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This section is for the following models:

W60-80XT [E135];  
 B/C60-80XT [B199];  
 C60-80XT2 [A499];  
 CA60-80XT [A498];  
 T5XT [E142];  
 W20-40XTA [A453];  
 W20-40XTC [A454];  
 W20-30XTR [A455]

## General

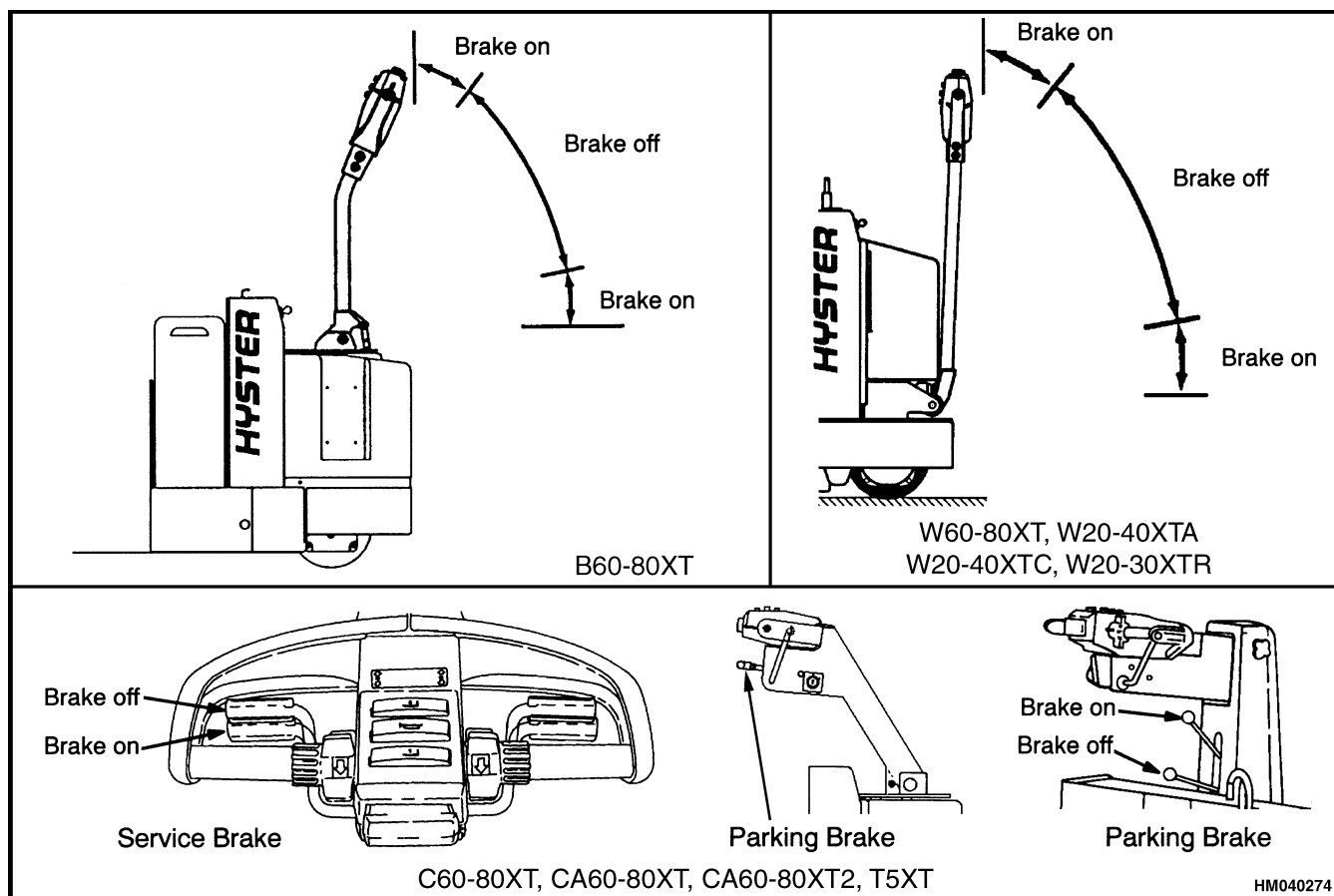
This section has the description and repair procedures for the brakes. Checks and adjustments for the brake assembly are described at the end of this section. A troubleshooting chart is also at the end of this section.

## Description

A mechanically-operated shoe brake with a brake drum fastened to the bevel gear shaft of the MDU is used on all units. An electrical cutout switch operated by the linkage interrupts the power to the drive motor when the brake is applied. The brake and cutout switch, when properly adjusted, operate simultaneously.

### W/B60-80XT

A spring applies the brake when the steering handle is in the vertical position or parallel to the floor. See Figure 1. The steering handle has a cam that moves a cam follower attached to a bellcrank. The bellcrank is attached through linkage to a brake release arm that will apply or release the brake when the steering handle is moved. Movement of the brake release arm compresses the spring to release the brake.



**Figure 1. Brake Operation**

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

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much.**

**W20-40XTA, W20-40XTC, W20-30XTR,  
W60-80XT**

A spring applies the brake when the steering handle is in the vertical position or parallel to the floor. The steering handle has a cam that moves a roller attached to a brake release arm. Movement of the brake release arm compresses the spring to release the brake.

**C60-80XT, CA60-80XT/XT2, T5XT**

The brake assembly is operated by hand levers that are part of the steering handle. The hand levers are attached to linkage that apply the brakes. Squeezing the brake levers will compress the springs and apply the brakes. When the handles are released, the springs will release the brakes. These units also have a parking brake. The parking brake is not automatically applied. The parking brake must be set manually when the operator leaves the truck.

**Repairs - General****WARNING**

Do not operate a lift truck that needs repairs. If a repair is necessary, put a **DO NOT OPERATE** tag on the control handle. Remove the key from the key switch.

**WARNING**

Before performing repairs or adjustments on the brake system, blocks must be placed under each side of the frame to raise the drive tire off the ground. The blocks must prevent the lift truck from falling and causing personal injury or property damage. See the Periodic Maintenance section for your truck. Refer to How to Put Lift Truck on Blocks.

**WARNING**

Always disconnect and separate the battery connector so the connector is completely free before performing any service or repairs. If the connector is not completely free, it can reconnect. Tag the connector **DO NOT RECONNECT**.

**WARNING**

The capacitor in the traction motor controller can hold an electrical charge after the battery is disconnected. To prevent electrical shock

and personal injury, discharge the capacitor before inspecting or repairing any component. Wear safety glasses. Make certain the battery has been disconnected. Discharge the capacitors in the controller by connecting a load (such as a contactor coil or a horn) across the controller's B+ and B- terminals. **DO NOT** use a screwdriver to discharge the traction motor controller.

**WARNING**

Be careful when removing or installing snap rings. These snap rings can come loose during removal or installation with enough force to cause a personal injury. Always use the correct snap ring pliers and wear eye and face protection during removal and installation.

Some parts of the steering control handle must be disconnected to disassemble the brakes. For removal and installation of the steering control handle see section **Steering Mechanism** 1600 SRM 534.

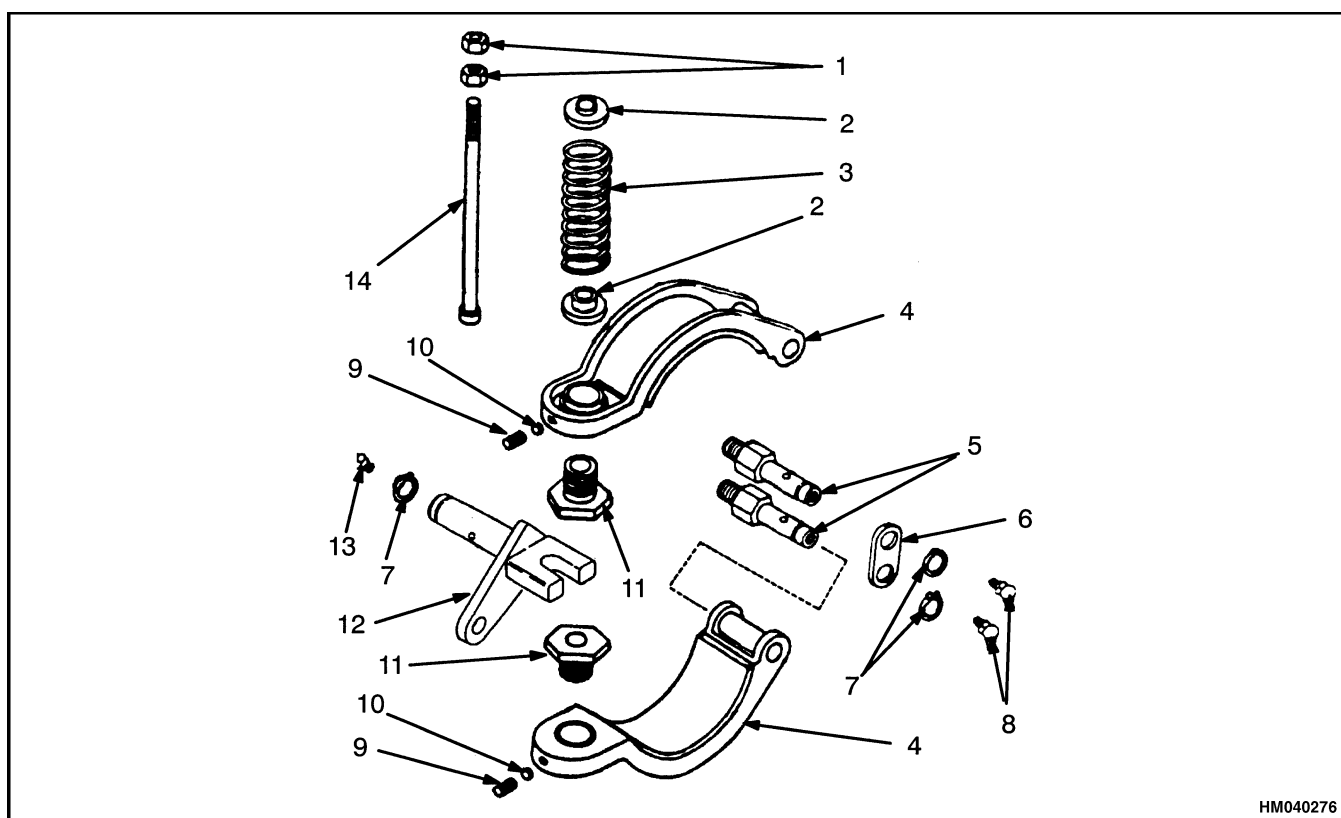
Separate parts of the brake system can be removed without disassembling the complete brake system. This procedure has steps to replace the brake shoe assemblies or to disassemble the complete brake system. Read the procedure and do only the steps necessary to make the required repairs to the unit being worked on.

**Brake Shoe Removal****W/B60-80XT, W20-40XTA, W20-40XTC,  
W20-30XTR**

See Figure 2 for the B60-80XT and Figure 3 for the W20-40XTA, W20-40XTC, W20-30XTR, and W60-80XT.

1. Raise the drive wheel off the floor. Block the lift truck. See the **Periodic Maintenance** section for your truck. See 8000 SRM 281 or 8000 SRM 652. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.

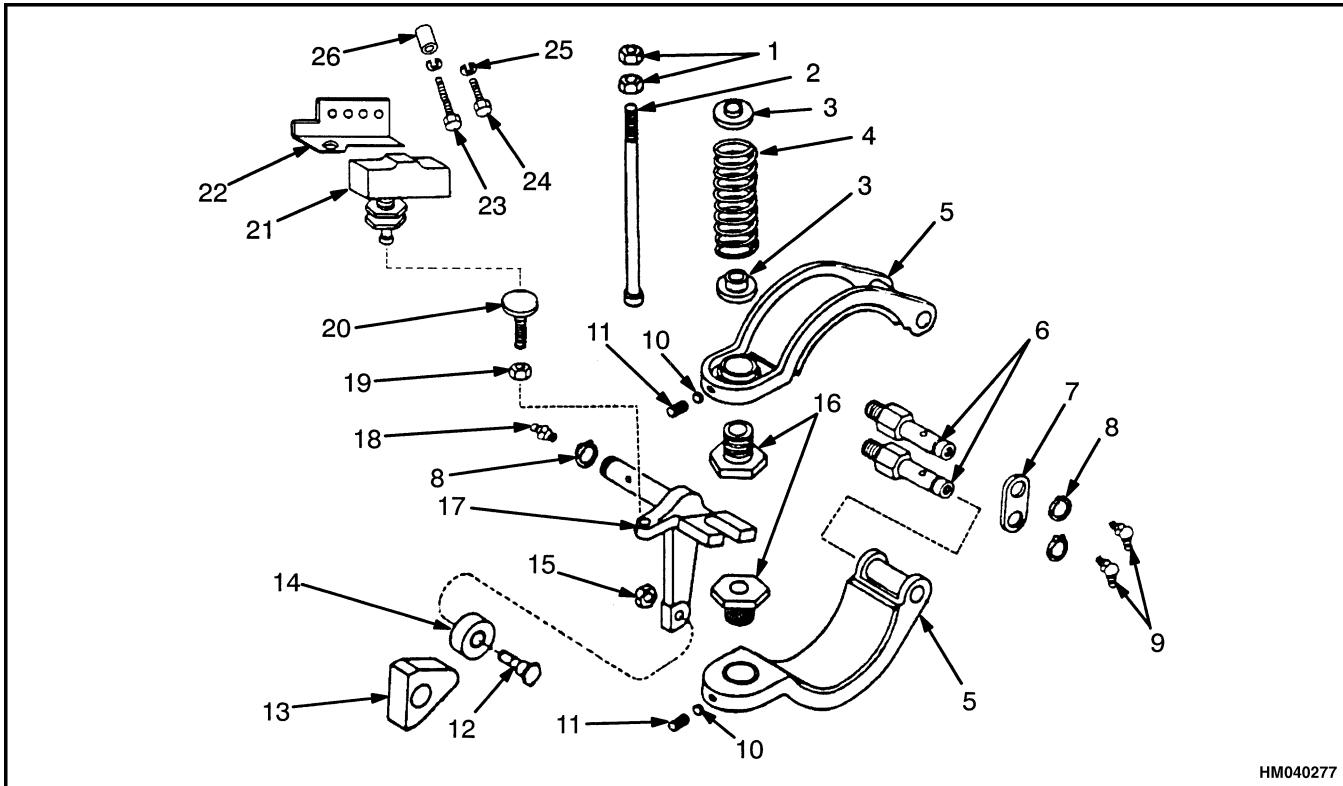
3. Remove the drive unit compartment hood to access the brakes.
4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Remove the grease fittings from the brake shoe pivot pins.
6. Disassemble the snap rings and pivot pin link from the brake pivot pins. Refer to **WARNINGS** in Repairs - General.
7. Loosen the nuts that apply tension to the spring to release the brake shoes from the drum.
8. The brake shoe and lining assembly can now be removed by sliding the assembly off the brake drum and pivot pins and out of the slot in the brake release arm.
9. If the brake shoe and lining assembly require further disassembly, remove the two nuts from the spring retainer bolt. Disassemble the spring seats, spring, and spring retainer bolt. Note that the spring retainer bolt head has a slotted head to keep the bolt from turning.
10. Loosen the setscrews and remove the adjusting screws from the brake shoe and lining assembly. Disassemble the setscrews from the brake shoes and remove the setscrew seats.



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- |                        |                       |
|------------------------|-----------------------|
| 1. NUT                 | 8. LUBE FITTING       |
| 2. SPRING SEAT         | 9. SETSCREW           |
| 3. SPRING              | 10. SETSCREW SEAT     |
| 4. BRAKE SHOE W/LINING | 11. ADJUSTING SCREW   |
| 5. PIVOT PIN           | 12. BRAKE RELEASE ARM |
| 6. LINK                | 13. LUBE FITTING      |
| 7. SNAP RING           | 14. THREADED ROD      |

**Figure 2. Brake Shoe Assembly (B60-80XT)**



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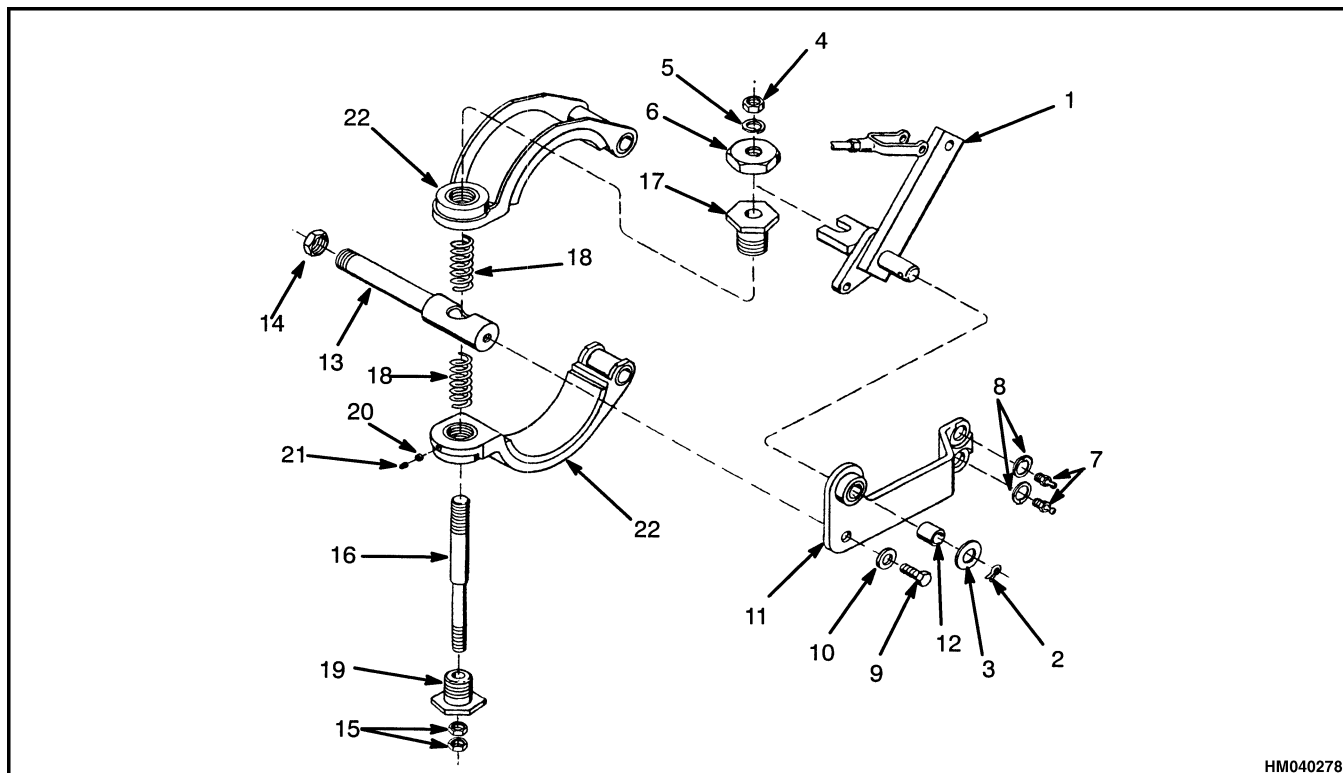
- |                        |                       |
|------------------------|-----------------------|
| 1. NUT                 | 14. ROLLER W/BUSHING  |
| 2. THREADED ROD        | 15. NUT               |
| 3. SPRING SEAT         | 16. ADJUSTING SCREW   |
| 4. SPRING              | 17. BRAKE RELEASE ARM |
| 5. BRAKE SHOE W/LINING | 18. LUBE FITTING      |
| 6. PIVOT PIN           | 19. NUT               |
| 7. LINK                | 20. SWITCH ACTUATOR   |
| 8. RETAINING RING      | 21. SWITCH            |
| 9. LUBE FITTING        | 22. MOUNTING BRACKET  |
| 10. SETSCREW SEAT      | 23. CAPSCREW          |
| 11. SETSCREW           | 24. CAPSCREW          |
| 12. STUD               | 25. LOCKWASHER        |
| 13. BRAKE CAM          | 26. SPACER            |

**Figure 3. Brake Shoe Assembly (W20-40XTA, W20-40XTC, W20-30XTR, W60-80XT)**

### C60-80XT

See Figure 4.

1. Raise the drive wheel off the floor. Block the lift truck. See the section **Periodic Maintenance** 8000 SRM 281. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.
3. Remove the drive unit compartment hood to access the brakes.
4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Remove the grease fittings from the brake shoe pivot pins.



HM040278

- |                      |                           |
|----------------------|---------------------------|
| 1. ARM CAM WELDMENT  | 12. BUSHING               |
| 2. COTTER PIN        | 13. CENTERING SHAFT       |
| 3. FLAT WASHER       | 14. NUT                   |
| 4. NUT               | 15. NUT                   |
| 5. LOCKWASHER        | 16. BRAKE SHAFT           |
| 6. ADJUSTING NUT     | 17. ADJUSTING SCREW-UPPER |
| 7. LUBE FITTING      | 18. SPRING                |
| 8. SNAP RING         | 19. ADJUSTING SCREW-LOWER |
| 9. CAPSCREW          | 20. SETSCREW SEAT         |
| 10. LOCKWASHER       | 21. SETSCREW              |
| 11. SUPPORT WELDMENT | 22. BRAKE SHOE W/LINING   |

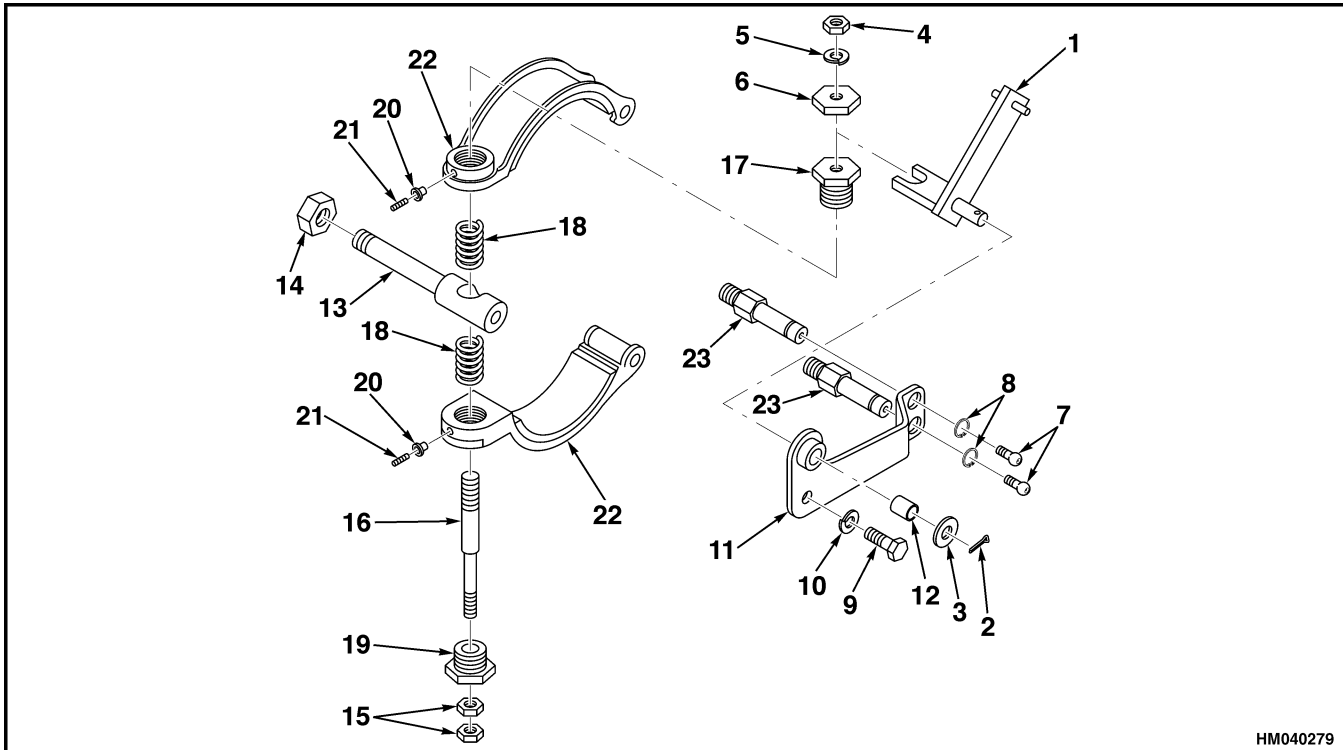
**Figure 4. Brake Shoe Assembly (C60-80XT)**

6. Disassemble the snap rings from the brake pivot pins. Remove the cotter pin and flat washer retaining the arm cam weldment to the support weldment. Remove the capscREW and lockwasher supporting the centering shaft to the support weldment. Remove the support weldment. Check the bushing in the support weldment for elongation or damage. Replace the bushing if necessary. Refer to **WARNINGS** in Repairs - General.

### CA/C60-80XT/XT2, T5XT

See Figure 5.

1. Remove the two jam nuts from the bottom of the brake shaft. Loosen the hex nut on the top of the brake shaft. Loosen the setscrews retaining the adjusting screws. Loosen the adjusting screws. Remove the brake shaft out of the arm cam weldment, brake shoes, and centering shaft. Support the springs when removing the brake shaft.



HM040279

- |                      |                           |
|----------------------|---------------------------|
| 1. ARM CAM WELDMENT  | 13. CENTERING SHAFT       |
| 2. COTTER PIN        | 14. NUT                   |
| 3. FLAT WASHER       | 15. NUT                   |
| 4. NUT               | 16. BRAKE SHAFT           |
| 5. LOCKWASHER        | 17. UPPER ADJUSTING SCREW |
| 6. ADJUSTING NUT     | 18. SPRING                |
| 7. LUBE FITTING      | 19. LOWER ADJUSTING SCREW |
| 8. SNAP RING         | 20. SETSCREW SEAT         |
| 9. CAPSCREW          | 21. SETSCREW              |
| 10. LOCKWASHER       | 22. BRAKE SHOE W/LINING   |
| 11. SUPPORT WELDMENT | 23. PIVOT PIN             |
| 12. BUSHING          |                           |

*Figure 5. Brake Shoe Assembly (CA60-80XT/XT2, T5XT)*

## Brake Shoe Installation

### W/B60-80XT, W20-40XTA, W20-40XTC, W20-30XTR

See Figure 2 for the B60-80XT and Figure 3 for the W20-40XTA, W20-40XTC, W20-30XTR, and W60-80XT.

1. Assemble the setscrew seat and setscrew in the brake shoe and lining assembly. Do not tighten the setscrew completely. Install the adjusting screws into the brake shoe. Refer to Brake Adjustment, W/B60-80XT before tightening the setscrews.
2. Insert the spring retainer bolt through the brake shoes and adjusting screws. Install the spring seats, spring, and nuts on the retainer bolt.
3. Position the brake shoe and lining assemblies on the pivot pins and between the brake release arm.
4. Install the pivot pin link on the pivot pins and install the snap rings. Refer to **WARNINGS** in Repairs - General. Assemble the grease fittings into the pivot pins. Grease the pivot pins.



5. Adjust the nuts on the spring retainer bolt until the spring is compressed to 100 mm (3.94 in.) for 6000-lb lift trucks and 97 mm (3.81 in.) for 8000-lb lift trucks.
6. Adjust the brakes. Refer to Brake Adjustment.
7. Install the drive unit compartment hood.
8. Lower the lift truck so the drive wheel is on the floor. Connect the battery. Test the operation of the lift truck before returning to service.

### C60-80XT2, CA60-80XT, T5XT

See Figure 4 and Figure 5.

1. Assemble the setscrew seat and setscrew in the brake shoe and lining assembly. Do not tighten the setscrew completely. Install the adjusting screws into the brake shoe. Refer to Brake Adjustment, C60-80XT, CA60-80XT/XT2, T5XT before tightening the setscrews.
2. Install the centering shaft in the drive unit housing and install the nut to retain the shaft. Make certain that the hole in the centering shaft is aligned with the brake shoes before tightening the nut.
3. Position the brake shoe and lining assemblies on the pivot pins.

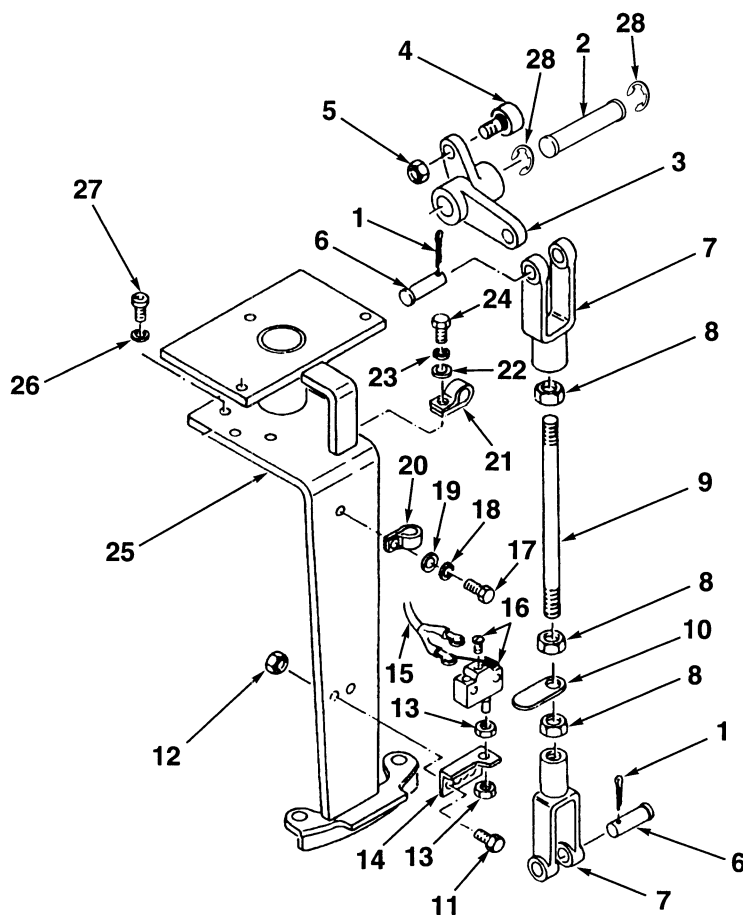
4. Position the springs in the brake shoes and centering shaft. Install the brake shaft through the centering shaft, brake shoes, and springs. Install the two jam nuts on the bottom of the brake shaft. Snug the adjusting nut on the top of the brake shaft to contact the slot in the arm cam weldment. Refer to Brake Adjustment before tightening the adjusting nut, retaining nut, and lock-washer.
5. Install the bushing in the support weldment. Position the support weldment on the pivot pins and arm cam weldment. Install the snap rings on the pivot pins. Refer to **WARNINGS** in Repairs - General. Assemble the grease fittings into the pivot pins. Grease the pivot pins.
6. Install the capscrew and washer to retain the support weldment to the centering shaft. Install the washer and a new cotter pin to attach the arm cam weldment to the support bracket.
7. Adjust the brakes. Refer to Brake Adjustment.
8. Install the drive unit compartment hood.
9. Lower the lift truck or tractor so the drive wheel is on the floor. Connect the battery and test the operation of the lift truck brakes prior to returning the lift truck to service.

## Brake Linkage Removal

### W/B60-80XT

See Figure 6.

1. Raise the drive wheel off the floor. Block the lift truck. See section **Periodic Maintenance** 8000 SRM 281. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.
3. Remove the drive unit compartment hood to access the brakes.
4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Straighten and remove the cotter pins retaining both the upper and lower clevis pins. Remove the clevis pins from the yoke ends.
6. Straighten and remove the cotter pin retaining the bellcrank to the control handle pivot. Remove the clevis pin and the bellcrank.
7. Remove the yoke ends, jam nuts, and switch plate from the connecting rod.
8. Remove the retaining ring from the brake release arm. If necessary, use a drift to remove the arm from the MDU housing. Refer to **WARNINGS** in Repairs - General.
9. Tag and disconnect the wires to the brake switch. Remove the nut retaining the switch to the drive unit housing and remove the switch.
10. Remove the capscrews, lock nuts, wire clamp, and bracket from the drive unit housing.



HM040281

- |                   |                  |
|-------------------|------------------|
| 1. COTTER PIN     | 15. WIRE HARNESS |
| 2. PIN            | 16. SWITCH       |
| 3. BELLCRANK      | 17. CAPSCREW     |
| 4. CAM FOLLOWER   | 18. LOCKWASHER   |
| 5. LOCK NUT       | 19. WASHER       |
| 6. YOKE PIN       | 20. CLAMP        |
| 7. YOKE RH THREAD | 21. CLAMP        |
| 8. JAM NUT        | 22. WASHER       |
| 9. THREADED ROD   | 23. LOCKWASHER   |
| 10. SWITCH PLATE  | 24. CAPSCREW     |
| 11. CAPSCREW      | 25. SUPPORT      |
| 12. LOCK NUT      | 26. LOCKWASHER   |
| 13. NUT           | 27. CAPSCREW     |
| 14. BRACKET       | 28. E-RING       |

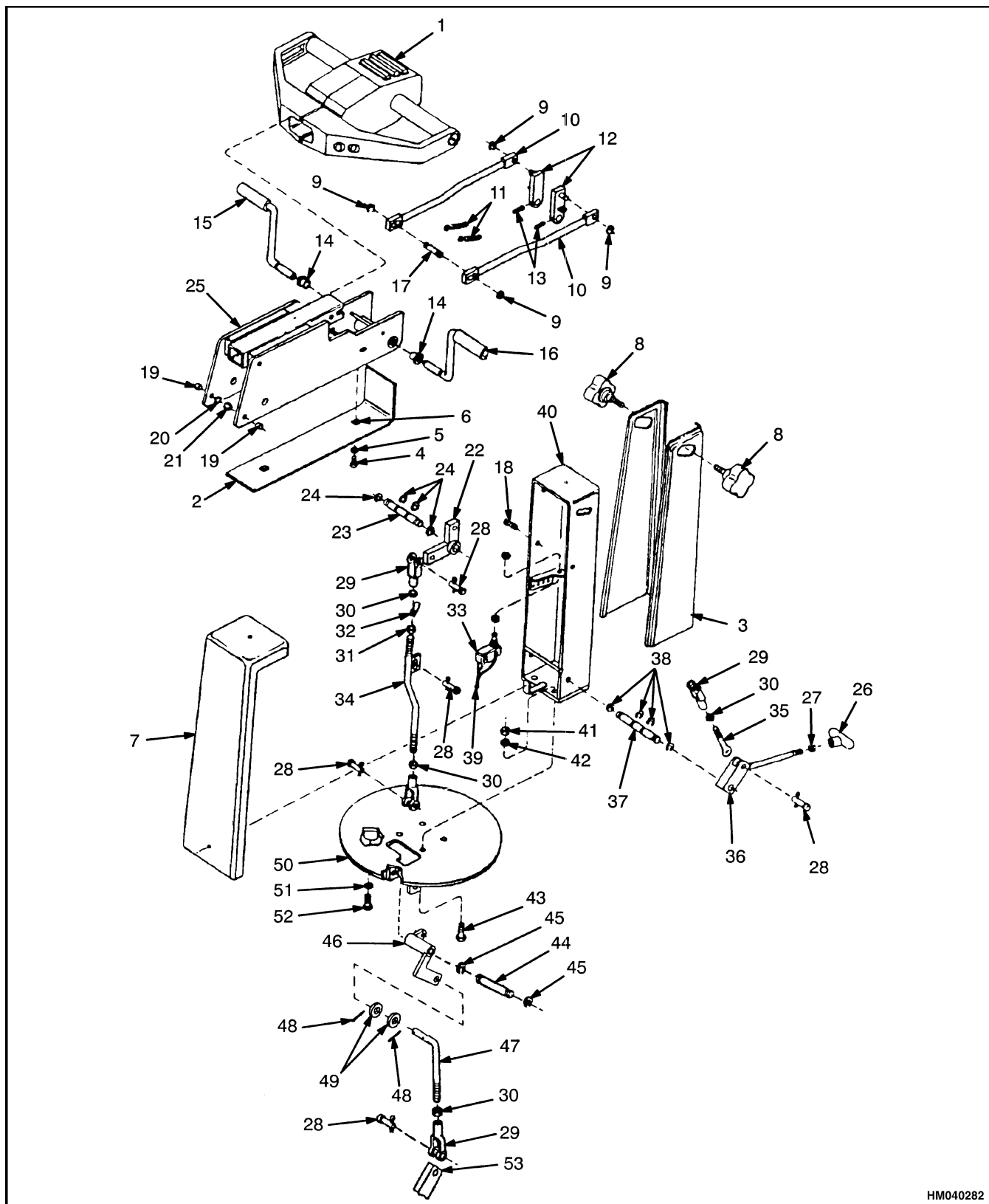
**Figure 6. Brake Linkage (W/B60-80XT)**

**C60-80XT**

See Figure 7.

1. Raise the drive wheel off the floor. Block the lift truck. See the section **Periodic Maintenance** 8000 SRM 281. Refer to **WARNINGS** in Repairs - General.
  2. Disconnect the battery connector.
  3. Remove the drive unit compartment hood to access the brakes.
  4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
  5. Remove the two capscrews and lockwashers retaining the front cover and the two capscrews retaining the cover plate. Remove the front cover and the cover plate.
- NOTE:** Before disassembling any of the brake linkage, mark the yokes, brake rods, and nuts so that the length of the linkage is not changed. If components on the threaded rods are being removed, measure the rods and record their dimensions for the proper alignment at assembly.
6. Remove the cotter pin (28) retaining the clevis pin to the arm cam weldment (53). Remove the clevis pin. Remove the cotter pin (48) retaining the lower brake rod (47) to the bellcrank (46). Remove the washers (49) and the lower brake rod (47) from the bellcrank (46).
  7. Remove the cotter pin retaining the clevis pin to the upper threaded brake rod (34) and the bellcrank (46). Remove the clevis pin.

8. Remove the snap rings (45) retaining the bellcrank (46) to the disc. Refer to **WARNINGS** in Repairs - General. Remove the pin (44) and bellcrank (46) from the disc (50).
9. Remove the cotter pins retaining the clevis pins (28) to the arm and cam (36) and the brake rod (34). Remove the clevis pins (28) and the brake rod (34).
10. Remove the snap rings (24) retaining the pin (23) and cam (22) to the steer handle (25). Refer to **WARNINGS** in Repairs - General. Remove the pin and the cam.
11. Remove the roll pins (13) retaining the plate weldments (12) to the handles (15 and 16). Remove the handles and bushings (14).
12. Remove the springs (11) from the rod weldments (10) and the mounting brackets in the steer handle (25). Remove the E-rings (9) retaining the rod weldments (10) to the plate weldments (12) and the pin (17) to the cam (22). Remove the plate weldments (12), cam (22), pin (17), and the rod weldments (10) from the steer handle.
13. Remove the snap rings (38) from the parking brake pin (37). Remove the pin and parking brake arm and cam (36). Remove the cotter pin retaining the eye bolt (35), nut (30), and yoke (29) from the arm and cam.
14. Identify the wires to the brake switch (33). Remove the brake switch wires. Remove the upper nut and remove the switch from the tower.



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Figure 7. Brake Linkage (CA60-80XT)

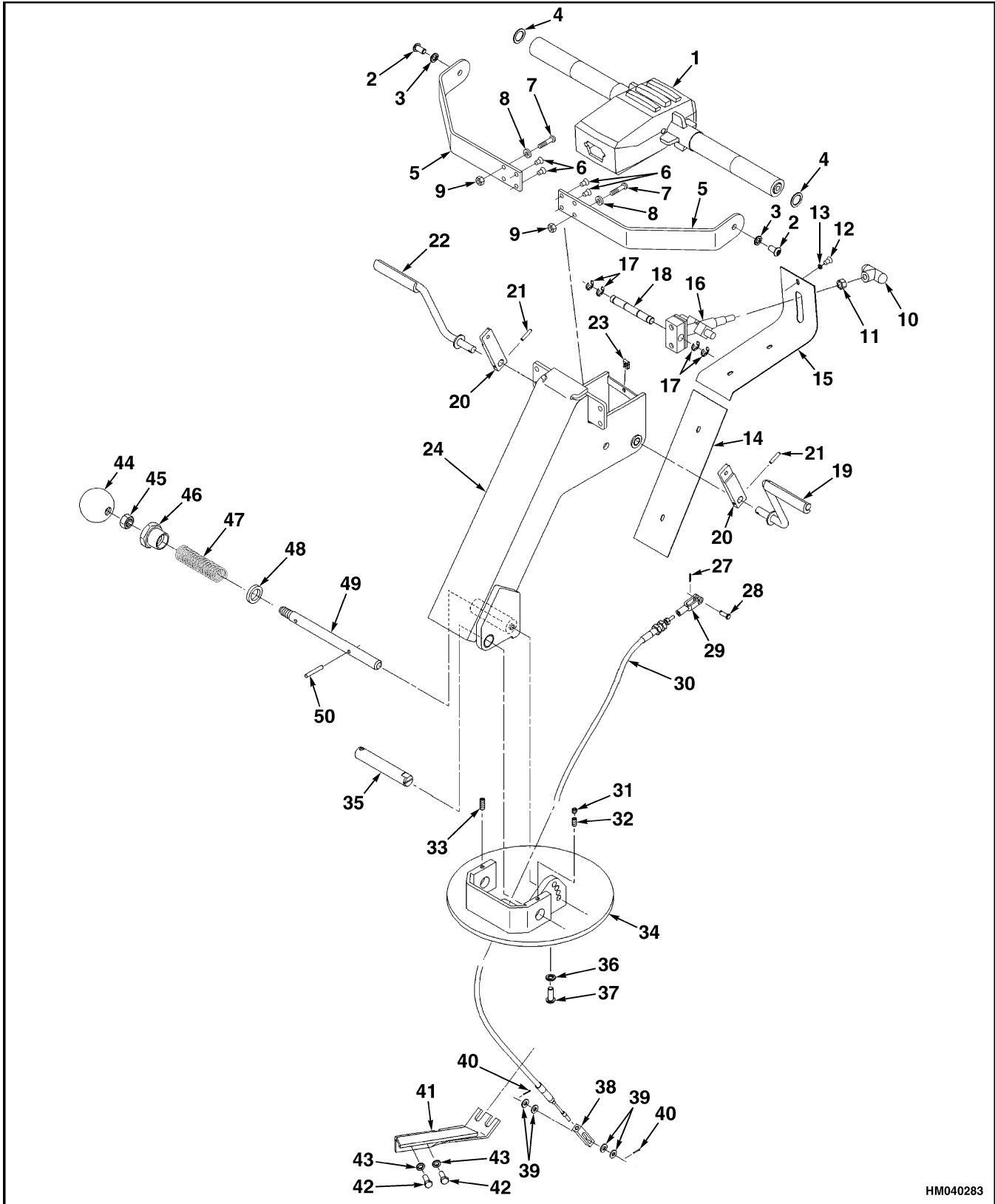
*Legend for Figure 7*

- |                    |                      |
|--------------------|----------------------|
| 1. CONTROL HEAD    | 28. PIN W/COTTER PIN |
| 2. COVER PLATE     | 29. YOKE             |
| 3. BACK COVER      | 30. NUT              |
| 4. CAPSCREW        | 31. JAM NUT          |
| 5. LOCKWASHER      | 32. SWITCH PLATE     |
| 6. NUT             | 33. SWITCH           |
| 7. FRONT COVER     | 34. BRAKE ROD        |
| 8. KNOB            | 35. EYE BOLT         |
| 9. E-RING          | 36. ARM AND CAM      |
| 10. ROD WELDMENT   | 37. PIN              |
| 11. SPRING         | 38. SNAP RING        |
| 12. PLATE WELDMENT | 39. WIRE HARNESS     |
| 13. ROLL PIN       | 40. TOWER            |
| 14. BUSHING        | 41. NUT              |
| 15. HANDLE         | 42. LOCKWASHER       |
| 16. 16. HANDLE     | 43. CAPSCREW         |
| 17. PIN            | 44. PIN              |
| 18. CAPSCREW       | 45. SNAP RING        |
| 19. PIVOT          | 46. BELLCRANK        |
| 20. LOCKWASHER     | 47. BRAKE ROD        |
| 21. LOCK NUT       | 48. COTTER PIN       |
| 22. CAM            | 49. FLAT WASHER      |
| 23. PIN            | 50. DISC             |
| 24. SNAP RING      | 51. CAPSCREW         |
| 25. STEER HANDLE   | 52. LOCKWASHER       |
| 26. KNOB           | 53. ARM CAM WELDMENT |
| 27. NUT            |                      |

**CA60-80XT/XT2, T5XT**

See Figure 8.

1. Raise the drive wheel off the floor. Block the lift truck see the section **Periodic Maintenance** 8000 SRM 281. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.
3. Remove the drive unit compartment hood to access the brakes.
4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Remove the two capscrews and lockwashers retaining covers (14 and 15). Remove the capscrew (12) and lockwasher (13). Remove knob (10) and nut (11). Remove covers (14 and 15).
6. Remove the cotter pins (40) retaining the centering shaft to the yoke arm (38). Remove the centering shaft. Remove the washers (39). Disconnect the cable end from the yoke end (38).
7. Remove the cotter pin (27) retaining the pin (28) to the brake arm (20) and rod end (29). Disconnect the cable from the rod end.
8. Remove the pin (21) retaining the brake handles (19 and 22). Remove the brake arms and handles.
9. Remove the E-rings (17) from the pin (18). Refer to **WARNINGS** in Repairs - General. Remove the pin (18) from the arm (16). Remove arm.



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Figure 8. Brake Linkage (C60-80XT2, T5XT)

*Legend for Figure 8*

- |                |                     |                            |
|----------------|---------------------|----------------------------|
| 1. STEER HEAD  | 18. PIN             | 35. PIVOT SHAFT            |
| 2. CAPSCREW    | 19. LH BRAKE HANDLE | 36. LOCKWASHER             |
| 3. WASHER      | 20. BRAKE ARM       | 37. CAPSCREW               |
| 4. WASHER      | 21. PIN             | 38. YOKE END               |
| 5. STEER ARM   | 22. RH BRAKE HANDLE | 39. WASHER                 |
| 6. CAPSCREW    | 23. TENNERMAN NUT   | 40. PIN                    |
| 7. CAPSCREW    | 24. STEER COLUMN    | 41. BRACKET-CABLE MOUNTING |
| 8. LOCKWASHER  | 25. BUSHING         | 42. CAPSCREW               |
| 9. NUT         | 26. BUSHING         | 43. LOCKWASHER             |
| 10. KNOB       | 27. COTTER PIN      | 44. BALL HANDLE            |
| 11. NUT        | 28. PIN             | 45. JAM NUT                |
| 12. CAPSCREW   | 29. ROD END         | 46. PIPE FITTING           |
| 13. LOCKWASHER | 30. CABLE           | 47. SPRING                 |
| 14. COVER      | 31. SETSCREW        | 48. WASHER                 |
| 15. COVER      | 32. SETSCREW        | 49. PIN                    |
| 16. ARM        | 33. SETSCREW        | 50. LOCKING PIN            |
| 17. E-RING     | 34. STEER DISC      |                            |

**Brake Linkage and Cable Installation****W/B60-80XT**

See Figure 6.

1. Install the bellcrank on the control handle pivot with the clevis pin and a new cotter pin.
2. Assemble the switch actuator plate, jam nuts, and yoke ends to the connecting rod. The correct length of the rod assembly must be determined prior to connecting the rod to the upper bell crank and the brake release cam. Make certain that the cam follower is touching the cam on the control handle. Place a 0.38 to 0.76 mm (0.015 to 0.030 in.) shim between the brake release cam and the upper adjusting nut. It may be necessary to adjust the nut. Loosen the setscrew to make any adjustment. Keep the shim between the nut and brake release arm. Adjust the brake connecting rod to the length required to enable the upper and lower clevis pins to be installed in the brake release cam and the upper bellcrank. Install the clevis pins and new cotter pins. Tighten the setscrew and remove the shim.
3. Install the same shim on the lower side of the brake release cam. Loosen the setscrew and adjust the lower adjusting nut to obtain the same clearance. Tighten the setscrew when a clearance of 0.38 to 0.76 mm (0.015 to 0.030 in.) is obtained.
4. Adjust the brakes. Refer to Brake Adjustment, W/B60-80XT.

5. Install the drive unit compartment hood.

6. Lower the lift truck so the drive wheel is on the floor. Connect the battery and test the operation of the lift truck prior to returning the lift truck to service.

**C60-80XT**

See Figure 7.

1. Install the brake switch (33) in the tower (40) and install the upper nut to retain the switch to the housing. Install the wires to the switch.
2. Assemble the eye bolt (35), nut (30), and yoke (29) to the parking brake and cam (36). Install the clevis pin (28) and a new cotter pin. Align the pivot pin (37) and the arm and cam in the tower. Install the snap rings (38) to retain the pivot pin. Refer to **WARNINGS** in Repairs - General.
3. Assemble the rod weldments (10) to the plate weldments (12) using the E-rings (9).
4. Install the bushings (14) in the steer handle (25). Install the handles (15 and 16) into the bushings. Align the holes in the handles and plate weldments (12) and install the roll pins (13).
5. Install the pivot pin (23) for the bellcrank (22) in one side of the tower. Position the bellcrank on the pivot pin. Install the snap rings (24) to retain the bellcrank. Complete installing the pivot pin in the tower and install the outer snap rings to retain the pivot pin.

6. Align rod weldments (10) with the bellcrank (22) and install pin (17). Install the snap rings E-rings (9) to retain the pin. Install the return springs (11) between the plate weldments (10) and the mounting brackets located in the steer handle (25).
7. Align the upper threaded brake rod (34) with the bellcrank (22) and install the clevis pin and a new cotter pin (28). Align the parking brake arm and cam (36) with the upper brake rod and install the clevis pin and a new cotter pin (28). Make certain that the switch plate (32) contacts the switch (33).
8. Align the bellcrank (46) with the mounting brackets on the steering disc (50) and install the pivot pin (44). Install the snap rings (45) on the pivot pin. Align the upper brake rod (34) with the bellcrank (46) and install the clevis pin and a new cotter pin (28).
9. Align the lower brake rod (47) with the yoke (29) and nut (30) installed with the arm cam weldment (53) and install the clevis and a new cotter pin (28). Install the lower brake rod in the bellcrank and install the two washers (49) and new cotter pins (48).

## CA60-80XT/XT2, T5XT

See Figure 8.

1. Insert pin (18) into arm (16) and attach with snap rings (17).
2. Insert arm (16) into plate (15) and fasten to nut (11). Insert knob (10) onto end of arm.
3. Align brake arms (20) inside steer column (24). Insert brake handles (19 and 22) into steer column and attach with cotter pin (21).
4. Attach cable end (30) to the rod end (29). Align rod end (29) onto brake arm (20) and attach with pin (28).
5. Run cable (30) through steer column (24) and align the yoke end (38) to the centering shaft. Place washers (39) into position and attach with cotter pins (40). Check that cable rests on cable bracket (41).
6. Attach the two capscrews and lockwashers that hold covers (14 and 15) into place. Insert capscrew (12) and lockwasher (13).
7. Replace the drive unit compartment hood.
8. Reconnect the battery connector.

## Brake Adjustment

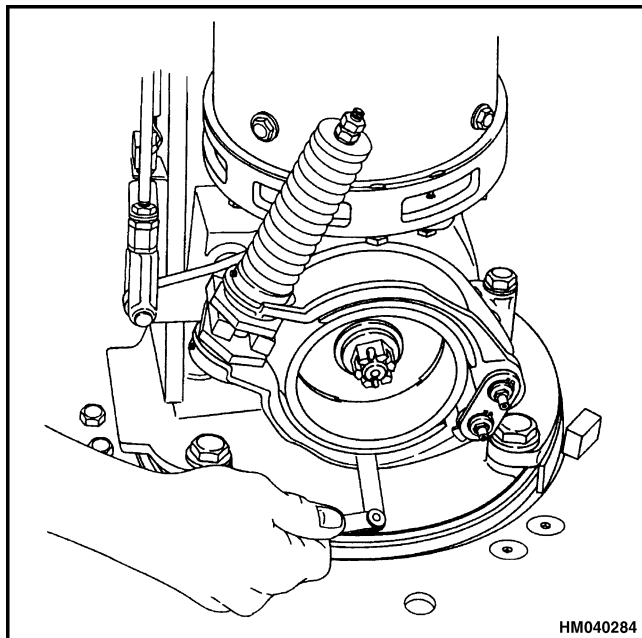
### W/B60-80XT, W20-40XTA, W20-40XTC, W20-30XTR

**NOTE:** The brake shoes are fully engaged when the control handle is either in the vertical position or parallel to the floor. See Figure 1. The brakes may only be adjusted to obtain clearance between the drum and the brake lining.

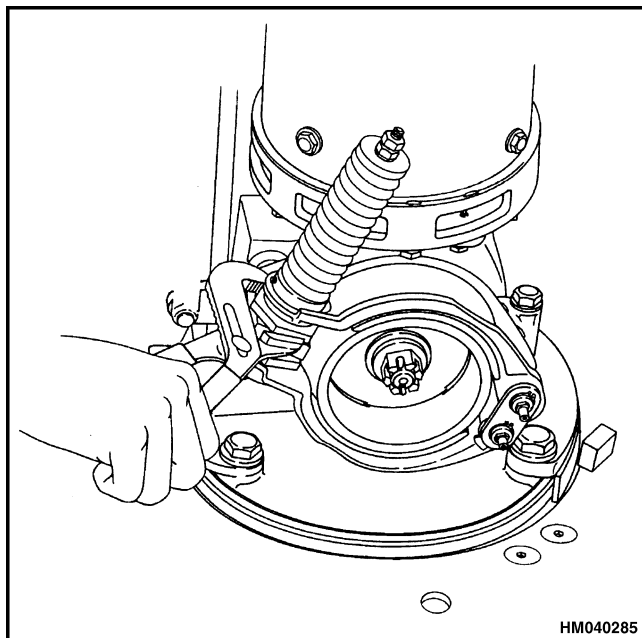
1. Raise the drive wheel off the floor. Block the lift truck. See the **Periodic Maintenance** for your truck. See 8000 SRM 281 or 8000 SRM 652. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.
3. Remove the drive unit compartment hood to access the brakes.

4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Lower the control handle to the operating position. (Brakes are **off**.) Install a 0.127 mm (0.005 in.) feeler gauge between the upper brake shoe lining and brake drum at the point of least clearance. See Figure 9. The feeler gauge should slide freely. If an adjustment is necessary, loosen the setscrew and turn the adjusting screw. See Figure 10. Turn the screw into the shoe to decrease the clearance. Turn the screw out of the brake shoe to increase the clearance between the brake shoe and drum. After the correct adjustment is obtained, tighten the setscrew. Adjust the lower brake shoe assembly in the same manner.





**Figure 9. Checking Brake Clearance**



**Figure 10. Adjusting Brake Clearance**

**NOTE:** Compressing the brake spring too tight will increase the effort to move the steer handle to the operating position.

6. To adjust the brake switch loosen the nut retaining the switch actuator and adjust the actuator plate up or down as necessary to obtain

the proper adjustment. Tighten the nut retaining the actuator plate. On all units the actuator is properly adjusted when the brake switch slightly opens as the brake is starting to apply.

7. Install the drive unit compartment hood.
8. Lower the lift truck so the drive wheel is on the floor. Connect the battery and test the operation of the lift truck prior to returning the lift truck to service. The brakes should be capable of holding on a 10% slope with a rated load. The unit should also be able to operate without any brake drag when the handle is in the operating position.

### **C60-80XT, CA60-80XT/XT2, T5XT**

**NOTE:** Adjust the brake shoes before attempting to adjust the service and parking brake linkage.

1. Raise the drive wheel off the floor. Block the lift truck see the section **Periodic Maintenance** 8000 SRM 281. Refer to **WARNINGS** in Repairs - General.
2. Disconnect the battery connector.
3. Remove the drive unit compartment hood to access the brakes.
4. Discharge the traction motor controller capacitor. Refer to **WARNINGS** in Repairs - General.
5. Make certain the hand brake levers are released. Release the parking brake. Install a 0.127 mm (0.005 in.) feeler gauge between the lower brake shoe lining and brake drum at the point of least clearance. See Figure 9. The feeler gauge should slide freely. If an adjustment is necessary, loosen the setscrew and turn the adjusting screw. Turn the screw clockwise to decrease the clearance. Turn the screw counterclockwise to increase the clearance between the brake shoe and drum. After the correct adjustment is obtained, tighten the setscrew. See Figure 10.
6. Adjust the upper brake shoe assembly. Loosen the setscrew and turn the adjusting screw. Turning the adjusting screw counterclockwise will decrease the clearance between the brake drum and brake shoes. Adjust to obtain a 0.127 mm (0.005 in.) clearance. Tighten the setscrew.
7. Have an assistant operate the hand brake levers and check to see that the brakes are engaged when hand pressure is applied to the levers.

8. Install the drive unit compartment hood.
9. Lower the lift truck or tractor so the drive wheel is on the floor. Remove the blocks from in front and back of the load wheels. Connect the battery connector and test the operation of the lift truck or tractor prior to returning the unit to service. The brakes should be capable of holding on a 10%

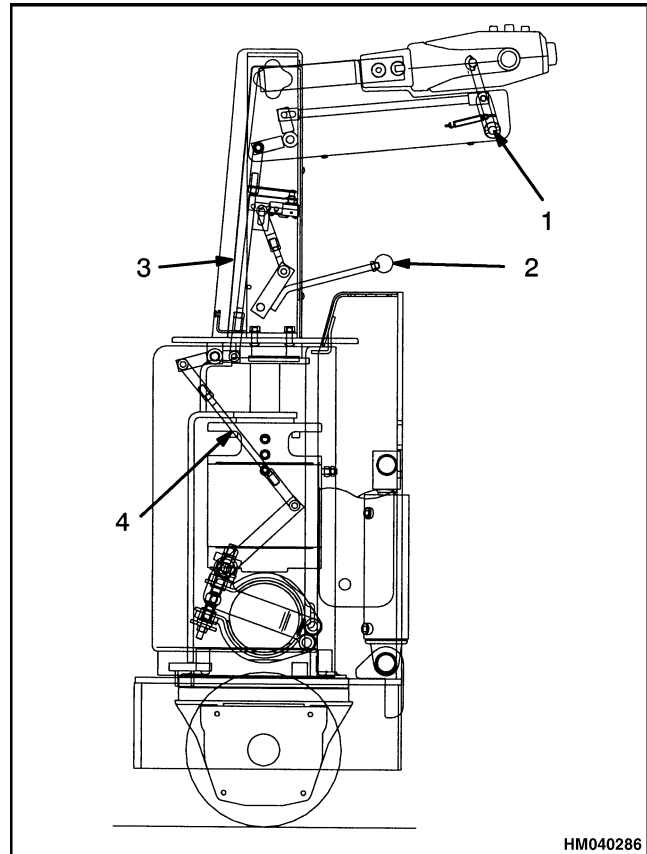
slope with a rated load. The T5XT tractor units should be capable of meeting the 317.8 kg (700 lb) drawbar drag requirement. Both the truck or tractor should also be able to operate without any brake drag when there is no pressure applied to the hand brake levers.

## Brake Linkage Adjustment

### C60-80XT, CA60-80XT/XT2, T5XT

**NOTE:** Adjust the brake shoes before attempting to adjust the service and parking brake linkage.

1. Adjust the yokes on the upper brake rod until the distance between centers is 360.7 mm (14.2 in.). See Figure 11 and Figure 12.
  - a. The brake rod must extend into both yokes a minimum of 12.7 mm (0.50 in.).
  - b. Do not tighten the nuts on the brake rod until Step 3 has been completed.
2. Use a Number 79 drill bit or a rod with a diameter of 9.2 mm (0.36 in.) and length of 19 mm (0.75 in.) to temporarily connect the lower yoke of the upper brake rod to the short arm on the bellcrank. Rotate the bellcrank until the drill bit or rod bottoms out on the under side of the steer tower plate. Retain the bellcrank in this position during Step 3, Step 4, and Step 5.
3. Press down on the forward arm on the brake cam lever until the pin bottoms in the slots in both brake rod weldments. Adjust the upper yoke on the upper rod to align with the hole in the forward arm. Install the yoke pin and cotter pin. Center the brake switch activator plate over the switch plunger. Tighten both the upper and lower lock nuts.
4. Adjust the lower brake rod to a length of 228.6 mm (9.0 in.), measuring from the center of the short leg to the center of the yoke pin hole. Apply a light film of grease to the inside diameter of the lower bellcrank bushing. Install the short leg of the lower brake rod into the long arm of the lower bellcrank, along with the spacer, washers, and cotter pins.

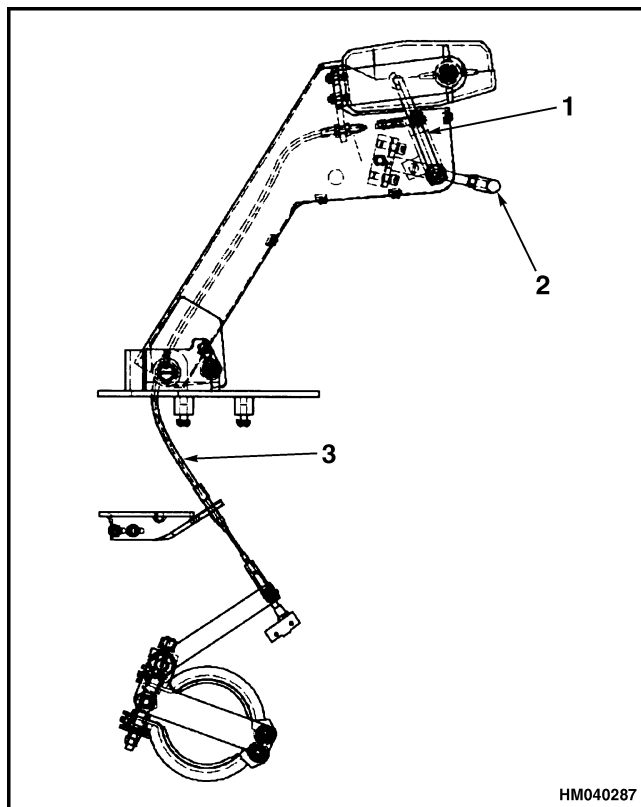


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1. HAND BRAKE LEVER
2. PARKING BRAKE
3. UPPER BRAKE ROD
4. LOWER BRAKE ROD

**Figure 11. Brake Installation (C60-80XT)**

5. Lift the brake actuating lever so the fork is resting flat against the upper brake shoe adjusting screw. Adjust the yoke on the lower brake rod so the holes in the lower brake rod and the actuating lever are aligned. Install the yoke pin and cotter pin. Tighten the yoke lock nut.



1. HAND BRAKE
2. PARKING BRAKE ASSEMBLY
3. CABLE ASSEMBLY

**Figure 12. Brake Installation (CA60-80XT/XT2, T5XT)**

6. Remove the drill bit or rod installed in Step 2.
7. Squeeze and release the hand brake levers several times to allow the brake linkage to find its normally off position.
8. Adjust the traction motor cut off switch with the brake linkage in the BRAKE OFF position. Adjust by turning the nuts on the switch to raise or lower the switch on the mounting bracket. The switch should be positioned so the activator plate is depressing the brake switch plunger 3.05 mm (0.12 in.). Check the switch adjustment by applying the pressure to the hand brake levers. The switch should cut the power to the traction motor within a movement of 127 mm (0.50 in.) of the brake levers. At the same time the brake linings should just begin to lightly drag on the brake drum.

9. Adjust the parking brake with the linkage in the OFF position and the brake levers released. Adjust the yoke on the parking brake rod assembly so the pin in the yoke just contacts the upper end of the slot in the plate, which is part of the upper rod weldment. Install the cotter pin. Tighten the yoke locking nut.
10. Check the service brake adjustment with the parking brake OFF.
  - a. The brake lining must not drag on the brake drum when the hand brake levers are released.
  - b. The brakes must meet the applicable stopping distance and/or draw bar drag requirements without the hand brake levers bottoming out on the direction/speed control grips. The brakes on a C60-80XT and CA60-80XT lift truck should be capable of holding on a 10% slope with a maximum rated load. The T5XT tractor units should be capable of meeting the 317.8 kg (700 lb) drawbar drag requirement.
11. Check the parking brake adjustment. The brakes on a C60-80XT and CA60-80XT lift truck should be capable of holding on a 10% slope with a rated load. The T5XT tractor units should be capable of meeting the 317.8 kg (700 lb) drawbar drag requirement. Both the truck or tractor should also be able to operate without any brake drag when there is no pressure applied to the hand brake levers.
12. Check the brake switch adjustment.
  - a. The traction motor must cut off within 12.7 mm (0.50 in.) travel of the hand brake levers.
  - b. The traction motor must operate when the hand brake levers are released and the parking brake is released.
  - c. The traction motor must cut-off when the parking brake is applied.

13. Lower the lift truck so the drive wheel is on the floor. Connect the battery and test the operation of the lift truck prior to returning the lift truck to service. The brakes on a C60-80XT and CA60-80XT lift truck should be capable of holding on a 10% slope with a maximum rated load. The

T5XT tractor units should be capable of meeting the 317.8 kg (700 lb) drawbar drag requirement. All units should also be able to operate without any brake drag when the hand brake levers are not applied and the parking brake is OFF.

## Troubleshooting

| PROBLEM                             | POSSIBLE CAUSE                                | PROCEDURE OR ACTION                  |
|-------------------------------------|-----------------------------------------------|--------------------------------------|
| Brake makes noise.                  | Brake needs adjusting.                        | Adjust.                              |
|                                     | Brake shoes worn.                             | Replace.                             |
|                                     | Brake shoes have oil or grease on them.       | Clean or replace shoes.              |
| Brake will not stop unit correctly. | Brake linkage or shoes not properly adjusted. | Adjust.                              |
|                                     | Brake shoes worn.                             | Replace.                             |
|                                     | Brake spring broken.                          | Replace.                             |
|                                     | Brake shoes have oil or grease on them.       | Clean or replace shoes.              |
|                                     | Brake switch not working properly.            | Adjust or replace.                   |
| Brake will not release.             | Brake not properly adjusted.                  | Adjust.                              |
|                                     | Brake linkage worn.                           | Replace.                             |
|                                     | Brake spring broken.                          | Replace (C60-80XT, CA60-80XT, T5XT). |
|                                     | Brake switch not working properly.            | Adjust or replace.                   |

