to the upper roller on the rear Tube Guide Roller Assembly. Continue to raise the Alignment Bearing until the back end of the Gradient coil starts to rise off of the cradle.

Note

When this happens the load at the back end of the Gradient coil is transferred from the cradle to the Support Tube and magnet.

32. Back out the two (2) (one on each side) radial supports and remove mounting pads from the upper portion on the front of the coil. See Illustration 3-18.



RADIAL SUPPORT LOCATION
ILLUSTRATION 3-18

21. Remove the Gradient Support Bracket from both ends of the magnet. See Illustration 3-19.



GRADIENT BRACKET SCREW LOCATION
ILLUSTRATION 3-19

22. Remove the Gradient Coil Roller assemblies, quantity 2, from the tool crate. See Illustration 3-20.



GRADIENT COIL ROLLER ASSEMBLIES
ILLUSTRATION 3-20

23. Remove 2 screws that attach the water manifold block to the inner coil face. See Illustration 3-21.



LOCATION OF SCREWS FOR WATER MANIFOLD
ILLUSTRATION 3-21

24. Place roller assemblies on the coil, one on each side of the coil on the Patient end. See Illustration 3-22.



ROLLER ASSEMBLY ON COIL
ILLUSTRATION 3-22

23. Check tube with a level on top of Female Tube Assembly. Make any adjustments with either the jack in the front or the Alignment Bearing in the rear.
24. At the front of the magnet. Operate the jack to raise the tube and watch for the Gradient Coil bracket to raise up off of the end flange bracket. A gap of 1/8 inch or 2 mm is sufficient. Make sure there is no contact with the warm bore or in bore passive shims.
25. Go to the rear of the magnet. Adjust the Alignment Bearing in the vertical direction and watch for the Gradient Coil bracket to raise up off of the end flange bracket. A gap of 1/8 inch or 2 mm is sufficient. Make sure there is no contact with the warm bore or in bore passive shims.
25. Go to the front of the magnet. Verify there is sufficient clearance all around the Gradient Coil for removal onto the cradle and cart.

CAUTION

Make sure the brakes are set on the cart before performing the next step. Personal injury or equipment damage may result if the brakes are not set properly. Make sure to watch and guide all cables attached to the BRM during the removal process. Damage to cables or Gradient Coil may occur if a cable is pinched, cut or snagged.

26. Slowly pull the Gradient Coil forward on the tube and watch the clearance around the coil to make sure it is concentric and level with the bore. This step requires 3 FE's; one in rear to push the coil and guide cables through the bore and two in front to pull on the coil.



Minimize the rotation of the coil on the tube. Damage to the roller assemblies could result.

27. Make sure the roller brackets are in line with the shipping bracket holes on the cradle. This alignment is necessary for installing the shipping blocks later in the procedure.



Watch for tube deflection when adjusting the jacking screws in the next step. Any tube deflection indicates the Gradient Coil is in contact with the warm bore thereby resisting free motion. Personal injury or damage to the tool could result.

28. Slowly lower the jack to allow the Gradient Coil weight to transfer to the Gradient Coil rollers.



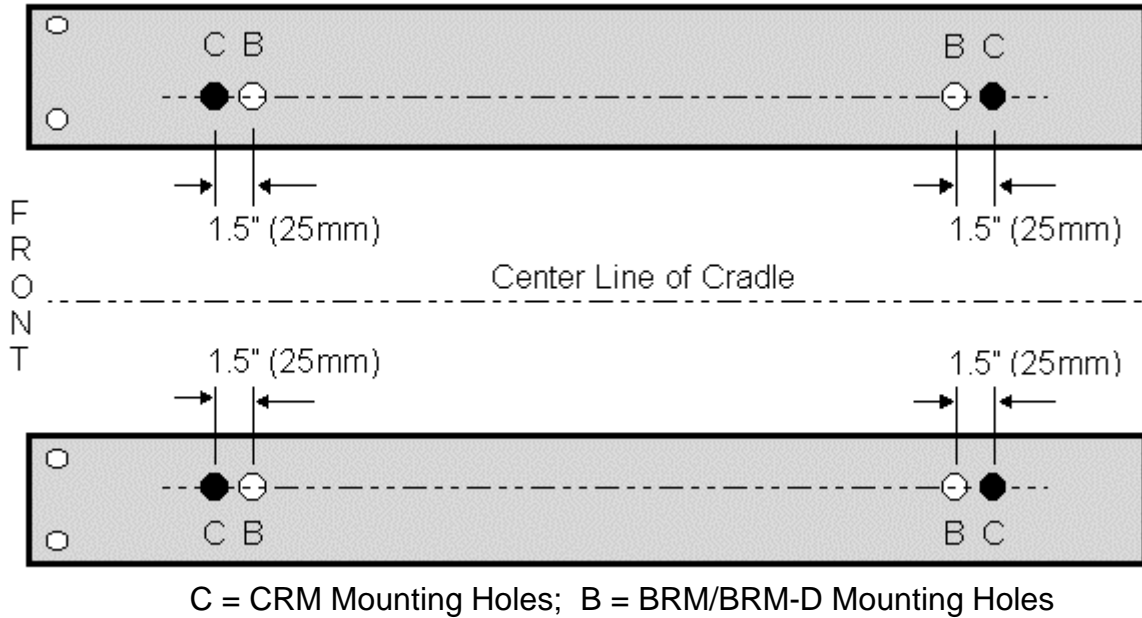
The jack on the Tube Jacking Assembly is ferrous. Personal injury or equipment damage may result if taken too close to the magnet. Keep as far away from magnet bore as possible when removing from magnet room.

29. Remove the bolt from the Tube Jack Assembly baseplate, remove the jack and take it out of the magnet room. The cradle is now clear to allow the Gradient Coil to move forward on the cart.
30. With 3 FE's pulling from the front, move the Gradient Coil over the cradle so it is centered from front-to-back on the cradle.

Note

It may be necessary to lower the cart to allow the back end of the Gradient Coil to clear the cradle.

31. **CRITICAL STEP!** Make sure the shipping bracket holes for the gradient coil will line up with the holes on the cradle of the cart before removing the rollers. See Illustration 3-23. The BRM, BRM-D, and CRM each have unique holes in the cart for shipping, be sure to align the TRM to the "B" holes on the shipping cart. You may have to rotate the Gradient Coil and/or move forward or back on the cradle to align the holes. See Illustration 4-8 for picture of shipping bracket installed.



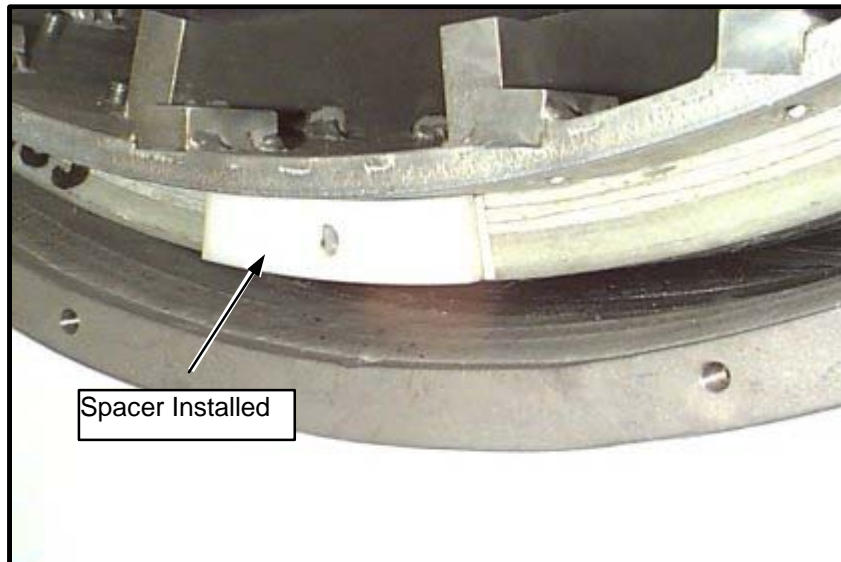
SHIPPING CART BRACKET HOLE LOCATIONS
ILLUSTRATION 3-23

32. Slowly lower the back end of the Gradient Coil onto the cradle by lowering the alignment bearing at the back end of the magnet.

CAUTION

Make sure the weight of the Gradient Coil has transferred from the tube to the cradle/cart before proceeding to the next step. Personal injury or equipment damage may result if the load was not transferred.

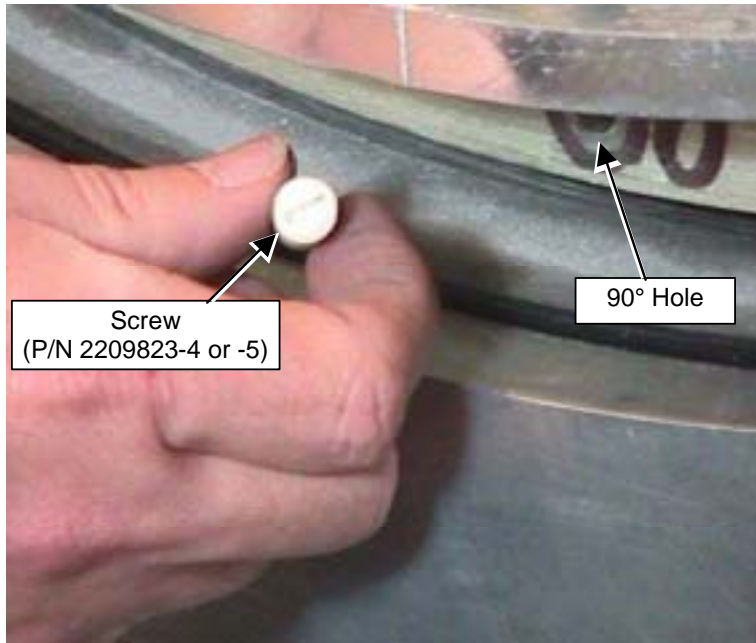
33. Adjust the jacking screws on the roller block for wheel removal, remove the rollers and pins then lower adjust the jacking screws to lower the Gradient Coil to the cradle.
34. Remove the front and rear spacer's on the gradient coil and be careful not to interchange. The front spacer must go on the front location of the replacement coil. See Illustration 3-25 for the location of the spacer.



SPACER LOCATION
ILLUSTRATION 3-25

35. Uninstall 15mm spacer on screw.

36. Uninstall the spacer by removing the screw from the 90° hole. See Illustration 3-26.



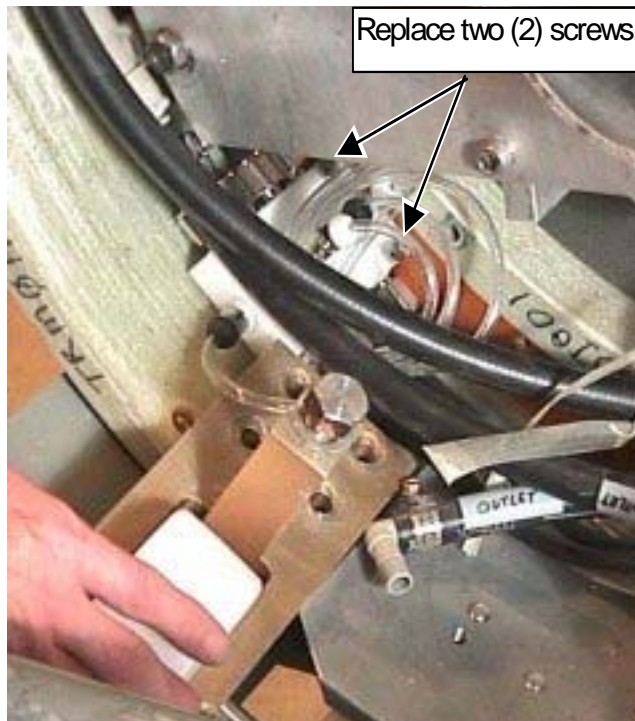
UNINSTALLING SCREW FROM 90° HOLE
ILLUSTRATION 3-26

37. Remove the Gradient Coil Roller assemblies. See Illustration 3-27.



ROLLER ASSEMBLY ON COIL
ILLUSTRATION 3-27

32. Replace the 2 screws that attach the water manifold block to the inner coil face. See Illustration 3-28.

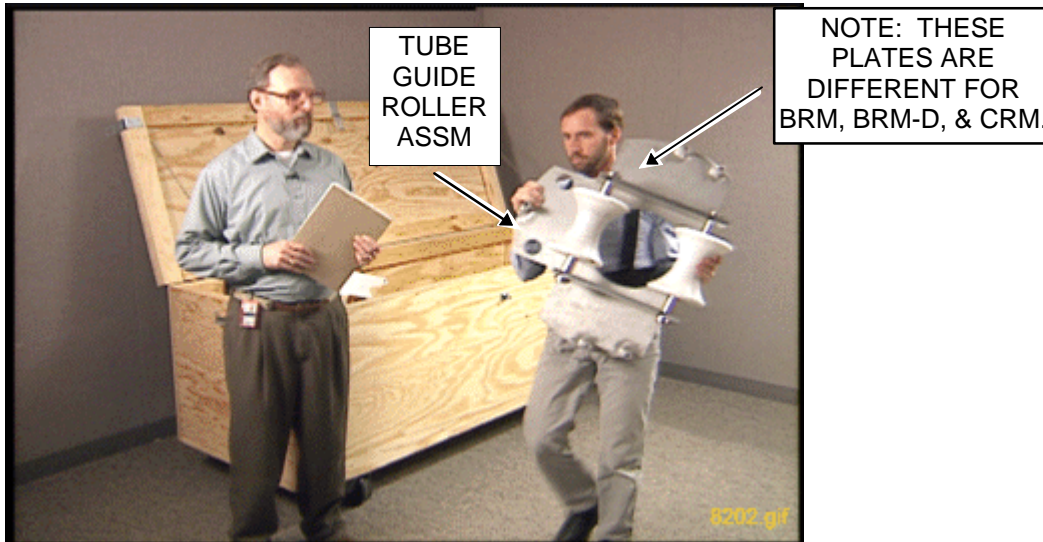


LOCATION OF SCREWS FOR WATER MANIFOLD
ILLUSTRATION 3-28

37. Get the rope supplied in the kit and route it under the support tube between the end flange of the magnet and the Gradient coil. Attach the rope the enclosure frame brackets on the cryostat. Adjust the height of the rope so it will provide support for the tube during the disassembly process.
38. The 3 FE's required for this step are positioned as follows: #1 is in the rear of the magnet to remove the cotter pin and to support the tube as it is removed from the Alignment Bearing. #2 is between the coil cart and the magnet, to unthread the tube sections as #1 supports the back part of the section in the bore after the shaft is removed from the Alignment Bearing. #3 is in the front of the coil cart and pulls on the cart after #1 removes the cotter pin; pulling just enough for the shaft of the tube to pull free from the Alignment Bearing.
39. Unthread the tube leaving one section in the bore (supported by the rope and Tube Support Plate Assembly) and leave the other section in the Gradient coil on the cart.
40. Release the brake on the cart and slowly back the cart with the coil out of the room.

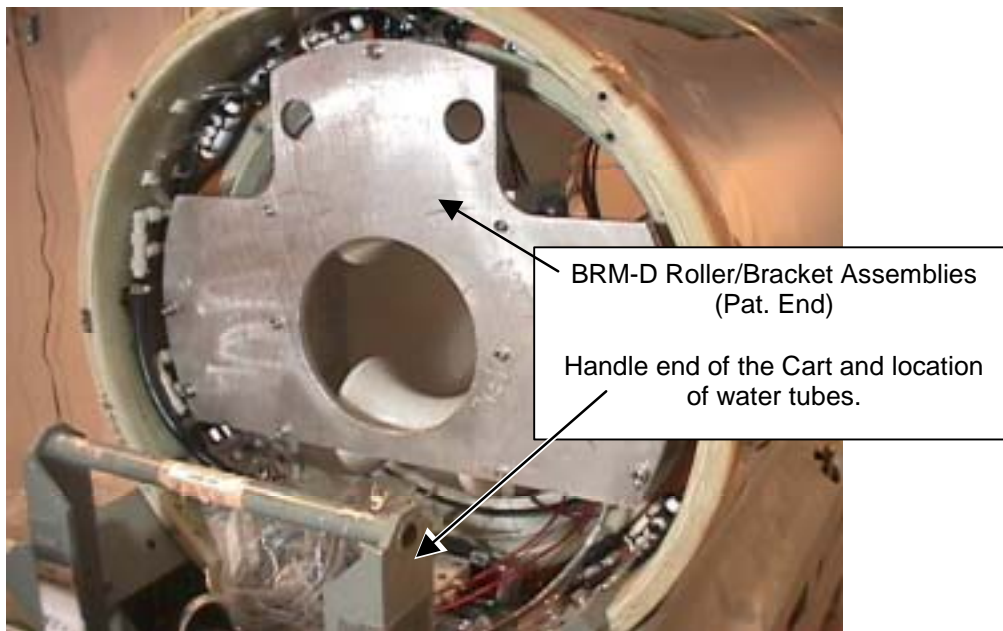
4- INSTALLING THE TRM

1. Remove the two Tube Guide Roller Assemblies from the crate. You may need to exchange the rollers to the BRM-D Plate Assembly. Install one Assembled Tube Guide Roller Assembly onto each end of the Gradient Coil. See Illustration 4-1. The kit contains 16 M10 x 120 studs. Use these studs at the top hole location. The stud will support the Tube Guide Roller Assembly and will assist the alignment of the remaining bolts.



TUBE GUIDE ROLLER ASSEMBLY
ILLUSTRATION 4-1

2. Install the Patient End plate (p/n 2213270) to the coil. See Illustration 4-2.



PATIENT END PLATE ON COIL
ILLUSTRATION 4-2

- Secure plate, using washer and nut on studs, see Illustration 4-3.

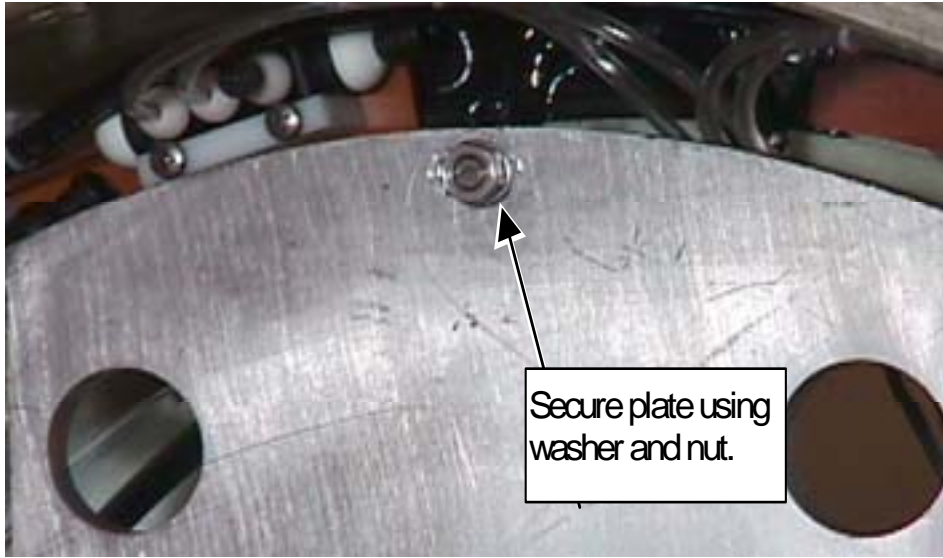
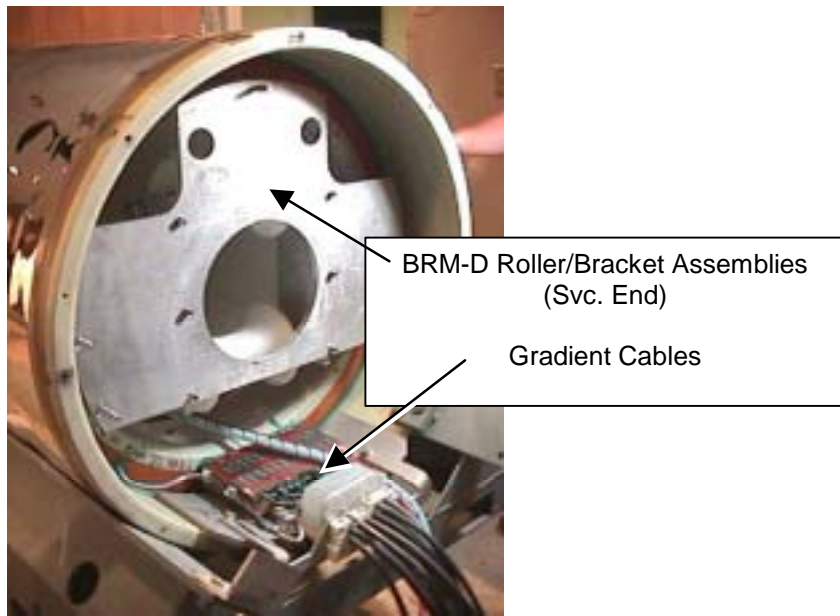


PLATE SECURED TO COIL
ILLUSTRATION 4-3

- Install the Service End plate (p/n 2213270-2). See Illustration 4-4.



SERVICE END PLATE ON COIL
ILLUSTRATION 4-4

5. Using Alcohol and a clean towel, wipe down the inside of the magnet. See Illustration 4-5.



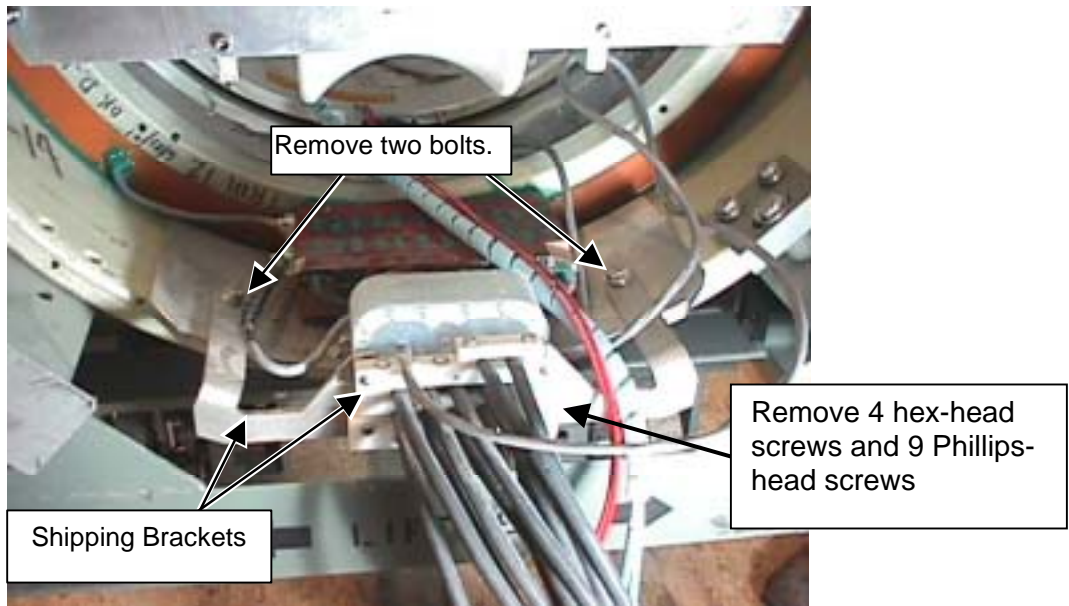
WIPING DOWN INSIDE OF MAGNET
ILLUSTRATION 4-5

6. If Gradient Support bracket is on the front and rear interface rings, remove bracket before installing the coil. The added clearance is needed for pulling the gradient cables through the bore.

WARNING!

POSSIBLE DAMAGE TO GRADIENT CABLE LEADS EXISTS. THE GRADIENT CABLE LEAD CONNECTIONS CAN BREAK EASILY. CAREFULLY REMOVE THE SHIPPING BRACKETS THAT SECURE THE GRADIENT CABLE LEADS.

7. On the coil cart, remove the shipping brackets that hold the gradient cable leads in place. See Illustrations 4-6 and 4-7.

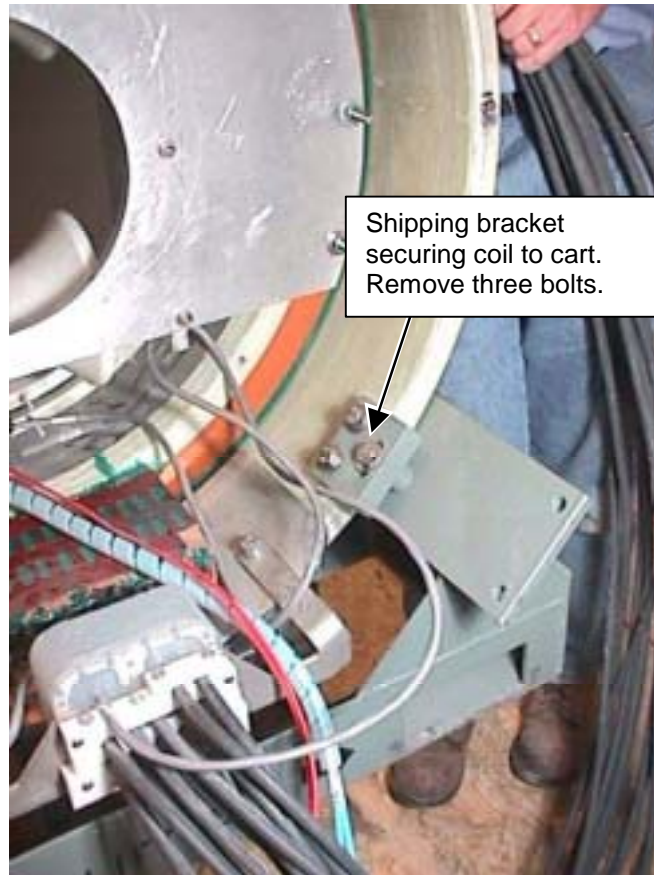


LOCATION OF SHIPPING BRACKETS HOLDING GRADIENT CABLES
ILLUSTRATION 4-6



SHIPPING BRACKETS REMOVED
ILLUSTRATION 4-7

8. Remove the shipping bracket that secures the coil to the cart. See Illustration 4-8.



LOCATION OF SHIPPING BRACKET
ILLUSTRATION 4-8

9. Place Male Tube Assembly in magnet and secure to the support plate using the cotter pin.
10. Place the Female Tube Assembly in the coil.
11. Maneuver cart with coil to the front of the magnet.

12. Carefully feed the gradient cables through the bore of the magnet and carefully pull out the back. See Illustration 4-9.



FEEDING GRADIENT COILS THROUGH MAGNET BORE
ILLUSTRATION 4-9

13. Remove shipping bolts from the cart. There are a total of 4 bolts, two on each side. See Illustration 4-10.



REMOVING SHIPPING BOLT FROM CART
ILLUSTRATION 4-10

14. Position the cart in front of the magnet and center the cart left/right in respect to the patient bore. Provide enough room for an FE to stand between the cart and the magnet so the FE can thread the support tube sections together.

15. Release the hand lever on the cart handle to set the brakes so the cart will not move after the cart is aligned to the magnet bore.
16. To properly align the coil, it may be necessary to move the cart up or down. See Illustration 4-11.



ADJUSTING HEIGHT OF CART
ILLUSTRATION 4-11

17. Connect the Tube Assembly. This takes one person at the rear of the magnet to hold the male tube; one person at the patient end of the coil and a person in the middle to make sure the tube connects.
18. Adjust the height of the cart so the end of the Tube is the same height as the Tube in the bore of the magnet.
19. Slowly thread the Tube sections together.

Note

Be very careful not to force the threads. Make vertical or horizontal adjustments, as necessary, to the alignment bearing or cart for an easy fit.

20. Remove the Gradient Coil Roller assemblies, quantity 2, from the tool crate. See Illustration 4-12.



GRADIENT COIL ROLLER ASSEMBLIES
ILLUSTRATION 4-12

21. Remove 2 screws that attach the water manifold block to the inner coil face. See Illustration 4-13.



LOCATION OF SCREWS FOR WATER MANIFOLD
ILLUSTRATION 4-13

22. Place roller assemblies on the coil, one on each side of the coil on the Patient end. See Illustration 4-14.



ROLLER ASSEMBLY ON COIL
ILLUSTRATION 4-14

23. Go to the rear of the magnet. Adjust the Alignment Bearing in the vertical direction and watch for the tube to make contact to the upper roller on the rear Tube Guide Roller Assembly. Continue to raise the Alignment Bearing until the back end of the Gradient coil starts to raise off of the cradle.

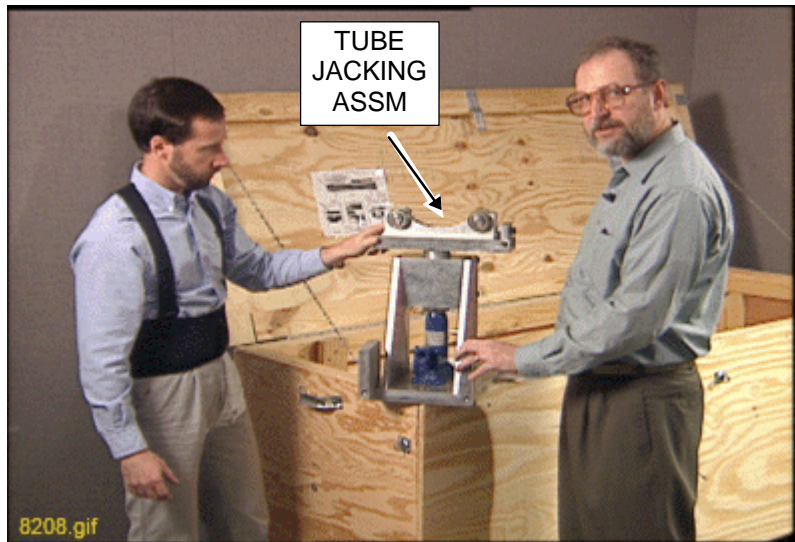
Note

When this happens the load at the back end of the Gradient coil is transferred from the cradle to the Support Tube and magnet.

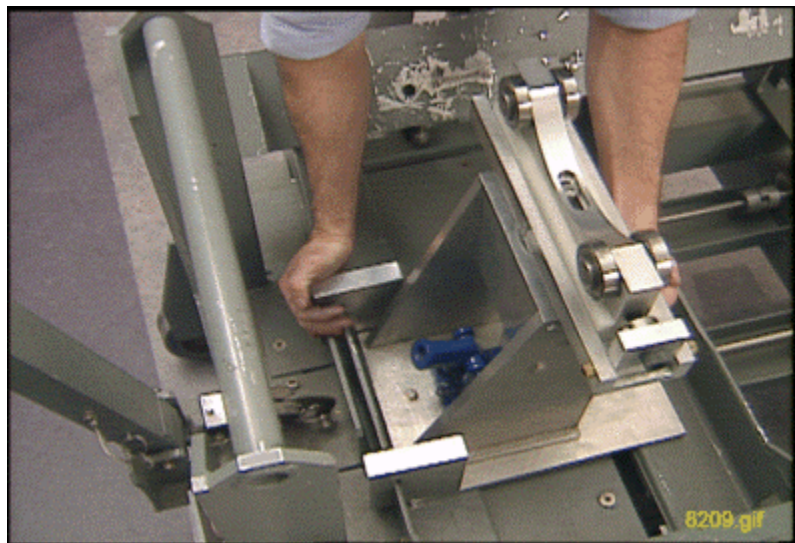
24. Move the rollers on the assemblies to the lowest position.

25. Slowly push the Gradient coil toward the magnet on the rollers until there is enough clearance to install the Tube Jacking assembly.

26. Remove the Tube Jacking Assembly from the crate. See Illustration 4-15. Install it onto cradle/cart. Secure with bolt through Tube Jack Assembly Base Plate. See Illustration 4-16.



TUBE JACKING ASSEMBLY
ILLUSTRATION 4-15



SECURE TUBE JACKING ASSEMBLY
ILLUSTRATION 4-16

- 27. Operate the jack to raise the coil to put load on the upper rollers and allow for the removal of the Gradient coil Roller assemblies.
- 28. Remove the Gradient coil Roller Assemblies and return these parts to the shipping case.
- 29. Check for proper clearance around the TRM assembly in respect to the magnet bore opening. Make adjustments to the jack and alignment bearing to produce a fit that is symmetrical and level to the bore in front and back.

30. Slowly push the Gradient coil into the magnet bore and watch the clearance at both ends. Carefully pull the gradient coils through the rear of the magnet. Continue to install until the Gradient coil is centered from front to back within the warm bore.
31. At front end of Gradient Coil, install 16 mm spacer (2238908-3) with Cheesehead screw (2209823-4) at the 90° hole. See Illustration 4-17.

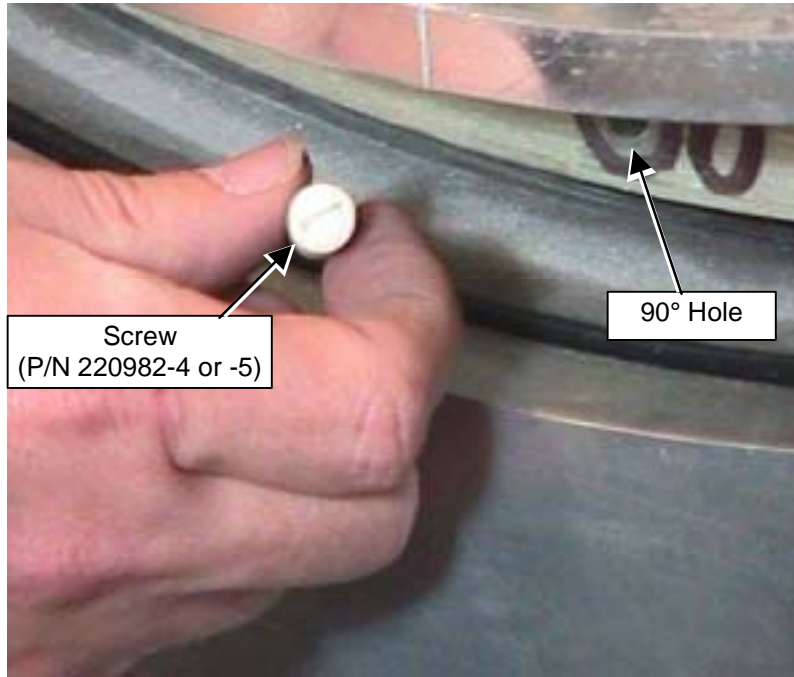
**INSTALLING SCREW INTO 90° HOLE**

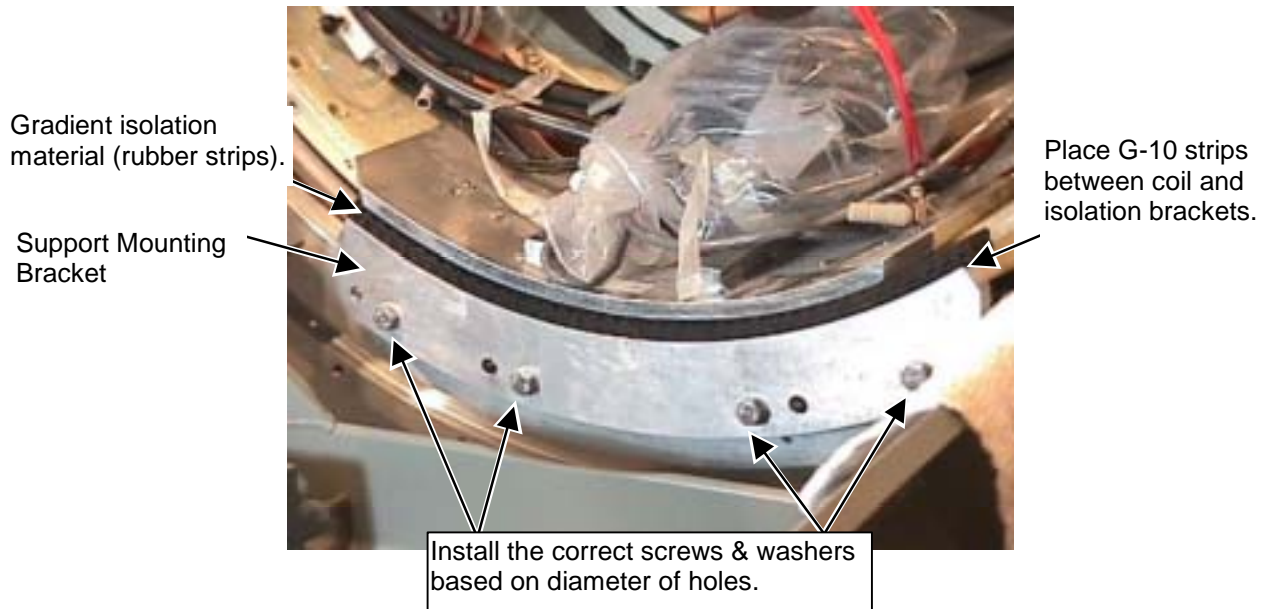
ILLUSTRATION 4-17

32. At the rear end of the Gradient Coil, fill axial gap between coil and support with shims, using the thickest shim last, (2238908, -2, -3, and/or -4) as required. Then fasten in place with proper length screw (2209823-4 or -5).

Note

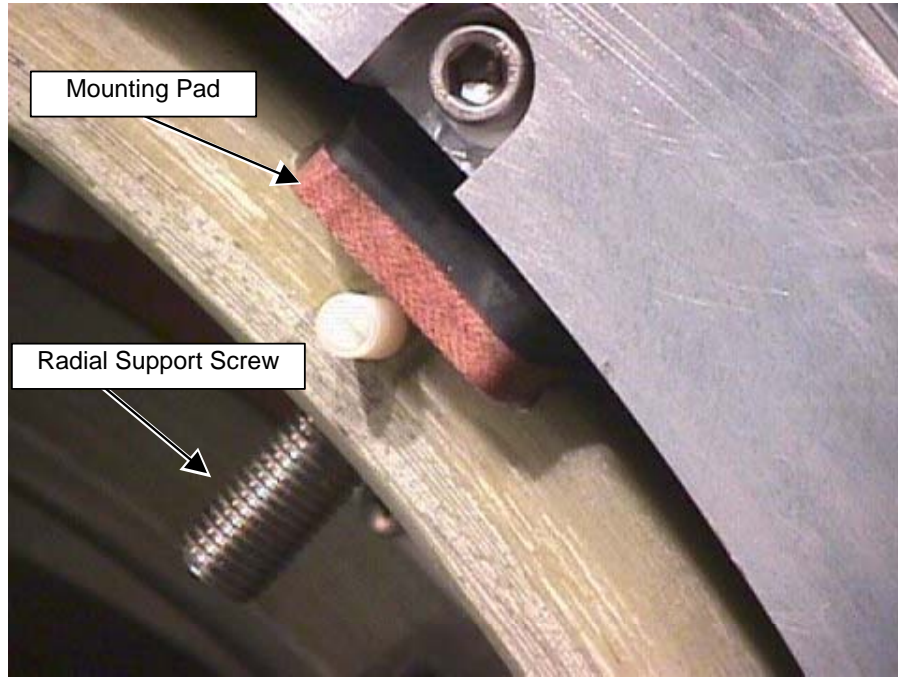
For Support Mounting Brackets that have 14 mm diameter holes, the nylon shoulder washers (22308141-4) must be used with the M10 hex head bolts. **For Support Mounting Brackets with 10.5mm diameter holes**, the plain stainless steel washers (2184009) should be used in place of the nylon shoulder washers.

- 33. When the coil is centered in the Z direction, install the gradient isolation support mounting bracket. Based on the diameter of the holes use the correct hardware that is called out in the Note above. See Illustration 4-18 for location.
- 34. Once the support mounting brackets are in place, install the gradient isolation material, (black rubber strips) between the coil and the support. You must use two interlocked strips per side. Use the supplied (fiberglass) G-10 strips (2293771 and/or -2 as needed) to center the coil in the Y direction. By measuring the gap between the gradient coil and the magnet warm bore. The difference must be less than 2mm. See Illustration 4-18.



INSTALLING ISOLATION MATERIAL
ILLUSTRATION 4-18

35. Install the four Radial Supports between the TRM coil and the magnet warm bore (located at 10 & 2 O'clock). See Illustration 4-19. First, tighten the Radial Support Screw until the Mounting Pad is secure to the magnet warm bore. Then tighten the Radial Support Screw an additional ½ turn. Then install the plastic setscrew to prevent the Radial Support Screw from loosening.



INSTALLING RADIAL SUPPORTS
ILLUSTRATION 4-19

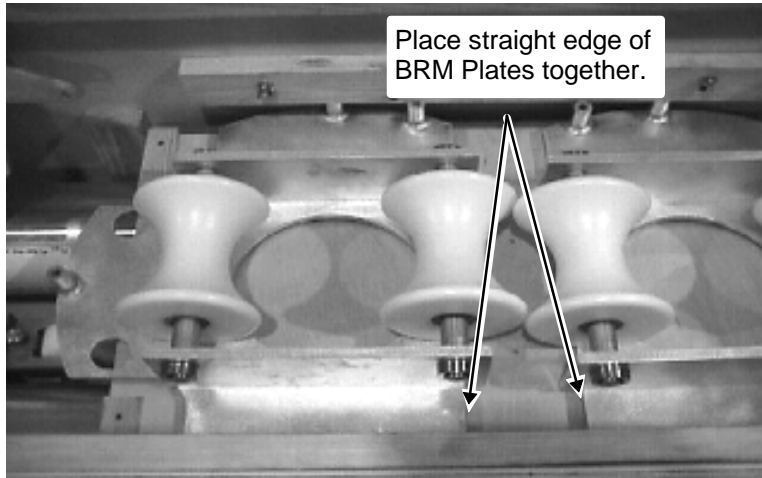
36. Replace the 2 screws that attach the water manifold block to the inner coil face. See Illustration 4-20.



LOCATION OF SCREWS FOR WATER MANIFOLD
ILLUSTRATION 4-20

5- RETURNING PLATES TO GRADIENT INSERTION TOOL KIT

1. BRM plates with the rollers attached (spacers pointing up) are placed in the crate. See Illustration 5-1.

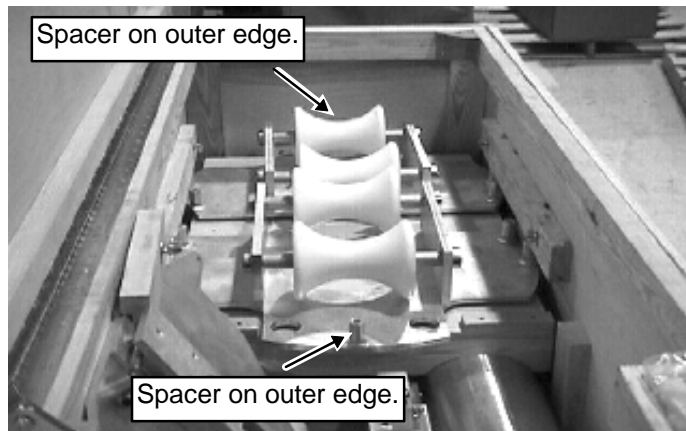


PLACEMENT OF BRM PLATES
ILLUSTRATION 5-1

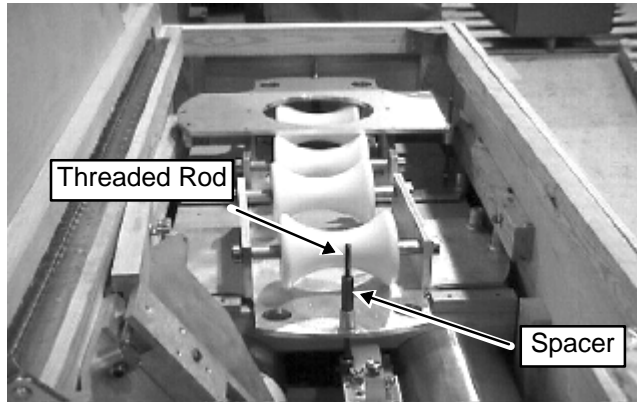
2. Install threaded rod through spacer on the outer edge of the BRM plate (see Illustration 5-2) and secure with washer and nut on bottom of BRM plate (see Illustration 5-3).

Note

Slide threaded rod with washer and nut attached on end through the bottom of the spacer.

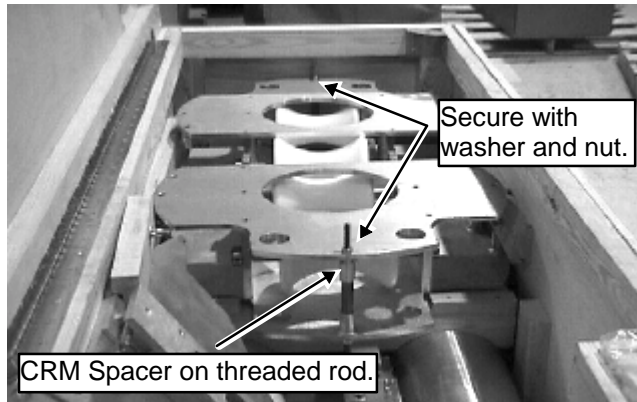


BRM PLATE SPACER LOCATIONS
ILLUSTRATION 5-2



THREADED ROD AND SPACER ATTACHED TO BRM PLATE
ILLUSTRATION 5-3

3. Install spacer on both threaded rods. See Illustration 5-3.
4. Install CRM plates (labeled *55cm Plate*) onto BRM plates and rollers by placing CRM spacer on the threaded rod. See Illustration 5-4.



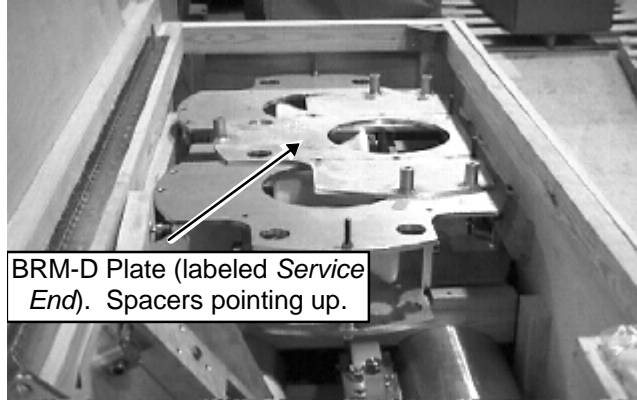
PLACEMENT OF CRM PLATES
ILLUSTRATION 5-4

5. Place washer and nut on threaded rod and tighten to secure plates on both ends. See Illustration 5-4.

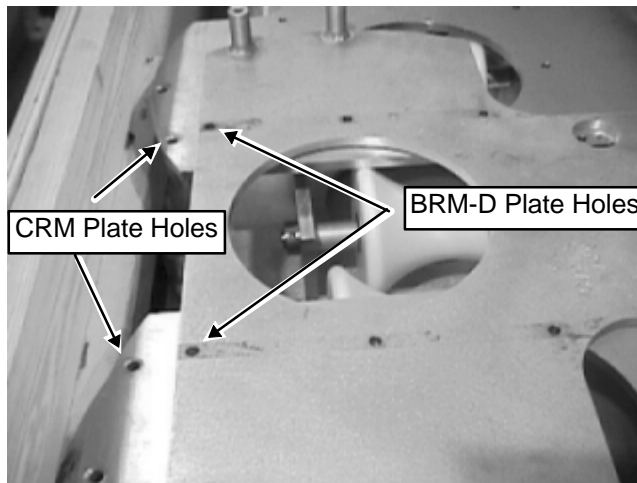
- Place BRM-D plate labeled *Service End* on CRM plates (see Illustration 5-5). Line up holes on BRM-D plate and CRM plates (see Illustration 5-6).

Note

BRM-D Plate labeled *Service End* has the short spacers.



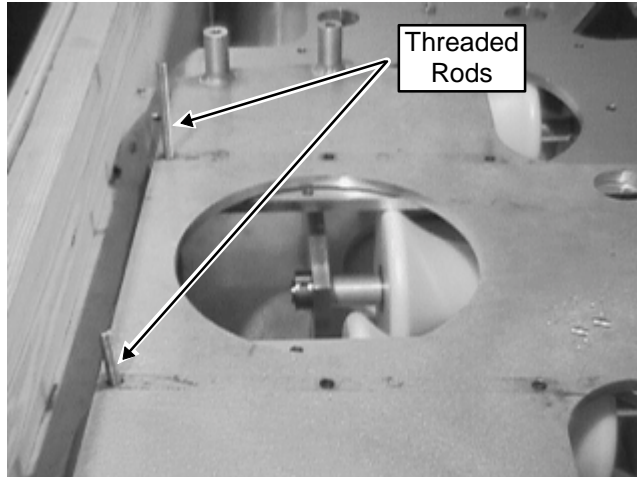
PLACEMENT OF BRM-D (SERVICE END) PLATE
ILLUSTRATION 5-5



BRM-D PLATE ALIGNMENT
ILLUSTRATION 5-6

- Move BRM-D plate to wall of crate with holes in Illustration 5-6 aligned.

8. Put washer and nut on one end of both threaded rods.
9. Underneath the CRM plates slide the threaded rods through the aligned holes of the CRM and BRM-D plates. See Illustration 5-7.

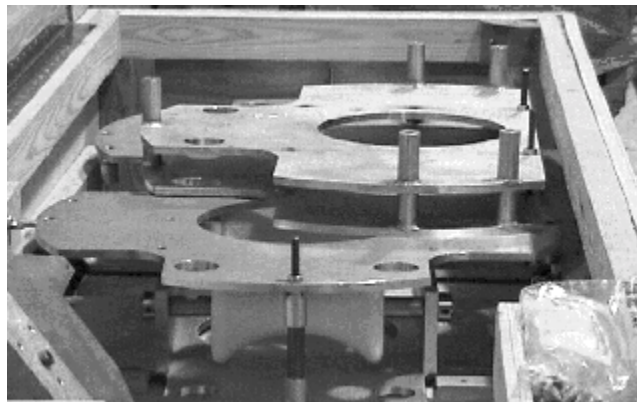


PLACEMENT OF THREADED RODS IN CRM & BRM-D PLATES
ILLUSTRATION 5-7

Note

Allow the threaded rods to rest on the BRM plates while performing next step.

10. Place the BRM-D plate, labeled *Patient End*, on top of the *Service End* BRM-D plate. Threaded rods will go through the same holes as on the *Service End* BRM-D plate. See Illustration 5-8.



PLACEMENT OF THE PATIENT END BRM-D PLATE
ILLUSTRATION 5-8

11. Place washers and nuts on the threaded rods and secure both ends of rods to plates. Verify all threaded rods are fastened securely so plates do not move during shipping.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	Nov. 2, 2001	K. Keshena	Preliminary version.
0	Dec. 11, 2001	K. Keshena	Initial release.
1	June 12, 2002	K. Keshena	Updated section 2- List of Equipment & Parts and included the gradient isolation brackets in the remove and replace sections.