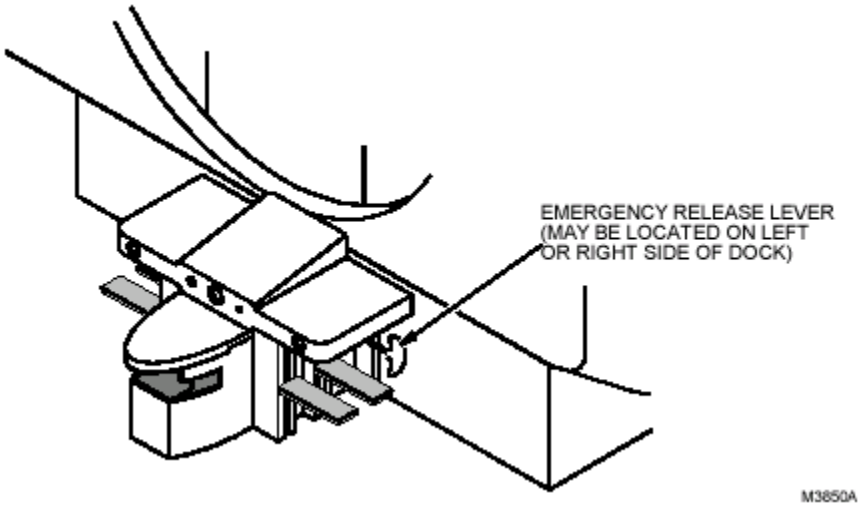
SECTION 3 - PATIENT HANDLING

TABLE OF CONTENTS

SECTION	TITLE	PAGE
3–1	CHECK EMERGENCY RELEASE OF CRADLE AND PATIENT TRANSPORT	3-2
3–2	CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT	3-3
3–3	CHECK PATIENT TRANSPORT CASTERS, ARM BOARD SET SCREWS & BUMPERS	3-14
3-3-1	Armboard Bumper Replacement	3-15
3–4	CHECK PATIENT TRANSPORT CASTER LOCKS	3-17
3–5	CHECK CRADLE LONGITUDINAL DRIVE CLUTCH	3-18
3–6	CHECK PATIENT TRANSPORT FOR HYDRAULIC FILTER	3-19
3–7	CLEAN LIGHTWEIGHT CRADLE WHEELS	3-20
3-8	CHECK FOOT PEDAL SPRING INSTALLATION DATE	3-21

3-1 CHECK EMERGENCY RELEASE OF CRADLE AND PATIENT TRANSPORT

1. Dock patient transport and engage carriage assembly with cradle.
2. Drive cradle into bore approximately 24 inches (61 cm).
3. Step on the undock pedal. If the table undocks, **repair immediately.** Refer to the *Lightweight Patient Transport Procedure (PT1SCA2), section 10* on the Signa ® 8x Service Methods CD ROM, Direction # 2160623.
4. Step on the table down pedal. If the table lowers, **repair immediately.** Refer to the *Lightweight Patient Transport Procedure (PT1SCA2), section 8,* Signa ® 8x Service Methods CD ROM, Direction #2160623.
5. Either squeeze the blue handle, or twist the gray emergency release handle on end of cradle to release cradle from carriage assembly. If cradle fails to release, **repair immediatel**y. Refer to the *Lightweight Patient Transport Procedure (PT1SCA2), section 9,* Signa ® 8x Service Methods CD ROM, Direction # 2160623.
6. Pull hard on emergency release lever, to release table from dock. See Illustration 3-1. If table fails to release from dock, **repair immediatel**y. Refer to the *Lightweight Patient Transport Procedure (PT1SCA2), section 9,* Signa ® 8x Service Methods CD ROM, Direction #2160623.



LOCATION OF EMERGENCY RELEASE LEVER
ILLUSTRATION 3-1

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT

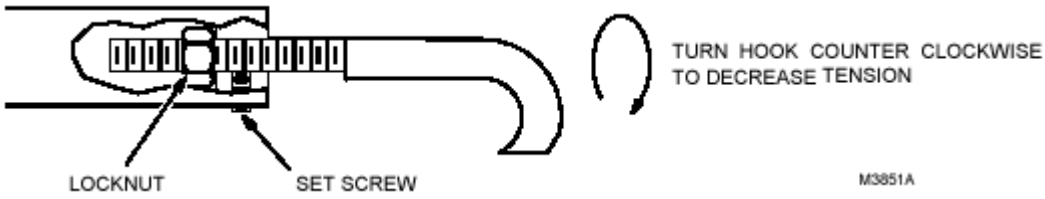
1. Dock patient transport by pressing DOCK pedal. Docking should not require excessive force. If excessive force is needed, hook tension is too tight. Do Step 2 to loosen hook tension. Otherwise, go to Step 4.

CAUTION

Do not adjust dock hook tension more than one turn at a time. Adjusting more than one turn at a time may cause damage to internal patient transport mechanisms.

2. To loosen dock hook tension, do the following:

   a. Loosen set screw and lock nut near base of dock hook. See Illustration 3-2.



LOCATION OF SET SCREW AND LOCK NUT
ILLUSTRATION 3-2

   b. Rotate hook one turn counterclockwise.

   c. Tighten set screw and locknut.

   d. Repeat Step 1 to recheck hook tension.

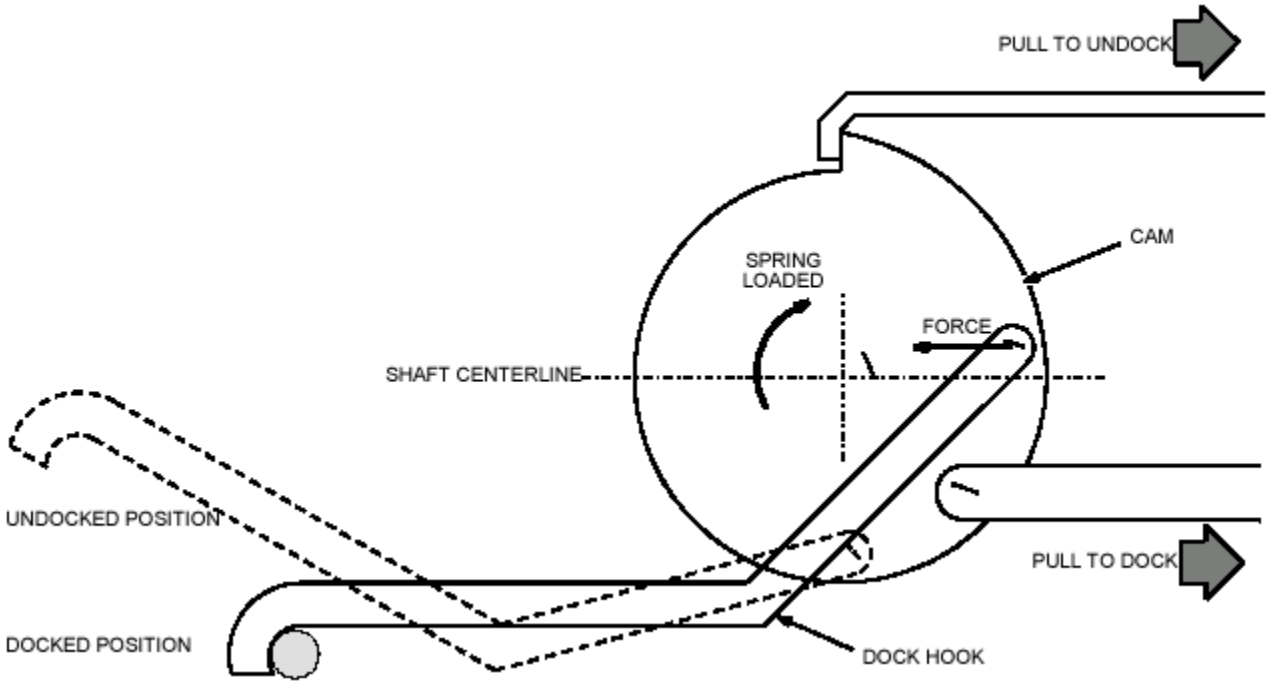
   e. If this adjustment causes transport docking problems, restore docking hook to original position and adjust dock pedal stroke tension inside transport per Step 3.

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

3. Dock Pedal Stroke Adjustment.

If adjusting dock hook tension does not relieve excessive force from the docking pedal, or caused other docking problems; adjust the dock pedal stroke.

The table dock hook operates on the over-center principle. This is implemented by fixing one end of the hook to a cam on a shaft. When the force on the hook at its point of attachment to the cam is on the opposite side of the shaft as the hook end, this force will tend to keep the hook in the docked position. When the point of force is moved over-center of the shaft centerline, the force will no longer act to keep the hook retracted, and the spring loaded cam will extend the hook to the undocked position. See Illustration 3-3.



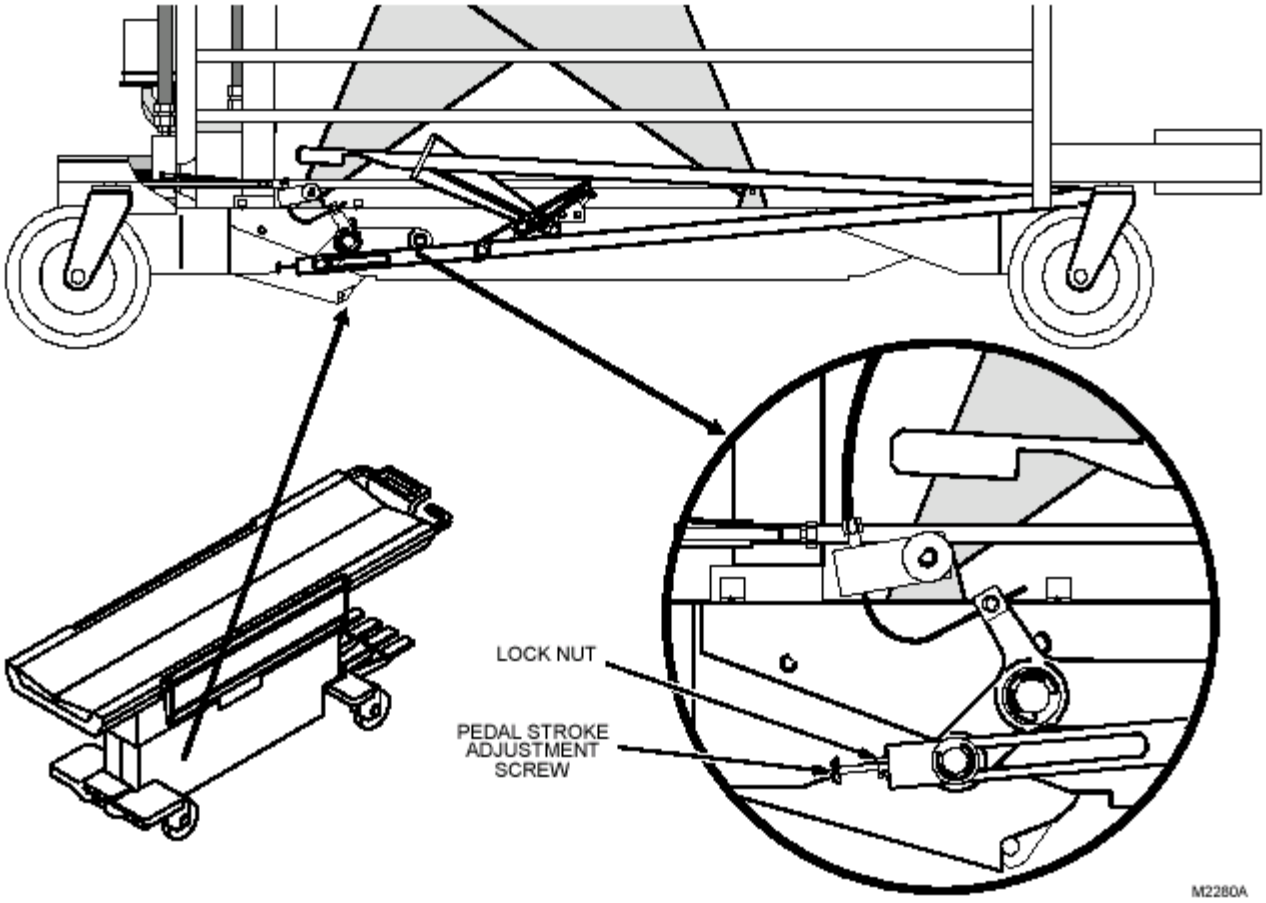
DOCKING MECHANISM THEORETICAL REPRESENTATION
ILLUSTRATION 3-3

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

Procedure

a. Remove all upper and lower trim covers from sides of Patient Transport.

b. Tighten or loosen the stroke adjustment screw as required so when the dock pedal is fully depressed during the docking operation, the hook cam mechanism just goes over-center. See Illustration 3-4.



DOCK PEDAL STROKE ADJUSTMENT
ILLUSTRATION 3-4

4. Press table UP pedal. Table should raise to full up position. Continue to press UP pedal a few strokes. Table should not vibrate back and forth excessively. If vibration is excessive, hook tension is too loose. Do Step 5 to tighten hook tension. Otherwise, go to Step 6.

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

5. To tighten dock hook tension, do the following:

   a. Loosen set screw and lock nut near base of dock hook. See Illustration 3-2.

   b. Rotate hook one turn clockwise.

   c. Tighten set screw and lock nut.

   d. Repeat Step 4 to recheck hook tension.

   e. If this adjustment causes transport docking problems, restore docking hook to original position and adjust dock pedal stroke tension inside transport per Illustrations 3-3 and 3-4.

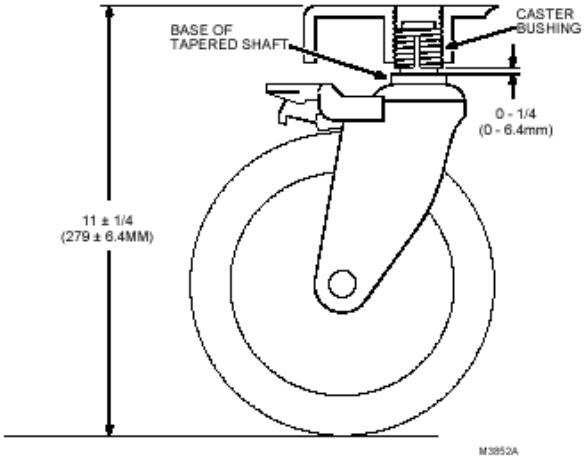
6. Drive cradle into bore approximately 24 inches (61 cm). Release cradle from carriage by squeezing or twisting the emergency release handle at end of cradle. Remove cradle from table top.

7. Lay a non-ferrous straight edge (such as an aluminum computer leg) across bridge and table top to check if table top is level to bridge in both directions. See Illustration 3-6. If table is not level with bridge, casters must be adjusted. Note how much adjustment is required and go to Step 9. Otherwise go to Step 8.

WARNING!

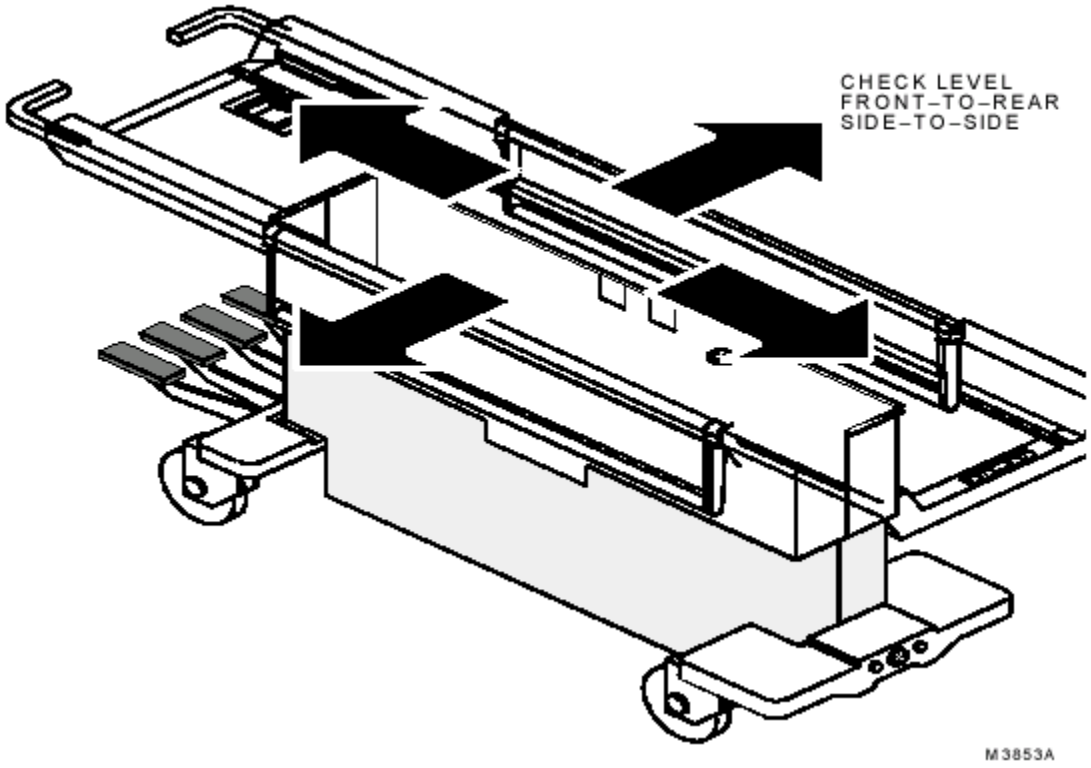
ENSURE DISTANCE BETWEEN BOTTOM EDGE OF CASTER BUSHING AND BASE OF TAPERED SHAFT IS NOT MORE THAN ¼LA (6.4 MM). ANY LARGER DISTANCE WILL LEAVE CASTER BUSHING VULNERABLE TO DAMAGE WHICH CAN RESULT IN INJURY TO PATIENT AND/OR PERSONS NEAR PATIENT TRANSPORT.

8. Check height of table casters. Distance between top of aluminum support casting and floor should be 11.0 ± 1/4 inches (279 ± 6.4mm). See Illustration 3-5. If any casters are out of tolerance, note how much adjustment is required and go to Step 9. Otherwise go to Step 13.



CHECKING HEIGHT OF CASTER
ILLUSTRATION 3-5

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)



CHECKING LEVEL OF TABLE
ILLUSTRATION 3-6

DANGER!!

FERROUS MATERIAL HAZARD!! TORQUE WRENCH AND SOCKET DRIVE CONTAIN FERROUS MATERIAL AND CAN BE FORCIBLY ATTRACTED TO MAGNET. DO NOT BRING WRENCH AND SOCKET DRIVE INTO MAGNET ROOM.

9. Undock patient transport and move it out of magnet room.

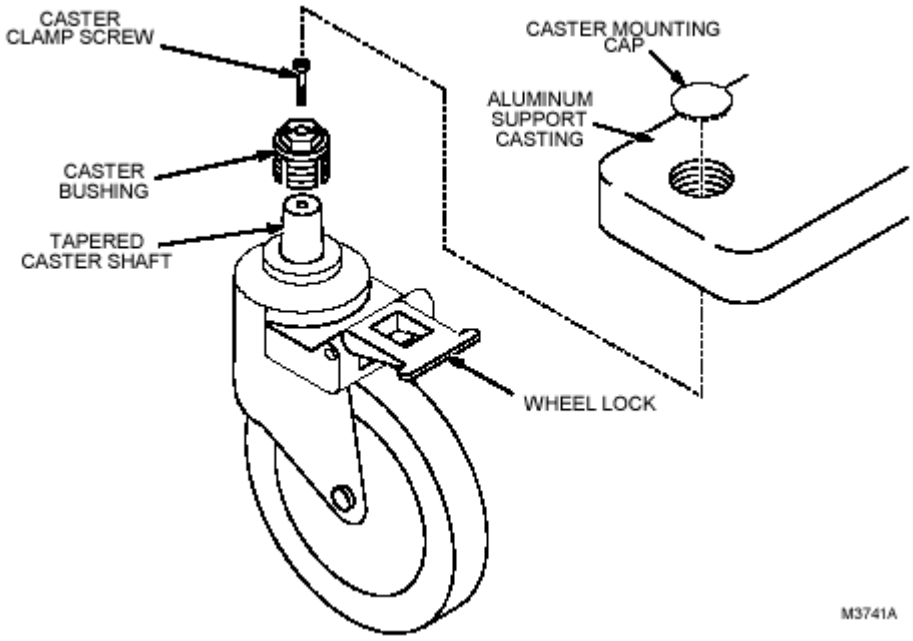
3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

WARNING!

ADJUSTMENTS WHICH EXCEED TOLERANCES SHOWN IN ILLUSTRATION 3-5 LEAVE CASTER BUSHING VULNERABLE TO DAMAGE, WHICH CAN RESULT IN INJURY TO PATIENT AND/OR PERSONS NEAR PATIENT TRANSPORT.

10. To adjust a caster, do the following:

    a. Remove caster mounting cap by prying it off with a small screwdriver. See Illustration 3-7.



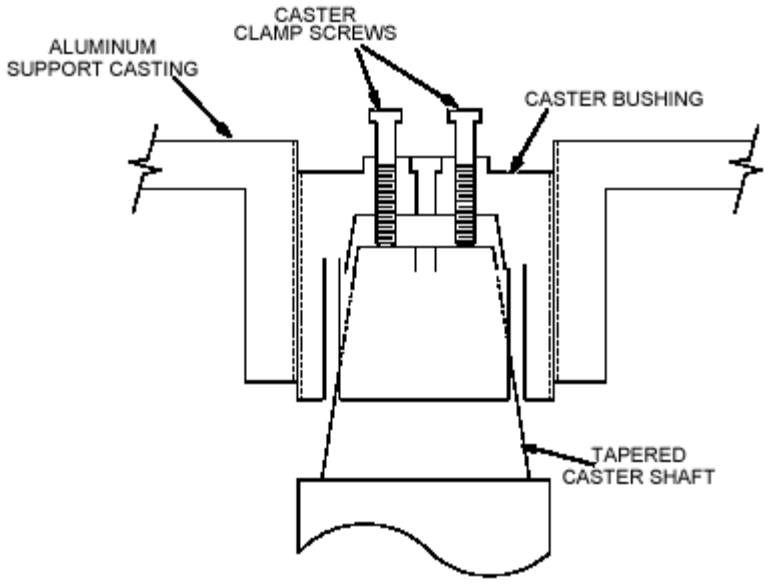
CASTER WHEEL ASSEMBLY
ILLUSTRATION 3-7

    b. Remove caster clamp screw (cap screw) from its hole, and screw it into one of the empty caster release screw holes, finger tight only.

    c. Go to another caster assembly and remove caster clamp screw. Bring borrowed caster clamp screw back to caster being adjusted.

    d. At caster being adjusted, screw borrowed caster clamp screw into other empty caster release screw hole, finger tight only.

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)



CASTER MOUNTING CONSTRUCTION
ILLUSTRATION 3-8

e. Alternately screw in caster clamp screws one turn at a time until tapered caster shaft is as loose as possible in caster bushing. See Illustration 3-8.

f. Using a means of leverage, slightly prop up aluminum support casting (at caster being adjusted) only enough to take patient transport weight off caster wheel. This will disengage caster shaft from caster bushing and prevent excessive wear on threads during adjustment.

g. Remove both caster clamp screws from caster release screw holes.

h. Activate wheel lock at caster being adjusted. See Illustration 3-7.

WARNING!

ADJUSTMENTS WHICH EXCEED TOLERANCES SHOWN IN ILLUSTRATION 3-5 LEAVE CASTER BUSHING VULNERABLE TO DAMAGE, WHICH CAN RESULT IN INJURY TO PATIENT AND/OR PERSONS NEAR PATIENT TRANSPORT.

Note

It may not be possible to maintain tolerances shown in Illustration 3-5 and keep patient transport level with bridge. Try to do the best job possible while maintaining tolerances.

i. While holding caster wheel, use a 19 mm socket to turn caster bushing counterclockwise to raise table corner or clockwise to lower table corner. Each complete revolution of caster bushing raises or lowers caster 0.083 (approximately 3/32) inch (2.1 mm).

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

j. Remove prop from under aluminum support casting.

k. Return borrowed caster clamp screw to its original caster assembly.

l. At caster being adjusted, insert remaining caster clamp screw into caster clamp screw hole.

m. Using torque wrench (46-306712G1 Regional Tool Kit) and socket driver (46-307811P1), torque caster clamp screw to 50 inch-pounds (56 Nm). If necessary, refer to operating instructions supplied with the torque wrench.

n. Verify that caster shaft is seated well into caster bushing and that gap between bottom of caster bushing and base of caster shaft is less than 1/4 inches (6.4 mm).

o. Reinstall caster mounting cap.

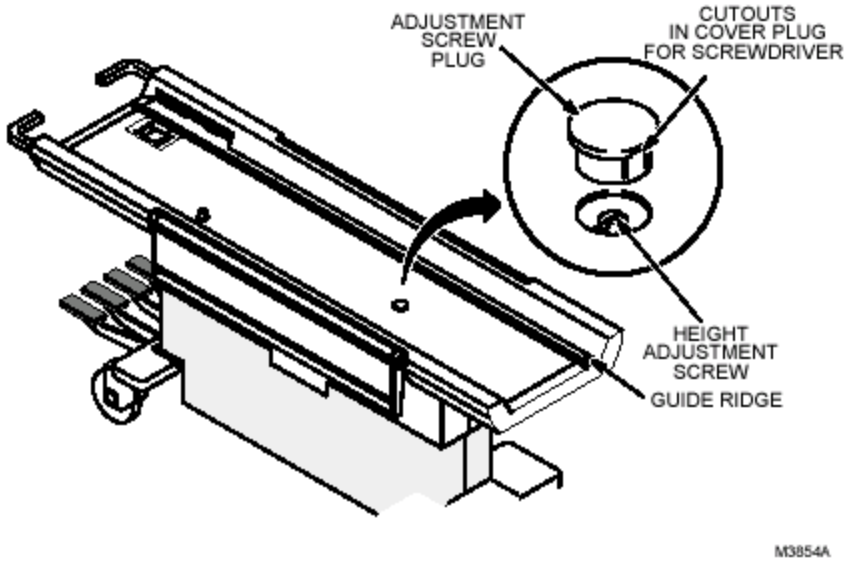
p. Repeat Steps a through o for each caster to be adjusted.

11. Move patient transport back into magnet room, and dock transport to magnet.

12. Repeat Steps 6 and 7 to recheck height of all casters. When all casters are properly adjusted, continue with Step 13.

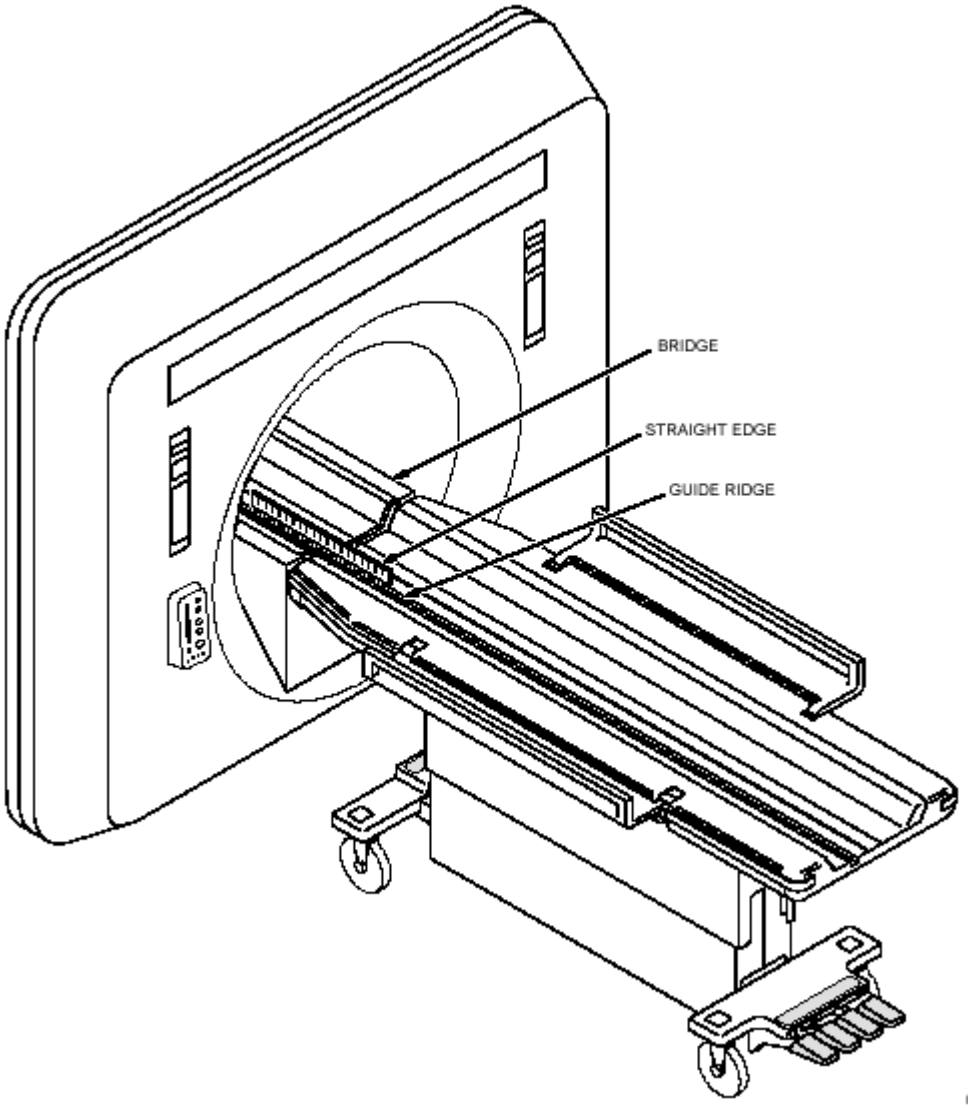
13. Lay a nonferrous straight edge (such as an aluminum computer leg) across bridge and table top to check height of table top compared to height of bridge. Table top should be equal to bridge height so cradle will stay latched as it drives into bore. If adjustment is needed, remove adjustment screw plug and rotate height adjustment screw to raise or lower table top. See Illustration 3-9.

14. Lay nonferrous straight edge (such as aluminum computer leg) along guide ridge on bridge and table top. Table and bridge should be aligned both right-to-left and in a straight line. See Illustration 3-10. If alignment is needed, go to Step 15. Otherwise go to Step 16.



HEIGHT ADJUSTMENT SCREW
ILLUSTRATION 3-9

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

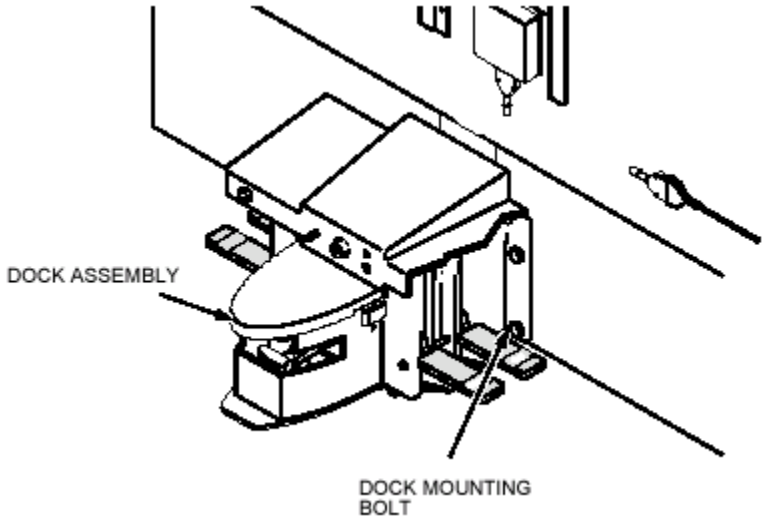


ALIGNING TABLE TO BRIDGE
ILLUSTRATION 3-10

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

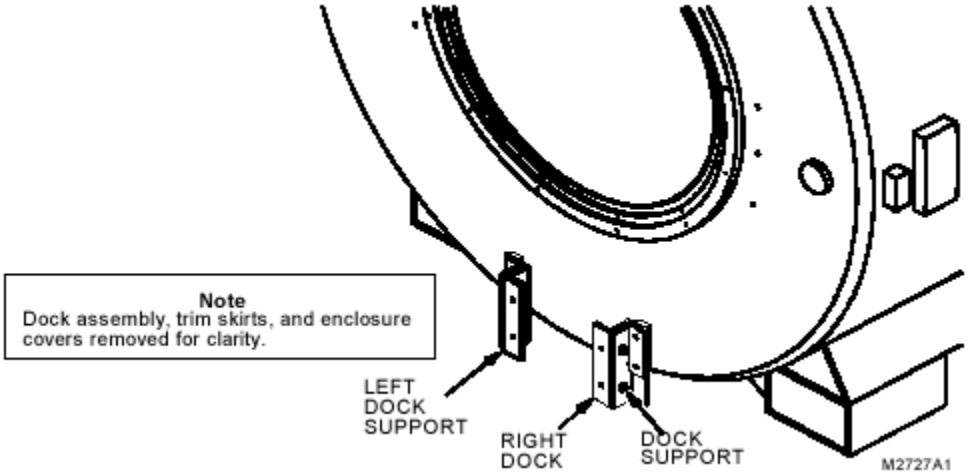
15. There are two types of adjustment: right-to-left and straight line.

    a. If right-to-left adjustment is needed, loosen four dock mounting bolts. See Illustration 3-11. Move dock right or left as needed, then re-tighten bolts.



DOCK MOUNTING BOLT
ILLUSTRATION 3-11

    b. If straight line adjustment is needed, loosen bolts on left or right dock support. See Illustration 3-12. Adjust the angle of the dock assembly with respect to the bridge as needed, then re-tighten bolts.



DOCK SUPPORT BOLTS
ILLUSTRATION 3-12

3-2 CHECK PATIENT TRANSPORT DOCKING AND ALIGNMENT (continued)

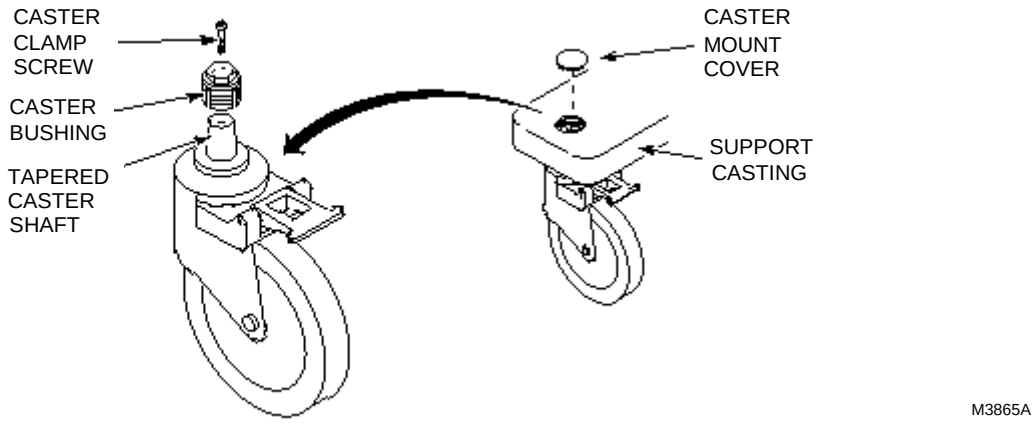
16. Check for a gap 1 inch ± 1/4 inch (25.4 ± 6.4 mm) between table and bridge. If gap is not correct, loosen bolts on left and right dock supports. See Illustration 3-12. Move dock towards or away from magnet, making sure table is still in a straight line with bridge, until gap is correct. Then, tighten left and right dock support bolts.
17. Press table DOWN pedal. Verify carriage drives back into bore a few inches. If carriage does not drive back, schedule time to repair table-up limit switch.
18. Press table UP pedal until table is fully up. Verify carriage drives out of bore until it connects with cradle latch.
19. Inspect underside of cradle. Verify all eight bearings and their retaining screws are present and intact. Replace any missing or damaged parts:

Bearing:	46-243178P3
Shorter screw:	46-243496P1
Longer screw:	46-258536P1

20. Place cradle back on table and bridge.
21. Drive carriage fully into bore.
22. With cradle unlatched, verify cradle rolls smoothly in and out of bore.
23. Drive carriage out and verify it latches with cradle.
24. Drive carriage in and out with cradle latched. Verify cradle stays latched to carriage.

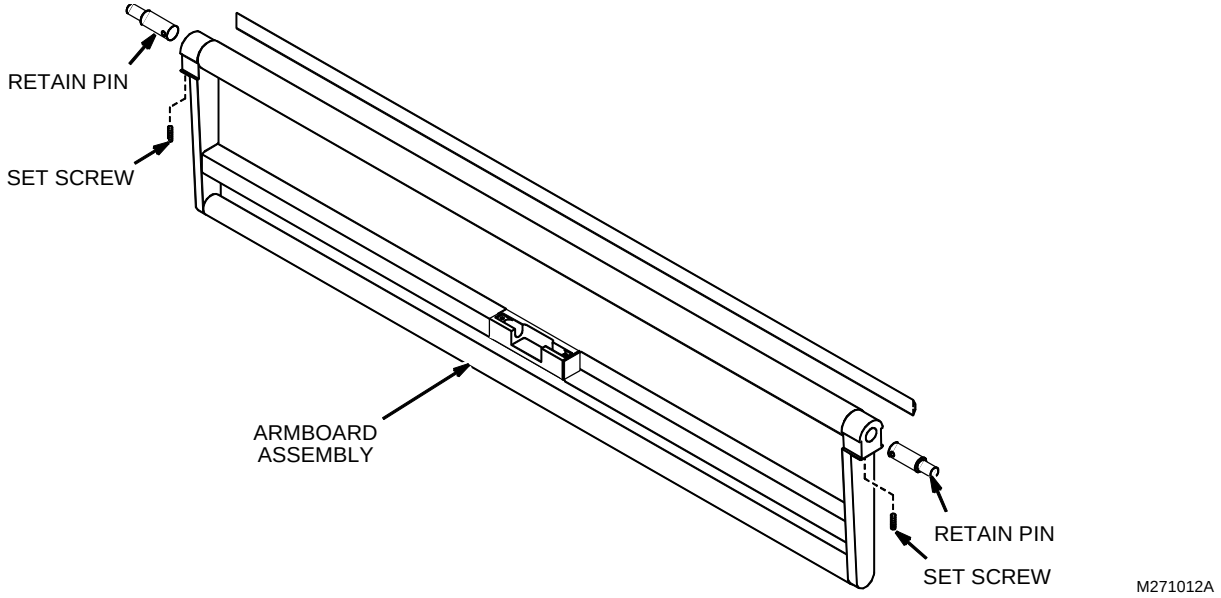
3–3 CHECK PATIENT TRANSPORT CASTERS, ARMBOARD SET SCREWS & BUMPERS

1. Move patient transport to a location where caster inspection can be performed outside magnetic environment.
2. Remove caster mount cover.
3. On lightweight patient transport, use a torque wrench to check tightness of caster clamp screw. See Illustration 3-13. It should be torqued to 50 inch–pounds (56 Nm). If clamp screw was not tightened to proper torque, patient transport docking and alignment should be checked. Refer to Section 3–2. After checking and adjusting patient transport alignment, go to Step 4.
4. Install caster mount cover and return transport to service.



CASTER DISASSEMBLY
ILLUSTRATION 3-13

5. Rotate each armboard until set screws are visible. See Illustration 3-14.
6. Using a 10-32 hex socket wrench, check each set screw for tightness.
7. Release armboard and rotate it back to normal position.



ARMBOARD SET SCREWS
ILLUSTRATION 3-14

8. Check bumper strips for areas where adhesive may have dried and strips are separating from the armboard assembly. If strips are separating, schedule time to repair using the procedure in section 3-3-1.

3-3-1 Armboard Bumper Replacement

Required Tools & Materials:

• Narrow (1 inch) Putty Knife	Obtain locally
• Rubber Protector such as “Armor All” (or equivalent)	Obtain locally
• Sharp Knife or Utility Knife	Obtain locally
• Towels or Rags	Obtain locally
• Adhesive Remover such as “GOO GONE” (or equivalent)	Obtain locally
• Isopropyl Alcohol	46-183000P164
• Neoprene Gloves (100 count box)	46-194427P400 (lg) P401 (xlg)
• Adhesive (one quart …fixes many bumpers)	46-170079P1
• Brush (for application of adhesive)	46-194427P218
• Bumper for Arm Board (if lost)	46-271017P2

Procedure:

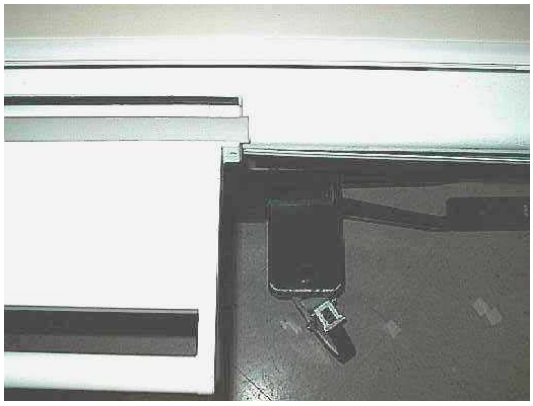
1. Remove table from magnetic field to a ventilated location.
2. Remove partially attached bumper(s) (if present).
3. Clean arm board bumper channel(s) completely with alcohol and/or adhesive remover, putty knife and towel/rag; see Illustration 3-15.

ARMBOARD BUMPER CHANNEL
ILLUSTRATION 3-15

4. Apply adhesive to bumper channel and bumper surface per manufacturer directions (use gloves and brush).
5. Install bumper in channel with some over lap at each end.

3-3-1 Armboard Bumper Replacement (Continued)

6. Apply pressure to entire bumper to insure good adhesion.
7. Repeat on second bumper if necessary; see Illustration 3-16.



BUMPER INSTALLED WITH OVERLAP
ILLUSTRATION 3-16

8. Cut bumper ends at 45 degree angles to match arm board edges to prevent catching on sheets and/or patients; see Illustration 3-17.

CUTTING BUMPER ENDS
ILLUSTRATION 3-17

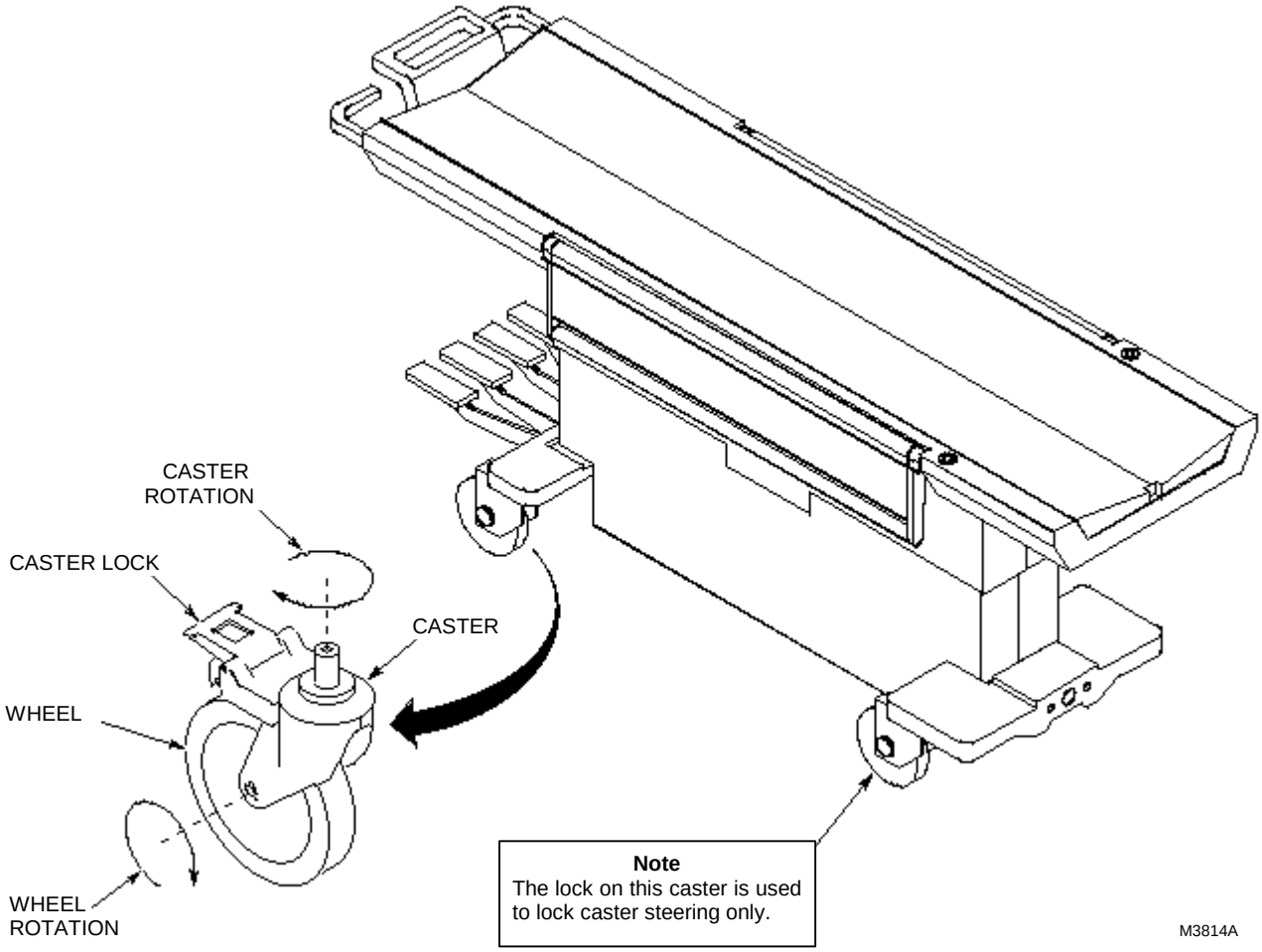
9. Apply Armor All to bumper surface(s) to reduce surface friction.
10. Return table to customer for use.

3–4 CHECK PATIENT TRANSPORT CASTER LOCKS

Note

The right front caster lock is used to lock caster rotation (steering) only, not to lock wheel rotation.

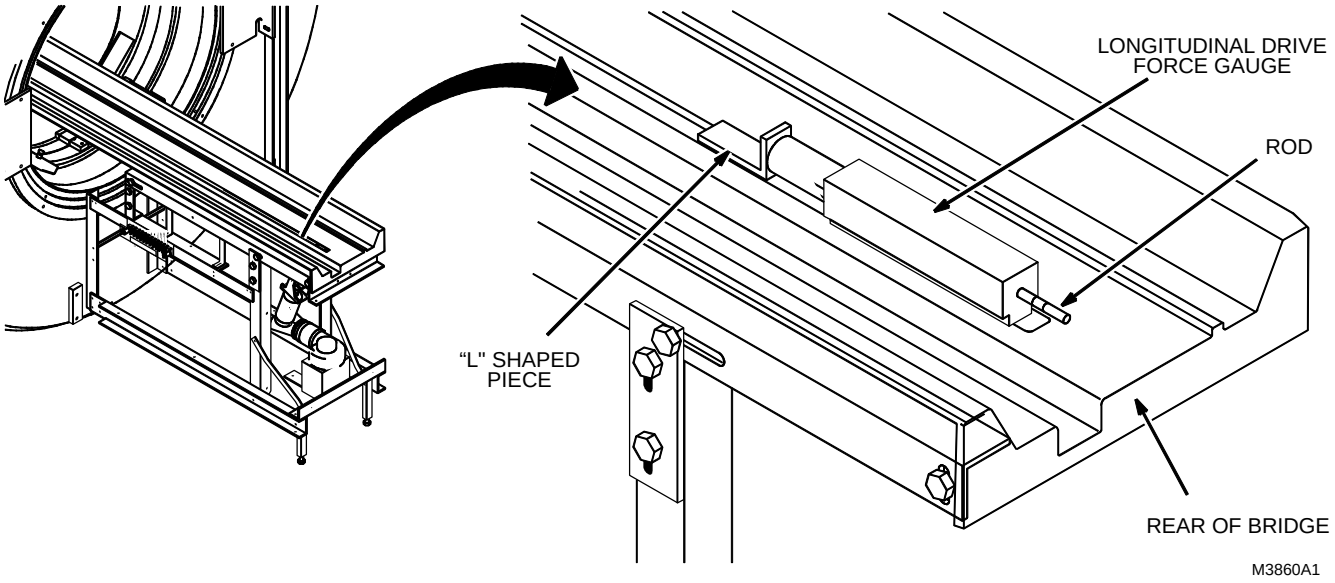
1. Press down on one of the three caster wheel locks (one on left front left caster and one on each of the two rear casters). See Illustration 3-18. Verify that caster wheel does not rotate when lock is engaged, then release caster lock. Verify caster wheel rotates freely when lock is not engaged.
2. Repeat Step 1 for other two caster wheel locks.
3. If any caster lock (46-282918P1) does not work properly, repair or replace it IMMEDIATELY.



LIGHTWEIGHT PATIENT TRANSPORT CASTER LOCKS
ILLUSTRATION 3-18

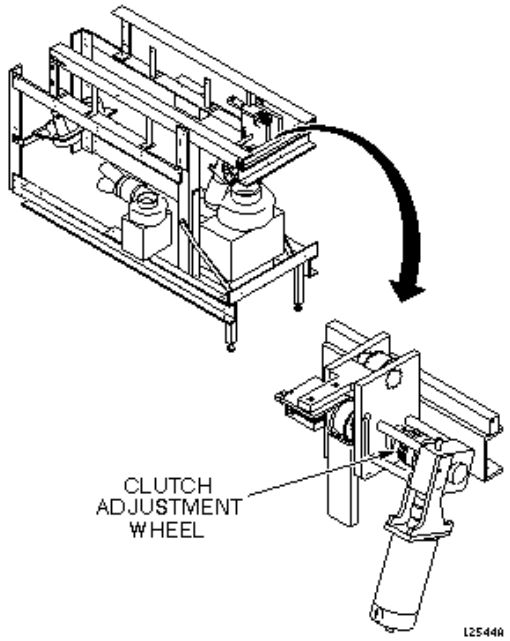
3–5 CHECK CRADLE LONGITUDINAL DRIVE CLUTCH

1. Position head coil carriage to the magnet opening at the rear.
2. Position Longitudinal Drive Force Gauge (46-307500G1) at rear of bridge with rod end of gauge facing magnet rear. See Illustration 3-19. Make sure rod is pushed into gauge as far as it will go.
3. Fast–forward carriage into magnet bore, making contact with “L” shaped piece on gauge, and forcing rod to protrude from gauge.
4. When clutch is properly tensioned, rod should only protrude far enough to show area between inked calibration lines on rod. If first line is not visible, or if more rod is visible past second line, clutch tension requires adjustment. See Illustration 3-20. Remove Rear Pedestal covers to gain access for clutch adjustments.
5. Repeat Steps 3 and 4 until clutch is properly tensioned.



LONGITUDINAL DRIVE FORCE GAUGE
ILLUSTRATION 3-19

3–5 CHECK CRADLE LONGITUDINAL DRIVE CLUTCH (continued)



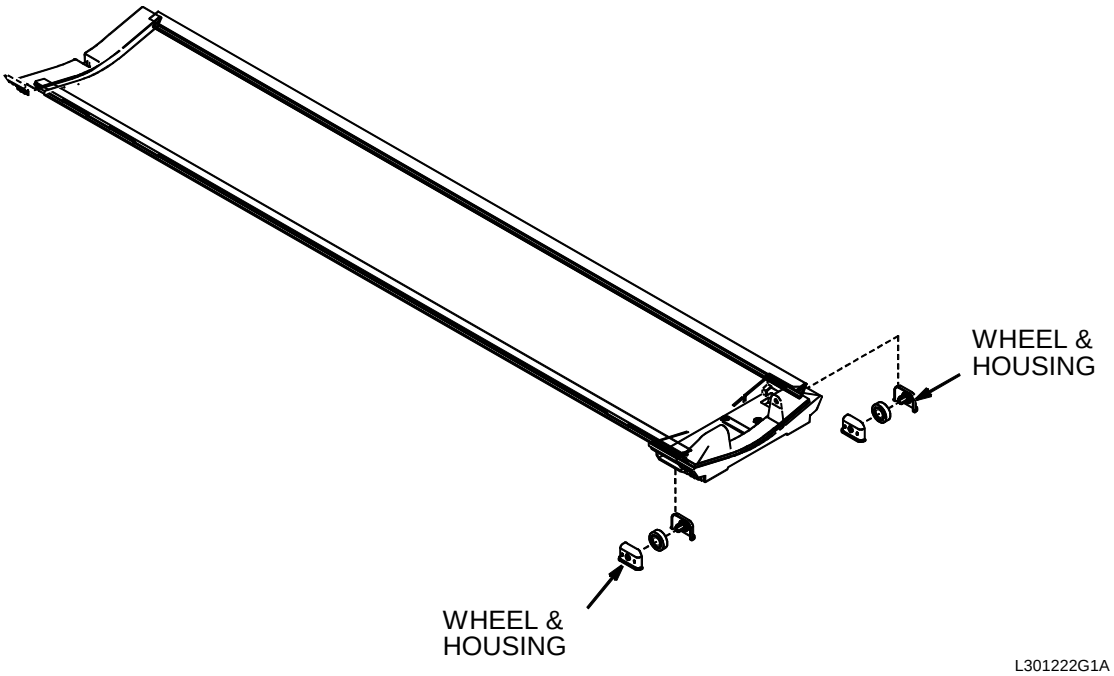
CLUTCH ADJUSTMENT FOR LONGITUDINAL DRIVE WITHOUT PULLEYS
ILLUSTRATION 3-20

3–6 CHECK PATIENT TRANSPORT FOR HYDRAULIC FILTER

1. With the Patient Transport docked, lower it to its lowest position.
2. Press Table–UP pedal on dock and verify table travels from lowest to highest position in 19 seconds or less with table unloaded.
3. Press Table–Down Pedal on dock and verify table travels from highest to lowest position in 20 seconds or less with table unloaded.
4. If either of these functional checks fail, schedule time to change the table filter element (46-230889P1).

3-7 CLEAN LIGHTWEIGHT CRADLE WHEELS

1. Remove table cradle and turn over on its back.
2. Using a flathead screwdriver, lift out each cradle wheel. See Illustration 3-21.



CRADLE WHEELS
ILLUSTRATION 3-21

3. Clean cradle wheel and return to cradle.

3-8 CHECK FOOT PEDAL SPRING INSTALLATION DATE

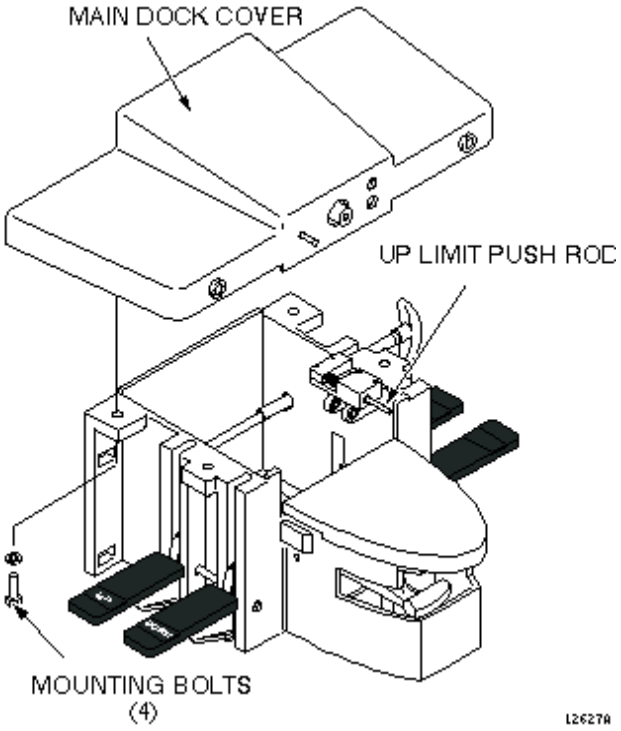
The spring (46-271152P1) between the table up & down foot pedals is to be replaced every five years. Check Dock Assembly for dated label, if no label exists and system installation date is 5 years or more, spring must be changed. Otherwise, maintain according to label on Dock Assembly.

DANGER!!

FERROUS MATERIAL HAZARD!! THE DOCK ASSEMBLY CONTAINS A MOTOR MADE WITH FERROUS COMPONENTS. HOLDING THIS ASSEMBLY TOO CLOSE TO THE MAGNET BORE WILL RESULT IN IT BEING FORCIBLY ATTRACTED TO THE MAGNET. TO PREVENT POSSIBLE BODILY INJURY OR DAMAGE TO MOTOR, MAGNET ENCLOSURE, OR MAGNET, PLACE DOCK ASSEMBLY ON FLOOR AT LEAST 10 FEET FROM FRONT OF MAGNET AND SLIDE INTO FINAL POSITION ALONG THE FLOOR.

PROCEDURE:

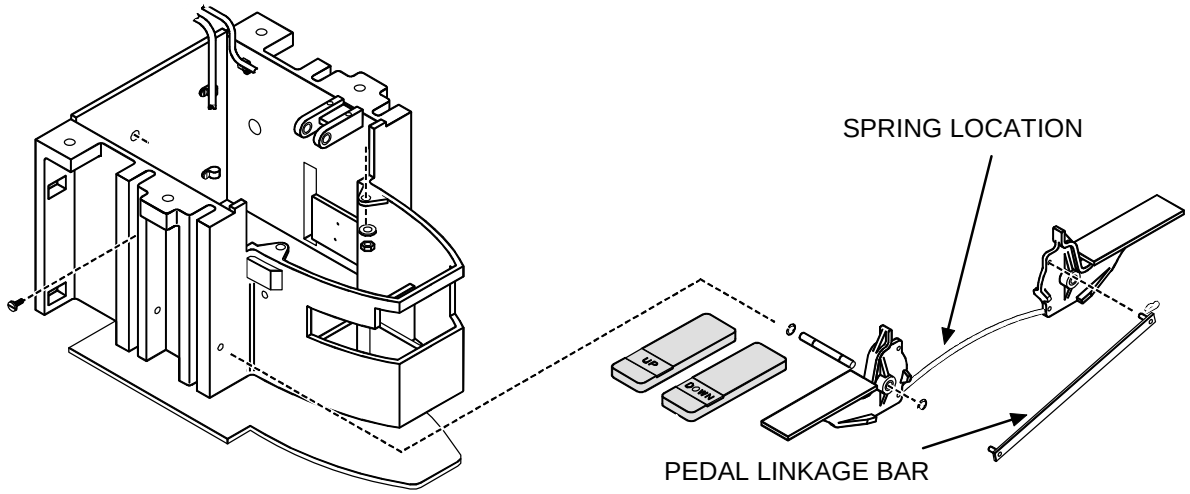
1. Remove Dock assembly from magnet enclosure and remove from magnet room. Refer to *SRI, Dock Hardware* replacement procedure, Section 3, Dock Components.
2. Remove 4 bolts securing dock cover. See Illustration 3-22.



MAIN DOCK COVER REMOVAL
ILLUSTRATION 3-22

3-8 CHECK FOOT PEDAL SPRING INSTALLATION DATE (continued)

3. Remove the Pedal Linkage Bar for the down pedal. See Illustration 3-23.
4. Remove and discard old spring.
5. Install new spring.



SPRING LOCATION
ILLUSTRATION 3-23

6. Replace Pedal Linkage Bar.
7. Repeat steps 3 through 5 for the up pedal.
8. Re-assemble dock cover to dock.
9. Re-attach dock assembly to magnet enclosure.
10. Using a piece of tape, make a label recording the date the spring was replaced and place on the exterior of the motor.