# CHAPTER 8
# WHEELS AND STEERING MAINTENANCE
## Section I. WHEEL AND RUNFLAT SYSTEM MAINTENANCE

### 8-1. WHEEL AND RUNFLAT SYSTEM MAINTENANCE TASK SUMMARY

## 8-2. JACKING INSTRUCTIONS

**This task covers:**

**a. Raising Corner of Vehicle**
**b. Lowering Corner of Vehicle**
**c. Raising Front of Vehicle**
**d. Lowering Front of Vehicle**
**e. Raising Rear of Vehicle**
**f. Lowering Rear of Vehicle**
**g. Raising Entire Vehicle**
**h. Lowering Entire Vehicle**

**INITIAL SETUP:**

**Tools**
General mechanic's tool kit: automotive (Appendix B, Item 1)

**General Safety Instructions**
Never work under vehicle unless wheels are blocked and it is properly supported.

**WARNING**

Hydraulic jacks are used for raising and lowering, and are not used to support vehicle. Never work under vehicle unless wheels are blocked and it is properly supported. Injury or damage to equipment may result if vehicle suddenly shifts or moves.

### a. Raising Corner of Vehicle

1. Block wheels (2) or (4).
2. Place jack under lower control arm (5) on corner to be raised.
3. Raise vehicle (1) high enough to place trestle (3).
4. Place trestle (3) under flat portion of frame rail (7) and lower jack until weight is supported by trestle (3).

### b. Lowering Corner of Vehicle

1. Raise vehicle (1) and remove trestle (3).
2. Lower vehicle (1).
3. Remove blocks from wheels (2) or (4).

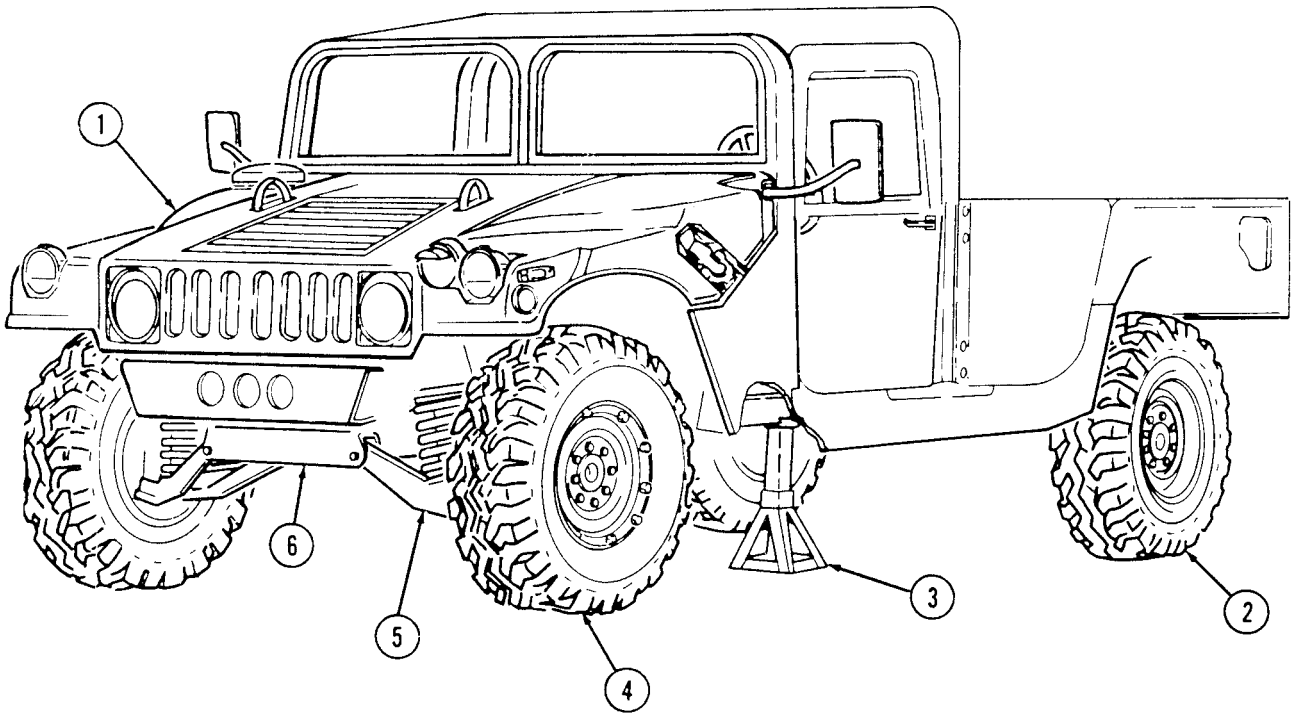
### c. Raising Front of Vehicle

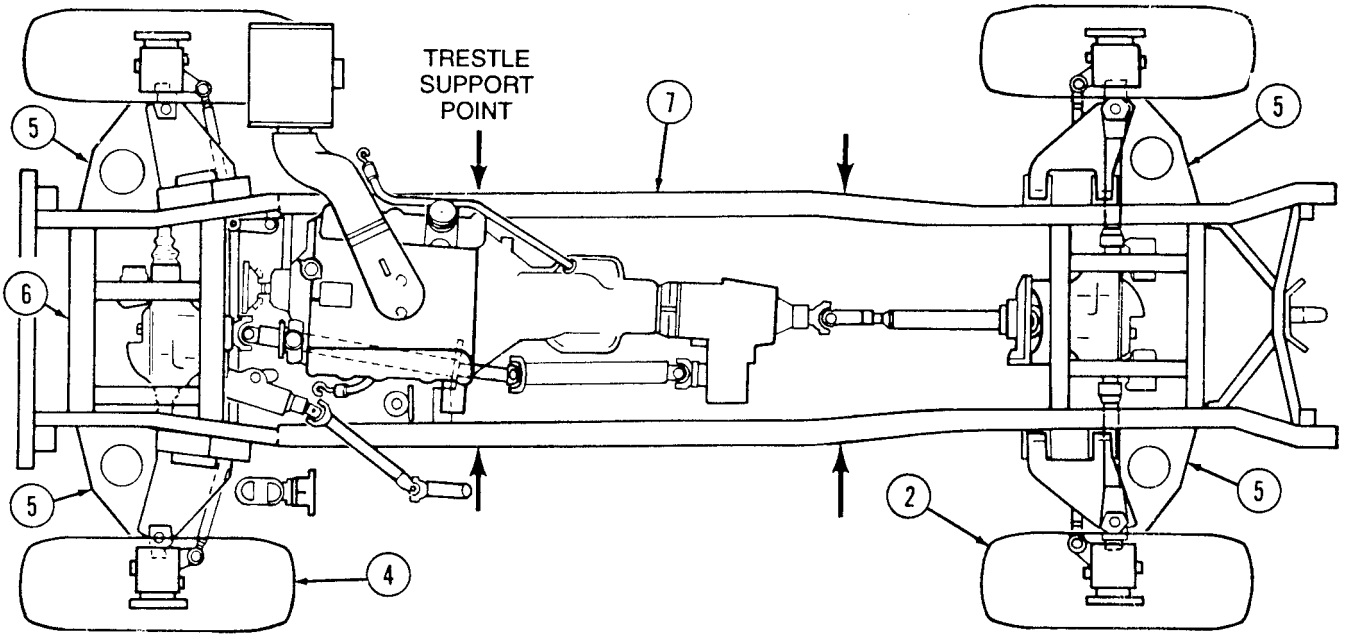
1. Block rear wheels (2).
2. Center jack under front suspension front crossmember (6). Use a wood block between jack and crossmember (6).
3. Raise vehicle (1) high enough to place trestles (3).
4. Place trestles (3) under flat portion of frame rails (7) and lower jack until weight is supported by trestles (3).

### d. Lowering Front of Vehicle

1. Raise vehicle (1) and remove trestles (3).
2. Lower vehicle (1).
3. Remove blocks from rear wheels (2).

## 8-2. JACKING INSTRUCTIONS (Cont'd)



## 8-2. JACKING INSTRUCTIONS (Cont'd)

### e. Raising Rear of Vehicle

1. Block front wheels (4).
2. Center jack under rear suspension rear crossmember (6). Use a wood block between jack and crossmember (6).
3. Raise vehicle (1) high enough to place trestles (3).

**WARNING**

For vehicles with a heavy load such as S250 shelter carrier, an additional trestle should be placed in the rear for added stability.

4. Place trestles (3) under flat portion of frame rails (5) and lower jack until weight is supported by trestles (3).

### f. Lowering Rear of Vehicle

1. Raise vehicle (1) and remove trestles (3).
2. Lower vehicle (1).
3. Remove blocks from front wheels (4).

### g. Raising Entire Vehicle

1. Raise front of vehicle (task c).
2. Center jack under rear suspension rear crossmember (6). Use a wood block between jack and crossmember (6).

**WARNING**

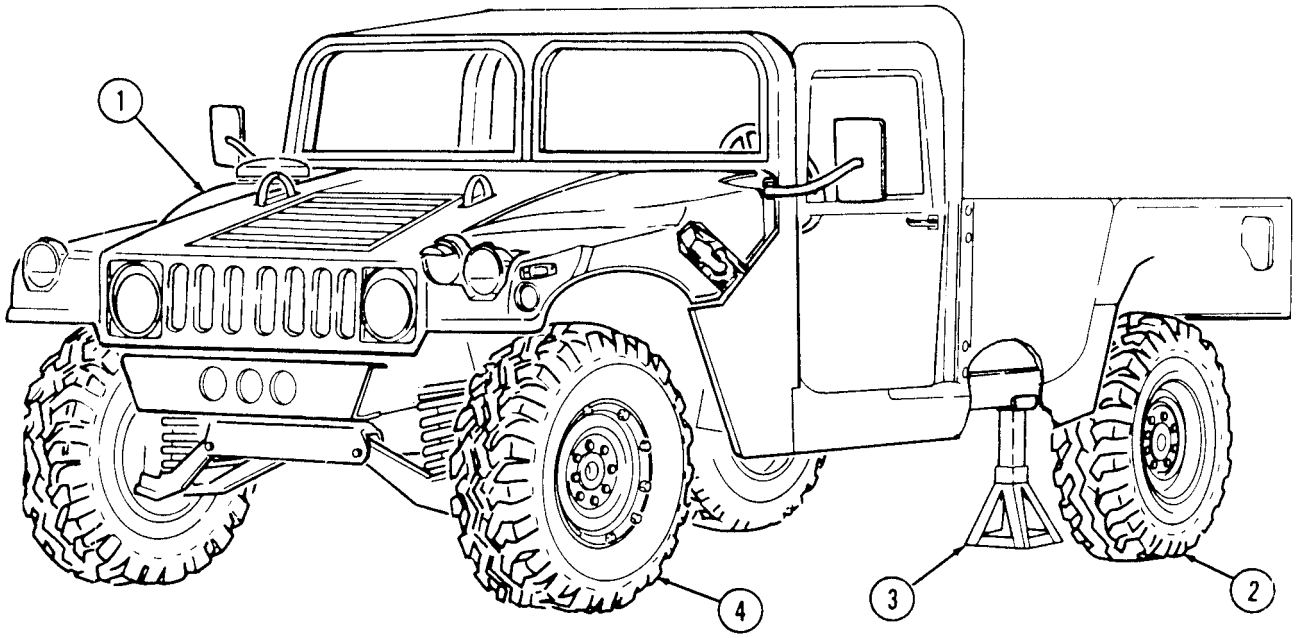
For vehicles with a heavy load such as S250 shelter carrier, an additional trestle should be placed in the rear for added stability.

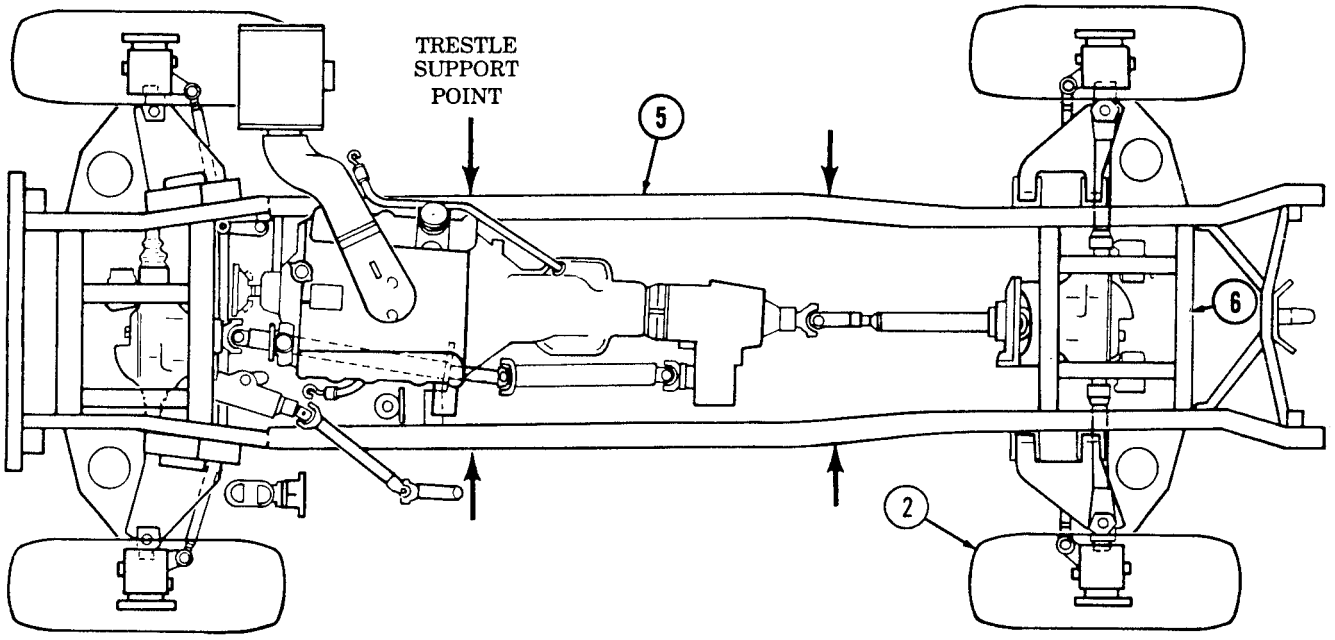
3. Raise vehicle (1) high enough to place trestles (3).
4. Place trestles (3) under flat portion of frame rails (5) and lower jack until weight is supported by trestles (3).
5. Move blocks aside.

### h. Lowering Entire Vehicle

1. Raise rear of vehicle (1) and remove trestles (3).
2. Lower rear of vehicle (1) and block rear wheels (2).
3. Lower front of vehicle (task d).

## 8-2. JACKING INSTRUCTIONS (Cont'd)



## 8-3. WHEEL REPLACEMENT

**This task covers:**

**a. Removal** **b. Installation**

**INITIAL SETUP:**

**Tools**

General mechanic's tool kit:
automotive (Appendix B, item 1)

**Manual References**

TM 9-2320-280-24P

**General Safety Instructions**

- Always apply parking brake and chock opposite wheel before removing wheel.
- Remove only the inner group of nuts when removing a wheel from the vehicle.
- Never mix radial tires and bias ply tires.

**WARNING**

- Always apply parking brake and chock opposite wheel before removing wheel. Avoid removing wheel when vehicle is on sloping terrain. Injury to personnel or damage to equipment may result.
- Remove only the inner group of nuts when removing a wheel from the vehicle. Removing the outer nuts which hold the rim together while the assembly is inflated could result in serious injury or death.
- Radial and Bias ply tires should not be mixed on the same vehicle. Injury to personnel or damage to equipment may result.

**NOTE**

Check tire size designator on sidewall for tire construction identification:
36 X 12.50-16 .5 LT-Bias ply
37 X 12.50R16.5LT-Radial

### a. Removal

1. Lumen eight lug nuts (2), but do not remove.
2. Raise and support corner of vehicle (para. 8-2).
3. Remove eight lug nuts (2) securing wheel (1) to geared hub (3) and remove wheel (1).

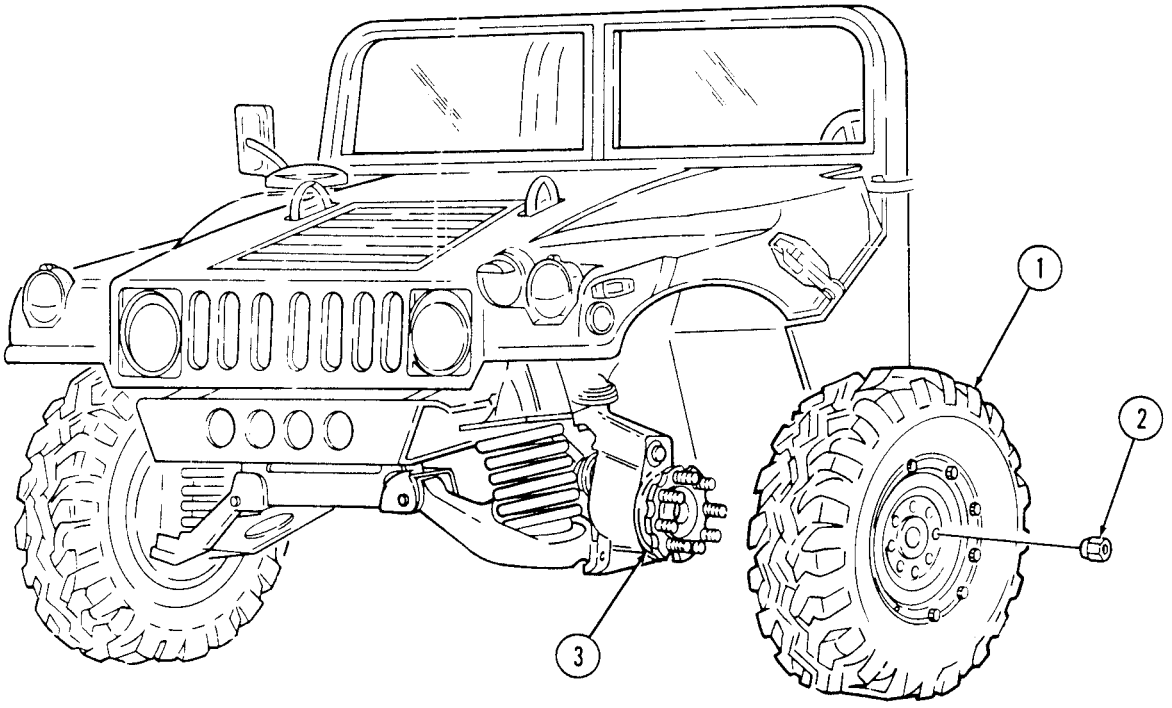
### b. Installation

**NOTE**

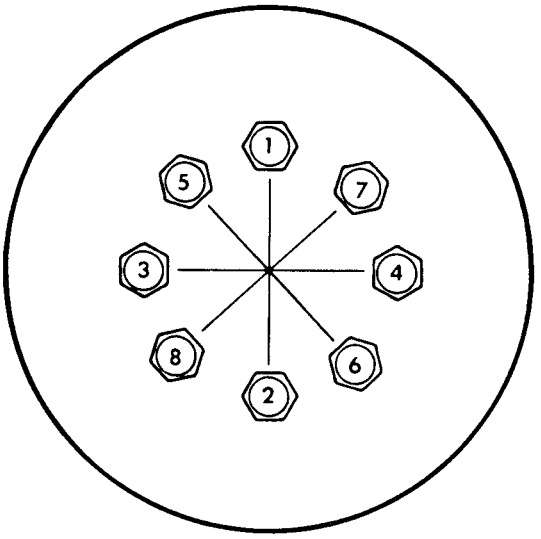
- Install lug nuts with fingers to full engagement. If nuts resist finger tightening, discard nuts. Examine studs for damage and replace if damaged (para. 6-14).
- The radial tire is nondirectional and can be used in either position.

1. Install wheel (1) on geared hub (3) with eight lug nuts (2).
2. Remove support and lower corner of vehicle (para. 8-2).
3. Tighten eight lug nuts (2) to 90-110 lb-ft. (122-149 N•m) in tightening sequence shown.

## 8-3. WHEEL REPLACEMENT (Cont'd)




TIGHTENING
SEQUENCE



## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE

**This task covers:**

**a. Disassembly**
**b. Inspection and Cleaning**
**c. Repair**
**d. Assembly**

**INITIAL SETUP:**

**Tools**

General mechanic's tool kit: automotive (Appendix B, Item 1)
General mechanic's tool kit: automotive, common No. 2 (Appendix B, Item 4)

**Special Tools**

Torque adapter, 9/16 in. (Appendix B, Item 144)
Socket adapter (Appendix B, Item 146)

**Materials/Parts**

Eight locknuts (Appendix G, Item 115)
Four locknuts (Appendix G, Item 116)
Lubricant (Appendix G, Item 196)
O-ring (Appendix G, Item 214)
Detergent (Appendix C, Item 17)

**Manual References**

TM 9-2320-280-10
TM 9-2320-280-24P
TM 9-2610-200-14

**Equipment Condition**

Wheel removed (para. 8-3).

**General Safety Instructions**

- Do not use tire machine.
- Ensure tire is totally deflated before removing wheel locknuts.
- Never use tubes in wheel assemblies.
- Rim surfaces must be kept clean and free of rust and dirt.
- Never use wheel assemblies with damaged studs.
- Never inflate a wheel assembly with the wheel locknuts removed.
- Never inflate a wheel assembly without first checking wheel locknut torques.
- Use only replacement parts specified in TM 9-2320-280-24P.
- Do not exceed recommended tire inflation pressure.
- Always use a tire inflation cage and a clip-on air chuck for tire inflation.

**WARNING**

Do not use tire machine. Injury to personnel or damage to equipment may result.

**NOTE**

The following maintenance procedure applies to vehicles using bias ply tires and two-piece magnesium runflats. Refer to paras. 8-4.1, 8-5, and 8-5.1 for maintenance instructions on radial tires and rubber runflats.

### a. Disassembly

1. Place wheel assembly in a tire inflation cage.

**WARNING**

In all disassembly operations, ensure the tire is totally deflated before removing wheel locknuts. Failure to follow proper safety precautions could cause serious injury or death.

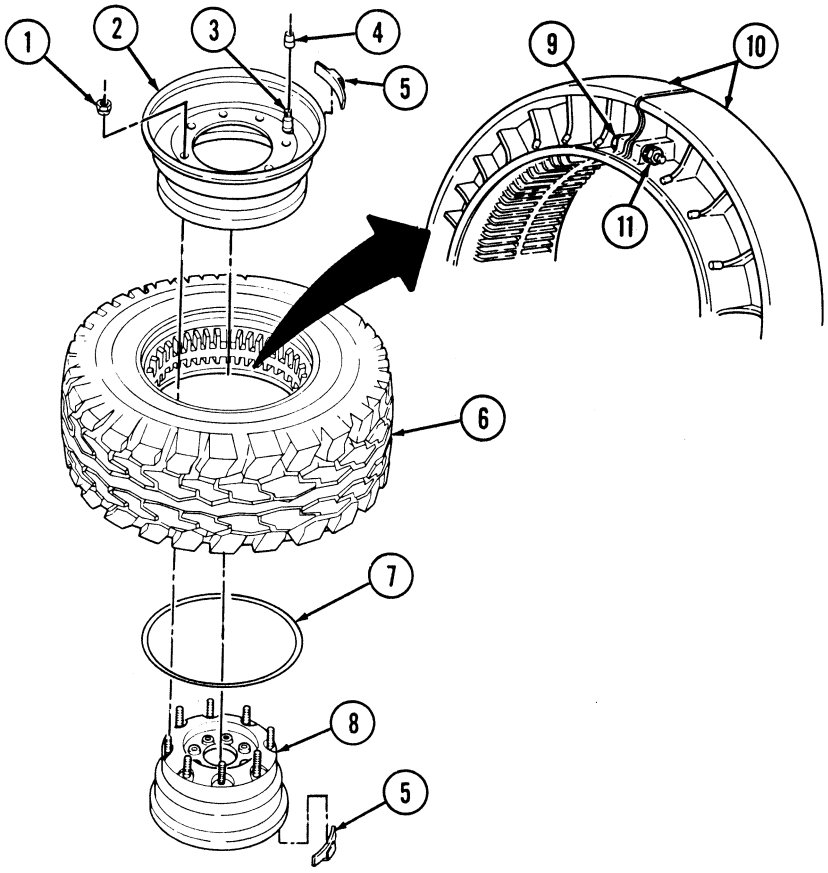
2. Remove valve core (4) from valve stem (3) and deflate tire (6). Run a piece of wire through valve stem (3) to make sure it is not plugged.
3. When tire (6) is fully deflated, remove wheel assembly from tire inflation cage and place flat on floor with valve stem (3) facing up.
4. Using a circular pattern, loosen eight wheel locknuts (1) securing rim halves (2) and (8) together. If you hear escaping air, do not proceed. Wait until the sound stops and recheck valve stem (3). When you are certain the tire (6) is fully deflated, proceed to remove wheel locknuts (1). Discard locknuts (1).

## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)

**WARNING**

Never inflate a wheel assembly with the wheel locknuts removed in an attempt to separate inner and outer rim halves. The assembly will separate under pressure, resulting in serious injury or death.

5. Remove rim half (2) from tire (6).
6. Remove tire (6) from rim half (8).
7. Remove O-ring (7) from rim half (8). Cut O-ring (7) in two, to make sure that it cannot be reused. Discard O-ring (7).
8. Remove four locknuts (11), flange bolts (9), and runflat halves (10) from tire (6). Discard locknuts (11).
9. Remove balance weights (5) from rim halves (2) and (8) (if present). Discard balance weights (5).



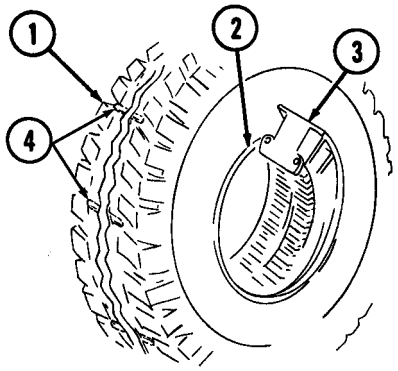
## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)

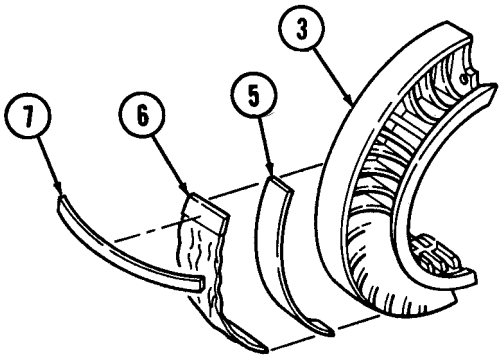
**b. Inspection and Cleaning**

**WARNING**

Do not reuse a tire which has been run flat without thoroughly inspecting for damage. Failure to follow these instructions may result in injury to personnel or damage to equipment.

1. Inspect inside of tire (1) for cord or belt separation, and inner liner damage. Replace tire (1) if damaged.
2. Inspect tire bead (2) for abrasions caused from runflat halves (3). Replace tire (1) if damaged.
3. Check for protruding objects inside tire (1) which may not be visible from outside. Repair tire (1) if damaged.
4. Check tread depth on tire (1). Tread should not be worn below level of wear bars (4). Replace tire (1) if tread is worn below wear bars (4).
5. Remove filament tape (7), lubricant packet (6), and adhesive tape (5) from runflat halves (3) if installed. Discard lubricant packet (6), filament tape (7), and adhesive tape (5).
6. Clean lubricant from tire (1) and runflat halves (3) with soap and water and allow to air dry.



## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)

7. Inspect inside diameter fins (9) and center section fins (10) of runflat halves (8) for cracks or broken sections. Replace runflat halves (8) if cracked or broken.
8. Inspect outside diameter (11) of runflat halves (8) for total penetration cracks. Replace runflat halves (8) if cracked.

**WARNING**

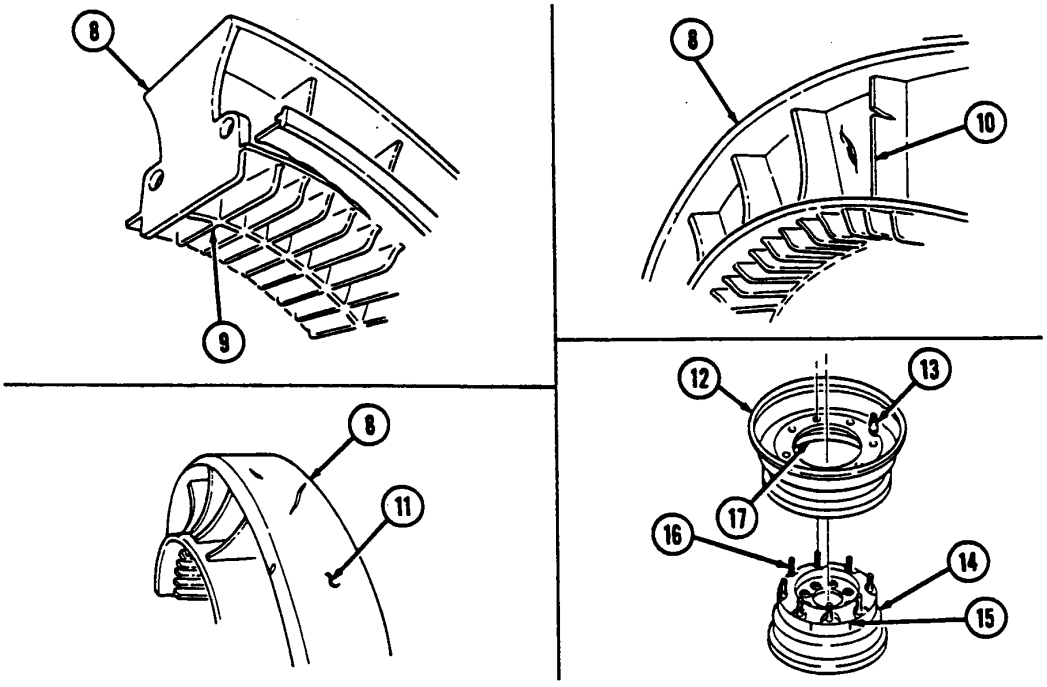
O-ring sealing surfaces and pressure relief grooves must be kept clean and free of rust and dirt. Failure to do so could cause the wheel assembly to separate under pressure if improperly disassembled, causing serious injury or death.

9. Using wire brush, clean studs (16). Clean all dirt and foreign material from rim halves (12) and (14) with soap and water and allow to air dry. Ensure O-ring sealing surfaces (17) and pressure relief grooves (15) on rim halves (12) and (14) are not cracked, bent, and do not have oversized mounting holes.
10. Inspect rim halves (12) and (14) for cracks, bent sealing surfaces, or oversized mounting holes. Replace rim halves (12) or (14) if cracked, bent, or if mounting holes are oversized.

**WARNING**

Never use wheel assemblies with studs which are damaged, loose, or have damaged threads. Damaged studs can cause improper assembly, which could cause individual fasteners to fail. Any of these situations could cause serious injury or death.

11. Inspect rim half (14) for cracked, broken, rusted, pitted, bent, or loose studs (16).
11.1. Inspect studs (16) for damaged or deformed threads. Replace studs (16) if threads are damaged or if studs (16) are damaged or loose (para. 8-8).
12. Inspect valve stem (13) for cracks or deterioration. Replace valve stem (13) if cracked or deteriorated.



## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)

**c. Repair**

Refer to TM 9-2610-200-14 for maintenance and repair of tires.

**d. Assembly**

**WARNING**

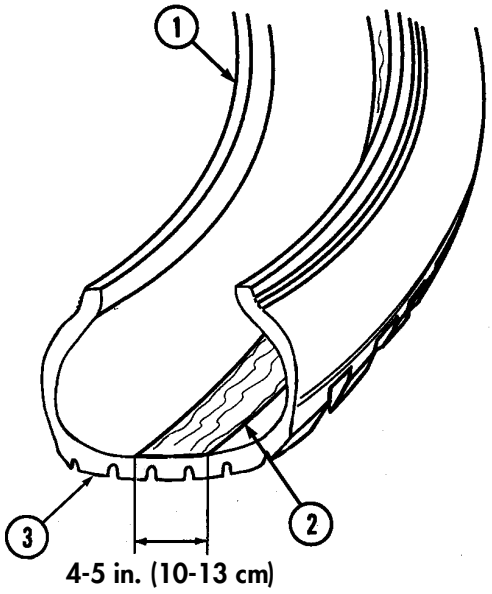
- Never use tubes in wheel assemblies. Use of a tube defeats built-in safety features, and could allow the wheel to come apart under pressure, resulting in serious injury or death.
- Use only replacement parts specified in TM 9-2320-280-24P for bias tires. Eight bolt rims were designed for use with bias tire components only. Wheels assembled with components not specified for bias tires could cause the assembly to separate under pressure, resulting in serious injury or death.

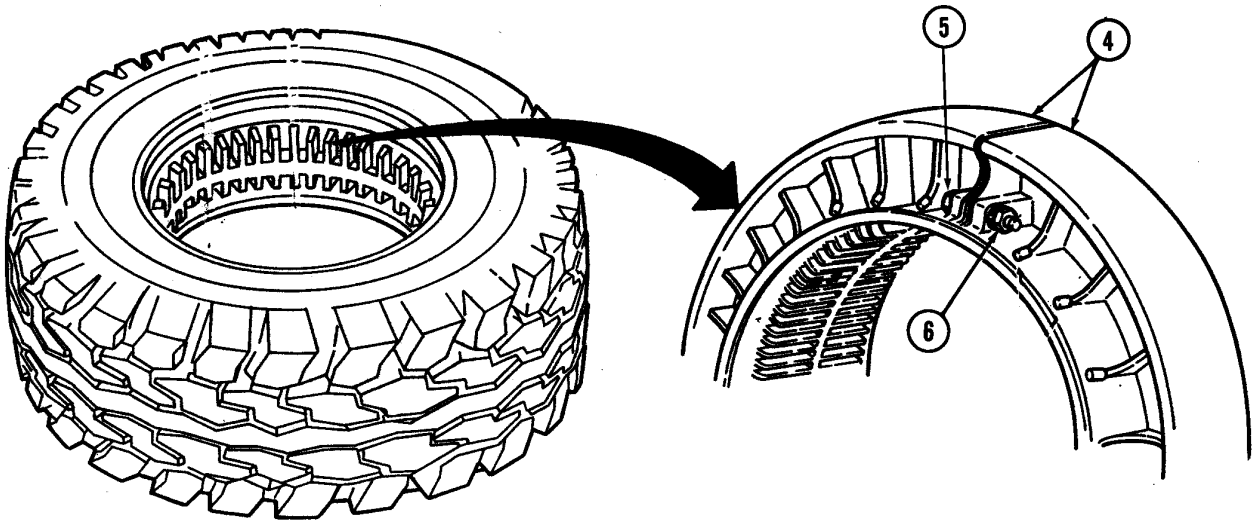
**NOTE**

Magnesium runflats are going to be phased out of the military supply system. They will be replaced by a rubber runflat kit. If rubber runflat kit is received for use with bias tires, follow assembly instructions in para. 8-5.

1. Apply one 11-ounce tube of gel lubricant (2) around inside of tire (1) at crown area (3).
2. Evenly spread gel lubricant (2) 4-5 in. (10-13 cm) wide on tire crown (3).
3. Install two runflat halves (4) inside tire (1) with four flange bolts (5) and locknuts (6). Using torque adapter, tighten locknuts (6) to 18-22 lb-ft (24-30 N•m).

## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)



## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)

4. Lubricate O-ring (8) with tire soap and install O-ring (8) on first ledge of rim half (9). Make sure O-ring (8) is not twisted and is uniformly positioned 1 in. (25.4 mm) below studs (10). Do not overstretch O-ring (8).
5. Position inner rim half (9) on a raised stand (or another inner rim half) to ensure tire (6) sidewall will not contact floor when installed.
6. Lubricate tire bead (7) and rim bead seat areas with tire soap.

**NOTE**

Before installing tire on inner rim half, inspect tire sidewalls for a "paint dot". Paint dots are often painted on tires to indicate the tire's light spot, for balancing purposes. If paint dot is present, position tire on rim halves so that paint dot is 180° from valve stem on outer rim half.

7. Center runflat (5) in tire (6). Carefully lower tire (6) over rim half (9). Check to ensure O-ring (8) has not been disturbed.
8. Ensure runflat (5) is not binding flat portion of rim half (9). Runflat (5) should clear inner rim half (9).
9. Install rim half (2) in tire (6).

**CAUTION**

Tighten locknuts gradually to avoid bent and broken studs, or damage to wheel components.

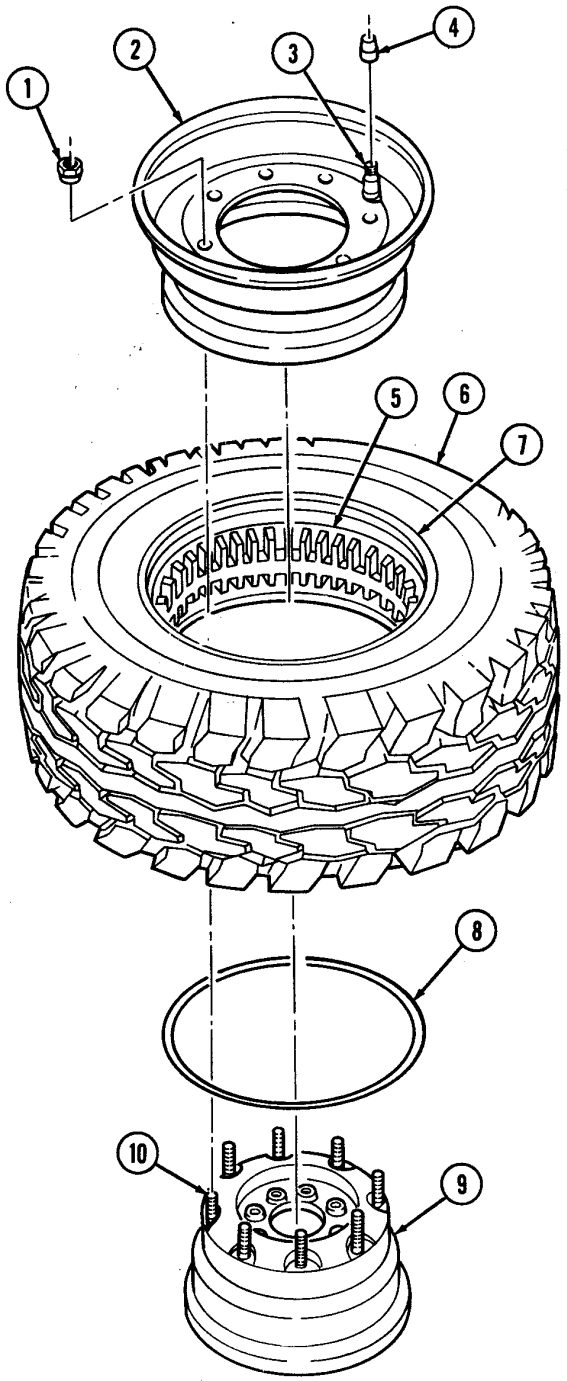
10. Install rim half (2) to rim half (9) with eight locknuts (1). Tighten locknuts (1) in sequence shown until rim half (2) is nearly touching rim half (9).
11. Tighten locknuts (1) to 55 lb-ft (75 N•m) in sequence shown.
12. Tighten locknuts (1) to 65 lb-ft (88 N•m) in sequence shown.
13. Check wheel assembly for gaps at each stud (10) between rim half (2) and rim half (9). Use a 0.0015 in. (0.038 mm) thickness gauge to detect gaps. If gaps are detected, disassemble and reassemble wheel assembly and recheck for gaps. If gaps are still detected, replace rim half (2).
14. Install valve core (4) in valve stem (3).

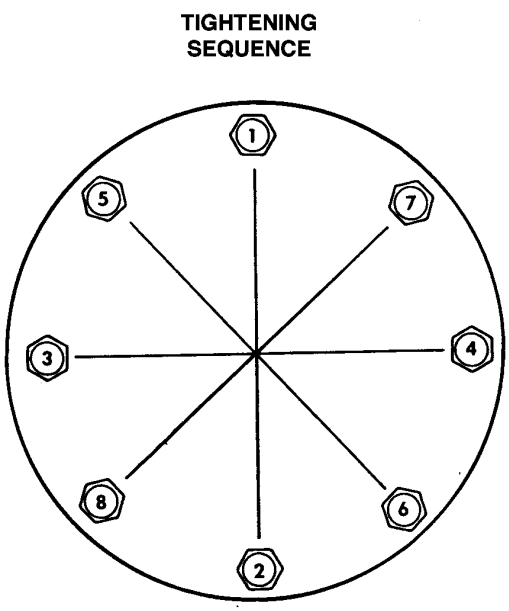
**WARNING**

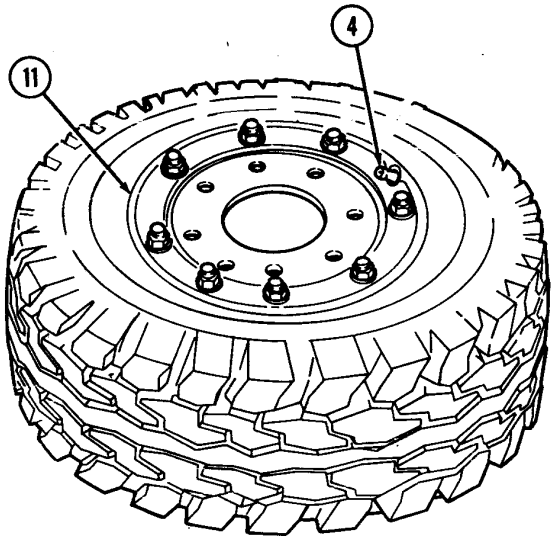
- Never inflate a wheel assembly without having checked wheel locknut torques to ensure the wheel locknuts are tightened to specifications. An assembly with improperly tightened locknuts could separate under pressure resulting in serious injury or death.
- Always use a tire inflation cage for inflation purposes. Stand on one side of cage, during inflation, never directly in front. Keep hands out of the cage during inflation. Inflate assembly to recommended pressure, using a clip-on air chuck. Do not exceed 30 psi (207 kPa) cold inflation pressure. Failure to follow these instructions may result in serious injury or death.

15. Place assembly in safety cage and inflate tire (6) to 30 psi (207 kPa) to seat tire bead.
16. Deflate tire (6) to recommended tire pressure (TM 9-2320-280-10).
17. Check for leaks around rim edges (11) and valve stem (4) with soapy solution.

## 8-4. TIRE, WHEEL, AND RUNFLAT MAINTENANCE (Cont'd)




FOLLOW-ON TASK: Balance tire (para. 8-9).

## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE

**This task covers:**

**a. Disassembly**
**b. Inspection and cleaning**
**c. Repair**
**d. Assembly**

**INITIAL SETUP:**

**Applicable Models**

All except M997A2, M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, and M1123

**Tools**

General mechanic's tool kit: automotive (Appendix B, Item 1)
General mechanic's tool kit: automotive, common No. 2 (Appendix B, Item 4)

**Special Tools**

Runflat compressor (Appendix B, Item 131)
Torque adapter, 9/16 in. (Appendix B, Item 144)

**Materials/Parts**

Twelve locknuts (Appendix G, Item 115)
O-ring (Appendix G, Item 214)
Detergent (Appendix C, Item 17)
Lubricant (Appendix G, Item 196)
Locknut (Appendix G, Item 82)
O-ring (Appendix G, Item 219)
Sealing compound, if required (Appendix C, Item 44)

**Personnel Required**

One mechanic

**Manual References**

TM 9-2320-280-10
TM 9-2320-280-24P
TM 9-2610-200-14

**Equipment Condition**

Wheel removed (para. 8-3).

**General Safety Instructions**

- Do not use tire machine.
- Ensure tire is totally deflated before removing wheel locknuts.
- Never use tubes in wheel assemblies.
- Rim surfaces must be kept clean and free of rust and dirt.
- Never use wheel assemblies with damaged studs.
- Never inflate a wheel assembly with the wheel locknuts removed.
- Never inflate a wheel assembly without first checking wheel locknut torques.
- Do not exceed recommended tire inflation pressure.
- Always use a tire inflation cage and a clip-on air chuck for tire inflation.
- Ensure runflat compressor strap is centered around runflat.
- Never intermix bias and radial tires on the same vehicle.
- Use only replacement parts specified in TM 9-2320-280-24P.
- Do not use runflat compressor if compressor strap is frayed or damaged.

**WARNING**

Do not use tire machine. Injury to personnel or damage to equipment may result.

**NOTE**

The following maintenance procedure applies to vehicles using bias ply tires and one-piece rubber runflats. Refer to para. 8-4 for maintenance instructions on bias tires and magnesium runflats, and paras. 8-5 and 8-5.1 for maintenance instructions on radial tires and rubber runflats.

### a. Disassembly

1. Place wheel assembly in a tire inflation cage.

## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

**WARNING**

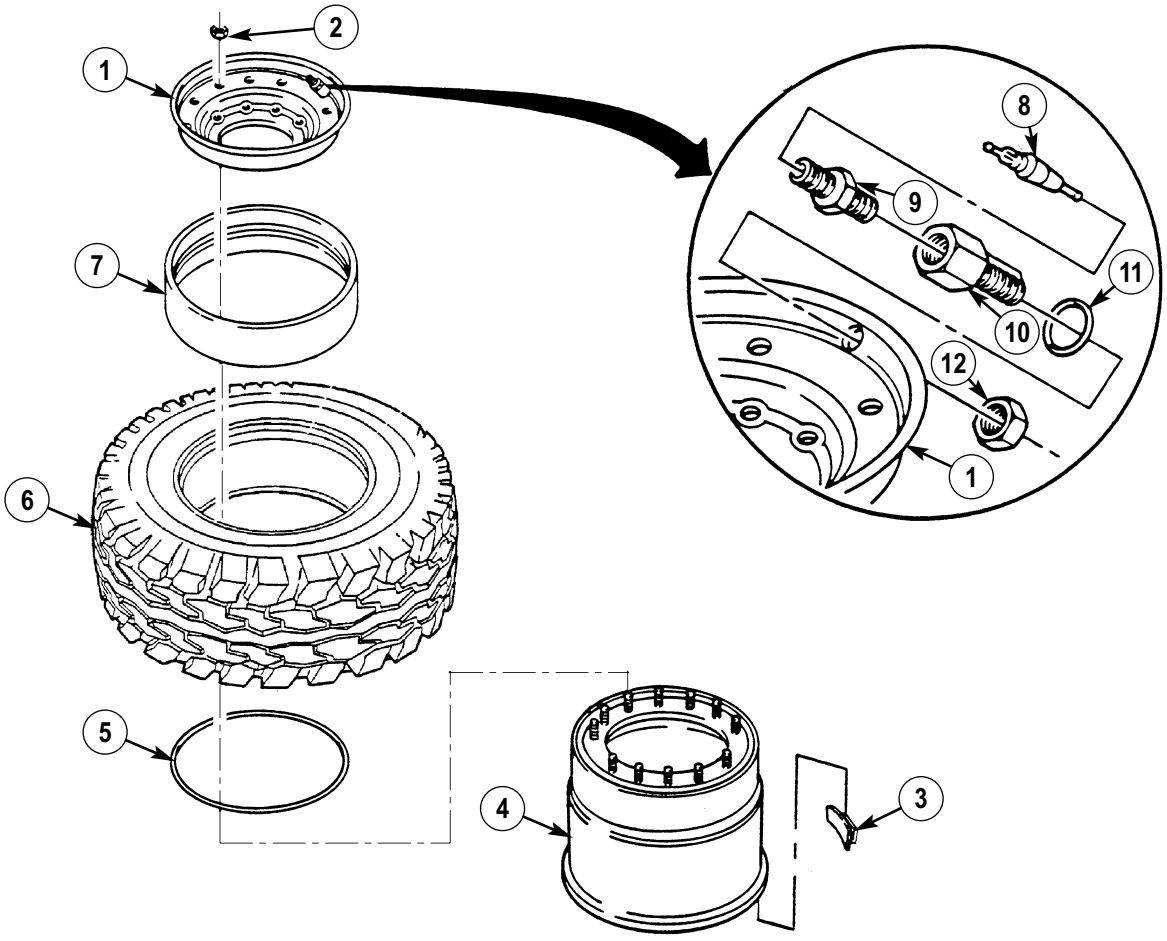
In all disassembly operations, ensure the tire is totally deflated before removing wheel locknuts. Failure to follow proper safety precautions could cause serious injury or death.

2. Remove valve core (8) from valve bore (9) and deflate tire (6). Run a piece of wire through valve bore (9) to make sure it is not plugged.
3. When tire (6) is fully deflated, use a circular pattern and loosen twelve wheel locknuts (2) securing rim halves (1) and (4) together. If you hear escaping air, do not proceed. Wait until the sound stops and recheck valve bore (9). When you are certain the tire (6) is fully deflated, proceed to remove wheel locknuts (2). Discard locknuts (2).
4. Remove outer rim half (1) from tire (6).

**NOTE**

Perform steps 5 and 6 only if damage to valve bore, insert, or O-ring is evident.

5. Remove valve bore (9) from insert (10). Remove insert (10) and locknut (12) from outer rim (1). Discard locknut (12).
6. Remove O-ring (11) from insert (10). Discard O-ring (11).
7. Remove O-ring (5) from inner rim half (4). Cut O-ring (5) in two, to make sure it cannot be reused. Discard O-ring (5).
8. Remove tire (6) from inner rim half (4).
9. Remove balance weights (3) from rim halves (1) and (4), if present. Discard balance weights (3).
10. Remove runflat spacer (7) from tire (6).



## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

11. Lay tire (1) flat.

**WARNING**

Do not use runflat compressor if compressor strap is frayed or damaged. Inspect the tool's pivot points and bearings and ensure runflat is free of grease and runflat compressor strap is centered around runflat. Failure to do so could cause injury to personnel.

**NOTE**

- Perform steps 10 and 11 when using runflat compressor P/N J39250.
- Perform steps 12 and 13 when using runflat compressor P/N 528236.

12. Position runflat compressor (3) on runflat (2) so that runflat compressor hex drive (4) is facing up and strap (5) is centered around runflat (2).

**NOTE**

Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

13. Using runflat compressor (3), compress runflat (2).
14. Position runflat compressor (6) on an outer edge of runflat (2) with handle assembly (7) facing up and strap (8) centered around runflat (2).

**NOTE**

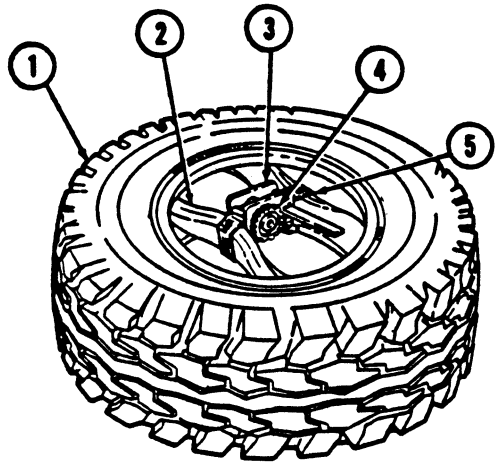
Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

15. Using runflat compressor (6), compress runflat (2).

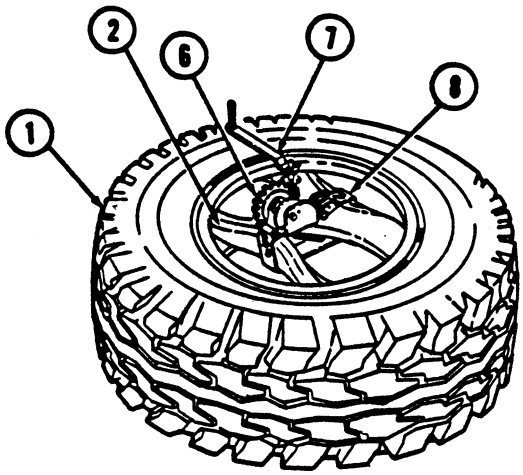
**NOTE**

- It may be necessary to use a tire spoon and tire soap to remove runflat from tire.
- When using runflat compressor P/N 528236, handle may need to be removed before removing runflat.

16. Remove runflat (2) from tire (1) and remove runflat compressor (3) or (6) from runflat (2).
17. Remove two lubricant packets (9) and adhesive tape (10) from runflat (2) if installed. Discard lubricant packets (9) and adhesive tape (10).




RUNFLAT COMPRESSOR (P/N J39250)




RUNFLAT COMPRESSOR (P/N 528236)

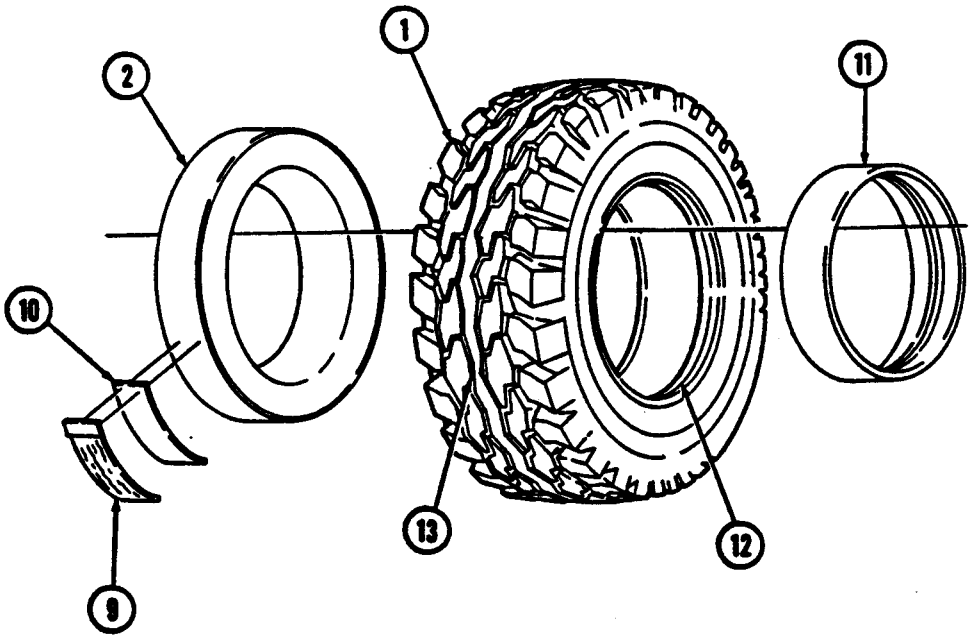
## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

**b. Inspection and Cleaning**

**WARNING**

Do not reuse a tire which has been run flat without thoroughly inspecting for damage. Failure to follow these instructions may result in injury to personnel or damage to equipment.

1. Inspect inside of tire (1) for cord or belt separation, and inner liner damage. Replace tire (1) if damaged.
2. Inspect tire bead (12) for abrasions caused from runflat (2). Replace tire (1) if damaged.
3. Check for protruding objects inside tire (1) which may not be visible from outside. Repair tire (1) if damaged.
4. Check tread depth on tire (1). Tread should not be worn below level of wear bars (13). Replace tire (1) if tread is worn below wear bars (13) or 3/32 in. (2.38 mm).
5. Inspect runflat spacer (11) for splitting, wear, or excessive chafing. Replace runflat spacer (11) if damaged.
6. Inspect runflat (2) for splitting, wear, or excessive chafing. Replace runflat (2) if damaged.



## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

**WARNING**

O-ringing surfaces and pressure relief grooves must be kept clean and free of rust and dirt. Failure to do so could cause the wheel assembly to separate under pressure, causing serious injury or death.

7. Using wire brush, clean studs (4). Clean all dirt and foreign material from rim halves (1) and (2) with soap and water and allow to air dry. Ensure O-ringing surfaces (5) and pressure relief grooves (3) on rim halves (1) and (2) are smooth and clean.
8. Inspect rim halves (1) and (2) for cracks, bent sealing surfaces (5), or oversized mounting holes. Replace rim halves (1) or (2) if cracked, bent, or if mounting holes are oversized.

**WARNING**

Never use wheel assemblies with studs which are damaged, loose, or have damaged threads. Damaged studs can cause improper assembly, which could cause individual fasteners to fail. Any of these situations could cause serious injury or death.

9. Inspect inner rim half (2) for cracked, broken, rusted, pitted, bent, or loose studs (4).
10. Inspect valve core (6) for cracks or deterioration. Replace valve core (6) if cracked or deteriorated.
11. Inspect studs (4) for damaged or deformed threads. Replace studs (4) if threads are damaged or if studs (4) are damaged or loose (para. 8-8).

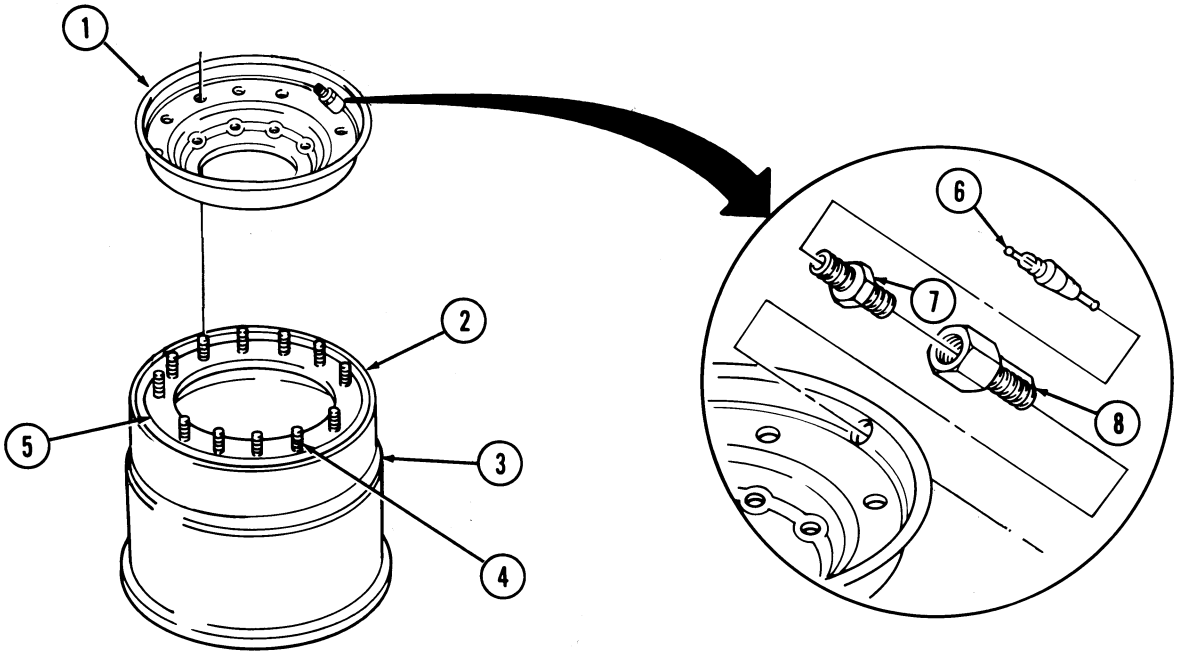
**NOTE**

Perform steps 11 and 12 only if valve core and insert were removed.

12. Inspect valve bore (7) for cracks or deterioration. Replace valve bore (7) if cracked or deteriorated.
13. Inspect insert (8) for damage. Replace insert (8) if damaged.

**c. Repair**

Refer to TM 9-2610-200-14 for maintenance and repair of tires.



## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

**d. Assembly**

**WARNING**

- Never use tubes in wheel assemblies. Use of a tube defeats built-in safety features, and could allow the wheel to come apart under pressure, resulting in serious injury or death.
- Use only replacement parts specified in TM 9-2320-280-24P. Wheels assembled with components which do not meet specifications could cause the assembly to separate under pressure, resulting in serious injury or death.
- Do not use runflat compressor if compressor strap is frayed or damaged. Ensure runflat is free of grease and runflat compressor strap is centered on runflat. Failure to do so could cause injury to personnel.
- Any oil on runflat compressor belt could result in personnel injury or damage to equipment. Wipe any oil off from belt or handle.

**NOTE**

Perform steps 1 and 2 when using runflat compressor P/N J39250.
Perform steps 3 and 4 when using runflat compressor P/N 528236.

1. Position runflat compressor (9) on runflat (8) so that runflat compressor hex drive (10) is facing up and strap (11) is centered around runflat (8).

**NOTE**

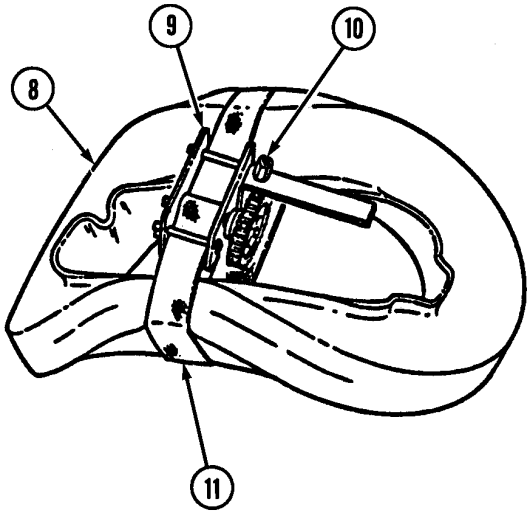
Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

2. Using runflat compressor (9), compress runflat (8).
3. Position runflat compressor (12) on an outer edge of runflat (8) with handle assembly (13) facing up and strap (14) centered around runflat (8).

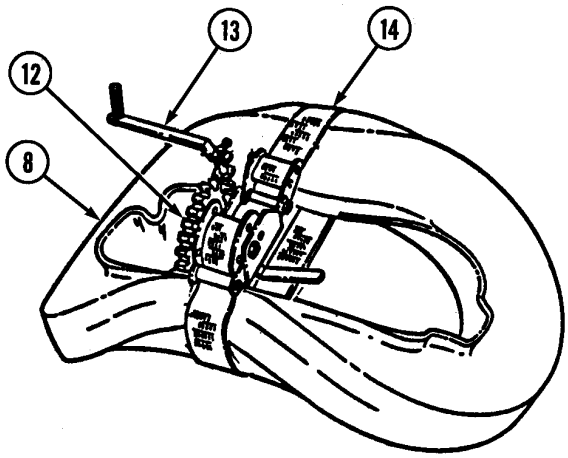
**NOTE**

Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

4. Using runflat compressor (12), compress runflat (8).




**RUNFLAT COMPRESSOR (P/N J39250)**




**RUNFLAT COMPRESSOR (P/N 528236)**

## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

5. Stand tire (1) up and lubricate tire bead (3) with tire soap.

**NOTE**

It may be necessary to remove the handle assembly on runflat compressor P/N 528236 before inserting runflat into tire.

6. Insert runflat (2), compressor side first, as far as possible into tire (1).
7. Lay tire (1) flat on protruding runflat side. Loosen compressor (4). Runflat (2) should insert itself inside tire (1). If not, repeat steps 5 through 7 and/or use a tire spoon to assist in installation.

**NOTE**

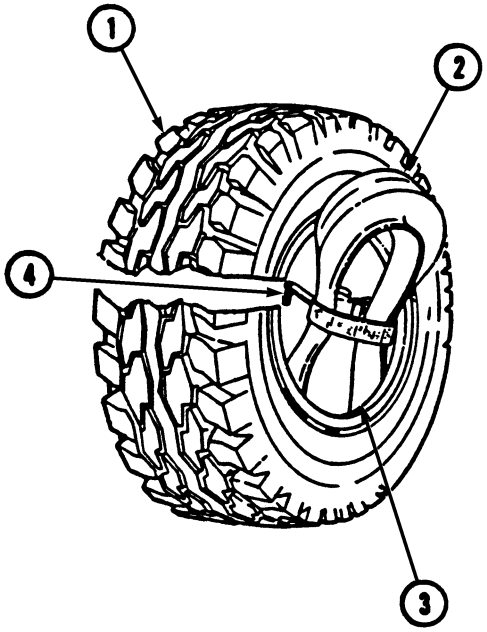
If required, clean and lubricate bearing assembly on runflat compressor P/N 528236 after removal.

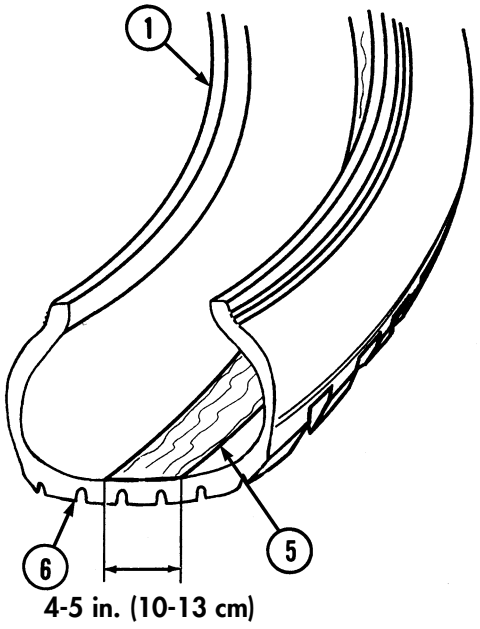
8. Loosen runflat compressor (4) and remove from tire (1).
9. Apply one 11-ounce tube of gel lubricant (5) around inside of tire (1) at crown area (6).
10. Evenly spread gel lubricant (5) 4-5 in. (10-13 cm) wide on the tire crown (6).

**NOTE**

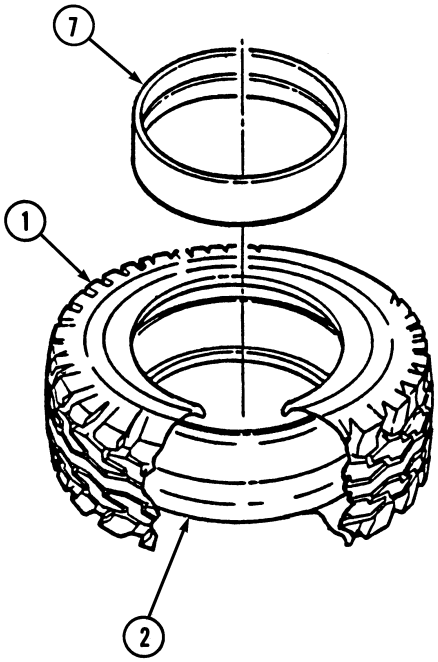
- Ensure longer lip of runflat faces inner rim of tire.
- Ensure runflat spacer butts up against flat side of runflat.

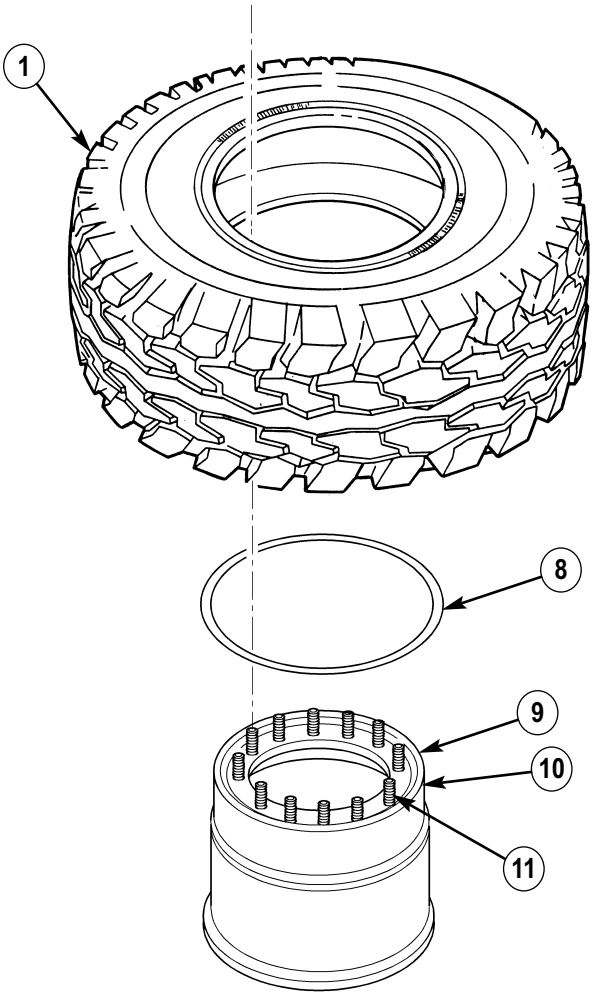
11. Install runflat spacer (7) inside tire (1) and position on valve side of tire (1).
12. Lubricate O-ring (8) with tire soap and install O-ring (8) in groove (10) on top of inner rim (9), around studs (11). Ensure O-ring (8) is not twisted and that it is uniformly positioned in groove (10). Do not overstretch O-ring (8).
13. Lubricate tire bead (3) and rim bead seat areas with tire soap.



## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)



## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

**WARNING**

Never intermix bias and radial rim assemblies. Damage to equipment may result causing injury to personnel.

**NOTE**

Before installing tire on inner rim half, inspect tire sidewalls for a "paint dot". Paint dots are often painted on tires to indicate the tire's light spot, for balancing purposes. If paint dot is present, position tire on rim halves so that paint dot is aligned with insert hole on outer rim half.

14. Center runflat (6) and runflat spacer (5) in tire (1). Carefully lower tire (1) over inner rim half (8). Check to ensure O-ring (7) has not been disturbed.
15. Ensure runflat (6) and runflat spacer (5) are not binding on flat portion of inner rim half (8). Runflat (6) and runflat spacer (5) should clear inner rim half (8).
16. Install valve core (9) in valve bore (10).

**NOTE**

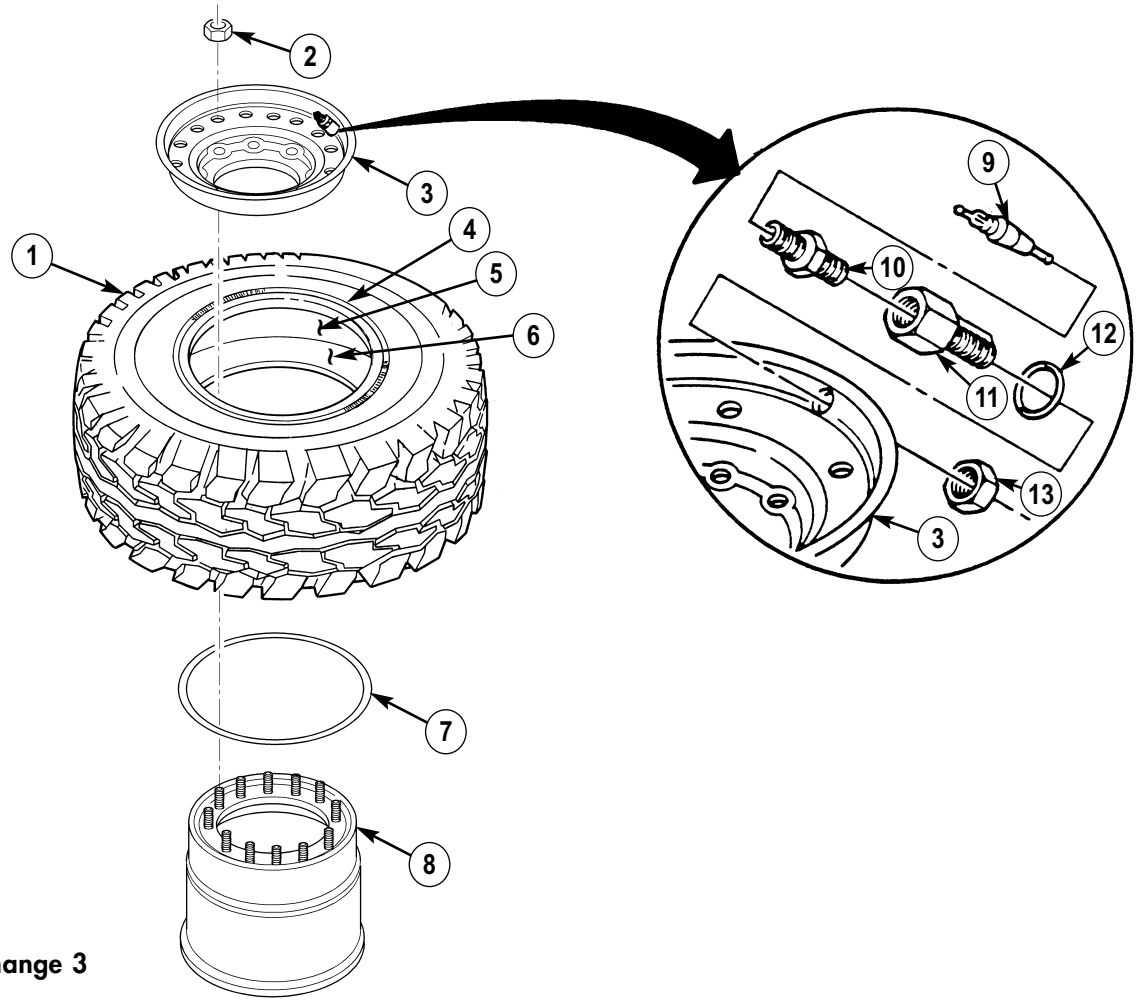
Perform step 17 only if valve bore and insert were removed.

17. Install insert (11), O-ring (12), and locknut (13) on outer rim (3). Apply sealing compound to valve bore (10) and install valve bore (10) on insert (11). Tighten locknut (13) to 40-60 lb-in. (5-7 N•m). Tighten valve bore (10) to 25-30 lb-ft (34-41 N•m).
18. Install outer rim half (3) on inner rim half (8).

**CAUTION**

Tighten locknuts gradually to avoid bent and broken studs, or damage to wheel components.

19. Install outer rim half (3) to inner rim half (8) with twelve locknuts (2).



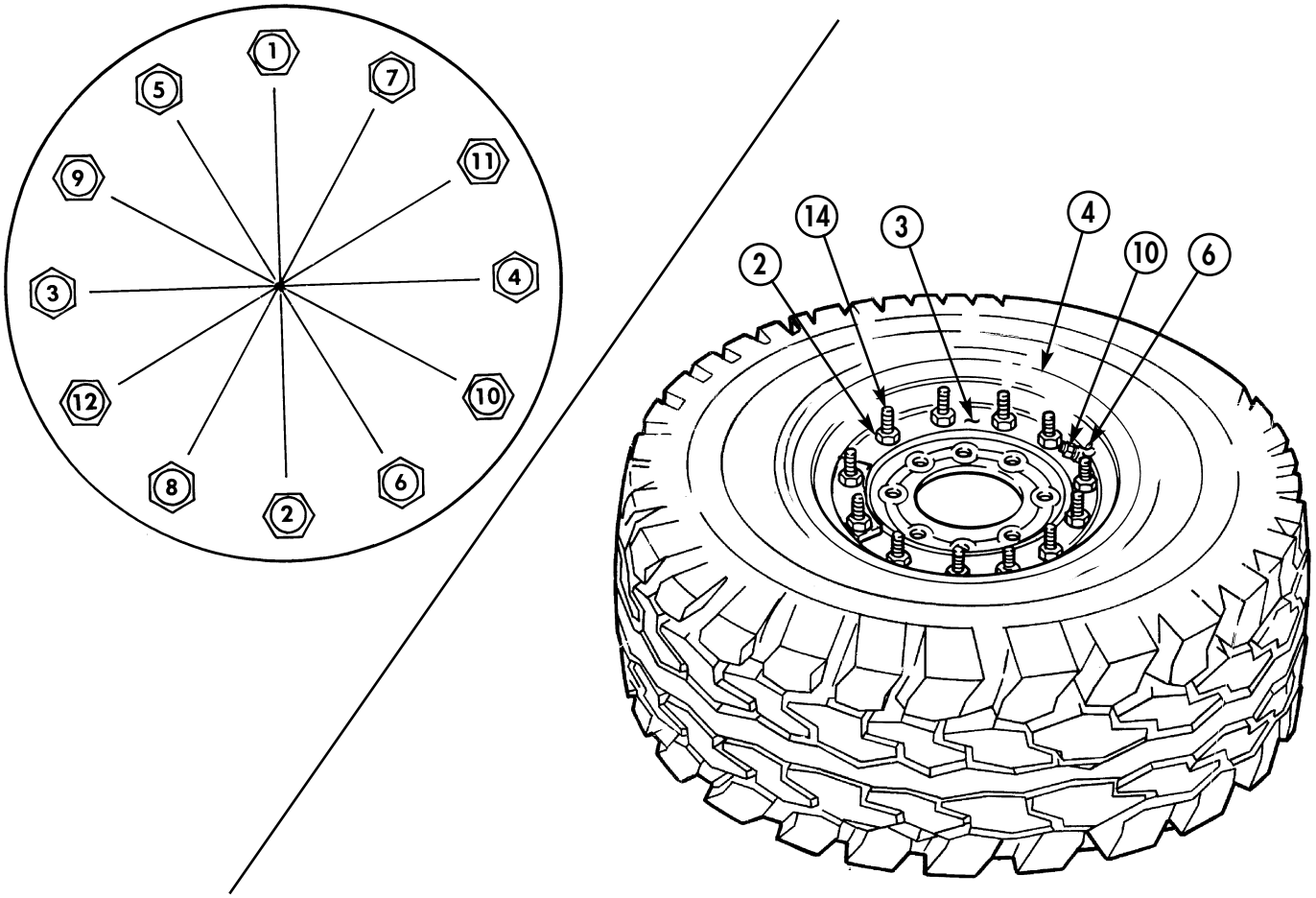
## 8-4.1. BIAS TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (Cont'd)

20. Tighten locknuts (2) to 85 lb-ft (115 N•m) in tightening sequence shown.
21. Tighten locknuts (2) to 125 lb-ft (170 N•m) in tightening sequence shown.
22. Check wheel assembly for gaps at each stud (14). Use a 0.0015 in. (0.038 mm) thickness gauge to detect gaps. If gaps are detected, disassemble and reassemble wheel assembly and recheck for gaps. If gaps are still detected, replace outer rim half (3).

**WARNING**

- Never inflate a wheel assembly without having checked wheel locknut torques to ensure the wheel locknuts are tightened to specifications. An assembly with improperly tightened locknuts could separate under pressure, resulting in serious injury or death.
- Always use a tire inflation cage for inflation purposes. Stand on one side of the cage, during inflation, never directly in front. Keep hands out of the cage during inflation. Inflate assembly to recommended pressure, using a clip-on air chuck. Do not exceed 50 psi (345 kPa) cold inflation pressure. Failure to follow these instructions may result in serious injury or death.

23. Place assembly in safety cage and inflate front and rear tires to recommended tire pressure (TM 9-2320-280-10).
24. Check for leaks around rim edges (4), insert (6), and valve bore (10) with soapy solution.




FOLLOW-ON TASK: Balance tire (para. 8-9).

# 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES)

**This task covers:**

**a. Disassembly**
**b. Inspection and Cleaning**
**c. Repair**
**d. Assembly**

**INITIAL SETUP:**

**Tools**

General mechanic's tool kit: automotive, (Appendix B, Item 1)
General mechanic's tool kit: automotive, common No. 2 (Appendix B, Item 4)

**Special Tools**

Runflat compressor (Appendix B, Item 131)
Torque adapter, 9/16 in. (Appendix B, Item 144)
Socket adapter (Appendix B, Item 146)

**Materials/Parts**

Lubricant (Appendix G, Item 196)
Twelve locknuts (Appendix G, Item 115)
Locknut (Appendix G, Item 82)
O-ring (Appendix G, Item 217)
O-ring (Appendix G, Item 219)
Detergent (Appendix C, Item 17)
Sealing compound, if required (Appendix C, Item 44)
Lubricating oil (Appendix C, Item 33)

**Manual References**

TM 9-2320-280-10
TM 9-2320-280-24P
TM 9-2610-200-14

**Equipment Condition**

Wheel removed (para. 8-3).

**General Safety Instructions**

- Do not use tire machine.
- Ensure tire is totally deflated before removing wheel locknuts.
- Never use tubes in wheel assemblies.
- Rim surfaces must be kept clean and free of rust and dirt.
- Never use wheel assemblies with damaged studs.
- Never inflate a wheel assembly with the wheel locknuts removed.
- Never inflate a wheel assembly without first checking wheel locknut torques.
- Do not exceed recommended tire inflation pressure.
- Always use a tire inflation cage and a clip-on air chuck for tire inflation.
- Ensure runflat compressor strap is centered around runflat.
- Never install radial tire on eight bolt wheel.
- Do not mix radial and bias tires.
- Ensure that during assembly indexing hole on inner and outer rim halves is aligned.

**WARNING**

Do not use tire machine. Injury to personnel or damage to equipment may result.

**NOTE**

The following maintenance procedure applies to vehicles using load range "D" tires and one-piece rubber runflats. Refer to paras. 8-4 and 8-4.1 for maintenance instructions on bias tires and magnesium runflats.

## a. Disassembly

1. Place wheel assembly in a tire inflation cage.

**WARNING**

In all disassembly operations, ensure the tire is totally deflated before removing wheel locknuts. Failure to follow proper safety precautions could cause serious injury or death.

2. Remove valve core (8) from valve bore (9) and deflate tire (6). Run a piece of wire through valve bore (9) to make sure it is not plugged.
3. When tire (6) is fully deflated, use a circular pattern and loosen twelve wheel locknuts (2) securing rim halves (1) and (4) together. If you hear escaping air, do not proceed. Wait until the sound stops and recheck valve bore (9). When you are certain the tire (6) is fully deflated, proceed to remove wheel locknuts (2). Discard locknuts (2).

## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**WARNING**

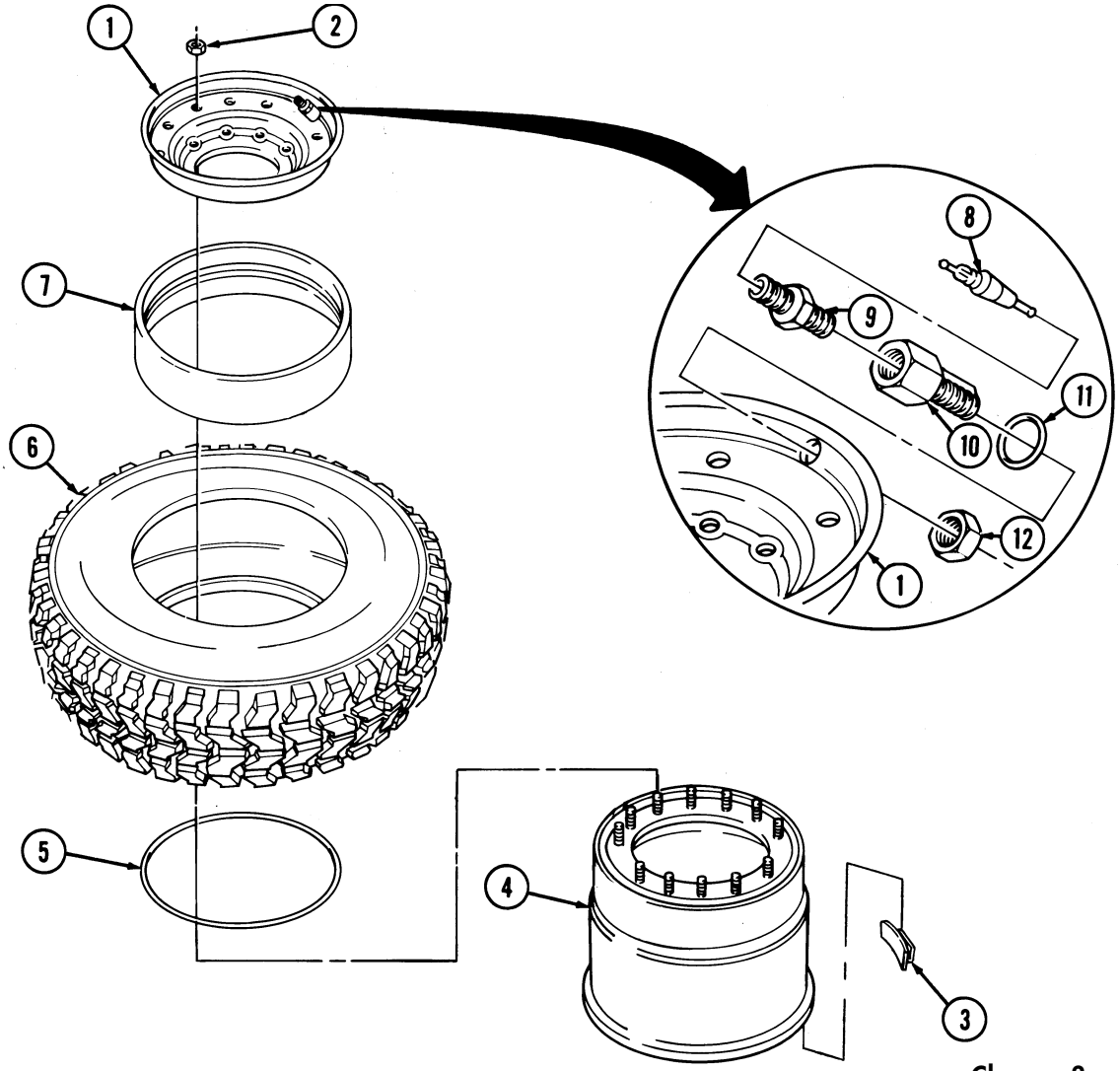
Never inflate a wheel assembly with the wheel locknuts removed in an attempt to separate inner and outer rim halves. The assembly will separate under pressure resulting in serious injury or death.

4. Remove outer rim half (1) from tire (6).

**NOTE**

Perform steps 5 and 6 only if damage to valve bore, insert, or O-ring is evident.

5. Remove valve bore (9) from insert (10). Remove insert (10) and locknut (12) from outer rim (1). Discard locknut (12).
6. Remove O-ring (11) from insert (10). Discard O-ring (11).
7. Remove O-ring (5) from inner rim half (4). Cut O-ring (5) in two, to make sure it cannot be reused. Discard O-ring (5).
8. Remove tire (6) from inner rim half (4).
9. Remove balance weights (3) from rim halves (1) and (4), if present. Discard balance weights (3).
10. Remove runflat spacer (7) from tire (6).



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

11. Lay tire (1) flat.

**WARNING**

- Do not use runflat compressor if compressor strap is frayed or damaged. Inspect the tool's pivot points and bearings and ensure runflat is free of grease and runflat compressor strap is centered around runflat. Failure to do so could cause injury to personnel.
- Any oil on runflat compressor belt or handle could result in personnel injury or damage to equipment. Wipe any oil off from belt or handle.

**NOTE**

Perform steps 12 and 13 when using runflat compressor P/N J39250.
Perform steps 14 and 15 when using runflat compressor P/N 528236.

11.1. Make sure gears and pivot points on runflat compressor (3) or (6) have a light coat of oil to ensure ease of operation and prevent from rust.

12. Position runflat compressor (3) on runflat (2) so that runflat compressor hex drive (4) is facing up and strap (5) is centered around runflat (2).

**NOTE**

Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

13. Using runflat compressor (3), compress runflat (2).

14. Position runflat compressor (6) on an outer edge of runflat (2) with handle assembly (7) facing up and strap (8) centered around runflat (2).

**NOTE**

Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

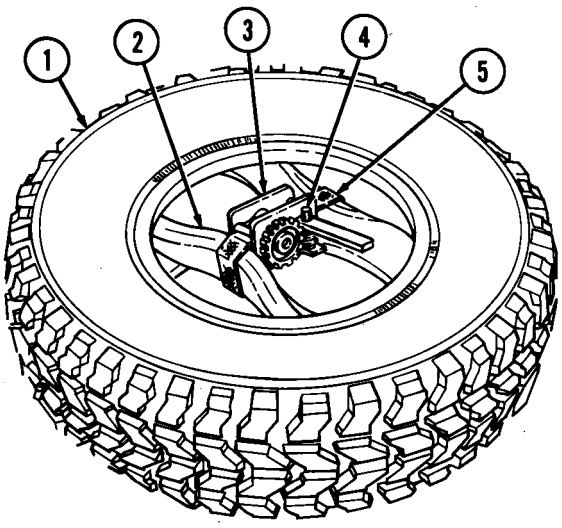
15. Using runflat compressor (6), compress runflat (2).

**NOTE**

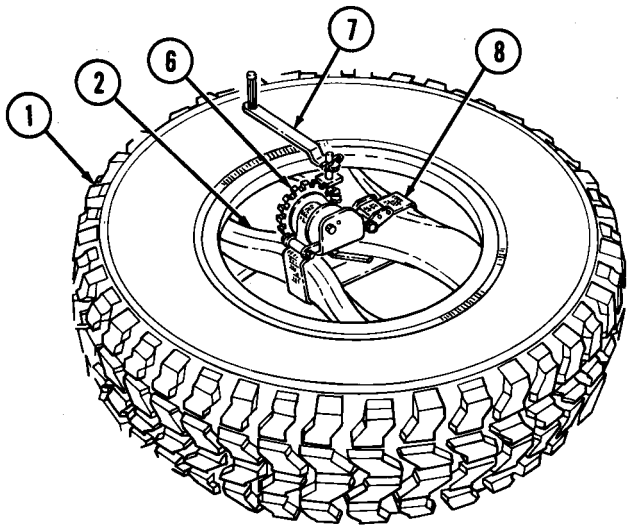
- It may be necessary to use a tire spoon and tire soap to remove runflat from tire.
- When using runflat compressor P/N 528236, handle may need to be removed before removing runflat.

16. Remove runflat (2) from tire (1) and remove runflat compressor (3) or (6) from runflat (2).

17. Remove two lubricant packets (9) and adhesive tape (10) from runflat (2) if installed.




**RUNFLAT COMPRESSOR (P/N J39250)**




**RUNFLAT COMPRESSOR (P/N 528236)**

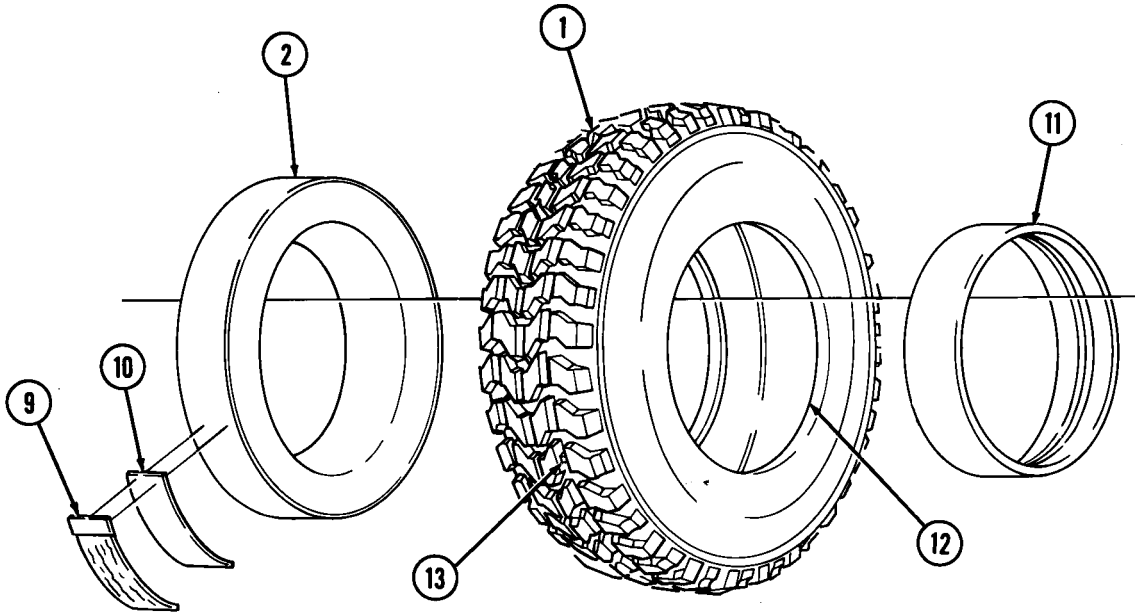
## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**b. Inspection and Cleaning**

**WARNING**

Do not reuse a tire which has been run flat without thoroughly inspecting for damage. Failure to follow these instructions may result in injury to personnel or damage to equipment.

1. Inspect inside of tire (1) for cord or belt separation, and inner liner damage. Replace tire (1) if damaged.
2. Inspect tire bead (12) for abrasions caused from runflat (2). Replace tire (1) if damaged.
3. Check for protruding objects inside tire (1) which may not be visible from outside. Repair tire (1) if damaged.
4. Check tread depth on tire (1). Tread should not be worn below level of wear bars (13). Replace tire (1) if tread is worn below wear bars (13) or 3/32 in. (2.38 mm).
5. Inspect runflat spacer (11) for splitting, wear, or excessive chafing. Replace runflat spacer (11) if damaged.
6. Clean all grease, dirt, and foreign material from the runflat (2) with soap and water and allow to air dry. Inspect runflat (2) for splitting, wear, or excessive chafing. Replace runflat (2) if damaged.



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**WARNING**

O-ring sealing surfaces and pressure relief grooves must be kept clean and free of rust and dirt. Failure to do so could cause the wheel assembly to separate under pressure, causing serious injury or death.

7. Using wire brush, clean studs (4). Clean all dirt and foreign material from rim halves (1) and (2) with soap and water and allow to air dry. Ensure O-ring sealing surfaces (5) and pressure relief grooves (3) on rim halves (1) and (2) are smooth and clean.
8. Inspect rim halves (1) and (2) for cracks, bent sealing surfaces (5), or oversized mounting holes. Replace rim halves (1) or (2) if cracked, bent, or if mounting holes are oversized.

**WARNING**

Never use wheel assemblies with studs which are damaged, loose, or have damaged threads. Damaged studs can cause improper assembly, which could cause individual fasteners to fail. Any of these situations could cause serious injury or death.

9. Inspect inner rim half (2) for cracked, broken, rusted, pitted, bent, or loose studs (4).
10. Inspect valve core (6) for cracks or deterioration. Replace valve core (6) if cracked or deteriorated.
10.1. Inspect studs (4) for damaged or deformed threads. Replace studs (4) if threads are damaged or if studs (4) are damaged or loose (para. 8-8).

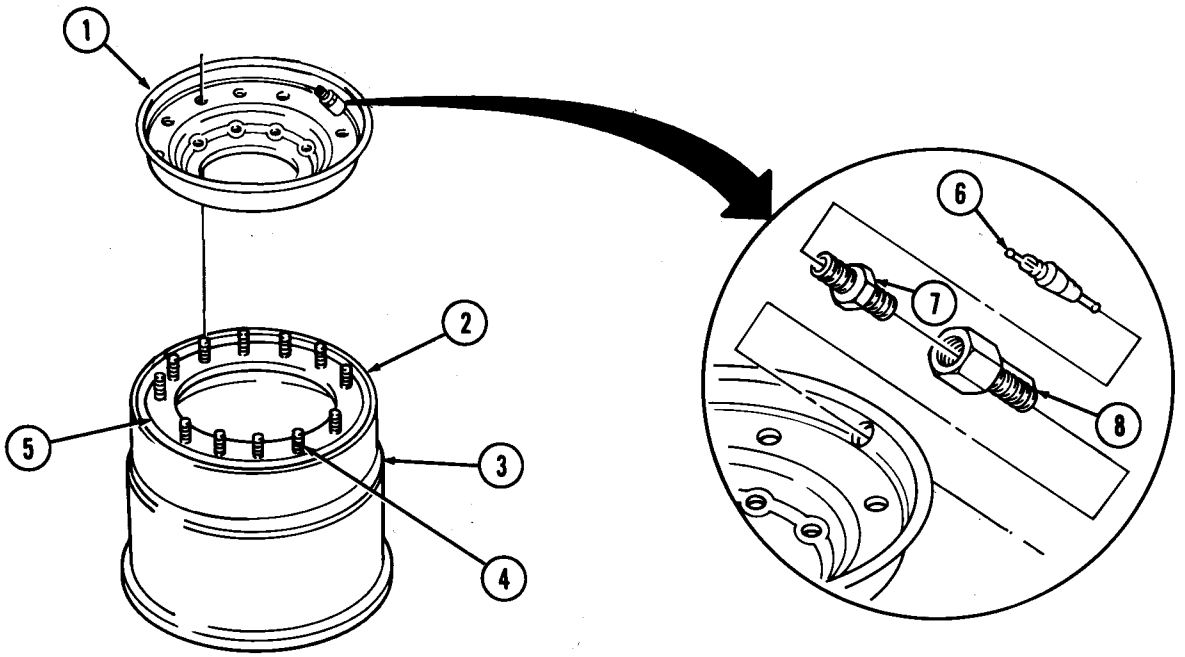
**NOTE**

Perform steps 11 and 12 only if valve core and insert were removed.

11. Inspect valve bore (7) for cracks or deterioration. Replace valve bore (7) if cracked or deteriorated.
12. Inspect insert (8) for damage. Replace insert (8) if damaged.

**c. Repair**

Refer to TM 9-2610-200-14 for maintenance and repair of tires.



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**d. Assembly**

**WARNING**

- Never use tubes in wheel assemblies. Use of a tube defeats built-in safety features, and could allow the wheel to come apart under pressure, resulting in serious injury or death.
- Use only replacement parts specified in TM 9-2320-280-24P for radial tires. Never install radial tire components on eight bolt rims. Wheels assembled with components not specified for radial tires could cause the assembly to separate under pressure, resulting in serious injury or death.
- Radial and bias tires should not be mixed on the same vehicle. Injury to personnel or damage to equipment may result.
- Do not use if compressor strap is frayed or damaged. Ensure runflat is free of grease and runflat compressor strap is centered on runflat. Failure to do so could cause injury to personnel.
- Any oil on runflat compressor belt or handle could result in personnel injury or damage to equipment. Wipe any oil off from belt or handle.

**NOTE**

Perform steps 1 and 2 when using runflat compressor P/N J39250.
Perform steps 3 and 4 when using runflat compressor P/N 528236.

1. Make sure gears and pivot points on runflat compressor (10) or (13) have a light coat of oil to ensure ease of operation and prevent from rust.

1.1. Position runflat compressor (10) on runflat (9) so that runflat compressor hex drive (11) is facing up and strap (12) is centered around runflat (9).

**NOTE**

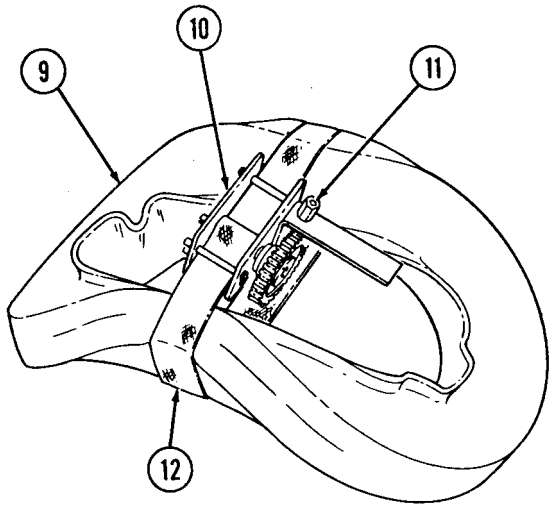
Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

2. Using runflat compressor (10), compress runflat (9).
3. Position runflat compressor (13) on an outer edge of runflat (9) with handle assembly (14) facing up and strap (15) centered around runflat (9).

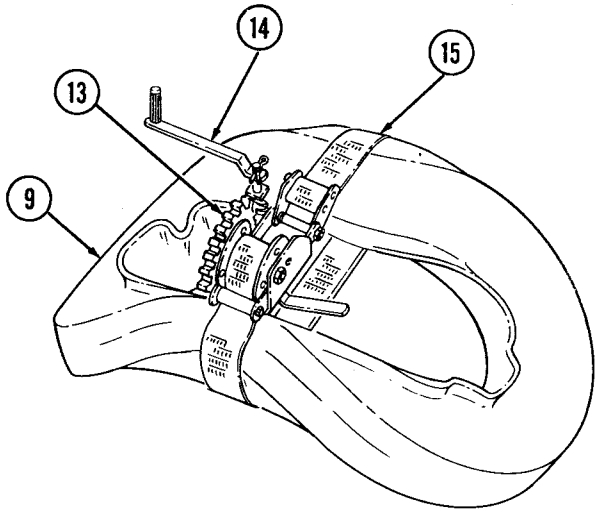
**NOTE**

Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

4. Using runflat compressor (13), compress runflat (9).




**RUNFLAT COMPRESSOR (P/N J39250)**




**RUNFLAT COMPRESSOR (P/N 528236)**

## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**NOTE**

The radial tire is a bidirectional tire and the tread may be positioned in either direction.

5. Stand tire (1) up and lubricate tire bead (3) with tire soap.

**NOTE**

It may be necessary to remove the handle assembly on runflat compressor (P/N 528236) before inserting runflat into tire.

6. Insert runflat (2), compressor side first, as far as possible into tire (1).
7. Lay tire (1) flat on protruding runflat side. Loosen compressor (4). Runflat (2) should insert itself inside tire (1). If not, repeat steps 5 through 7 and/or use a tire spoon to assist in installation.

**NOTE**

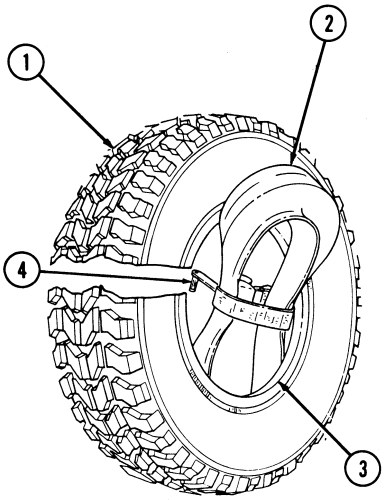
If required, clean and lubricate bearing assembly on runflat compressor P/N 528236 after removal.

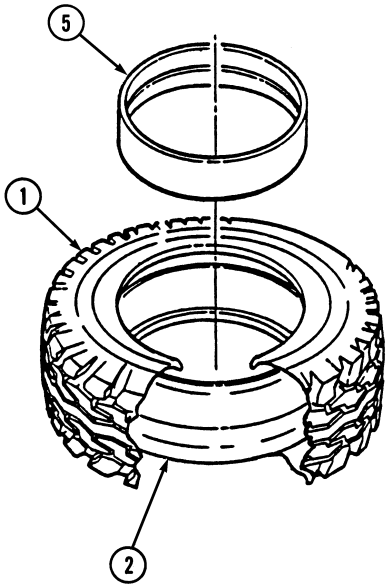
8. Loosen runflat compressor (4) and remove from tire (1).
9. Apply one 11-ounce tube of gel lubricant (6) around inside of tire (1) at crown area (7).
10. Evenly spread gel lubricant (6) 4-5 in. (10-13 cm) wide on tire crown (7).

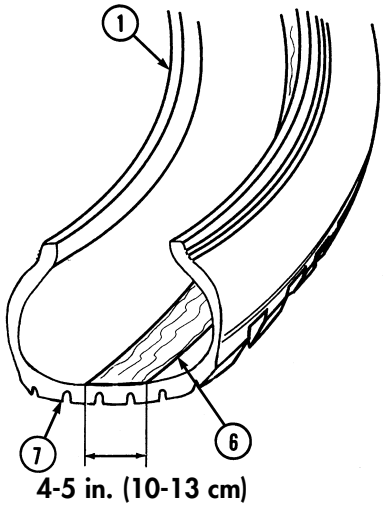
**NOTE**

- Ensure longer lip of runflat faces inner rim of tire.
- Ensure square cut edge of runflat spacer butts up against flat side of runflat.

11. Install flat spacer (5) inside tire (1) and position on valve side of tire (1).
12. Lubricate O-ring (10) with tire soap. Install O-ring (10) in groove (11.1) on top of inner rim (11), around studs (12). Ensure O-ring (10) is not twisted and that it is uniformly positioned in groove (11.1). Do not overstretch O-ring (10).
13. Lubricate tire bead (3) and rim bead seat areas with tire soap.



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

**WARNING**

- Never install radial tire on eight bolt wheel. Damage to equipment may result causing injury to personnel.
- Ensure that during assembly indexing hole on inner and outer rim halves is aligned. Failure to do so may cause damage to equipment or injury to personnel.

**NOTE**

Before installing tire on inner rim half, inspect tire sidewalls for a "paint dot". Paint dots are often painted on tires to indicate the tire's light spot, for balancing purposes. If paint dot is present, position tire on rim halves so that paint dot is aligned with insert hole on outer rim half.

14. Center runflat (2) and runflat spacer (5) in tire (1). Carefully lower tire (1) over inner rim half (11). Check to ensure O-ring (10) has not been disturbed.
15. Ensure runflat (2) and runflat spacer (5) are not binding on flat portion of inner rim half (11). Runflat (2) and runflat spacer (5) should clear inner rim half (11).
16. Install valve core (13) in valve bore (14).

**NOTE**

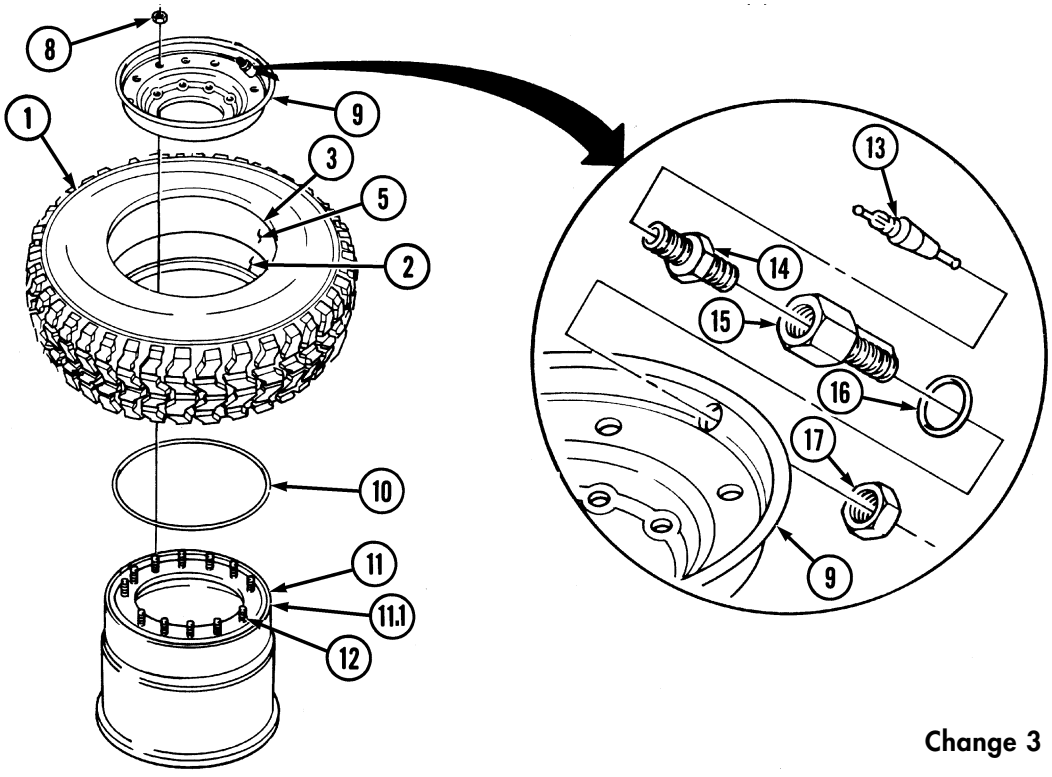
Perform step 17 only if valve bore and insert were removed.

17. Install insert (15), O-ring (16), and locknut (17) on outer rim (9). Apply sealing compound to valve bore (14) and install valve bore (14) on insert (15). Tighten locknut (17) to 40-60 lb-in. (5-7 N•m). Tighten valve bore (14) to 25-30 lb-ft (34-41 N•m).
18. Install outer rim half (9) on inner rim half (11).

**CAUTION**

Tighten locknuts gradually to avoid bent and broken studs, or damage to wheel components.

19. Install outer rim half (9) to inner rim half (11) with twelve locknuts (8).



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)

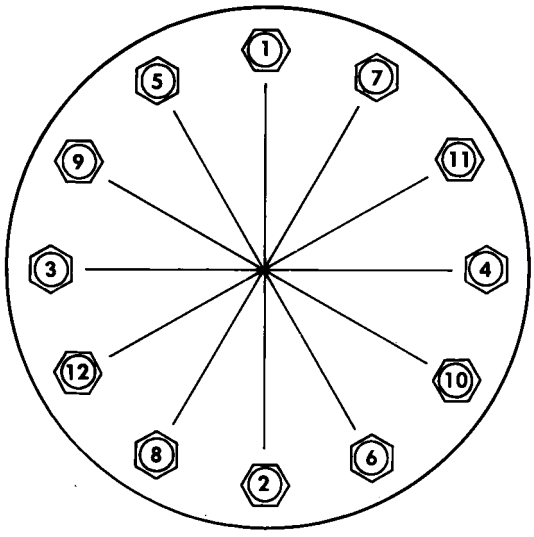
20. Tighten locknuts (1) to 85 lb-ft (115 N•m) in tightening sequence shown.
21. Tighten locknuts (1) to 125 lb-ft (170 N•m) in tightening sequence shown.
22. Check wheel assembly for gaps at each stud (2). Use a 0.0015 in. (0.038 mm) thickness gauge to detect gaps. If gaps are detected, disassemble and reassemble wheel assembly and recheck for gaps. If gaps are still detected, replace outer rim half (3).

**WARNING**

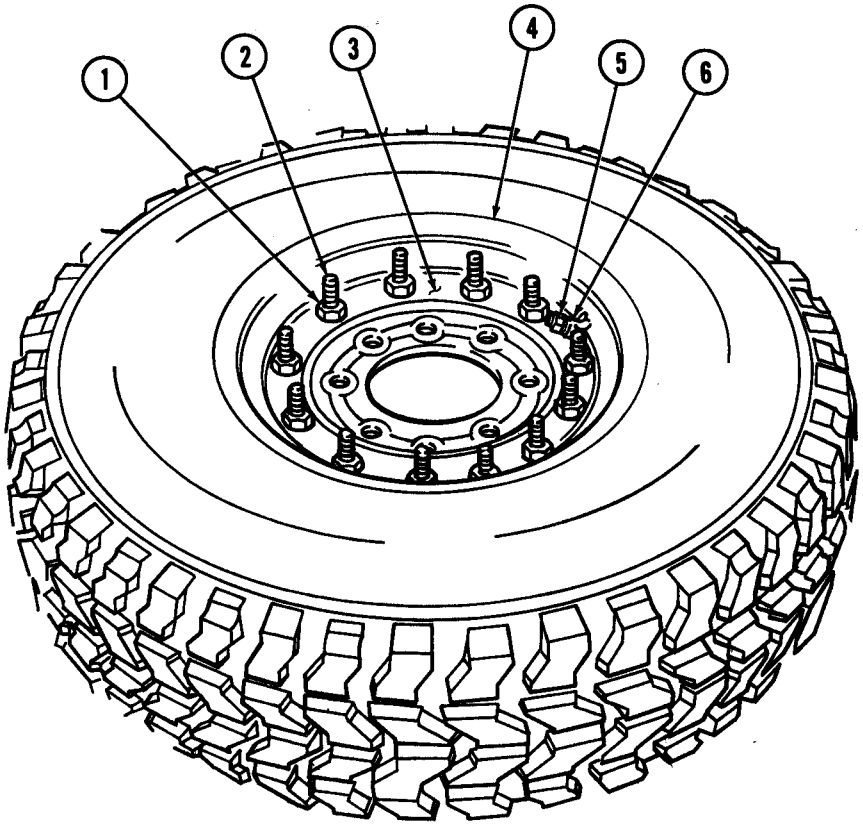
- Never inflate a wheel assembly without having checked wheel locknut torques to ensure the wheel locknuts are tightened to specifications. An assembly with improperly tightened locknuts could separate under pressure, resulting in serious injury or death.
- Always use a tire inflation cage for inflation purposes. Stand on one side of the cage, during inflation, never directly in front. Keep hands out of the cage during inflation. Inflate assembly to recommended pressure, using a clip-on air chuck. Do not exceed 50 psi (345 kPa) cold inflation pressure. Failure to follow these instructions may result in serious injury or death.

23. Place assembly in safety cage and inflate front and rear tires to recommended tire pressure (TM 9-2320-280-10).
24. Check for leaks around rim edges (4), insert (6), and valve bore (5) with soapy solution.

**TIGHTENING SEQUENCE**



## 8-5. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (ALL EXCEPT M1123 AND "A2" VEHICLES) (Cont'd)




FOLLOW-ON TASK: Balance tire (para. 8-9).

## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES)

**This task covers:**

**a. Disassembly**
**b. Inspection and Cleaning**
**c. Repair**
**d. Assembly**

**INITIAL SETUP:**

**Tools**

General mechanic's tool kit:
automotive, common No. 2
(Appendix B, Items 1 and 4)

**Special Tools**

Runflat compressor (Appendix B, Item 131)
Torque adapter, 9/16 in. (Appendix B, Item 144)
Socket adapter (Appendix B, Item 146)

**Materials/Parts**

Lubricant (Appendix C, Item 196)
Twelve locknuts (Appendix G, Item 115)
Locknut (Appendix G, Item 82)
O-ring (Appendix G, Item 217)
O-ring (Appendix G, Item 219)
Detergent (Appendix C, Item 17)
Sealing compound, if required
(Appendix C, Item 44)

**Manual References**

TM 9-2320-280-10
TM 9-2320-280-24P
TM 9-2610-200-14

**Equipment Condition**

Wheel removed (para. 8-3).

**General Safety Instructions**

- Do not use tire machine.
- Ensure tire is totally deflated before removing wheel locknuts.
- Never use tubes in wheel assemblies.
- Rim surfaces must be kept clean and free of rust and dirt.
- Never use wheel assemblies with damaged studs.
- Never inflate a wheel assembly with the wheel locknuts removed.
- Never inflate a wheel assembly without first checking wheel locknut torques.
- Do not exceed recommended tire inflation pressure.
- Always use a tire inflation cage and a clip-on air chuck for tire inflation.
- Ensure runflat compressor strap is centered around runflat.
- Never install radial tire on eight bolt wheel.
- Do not mix radial and bias tires.

**WARNING**

Do not use tire machine. Injury to personnel or damage to equipment may result.

**NOTE**

The following maintenance procedure applies to vehicles using load range "D" tires and one-piece rubber runflats. Refer to paras. 8-4 and 8-4.1 for maintenance instructions on bias tires and magnesium runflats.

### a. Disassembly

1. Place wheel assembly in a tire inflation cage.

**WARNING**

In all disassembly operations, ensure the tire is totally deflated before removing wheel locknuts. Failure to follow proper safety precautions could cause serious injury or death.

2. Remove valve core (8) from valve bore (7) and deflate tire (6). Run a piece of wire through valve bore (7) to make sure it is not plugged.
3. When tire (6) is fully deflated, use a circular pattern and loosen twelve wheel locknuts (2) securing rim halves (1) and (4) together. If you hear escaping air, do not proceed. Wait until the sound stops and recheck valve bore (7). When you are certain the tire (6) is fully deflated, proceed to remove wheel locknuts (2). Discard locknuts (2).

## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

**WARNING**

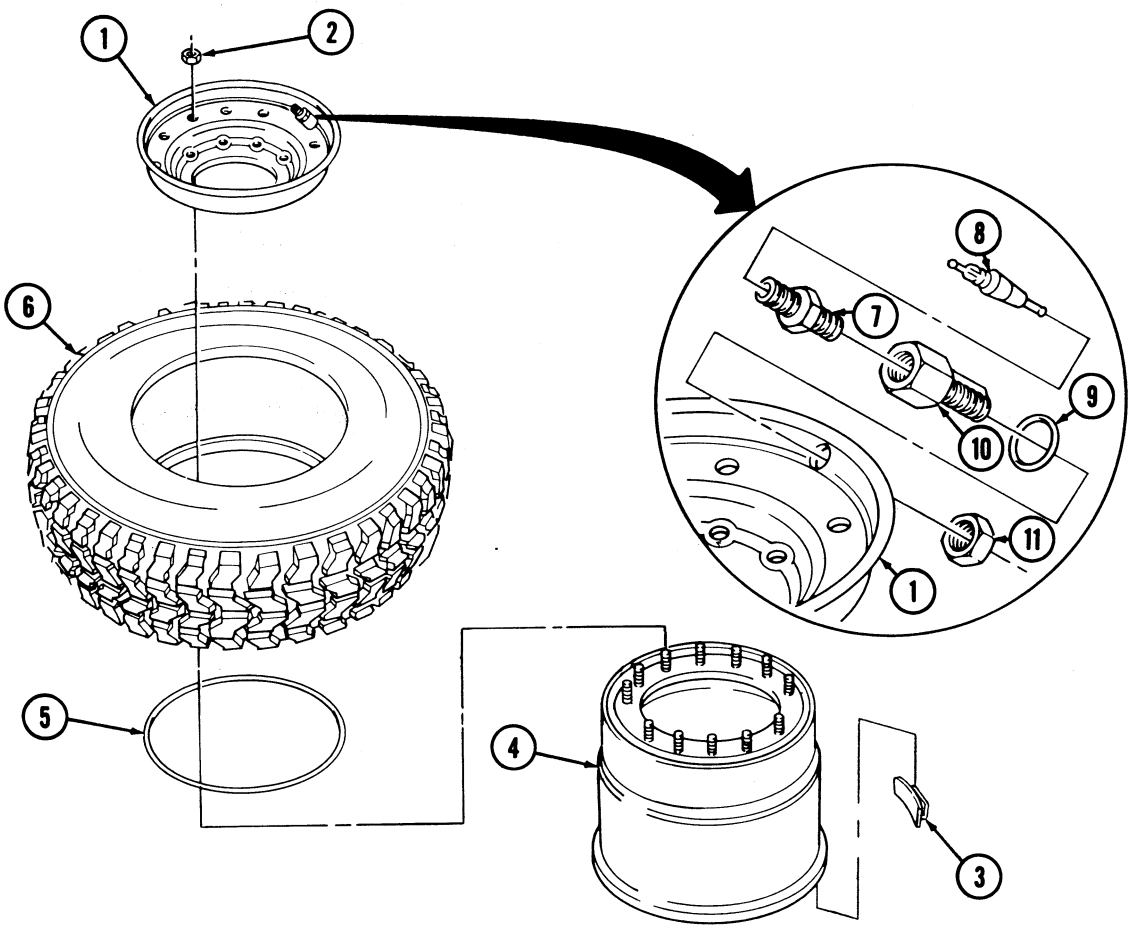
Never inflate a wheel assembly with the wheel locknuts removed in an attempt to separate inner and outer rim halves. The assembly will separate under pressure resulting in serious injury or death.

4. Remove outer rim half (1) from tire (6).

**NOTE**

Perform steps 5 and 6 only if damage to valve bore, insert, or O-ring is evident.

5. Remove valve bore (7) from insert (10). Remove insert (10) and locknut (11) from outer rim (1). Discard locknut (11).
6. Remove O-ring (9) from insert (10). Discard O-ring (9).
7. Remove O-ring (5) from inner rim half (4). Cut O-ring (5) in two, to make sure it cannot be reused. Discard O-ring (5).
8. Remove tire (6) from inner rim half (4).
9. Remove balance weights (3) from rim halves (1) and (4), if present. Discard balance weights (3).



## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

10. Lay tire (1) flat.

**WARNING**

- Do not use runflat compressor if compressor strap is frayed or damaged. Inspect tool's pivot points and bearings and ensure runflat is free of grease and runflat compressor strap is centered around runflat. Failure to do so could cause injury to personnel.
- Any oil on runflat compressor belt or handle could result in personnel injury or damage to equipment. Wipe any oil off from belt or handle.

**NOTE**

Perform steps 11 and 12 when using runflat compressor P/N J39250.
Perform steps 13 and 14 when using runflat compressor P/N 528236.

10.1. Make sure gear and pivot points on runflat compressor (6) or (3) have a light coat of oil to ensure ease of operation and protect from rust.

11. Position runflat compressor (3) on runflat (2) so that runflat compressor hex drive (4) is facing up and strap (5) is centered around runflat (2).

**NOTE**

Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

12. Using runflat compressor (3), compress runflat (2).
13. Position runflat compressor (6) on an outer edge of runflat (2) with handle assembly (7) facing up and strap (8) centered around runflat (2).

**NOTE**

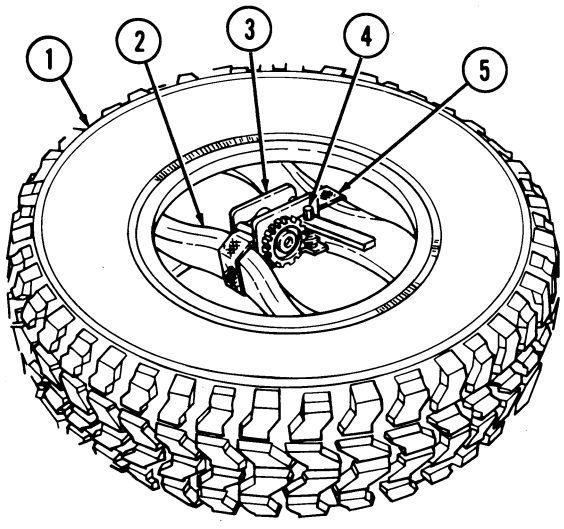
Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

14. Using runflat compressor (6), compress runflat (2).

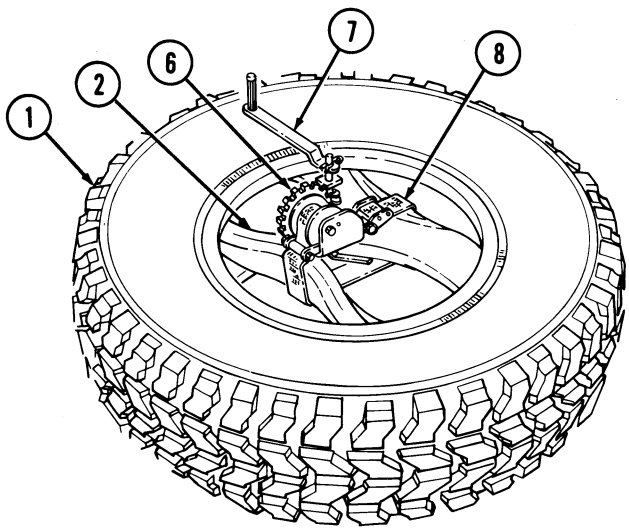
**NOTE**

- It may be necessary to use a tire spoon and tire soap to remove runflat from tire.
- When using runflat compressor P/N 528236, handle may need to be removed before removing runflat.

15. Remove runflat (2) from tire (1) and remove runflat compressor (3) or (6) from runflat (2).




**RUNFLAT COMPRESSOR (P/N J39250)**




**RUNFLAT COMPRESSOR (P/N 528236)**

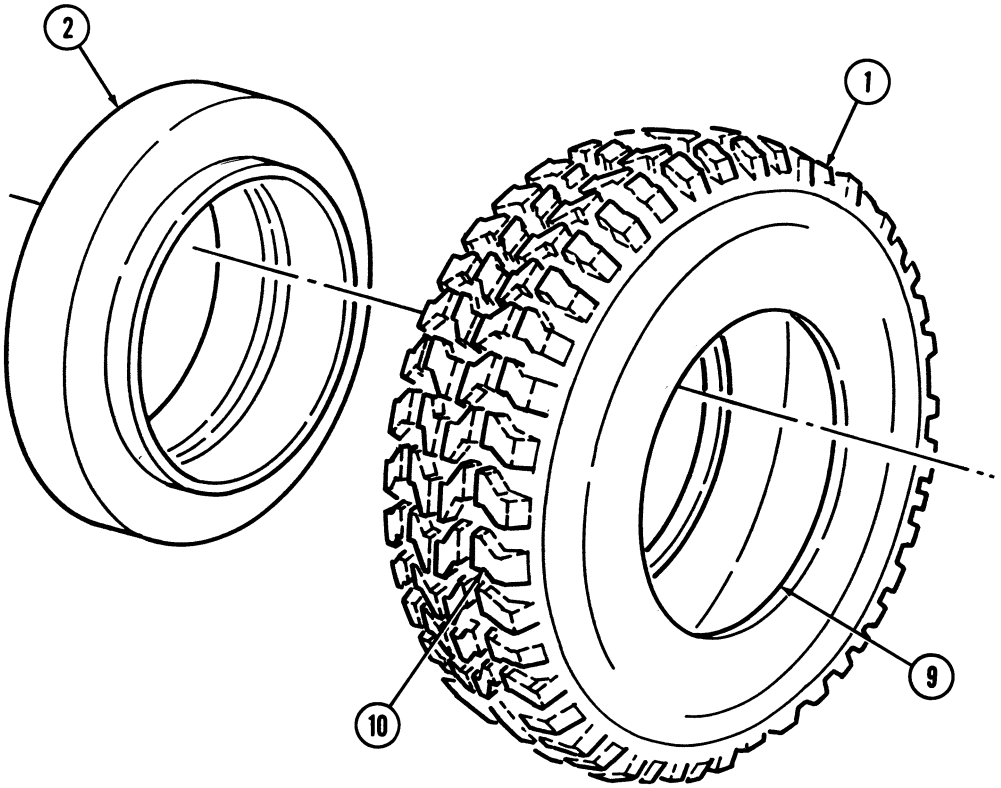
## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

**b. Inspection and Cleaning**

**WARNING**

Do not reuse a tire which has been run flat without thoroughly inspecting for damage. Failure to follow these instructions may result in injury to personnel or damage to equipment.

1. Inspect inside of tire (1) for cord or belt separation, and inner liner damage. Replace tire (1) if damaged.
2. Inspect tire bead (9) for abrasions caused from runflat (2). Replace tire (1) if damaged.
3. Check for protruding objects inside tire (1) which may not be visible from outside. Repair tire (1) if damaged.
4. Check tread depth on tire (1). Tread should not be worn below level of wear bars (10). Replace tire (1) if tread is worn below wear bars (10) or 3/32 in. (2.38 mm).
5. Clean all grease, dirt, and foreign material from the runflat (2) with soap and water and allow to air dry. Inspect runflat (2) for splitting, wear, or excessive chafing. Replace runflat (2) if damaged.



## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

**WARNING**

O-ring sealing surfaces and pressure relief grooves must be kept clean and free of rust and dirt. Failure to do so could cause the wheel assembly to separate under pressure, causing serious injury or death.

6. Using wire brush, clean studs (4). Clean all dirt and foreign material from rim halves (1) and (2) with soap and water and allow to air dry. Ensure O-ring sealing surfaces (5) and pressure relief grooves (3) on rim halves (1) and (2) are smooth and clean.
7. Inspect rim halves (1) and (2) for cracks, bent sealing surfaces (5), or oversized mounting holes. Replace rim halves (1) or (2) if cracked, bent, or if mounting holes are oversized.

**WARNING**

Never use wheel assemblies with studs which are damaged, loose, or have damaged threads. Damaged studs can cause improper assembly, which could cause individual fasteners to fail. Any of these situations could cause serious injury or death.

8. Inspect inner rim half (2) for cracked, broken, rusted, pitted, bent, or loose studs (4).

8.1. Inspect studs (4) for damaged or deformed threads. Replace studs (4) if threads are damaged or if studs (4) are damaged or loose (para. 8-8).

9. Inspect valve core (6) for cracks or deterioration. Replace valve core (6) if cracked or deteriorated.

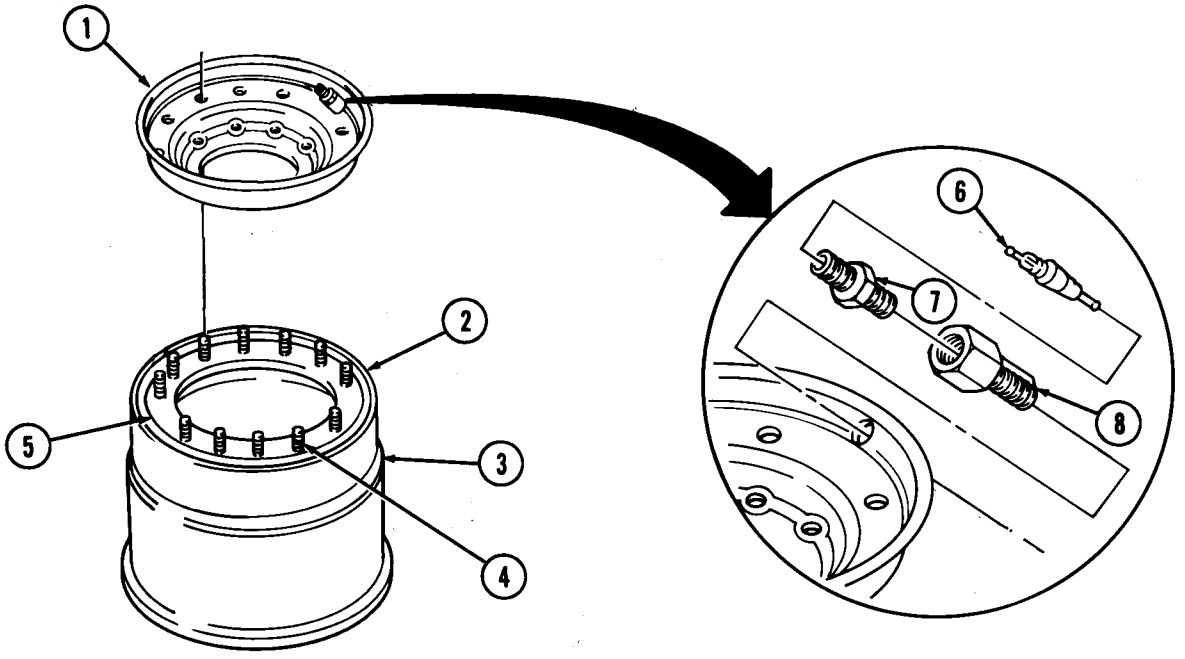
**NOTE**

Perform steps 10 and 11 only if valve bore and insert were removed.

10. Inspect valve bore (7) for cracks or deterioration. Replace valve bore (7) if cracked or deteriorated.
11. Inspect insert (8) for damage. Replace insert (8) if damaged.

**c. Repair**

Refer to TM 9-2610-200-14 for maintenance and repair of tires.



## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

**d. Assembly**

**WARNING**

- Never use tubes in wheel assemblies. Use of a tube defeats built-in safety features, and could allow the wheel to come apart under pressure, resulting in serious injury or death.
- Use only replacement parts specified in TM 9-2320-280-24P for radial tires. Never install radial tire components on eight bolt rims. Wheels assembled with components not specified for radial tires could cause the assembly to separate under pressure, resulting in serious injury or death.
- Radial and bias tires should not be mixed on the same vehicle. Injury to personnel or damage to equipment may result.
- Do not use if compressor strap is frayed or damaged. Ensure runflat is free of grease and runflat compressor strap is centered on runflat. Failure to do so could cause injury to personnel.
- Any oil on runflat compressor belt or handle could result in personnel injury or damage to equipment. Wipe any oil off from belt or handle.

**NOTE**

Perform steps 1 and 2 when using runflat compressor P/N J39250.
Perform steps 3 and 4 when using runflat compressor P/N 528236.

1. Make sure gears and pivot points on runflat compressor (13) or (10) have a light coat of oil to ensure ease of operation and prevent from rust.

1.1. Position runflat compressor (10) on runflat (9) so that runflat compressor hex drive (11) is facing up and strap (12) is centered around runflat (9).

**NOTE**

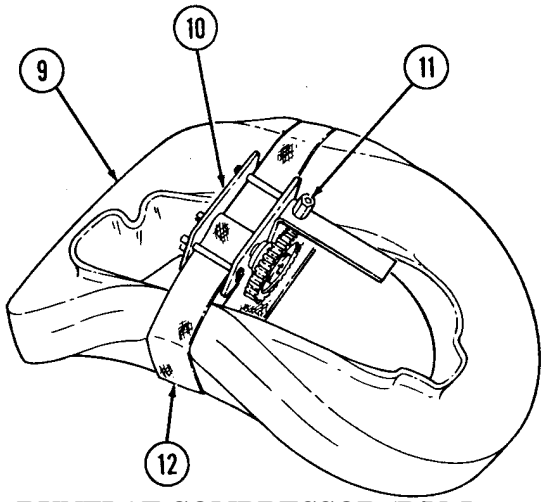
Compress runflat by rotating hex drive in either direction. Rotate hex drive opposite to loosen.

2. Using runflat compressor (10), compress runflat (9).
3. Position runflat compressor (13) on an outer edge of runflat (9) with handle assembly (14) facing up and strap (15) centered around runflat (9).

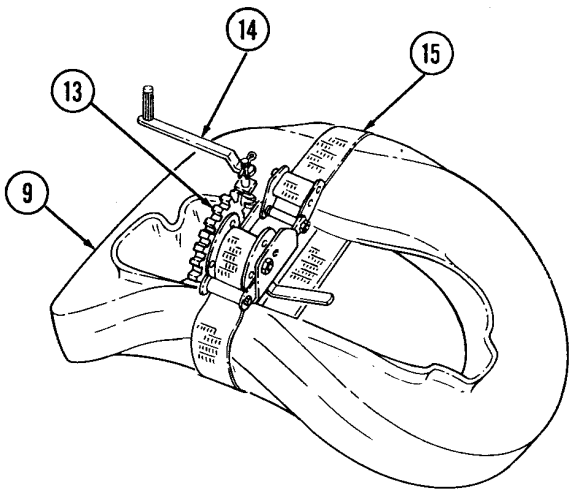
**NOTE**

Compress runflat by rotating the handle assembly in a clockwise direction. Rotate handle assembly counterclockwise to loosen.

4. Using runflat compressor (13), compress runflat (9).




**RUNFLAT COMPRESSOR (P/N J39250)**




**RUNFLAT COMPRESSOR (P/N 528236)**

## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

4.1. Apply one 11-ounce tube of gel lubricant (5.1) around inside of tire (1) at crown area (5.2).

4.2. Evenly spread gel lubricant (5.1) 4-5 in. (10-13 cm) wide on tire crown (5.2).

**NOTE**

The radial tire is a bidirectional tire and the tread may be positioned in either direction.

5. Stand tire (1) up and lubricate tire bead (4) with tire soap.

**NOTE**

It may be necessary to remove the handle assembly on runflat compressor (P/N 528236) before inserting runflat into tire.

6. Insert runflat (3), compressor side first, as far as possible into tire (1).
7. Lay tire (1) flat on protruding runflat side. Loosen compressor (5). Runflat (3) should insert itself inside tire (1). If not, repeat steps 5 through 7 and/or use a tire spoon to assist in installation.

**NOTE**

If required, clean and lubricate bearing assembly on runflat compressor P/N 528236 after removal.

8. Loosen runflat compressor (5) and remove from tire (1).

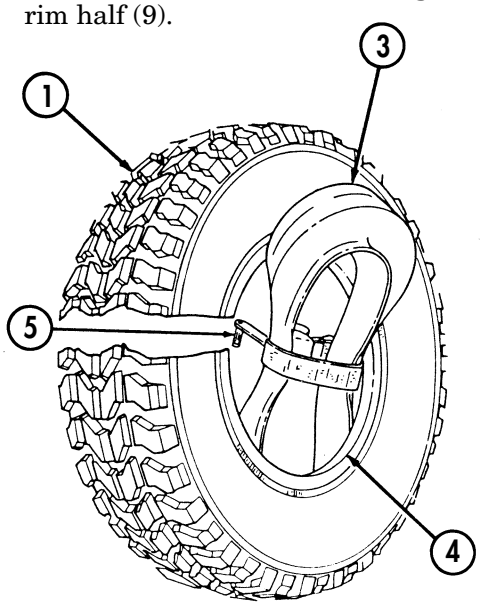
**WARNING**

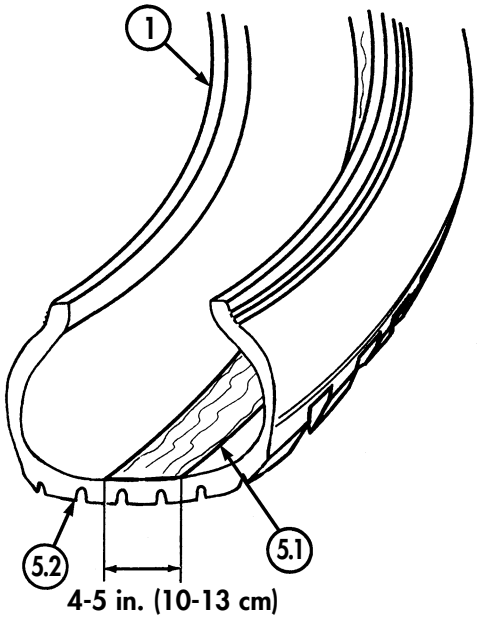
- Never install radial tire on eight bolt wheel. Damage to equipment may result causing injury to personnel.
- Ensure that during assembly indexing hole on inner and outer rim halves is aligned. Failure to do so may cause damage to equipment or injury to personnel.

**NOTE**

Before installing tire on inner rim half, inspect tire sidewalls for a "paint dot". Paint dots are often painted on tires to indicate the tire's light spot, for balancing purposes. If paint dot is present, position tire on rim halves so that paint dot is aligned with insert hole on outer rim half.

9. Lubricate tire bead (4) and rim bead seat areas with tire soap.
10. Center runflat (3) in tire (1). Carefully lower tire (1) over inner rim half (9).
11. Ensure runflat (3) is not binding on flat portion of inner rim half (9). Runflat (3) should clear inner rim half (9).



## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

**NOTE**

Ensure longer lip of runflat faces outer rim half.

12. Lubricate O-ring (8) with tire soap. Install O-ring (8) in groove (10) on top of inner rim (9), around studs (11). Ensure O-ring (8) is not twisted and that it is uniformly positioned in groove (10). Do not overstretch O-ring (8).
13. Install valve core (12) in valve bore (13).

**NOTE**

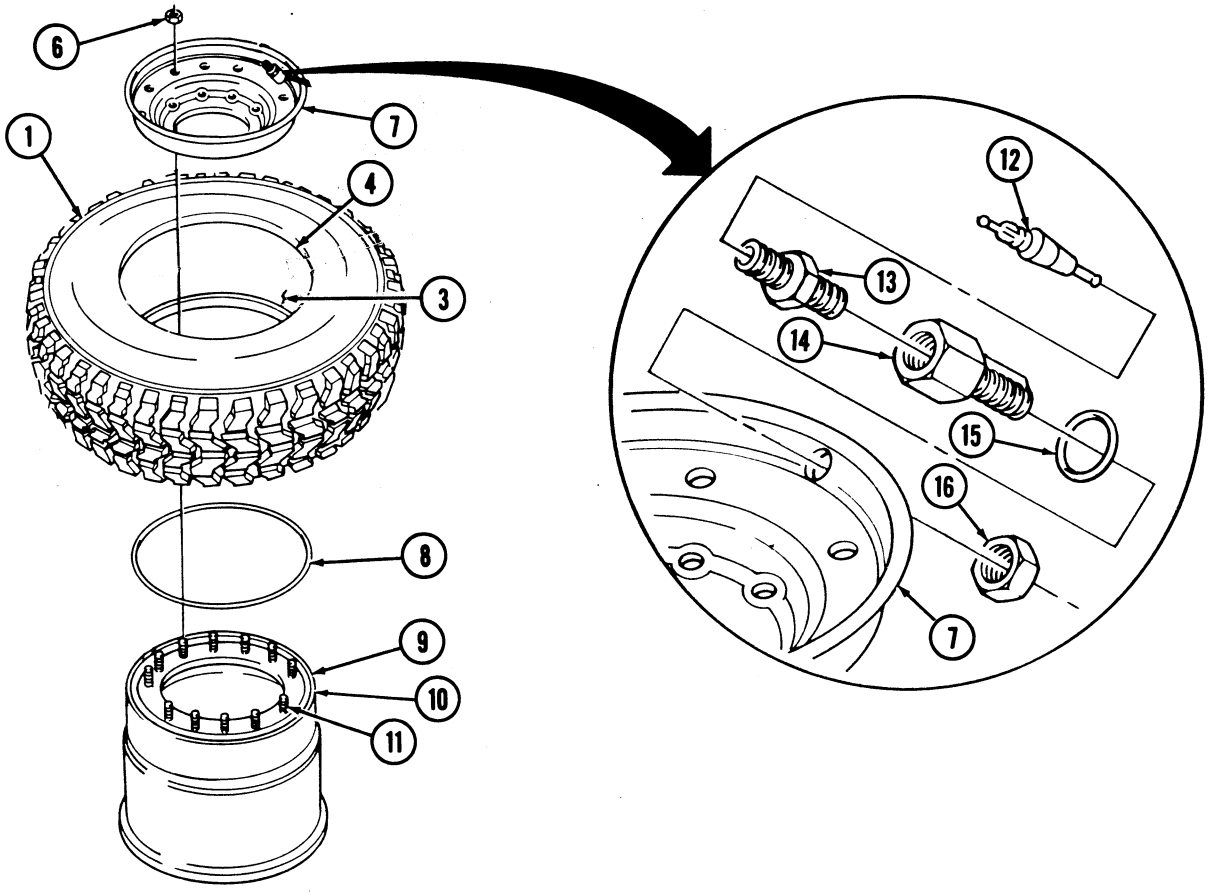
Perform step 14 only if valve bore and insert were removed.

14. Install insert (14), O-ring (15), and locknut (16) on outer rim (7). Apply sealing compound to valve bore (13) and install valve bore (13) on insert (14). Tighten locknut (16) to 40-60 lb-in. (5-7 N•m). Tighten valve bore (13) to 25-30 lb-ft (34-41 N•m).
15. Install outer rim half (7) on inner rim half (9).

**CAUTION**

Tighten locknuts gradually to avoid bent and broken studs, or damage to wheel components.

16. Install outer rim half (7) on inner rim half (9) with twelve locknuts (6).



## 8-5.1. RADIAL TIRE, WHEEL, AND RUBBER RUNFLAT MAINTENANCE (M1123 AND "A2" VEHICLES) (Cont'd)

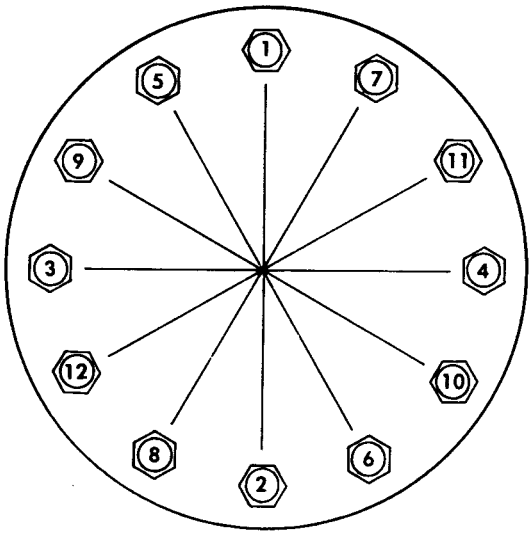
17. Tighten locknuts (1) to 85 lb-ft (115 N•m) in tightening sequence shown.
18. Tighten locknuts (1) to 125 lb-ft (170 N•m) in sequence shown.
19. Check wheel assembly for gaps at each stud (2). Use a 0.0015 in. (0.038 mm) thickness gauge to detect gaps. If gaps are detected, disassemble and reassemble wheel assembly and recheck for gaps. If gaps are still detected, replace outer rim half (3).

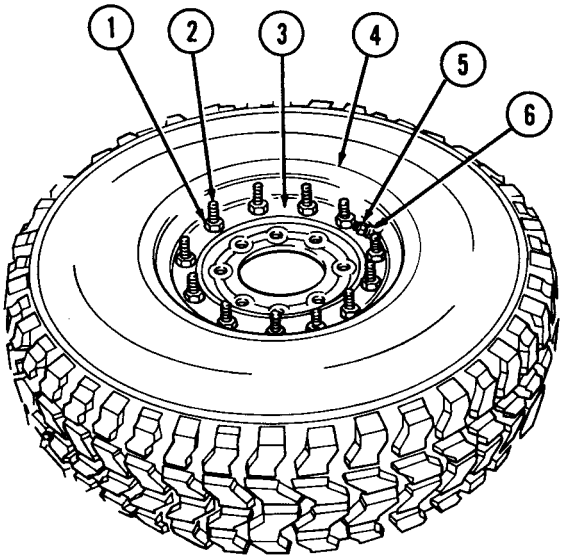
**WARNING**

- Never inflate a wheel assembly without having checked wheel locknut torques to ensure the wheel locknuts are tightened to specifications. An assembly with improperly tightened locknuts could separate under pressure, resulting in serious injury or death.
- Always use a tire inflation cage for inflation purposes. Stand on one side of the cage, during inflation, never directly in front. Keep hands out of the cage during inflation. Inflate assembly to recommended pressure, using a clip-on air chuck. Do not exceed 50 psi (345 kPa) cold inflation pressure. Failure to follow these instructions may result in serious injury or death.

20. Place assembly in safety cage and inflate front and rear tires to recommended tire pressure (TM 9-2320-280-10).
21. Check for leaks around rim edges (4), insert (6), and valve bore (5) with soapy solution.

**TIGHTENING SEQUENCE**




FOLLOW-ON TASK: Balance tire (para. 8-9).

# 8-6. RUNFLAT COMPRESSOR (P/N J39250) BELT REPLACEMENT

**This task covers:**

**a. Removal** **b. Installation**

**INITIAL SETUP:**

**Tools**
General mechanic's tool kit:
automotive (Appendix B, Item 1)

**Manual References**
TM 9-2320-280-24P

**Materials/Parts**
Runflat belt repair kit
(Appendix G, Item 276)

**a. Removal**

**NOTE**

Note position of belt for installation.

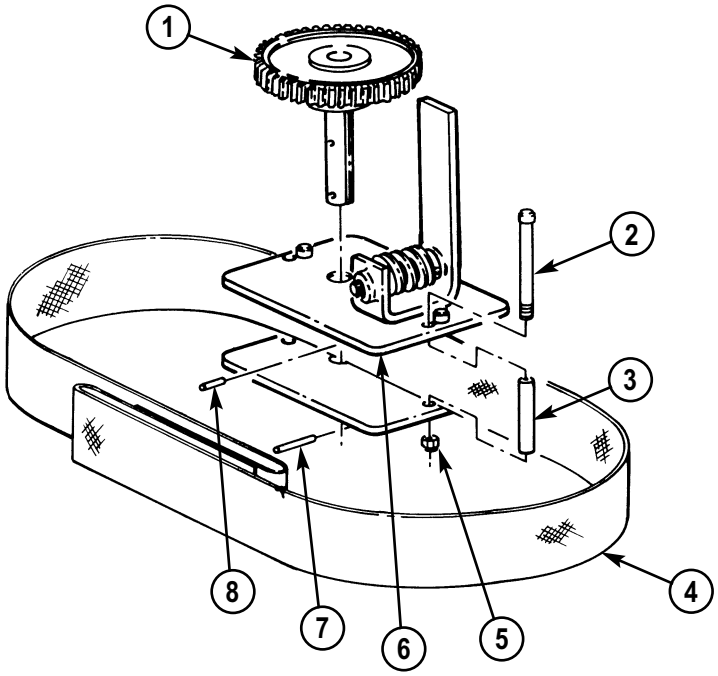
1. Remove small pin (8) from belt (4) and worm gear shaft assembly (1). Discard small pin (8).
2. Remove shaft pin (7) and worm gear shaft assembly (1) from compressor assembly (6). Discard shaft pin (7).
3. Remove two locknuts (5), sockethead screws (2), spacers (3), and belt (4) from compressor assembly (6). Discard locknuts (5).

**b. Installation**

**NOTE**

Belt overlap is to be positioned so that you have equal amount of belt on each side of worm gear shaft assembly.

1. Install belt (4) on compressor assembly (6) with two spacers (3), sockethead screws (2), and locknuts (5).
2. Install worm gear shaft assembly (1) on compressor assembly (6) with shaft pin (7).
3. Install belt (4) to worm gear shaft assembly (1) with small pin (8).



# 8-7. RUNFLAT COMPRESSOR (P/N 528236) BELT REPLACEMENT

**This task covers:**

**a. Removal** **b. Installation**

**INITIAL SETUP:**

**Tools**
General mechanic's tool kit: automotive (Appendix B, Item 1)

**Materials/Parts**
Runflat belt repair kit (Appendix G, Item 277)

**Manual References**
TM 9-2320-280-24P

**a. Removal**

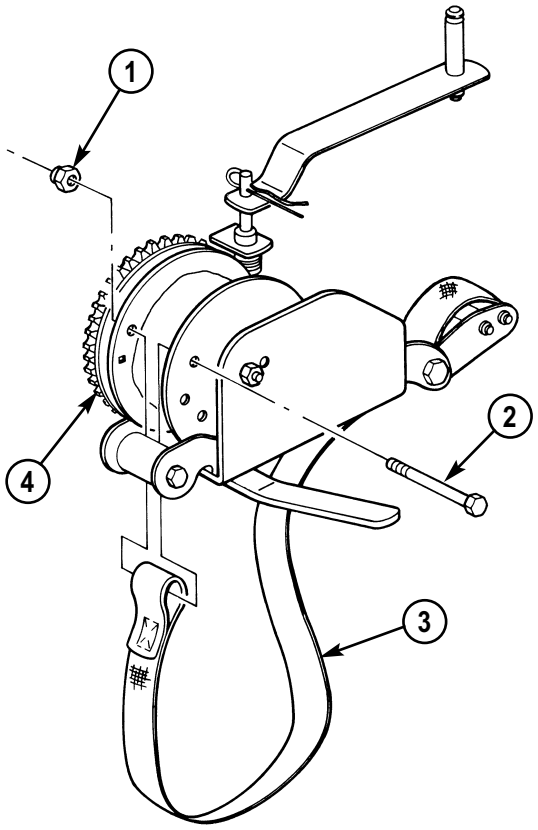
**NOTE**

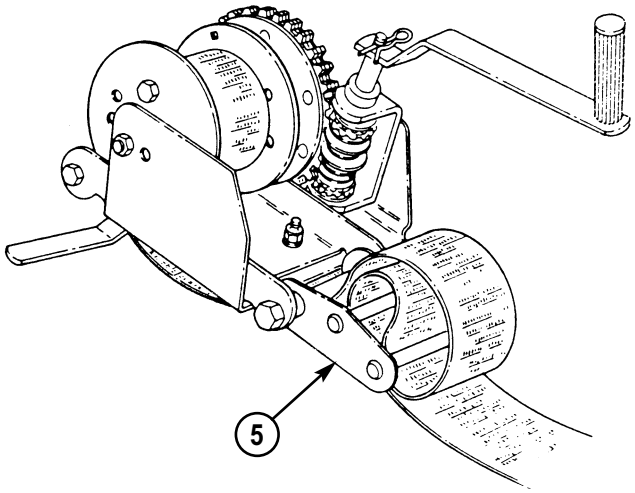
Note position of belt for installation.

Remove locknut (1), capscrew (2) and belt (3) from compressor (4). Discard locknut (1).

**b. Installation**

1. Install belt (3) on compressor (4) with capscrew (2) and locknut (1).
2. Loop free end of belt (3) around retaining bracket (5) as shown.



## 8-8. INNER RIM STUD MAINTENANCE

**This task covers:**

**a. Removal**
**b. Cleaning and Inspection**
**c. Installation**

**INITIAL SETUP:**

**Tools**

General mechanic's tool kit: automotive (Appendix B, Item 1)

**Manual References**

TM 9-2320-280-24P

**Equipment Condition**

Wheel removed (para. 8-3).

**General Safety Instructions**

- Always wear eye protection when replacing wheel studs.
- Ensure tire is totally deflated before removing wheel locknuts.
- Never use wheel assemblies with damaged studs.
- Never inflate a wheel assembly without first checking wheel locknut torques.
- Always use a tire inflation cage and a clip-on air chuck for tire inflation.

**WARNING**

Always wear eye protection when replacing wheel studs. Severe eye injury may result if metal chips contact eyes.

### a. Removal

**NOTE**

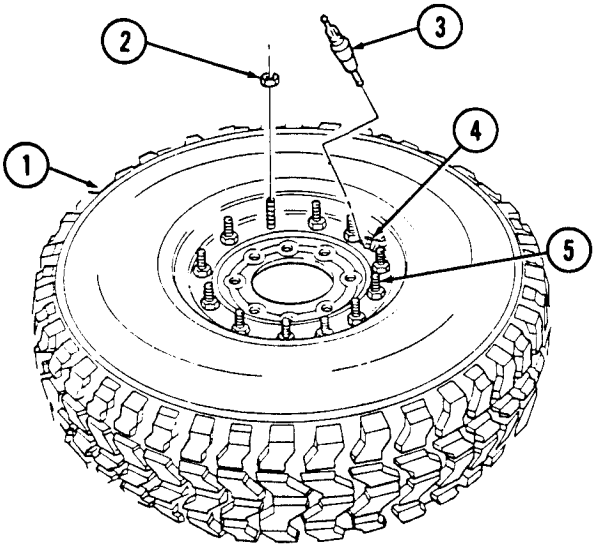
Perform steps 1 through 4 for stud removal without disassembly of wheel. Perform steps 5 and 6 for stud removal with disassembled wheel.

1. Place wheel assembly in tire inflation cage.

**WARNING**

In all assembly operations, ensure the tire is totally deflated before removing wheel locknuts. Failure to follow proper safety precautions may result in serious injury or death.

2. Remove valve core (3) from valve bore (4) and deflate tire (1). Run a wire through valve bore (4) to ensure it is not plugged.
3. When tire (1) is fully deflated, loosen wheel locknut (2) from each side of the broken stud(s) (5). If you hear escaping air, do not proceed. Wait until the sound stops and recheck valve bore (4). When you are certain tire is fully deflated, proceed to remove wheel locknut (2). Discard locknut (2).



## 8-8. INNER RIM STUD MAINTENANCE (Cont'd)

**NOTE**

When replacing broken rim stud(s), replace studs on both sides of the broken stud(s).

4. Drive studs (1) out of inner rim (2). Discard studs (1).
5. Disassemble wheel and runflat (para. 8-4 or 8-5.)
6. Drive stud (3) out of inner rim half (4). Discard stud (3).

### b. Cleaning and Inspection

1. Using wire brush, clean studs. Clean all dirt and foreign material from rim with soap and water and allow to air dry.

**WARNING**

Never use wheel assemblies with studs which are damaged, loose, or have damaged threads. Damaged studs can cause improper assembly, which could cause individual fasteners to fail. Any of these situations may result in serious injury or death.

2. Inspect inner rim (4) for cracked, broken, rusted, pitted, bent, or loose studs (3), and studs (3) with damaged, mutilated, or deformed threads.

### c. Installation

**NOTE**

Perform steps 1 and 2 for stud installation with disassembled wheel. Perform steps 3 through 11 for stud installation without disassembly of wheel.

1. Align splines on stud (3) with splines in inner rim (4) and drive stud (3) into inner rim (4) until stud shoulder seats against inner rim (4).
2. Assemble wheel and runflat (para. 8-4 or 8-5.).
3. Align splines on stud (1) with splines in inner rim (2) and drive stud (1) into rim (2) until shoulder of stud (1) seats against inner rim (2).
4. Repeat step 3 for all studs (1) being replaced.

**CAUTION**

Tighten locknuts gradually to avoid bent and broken studs, or damage to wheel components will result.

5. Install locknuts (6) on studs (1).

**NOTE**

After replacing broken stud(s), all rim nuts must be retorqued.

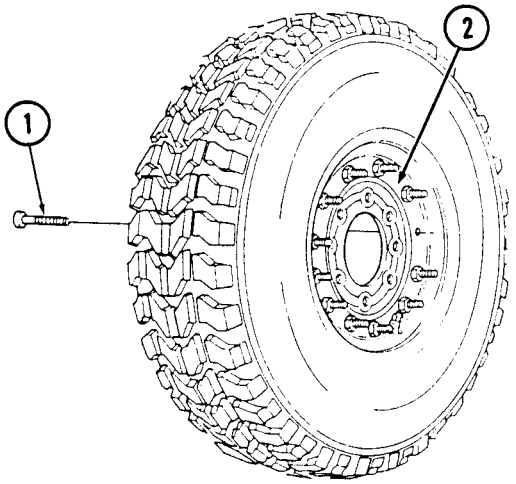
6. Tighten locknuts (6) to 85 lb-ft (115 N·m) in sequence shown.
7. Tighten locknuts (6) to 125 lb-ft ( 170 N·m) in sequence shown.
8. Check wheel assembly for gaps at each stud. Use a 0.0015 in. (0.038 mm) thickness gauge to detect gaps. If gaps are detected, disassemble and reassemble wheel assembly and recheck for gaps. If gaps are still detected, replace outer rim half (para. 8-4 or 8-5).
9. Install valve core (7) in valve bore (8).

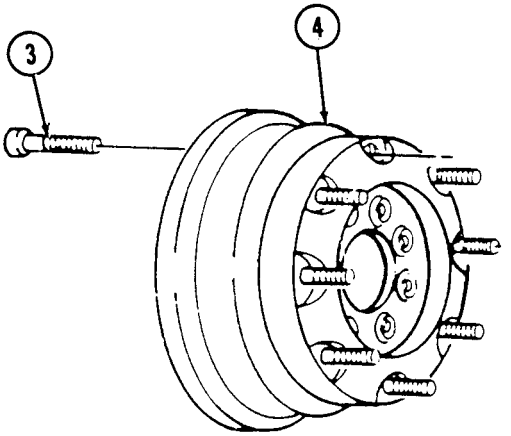
## 8-8. INNER RIM STUD MAINTENANCE (Cont'd)

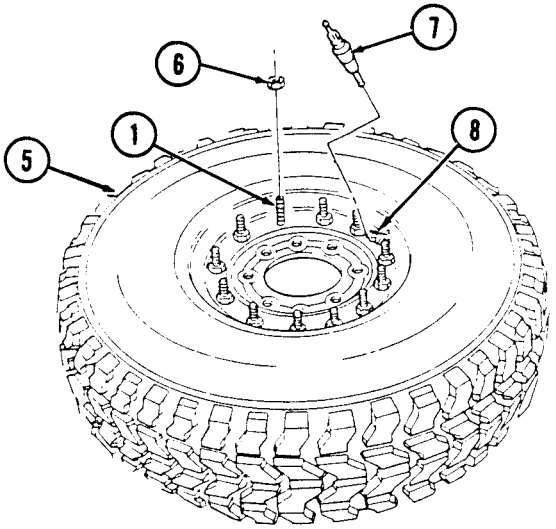
**WARNING**

- Never inflate a wheel assembly before checking wheel locknut torques to ensure the wheel locknuts are tightened to specifications. An assembly with improperly tightened locknuts could separate under pressure, resulting in serious injury or death.
- Always use a tire inflation cage for inflation purposes. Stand on one side of the cage during inflation, never directly in front. Keep hands out of cage during inflation. Inflate assembly to recommended pressure, using a clip-on air chuck. Do not exceed 50 psi (345 kPa) cold inflation pressure. Failure to follow these instructions may result in serious injury or death.

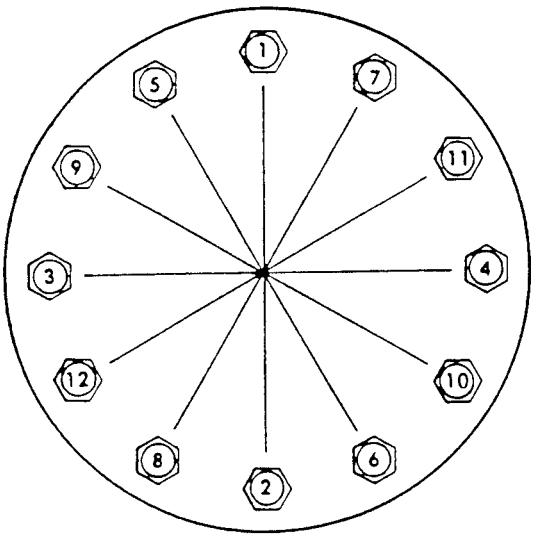
10. Place tire assembly (5) in safety cage and inflate front and rear tires to recommended tire pressure (TM 9-2320-280-10).
11. Check for leaks around rim edges, insert, and valve bore (8) with soapy solution.




TIGHTENING SEQUENCE




FOLLOW-ON TASK: Install wheel (para. 8-3).

## 8-9. TIRE BALANCING

**This task covers:**

**Balancing**

**INITIAL SETUP:**

**Tools**
General mechanic's tool kit:
automotive (Appendix B, item 1)

**Test Equipment**
Bubble balancer (Appendix B, Item 130)

**Materials/Parts**
Wheel balance weights (as required)
(Appendix G, Item 2)
Chalk (Appendix C, Item 15)

**Personnel Required**
One mechanic
One assistant

**Manual References**
TM 9-2320-280-24P

**Equipment Condition**
Wheel removed (para. 8-3).

**Balancing**

**NOTE**

- Wheel and tire must be clean and free of foreign material.
- Wheel must be centered on balancer utilizing lug nut mounting holes.

1. Mount tire (1) and wheel (2) on balancer, curb side up.
2. Locate and mark light spot (5) on tire (1).

**NOTE**

- If more than 29 oz. of weight is required to balance tire, wheel and runflat must be disassembled and tire rotated 180° on wheel.
- Tires can be balanced using either adhesive backed or clip on type weights. Follow steps 3 through 10 if using adhesive backed weights, or steps 11 through 15 for clip on type weights.

3. Add 6 oz. of weight (4) to center of light spot (5) between wheel (2) and clamp ring (3) until weight required to balance tire (1) is met or exceeded. Do not permanently attach weights (4) at this time.
4. If weight requirement is exceeded, evenly remove weights (4) in 1/2 oz. increments from each side of light spot (5) until tire (1) and wheel (2) are properly balanced.
5. Record amount of weights (4) used, and remove tire (1) and wheel (2) from balancer.
6. Working from light spot (5) on front side of tire (1), mark rear side of tire (1) and inside of wheel (2) for light spot (5) identification.
7. Temporarily attach weights (4) with tape to inside of wheel (2), in a radial direction, following weight placement diagram.
8. Repeat step 1 and add or subtract weights (4) until tire (1) is properly balanced.

**NOTE**

Wheel must be smooth and clean before attaching wheel weights.

9. Remove adhesive backing from weights (4) and attach to inside of wheel (2) following weight placement diagram.
10. Repeat step 1 to ensure tire (1) is properly balanced.
11. Place a 6 oz. weight (6) on edge of wheel (2) with clip (7) centered on light spot (5). Do not permanently attach weight (6) at this time.
12. Check wheel (2) and tire (1) for proper balance. If necessary, add weights (6), or replace 6 oz. weight (6) with a lighter weight (6), making sure weight clips (7) are centered on light spot (5) and weight (6) are not permanently attached.

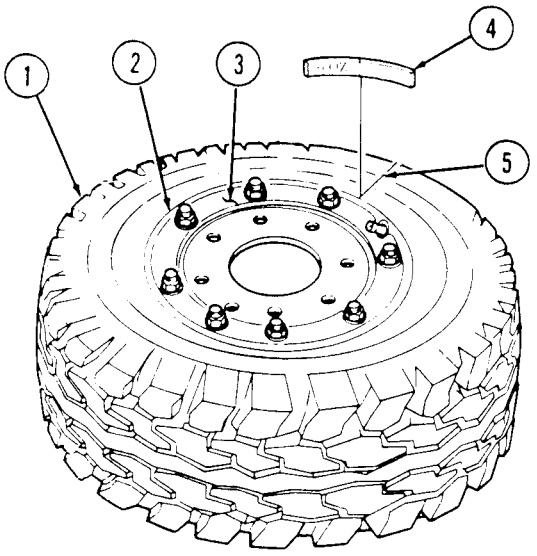
## 8-9. TIRE BALANCING (Cont'd)

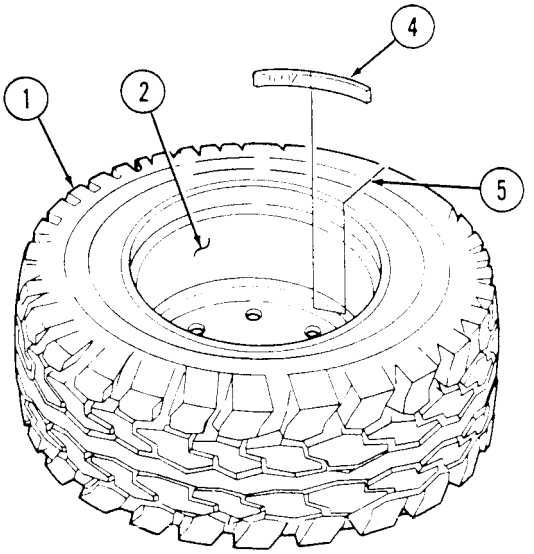
13. Repeat step 12 until wheel (2) and tire (1) are properly balanced.
14. Record total amount of weight (6) on wheel (2), and remove weights(s) from wheel (2) and wheel (2) from balancer.

**NOTE**

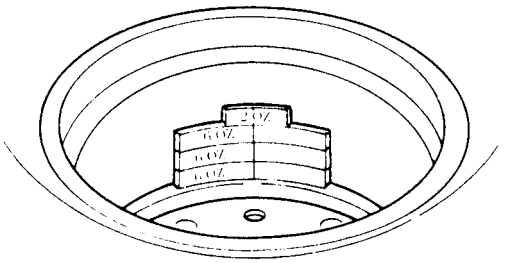
Total amount of weight must be split "50/50" between imer and outer edges of wheel rim. For example, if 6 oz. of total weight was required to balance wheel, attach 3 oz. to outer edge of rim and 3 oz. to inner edge of rim.

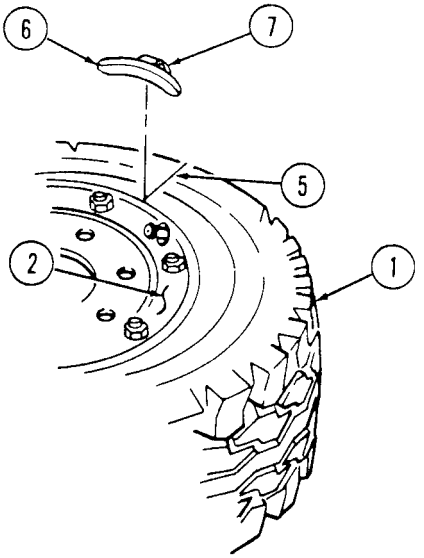
15. Attach weights (6) to inner and outer edges of wheel (2), ensuring weight clips (7) are centered on light spot (5), or weights (6) are placed evenly to sides of light spot (5) if more than one weight (6) is used. Using small hammer or clip claw-hammer tool, tap weights to conform to wheel (2) edge contour.




WEIGHT PLACEMENT DIAGRAM






FOLLOW-ON TASK: Install wheel (para. 8-3).