Form No. 3382-561 Rev C

Four-Wheel Drive Kit

Groundsmaster® 3280-D Traction Unit

Model No. 30299

Installation Instructions

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or reproductive harm.

Installation

1. Park the machine on a level surface, lower the cutting deck (or implement), stop the engine, engage the parking brake and remove the key from the ignition switch.

   Important: Read the general precautions for removing and installing hydraulic system components in the traction unit operators manual.

   ⚠ CAUTION

   Operate all hydraulic controls to relieve system pressure and avoid injury from pressurized hydraulic oil.

2. Block the front tires to prevent the machine from moving.

   Note: To ease the reassembly, tag the hydraulic hoses to show their correct position on the steering cylinder and steering valve.

3. Remove the hose clamps securing the steering cylinder hoses to the frame rail.

4. Disconnect and remove the hydraulic hoses from the rear axle steering cylinder and from the steering valve. Plug the steering valve ports to prevent contamination. Make sure to note which port on the steering valve is connected to the rod end of the steering cylinder.

5. If the machine has rear weight(s) attached to the frame, remove and discard the weight(s) (Figure 1).

6. Remove the (2) capscrews and nuts that secure the rear of the axle frame and the inside weight to the rear of the machine frame (Figure 1). Retain the weight for installation later in the procedure.

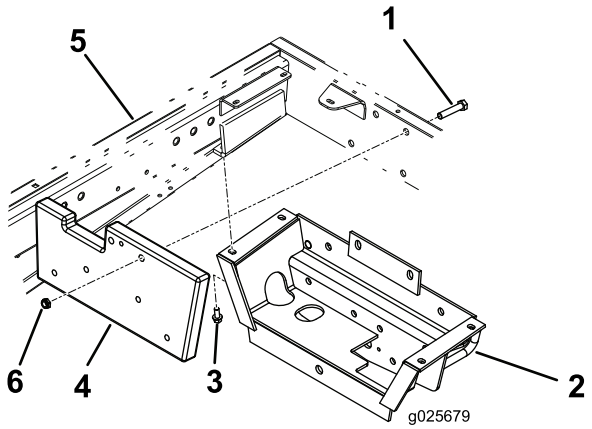


Figure 1

1. Capscrew
2. Axle frame
3. Capscrew
4. Weight, inside
5. Machine frame
6. Nut

7. Jack up the rear of the machine so that the tires are just off the ground. Support the rear of the machine frame with jack stands or the appropriate blocking.

8. Remove the (4) flange head screws that secure the rear frame and axle assembly to the underside of the machine frame (Figure 1).

9. Carefully move the rear frame and axle assembly from the machine.

10. Remove all parts from the shipping crate except for the axle mounted to the shipping brackets. Do not remove the axle from the shipping brackets.

11. Remove the sides of the crate.

12. Move the crate bottom/axle into position under the rear of the traction unit frame.

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13. Rotate the top of the axle assembly upward until the mounting holes are aligned with the holes in the frame (Figure 2).

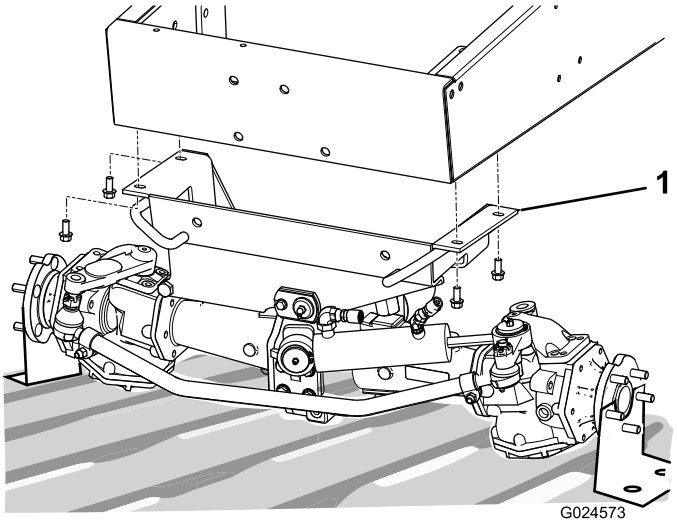


Figure 2

1. Top of axle assembly

14. Install and tighten the (4) 3/8 x 7/8 inch flange head screws to secure the axle assembly to the rear frame. While tightening the screws, make sure that the (2) mounting holes on the rear of the frame align with the axle frame holes (Figure 2).

15. On the right side of the axle, remove the plug and gasket (Figure 3).

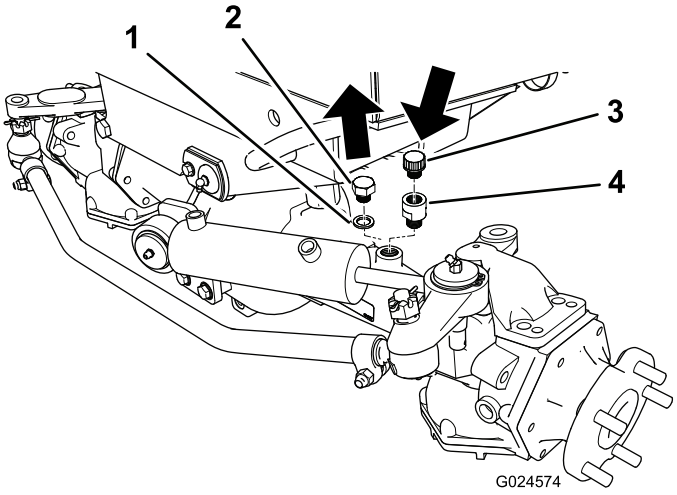


Figure 3

1. Gasket
2. Plug
3. Vent
4. Vent extension

16. Install the vent extension and vent into the hole in the axle (Figure 3).

17. Disconnect and remove the battery from the machine (Figure 4).

Important: Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.

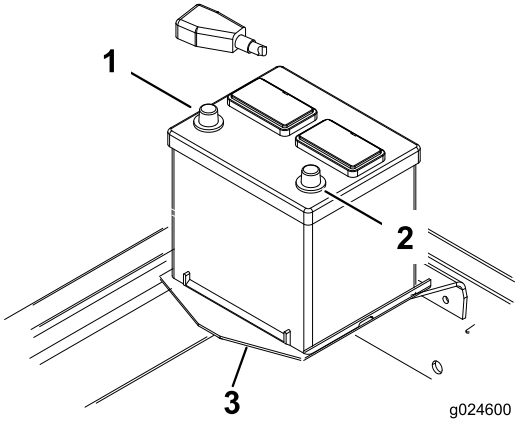


Figure 4

1. Positive (+)
2. Negative (-)
3. Battery base

18. Remove the (4) screws and nuts securing the battery base assembly to the frame (Figure 4). Remove the battery base from the machine.

19. Insert the previously removed inside weight into the axle frame.

20. Secure the rear of the axle frame and the inside weight to the machine frame with (2) 1/2 x 1–1/2 inch flange head screws.

21. Install the battery base and the battery.

Important: Always connect the positive (red) battery cable before connecting the negative (black) cable.

22. Mount the drive shaft yoke to the flange on rear of the front axle with six (6) socket head screws and lock washers (Figure 5).

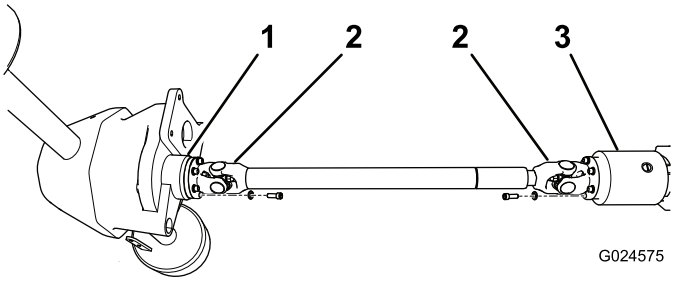


Figure 5

1. Front axle flange
2. Drive shaft yoke
3. Rear axle bidirectional clutch

Important: If the drive shaft tube and shaft were separated, make sure that the drive shaft yokes are aligned when the tube and shaft are assembled. Misalignment of the yokes will result in shortened

drive shaft life and will cause unnecessary vibration.

23. Mount the other drive shaft yoke to the bidirectional clutch on the rear axle with six (6) socket head screws and lock washers (Figure 5).

24. Install the 45 degree and 90 degree fittings to the steering cylinder, positioning as shown in Figure 6.

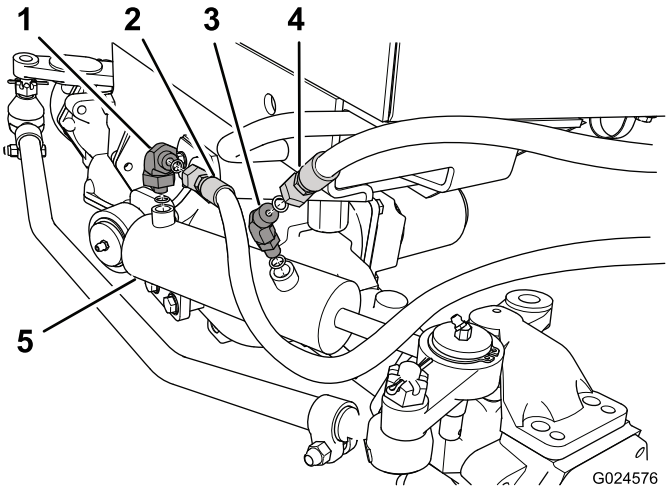


Figure 6

1. 90 degree fitting
2. 96 inch hose
3. 45 degree fitting
4. 94–1/2 inch hose
5. Steering cylinder

25. Connect and route the steering cylinder hoses as follows:

    - Connect the straight fitting end of the 96 inch hose to the 45 degree fitting on the steering cylinder (Figure 6).
    - Connect the straight fitting end of the 94–1/2 inch hose to the 90 degree fitting on the steering cylinder (Figure 6).
    - Route the hoses around the corner of the frame and under the right frame rail. Install (2) cable ties around the hoses (Figure 7).

      Important: The hoses must have an even radius around the corner of the frame with no sharp edges. The hoses must not contact any part of the axle, grease fitting, tire or steering cylinder.

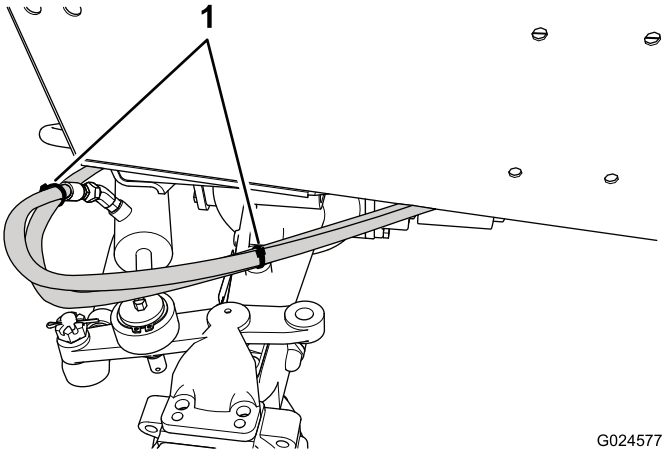


Figure 7

1. Cable tie (2)

    - Secure the hoses to the under side of the frame rail with an R-clamp and 5/16 x 1 inch screw (Figure 8). Bend the R-clamp, as required, to prevent the hoses from contacting the rear axle support.

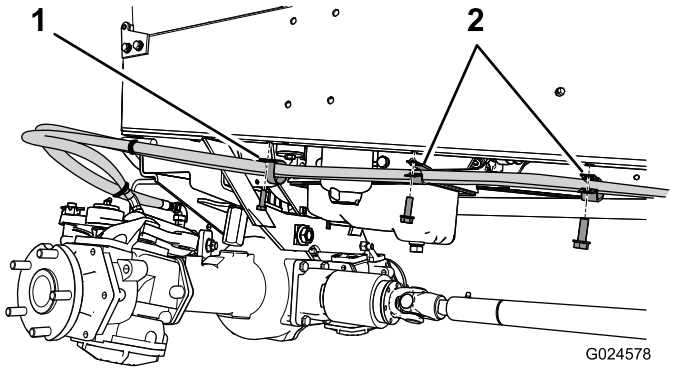


Figure 8

1. R-clamp
2. Double clamps (2)

    - Route and secure the hoses to the frame rail with (2) double clamps and 5/16 x 1 inch screws (Figure 8).
    - Following the existing traction unit hoses, route the new hoses to the steering valve. Secure the hoses to the existing hoses with cable ties.

      Note: The hoses must not contact any hot, sharp or moving parts.
    - Connect the 96 inch hose to the port on the steering valve labeled **"R"** (Figure 9).

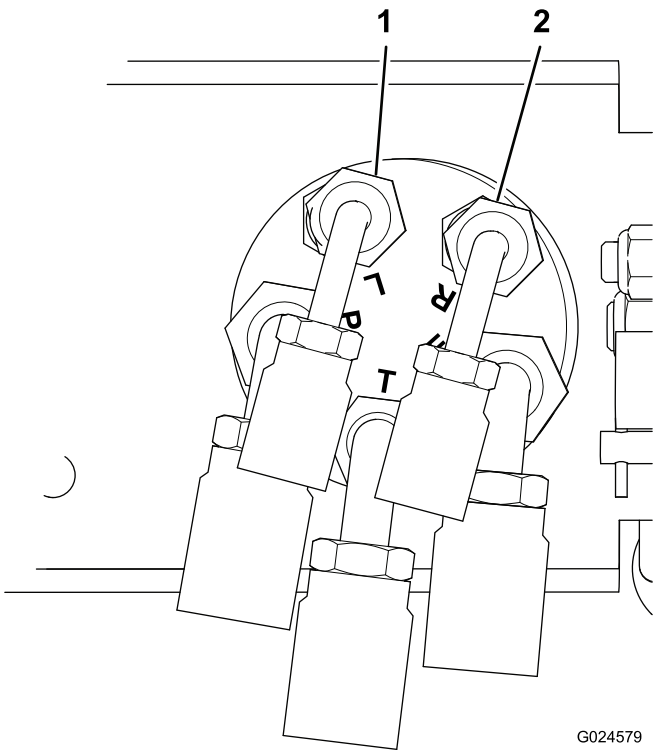


Figure 9

1. **"L"** Port -94–1/2 inch hose 2. **"R"** Port -96 inch hose

- Connect the 94–1/2 inch hose to the port on the steering valve labeled **"L"**(Figure 9).

26. Remove the lug nuts securing the axle wheel hubs to the shipping brackets (Figure 10).
27. Carefully remove the shipping brackets from the crate (Figure 10).

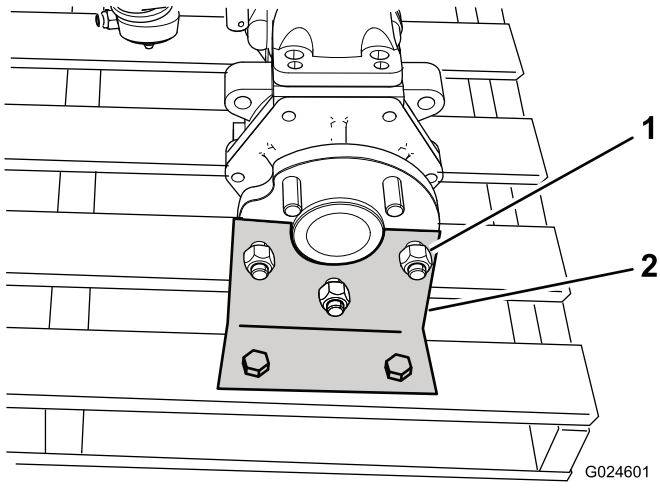


Figure 10

1. Lug nuts 2. Shipping bracket

28. Carefully move the crate away from the machine.
29. Install the tires to the wheel hubs with the lug nuts. Torque the lug nuts to 95–122 N-m (70–90 ft-lb).
30. Adjust the tire pressure to 138 kPa (20 psi)
31. Lower the machine to the ground.
32. Install the lube decal and 4 wheel drive decal next to the existing model and serial plate on the traction unit (Figure 11).

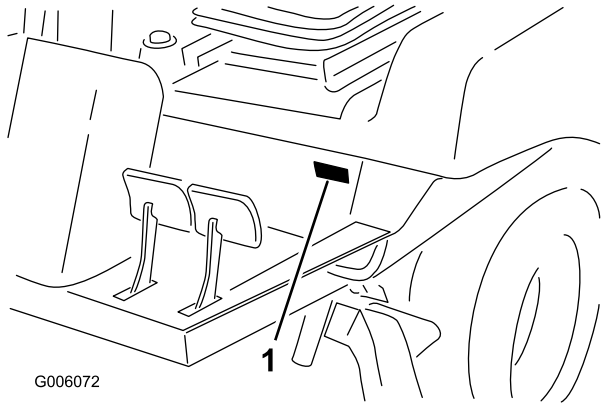


Figure 11

1. Model and serial number plate location

33. Using the dimensions shown in Figure 12, locate and affix the Toro decal to the rear of the machine. Make sure the mounting surface is clean before affixing the decal.

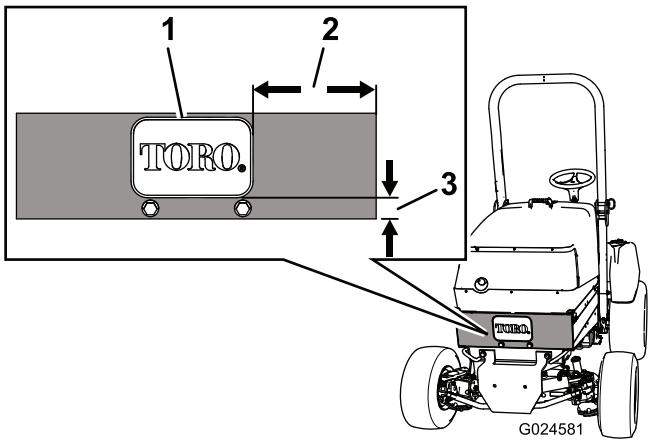


Figure 12

1. Decal 3. 3.4 cm (1–3/8 inches)
2. 20 cm (8 inches)

34. Check the hydraulic fluid level in the reservoir (front axle) and adjust as required (see Traction Unit Operator's Manual).
35. Start the engine and check for component interference as the steering wheel is turned from lock to lock. Also, make sure the wheels turn in the desired direction. If they do not, make sure the hoses are connected to the correct ports.

Operation

Weight Requirements

The Groundsmaster 3280-D 4 Wheel Drive Series machines comply with CEN standard EN 836:1997, ISO standard 5395:1990 and the ANSI B71.4-2004 Standard when equipped with rear weight. 50 lb. of rear weight was previously installed inside the axle frame. Use the chart below to determine combinations of additional weight required. Order parts from your local Authorized Toro Distributor.

Four Wheel Drive Chart	Additional Rear Weight Required	Left Side Weight Required	Weight Part Number	Weight Description	Qty
52 inch Side Discharge Deck (Model 30555)	0 lb.	0 lb.	-	-	-
52 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb.	145 lb.*	*77-6700 92-9670 24-5780	75 lb. Wheel Weight Bracket Kit Rear Weight Kit	1 1 1
60 inch Side Discharge Deck (Model 30366) or 62 inch Base Deck (Model 30403 w/ Rear Discharge Kit (Model 30305) or Guardian Kit (Model 30306)	0 lb.	0 lb.	-	-	-
60 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb.	0 lb.	*77-6700	75 lb. Wheel Weight	1
62 inch Side Discharge Deck (Model 30551)	0 lb.	0 lb.	-	-	-
62 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb.	0 lb.	11–0440 325–18 92–9670 24–5790 60–9870 3253–7 3217–9	50 lb. Wheel Weight (add both weights to left front wheel) Bolt (for wheel weights) Bracket Kit Rear Weight Bolt (1/2 x 2–1/4 inches) Lock washer (1/2 inch) Nut (1/2 inch)	1 4 1 1 2 2 2
72 inch Side Discharge Deck (Model 30368 or 31336) or 72 inch Base Deck (Model 30404) w/ Rear Discharge Kit (Model 30303) or Guardian Kit (Model 30304) or 72 inch Guardian Recycler Deck (Model 31335)	35 lb.	0 lb.	24–5790 60–9870 3253–7 3217–9	Rear Weight, 35 lb Bolt (1/2 x 4–1/2 inches) Lock washer (1/2 inch) Nut (1/2 inch)	1 2 2 2

* 75 lb. wheel weight (included with 15 cu. ft. hopper) required on left wheel

Maintenance

Lubrication

Service Interval: Every 50 hours—Grease the bearings and bushings.

Every 400 hours—Grease the rear axle bearings. (Or yearly, whichever comes first)

The machine has grease fittings that must be lubricated regularly with No. 2 General Purpose Lithium Base Grease. If machine is operated under normal conditions, lubricate all bearings and bushings after every 50 hours of operation. Bearings and bushings must be lubricated daily when operating conditions are extremely dusty and dirty. Dusty and dirty operating conditions could cause dirt to get into the bearings and bushings, resulting in accelerated wear. Lubricate grease fitting immediately after every washing, regardless of interval specified.

The bearing and bushing lubrication points are as follows:

- Drive shaft (3) (Figure 13)

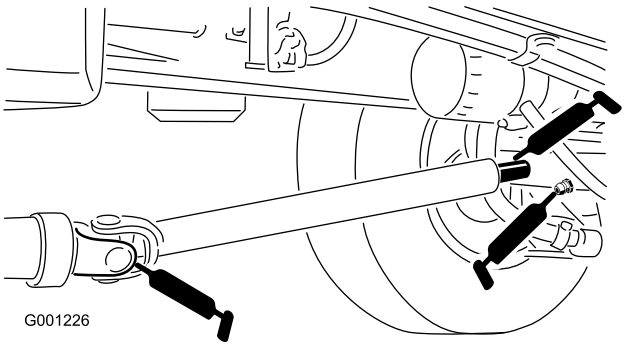


Figure 13

- Tie rod ends (2) (Figure 14)

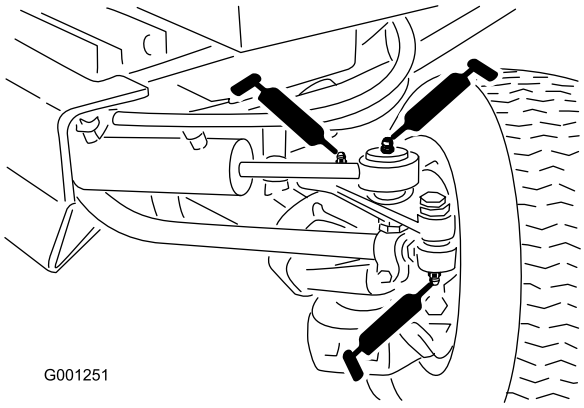


Figure 14

Adjusting the Rear Wheel Toe-in

Service Interval: Every 200 hours—Every 200 hours—Check the rear wheel toe-in.

The rear wheels should not toe-in or toe-out when they are adjusted correctly. To check the rear wheel toe-in, measure the center-to-center distance at wheel hub height, in front and in back of the rear tires.

- Rotate the steering wheel so rear wheels are straight ahead.
- Remove the nut securing one tie rod ball joint to the mounting bracket on the axle and disconnect the ball joint from the axle (Figure 15).

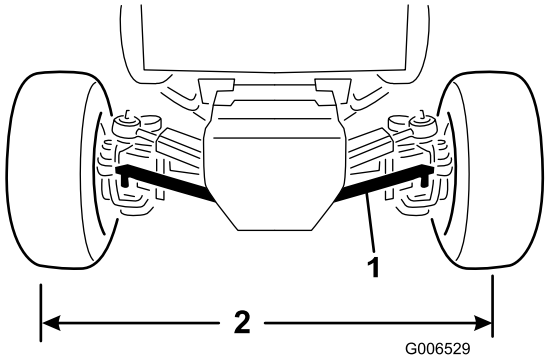


Figure 15

1. Tie rod
2. Same dimension at front and rear of wheels

- Loosen the screw on the tie rod clamp.
- Rotate the tie rod ball joint in or out until the center-to-center distance at front and back of rear wheels is the same (Figure 15).
- Install the ball joint to the mounting bracket and check the wheel toe-in.
- After attaining desired adjustment, tighten the screw on the tie rod clamp and secure the ball joint to the mounting bracket.

Adjusting the Steering Stops

The rear axle steering stops help prevent over travel of the steering cylinder in case of impact on rear wheels. The stops should be adjusted so there is .090 inch clearance between the bolt head and the knuckle on the axle when the steering wheel is completely turned left or right.

- Thread the bolts in or out until the .090 inch clearance is attained (Figure 16).

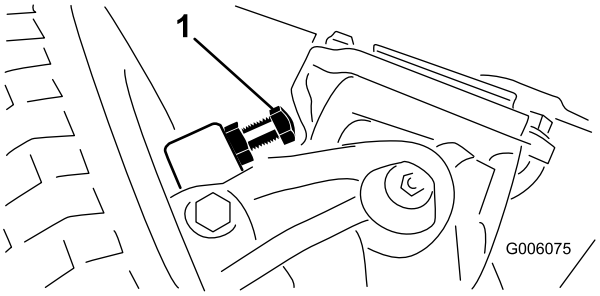


Figure 16

1. Steering stop (right side shown)

- Loosen the screw on the tie rod clamp.
- Rotate the ball joint in or out to adjust the length of the tie rod.
- Install the ball joint to the mounting bracket and check the wheel toe-in.
- After attaining desired adjustment, tighten the screw on the tie rod clamp and secure the ball joint to the mounting bracket.

Checking the Rear Axle Lubricant

The rear axle has three separate reservoirs which use SAE 80W-90 wt gear lube. Although the axle is shipped with lubricant from the factory, check the level before operating the machine.

1. Position the machine on a level surface.
2. Remove the check plugs from the axle and make sure the lubricant is up to the bottom of each hole. If the level is low, remove the fill plugs and add enough lubricant to bring the level up to the bottom of the check plug holes (Figure 17 and Figure 18).

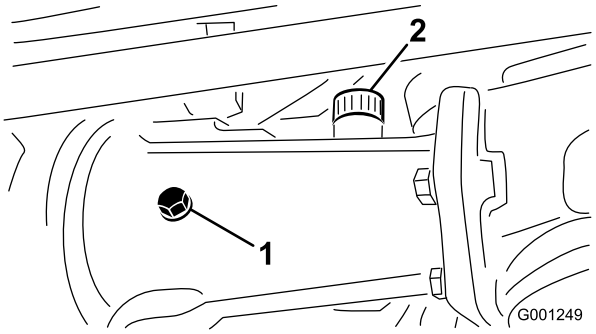


Figure 17

1. Check plug
2. Fill plug

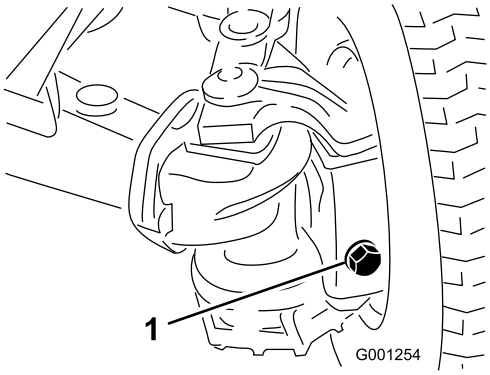


Figure 18

1. Fill/check plug (one on each end of axle)

Changing the Rear Axle Lubricant

Service Interval: Every 400 hours

1. Position the machine on a level surface.
2. Clean the area around the 3 drain plugs, 1 on each end and 1 in the center (Figure 19).

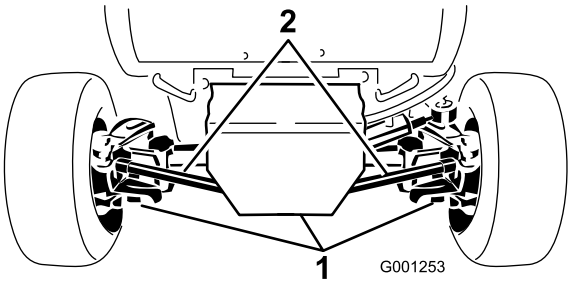


Figure 19

1. Drain plugs (3)

3. Remove the plugs allowing the oil to drain into drain pans.
4. After the oil is drained, apply thread locking compound on the drain plug threads and install them in the axle.
5. Fill the axle with lubricant; refer to Checking the Rear Axle Lubricant.

Checking the Bidirectional Clutch Lubricant

1. Position the machine on a level surface.
2. Rotate the clutch (Figure 20) so that the check plug (shown in the 12 o'clock position) is positioned at 4 o'clock

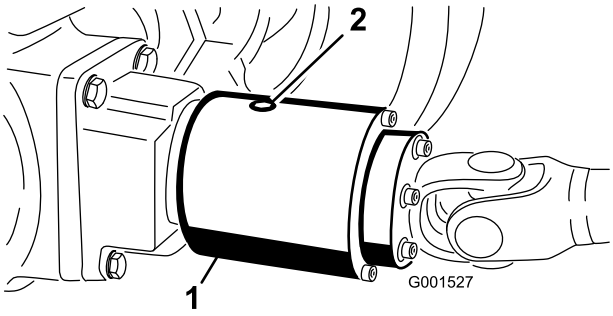


Figure 20

1. Bidirectional clutch
2. Check plug

3. Remove the check plug.

   The fluid level should be up to the hole in the clutch. If the fluid level is low, add Mobil Fluid 424. The clutch should be approximately 1/3 full.

4. Install the check plug.

   Note: Do not use engine oil (i.e. 10W30) in the bidirectional clutch. Anti-wear and extreme pressure additives will cause undesirable clutch performance.

   Note: Determine the left and right sides of the machine from the normal operating position.

Changing the Bidirectional Clutch Lubricant

Service Interval: Every 400 hours

1. Position the machine on a level surface.
2. Clean the area around the check plug on the bidirectional clutch.
3. Rotate the clutch so that the check plug is positioned downward (Figure 20).
4. Remove the check plug allowing all lubricant to flow into a drain pan.
5. Rotate the clutch so that the check plug is positioned at 4 o'clock.
6. Add Mobil Fluid 424 until the lubricant level is up to the hole in the clutch. The clutch should be approximately 1/3 full.
7. Install the check plug.

   Note: Do not use engine oil (i.e. 10W30) in the bidirectional clutch. Anti-wear and extreme pressure additives will cause undesirable clutch performance.

Checking Steering Cylinder Bolt Torque

Service Interval: Every 200 hours

1. Position the machine on a level surface.
2. Check the torque on the steering cylinder mounting bolts (Figure 21). Torque should be 48 to 60 ft-lb.

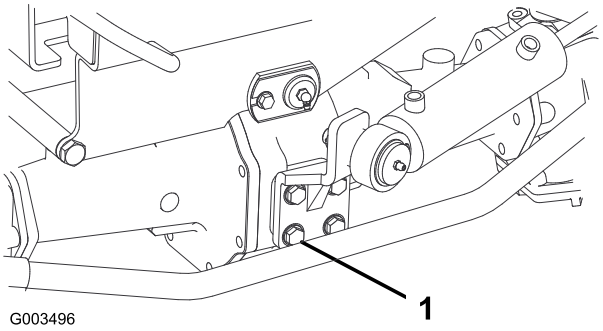


Figure 21

1. Mounting bolt (4)