Form No. 3378-131 Rev A

Flow Divider Kit

Groundsmaster® 4000 Series Traction Unit with Yanmar Engine

Model No. 30407

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

Loose Parts

Use the chart below to verify that all parts have been shipped.

Description	Qty.	Use
No parts required	–	Prepare the machine.
No parts required	–	Remove the hydraulic lines.
Flow divider	1	Install the hydraulic components.
45° hydraulic fitting	1	
90° hydraulic fitting	1	
Check fitting (3/4 inch)	1	
T-fitting	1	
Check adapter (9/16 inch)	1	
Straight-hydraulic fitting	1	
Hex-head bolt	2	
Flange nut	2	
Traction-motor tube	1	
Tube manifold	1	
Return hose	1	
Cross hose	1	
Rear-traction hose	1	

Note: The procedures for installing this kit require that you work from under the machine.

8111 Lyndale Avenue South
Bloomington, MN 55420

Register at www.Toro.com.

CE

Original Instructions (EN)
Printed in the USA

3378-131 A

Preparing the Machine

⚠ CAUTION

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injure you or other bystanders.

Remove the key from the ignition switch before you perform any maintenance.

Important: Use lifting and support equipment with a capacity of 1300 kg (5000 lb) or greater.

Important: Cap or plug any disconnected hydraulic hoses, tubes, or component ports to prevent contaminating the system.

1. Engage the parking brake, be sure that the traction pedal is in the neutral position.
2. Ensure that the PTO lever is in the Off position.
3. Shut the engine Off, remove the key from the switch, and allow the machine to cool.
4. Raise the machine on a hoist or jack up the front of the machine.

   Note: Use jack stands or block the machine to prevent it from falling.
5. Bleed the pressure from the hydraulic system by turning the hydraulic pump bypass valve; refer to the pushing or towing the machine instructions in the *Operator's Manual*.

Removing the Hydraulic Lines

Removing the Hydraulic Hoses

1. Align a drain pan below the forward end of the hydraulic-pressure hose (Figure 1).

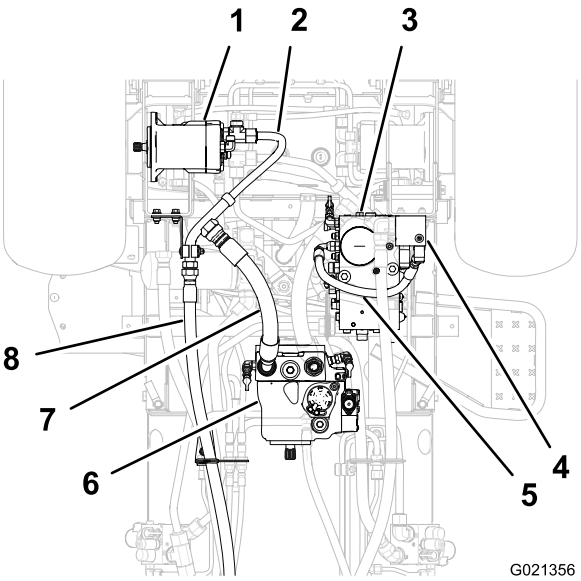


Figure 1

1. Traction motor
2. Divider tube
3. Combination manifold
4. Rear-traction manifold
5. Traction-control hose
6. Hydraulic pump
7. Hydraulic-pressure hose
8. Rear-traction hose

2. Remove the forward fitting of the hydraulic-pressure hose from the middle fitting of the divider tube, and allow the hydraulic fluid to drain from the hose and tube (Figure 2).

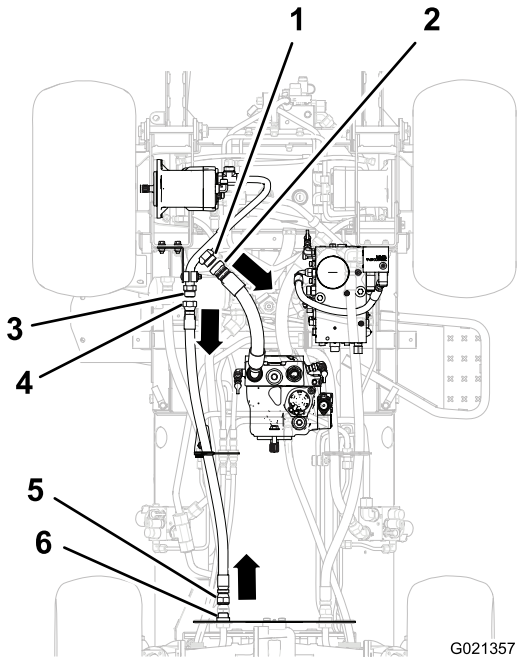


Figure 2

1. Middle fitting (divider-tube)
2. Forward fitting (pressure-hose)
3. Rear fitting (divider-tube)
4. Forward fitting (rear-traction hose)
5. Rear fitting (rear-traction hose)
6. Bulkhead fitting

3. Temporarily plug the hydraulic-pressure hose.
4. Remove the forward fitting of the rear-traction hose from the rear fitting of the divider tube (Figure 2).
5. Remove the rear fitting of the rear-traction hose from the bulkhead fitting in the bulkhead near the steering axle (Figure 2).
6. Pull the rear-traction hose through the hose support bracket, and remove the hose from the machine (Figure 3).

   Note: Discard the rear-traction hose.

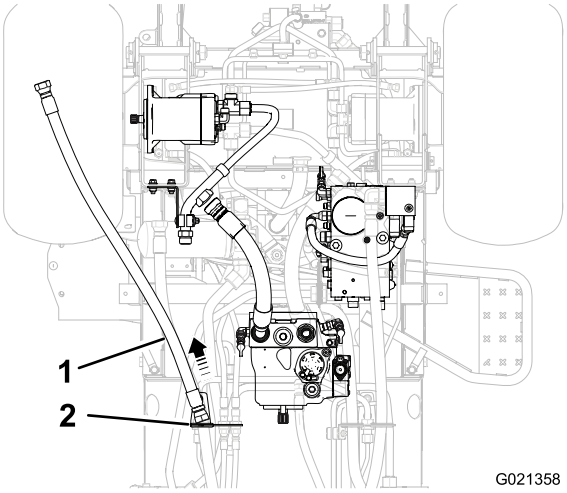


Figure 3

7. Temporarily cap the bulkhead fitting.

Removing the Tube Bracket and Clamp

1. Remove the bolt, nut, and clamp plate that secure the clamp-block halves and the divider tube to the support bracket (Figure 4).

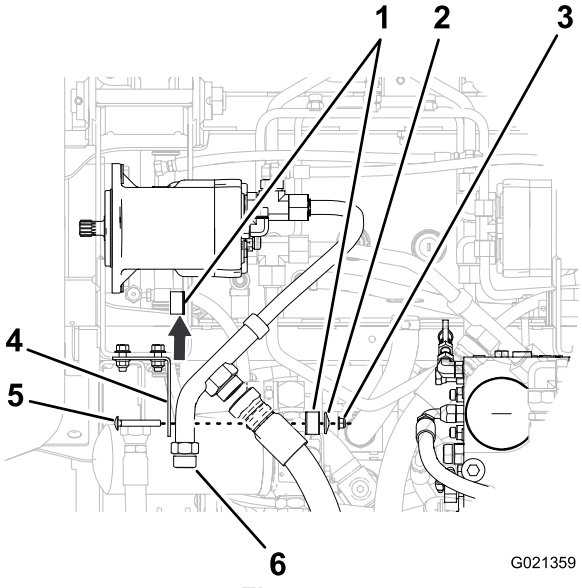


Figure 4

1. Clamp-block half
2. Clamp plate
3. Flange nut
4. Support bracket
5. Carriage bolt
6. Divider tube

2. Remove the clamp-block halves (Figure 4).
3. Remove the 2 bolts and 2 flange nuts that secure the support bracket to the chassis bracket, and remove the support bracket (Figure 5).

Note: Discard the bolts, nuts, clamp-block halves, and support bracket.

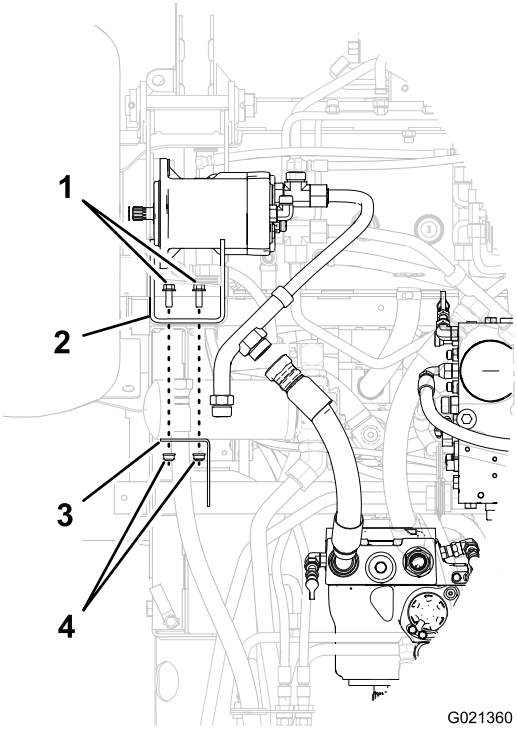


Figure 5

1. Bolts
2. Chassis bracket
3. Support bracket
4. Flange nuts

Removing the Divider Tube

1. Remove the tube nut of the divider tube from the T-fitting in the front-right traction motor, and remove the tube from the machine (Figure 6).

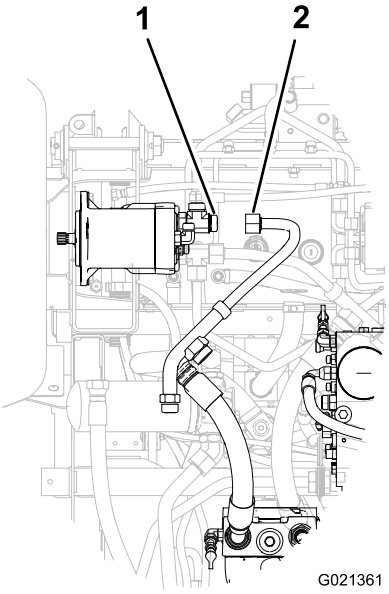


Figure 6

1. T-fitting (traction motor)
2. Tube nut (divider tube)

Note: Discard the divider tube.

2. Temporarily cap the T-fitting in the traction motor.

Removing the Traction-control Hose

1. Remove the inboard-hose fitting for the traction-control hose from the hydraulic fitting in port (CH1) of the combination manifold (Figure 7).

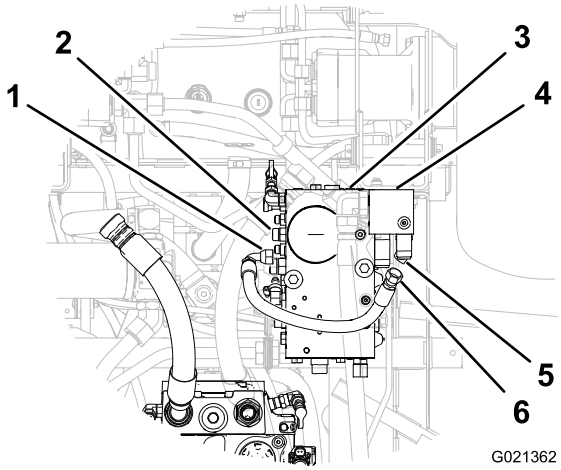


Figure 7

1. Inboard-hose fitting (traction-control hose)
2. Hydraulic fitting (combination manifold)
3. Combination manifold
4. Rear-traction manifold
5. Hydraulic fitting (rear-traction manifold)
6. Outboard-hose fitting (traction-control hose)

2. Remove the outboard-hose fitting for the traction-control hose from the 45° hydraulic fitting in the rear-traction manifold.
3. Temporarily cap the straight-hydraulic fittings in the combination manifold and the 45° hydraulic fitting in the rear-traction manifold.

   Note: Discard the traction-control hose.

Installing the Hydraulic Components

Assembling the Fittings to the Flow-divider Manifold

1. Thread the 45° hydraulic fitting into port (P1) of the flow-divider manifold (Figure 8).

   Note: Tighten the jam nut for the fitting hand tight.

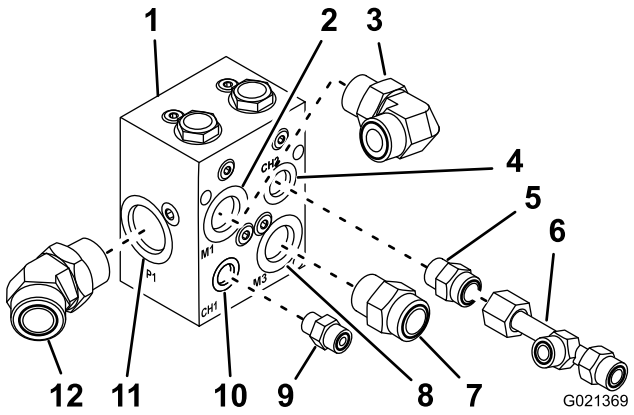


Figure 8

1. Flow-divider manifold
2. Port (M1)
3. 90° hydraulic fitting
4. Port (CH2)
5. Check fitting (3/4 inch)
6. T-fitting
7. Straight-hydraulic fitting
8. Port (M3)
9. Check adapter (9/16 inch)
10. Port (CH1)
11. Port (P1)
12. 45° hydraulic fitting

2. Thread the 90° hydraulic fitting into port (M1) of the flow-divider manifold (Figure 8).

   Note: Tighten the jam nut for the fitting hand tight.
3. Install the 3/4 inch check fitting into port (CH2) of the flow-divider manifold (Figure 8).
4. Thread the tube nut of the T-fitting onto the check fitting (Figure 8).

   Note: Tighten the tube nut of the T-fitting hand tight.
5. Install the straight-hydraulic fitting into port (M3) of the flow-divider manifold (Figure 8).
6. Install the 9/16 check adapter into port (CH1) of the flow-divider manifold (Figure 8).

Installing the Flow-divider Manifold

1. Align the holes in the flow-divider manifold with the holes in the chassis bracket (Figure 9).

   Note: Ensure that the 45º fitting in the flow-divider manifold is toward the centerline of the machine.

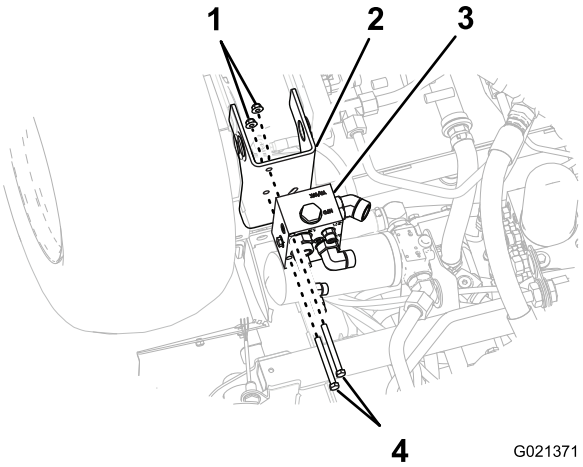


Figure 9

1. Flange nuts
2. Chassis bracket
3. Flow-divider manifold
4. Hex-head bolts

2. Secure the flow-divider manifold to the chassis bracket with the 2 hex-head bolts and 2 flange nuts (Figure 9).

Installing the Traction-motor Tube

1. Align the tube nuts for the traction-motor tube to the T-fitting in the traction motor and the 90º fitting in the flow divider (Figure 10).

   Note: Ensure that the traction-motor tube is routed above the hydraulic-pressure hose of the hydraulic pump; refer to step 2 of Removing the Hydraulic Hoses (page 2).

   Note: Rotate the 90º fitting as necessary to align the fitting with the rear-tube nut of the traction-motor tube.

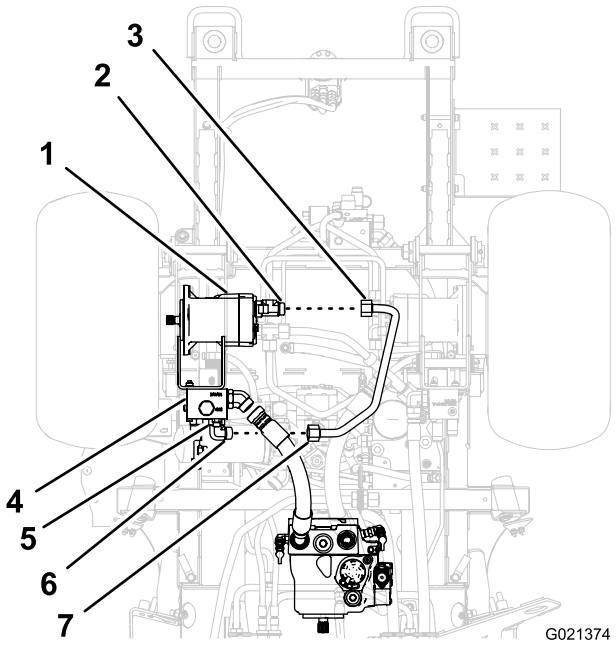


Figure 10

1. Traction motor
2. T-fitting
3. Forward-tube nut (traction-motor tube)
4. Flow-divider manifold
5. Jam nut
6. 90° hydraulic fitting
7. Rear-tube nut (traction-motor tube)

2. Remove the cap from the T-fitting of the traction motor that you installed step 2 of Removing the Divider Tube (page 4).
3. Thread the tube nuts for the traction-motor tube onto the fittings in the traction motor and the flow divider (Figure 10).
4. Tighten the jam nut for the 90º fitting (Figure 10).
5. Tighten the tube nuts of the traction-motor tube to 116 to 142 N-m (85 to 105 ft-lb).

Installing the Tube Manifold

1. Align the forward-tube nut for the tube manifold with the check adapter located in port CH1 of the flow divider (Figure 11).

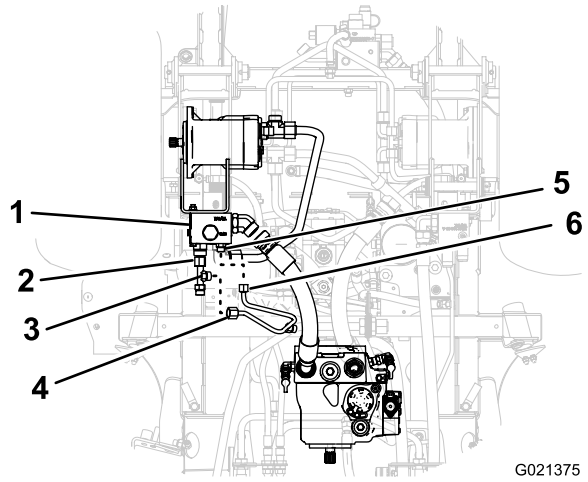


Figure 11

1. Flow-divider manifold
2. Tube nut (T-fitting)
3. 90° threaded fitting (T-fitting)
4. Rear-tube nut (tube manifold)
5. Check adapter (9/16 inch)
6. Forward-tube nut (tube manifold)

2. Align the rear-tube nut for the tube manifold with the 90° threaded fitting of the T-fitting (Figure 11).

   Note: Rotate the T-fitting necessary to align the fitting with the rear-tube nut of the tube manifold.

3. Thread the tube nuts of the tube manifold onto the check adapter and the T-fitting (Figure 11).
4. Tighten the tube nut of the T-fitting to 51 to 63 N-m (37 to 47 ft-lb).
5. Tighten the tube nut of the tube manifold to 51 to 63 N-m (37 to 47 ft-lb).

Installing the Return Hose

1. Align the straight fitting of the return hose with the threaded fitting of the tube manifold (Figure 12).

   Note: Ensure that the return hose is routed above the hydraulic-pressure hose of the hydraulic pump; refer to step 2 of Removing the Hydraulic Hoses (page 2).

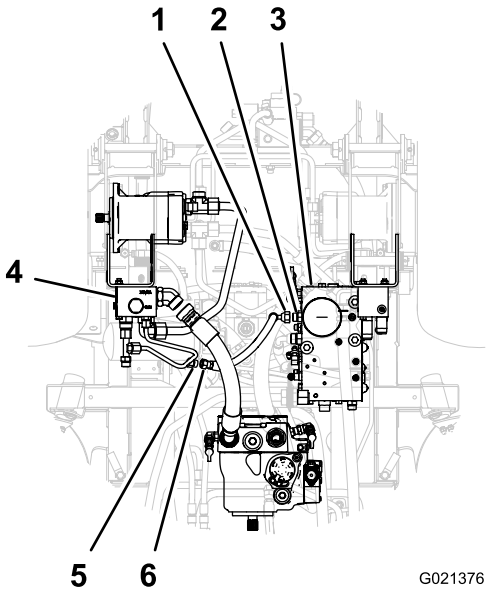


Figure 12

1. 90º fitting (return hose)
2. Hydraulic fitting (combination manifold)
3. Combination manifold
4. Flow-divider manifold
5. Straight fitting (return hose)
6. Threaded fitting (tube manifold)

2. Align the 90° fitting of the return hose with the threaded fitting in the combination manifold (Figure 12).
3. Remove the cap from the hydraulic fitting in the combination manifold that you installed in step 3 of Removing the Traction-control Hose (page 5).
4. Thread the hose fittings onto the fittings of the return manifold and the combination manifold, and tighten the hose fittings to 51 to 63 N-m (37 to 47 ft-lb).
5. Torque the 90° fitting of the return hose to 51 to 63 N-m (37 to 47 ft-lb).
6. Torque the straight fitting of the return hose to 37 to 44 N-m (27 to 33 ft-lb).

Installing the Cross Hose

1. Align the 90° fitting of the cross hose through the cushioned guide in the support bracket, and slide the hose through the bracket (Figure 13).

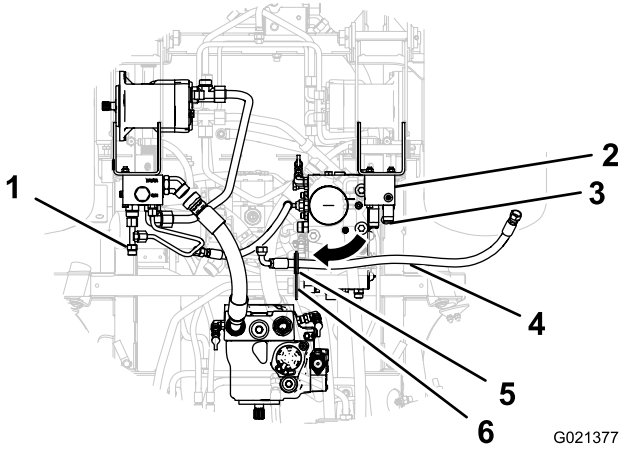


Figure 13

1. Straight-threaded fitting (T-fitting)
2. Rear-traction manifold
3. 45° hydraulic fitting (rear-traction manifold)
4. Cross hose
5. Cushioned guide
6. Support bracket

2. Align the 90° fitting of the cross hose with the straight-threaded fitting of the T-fitting (Figure 14).

   Note: Ensure that the cross hose is routed above the hydraulic-pressure hose of the hydraulic pump; refer to step 2 of Removing the Hydraulic Hoses (page 2).

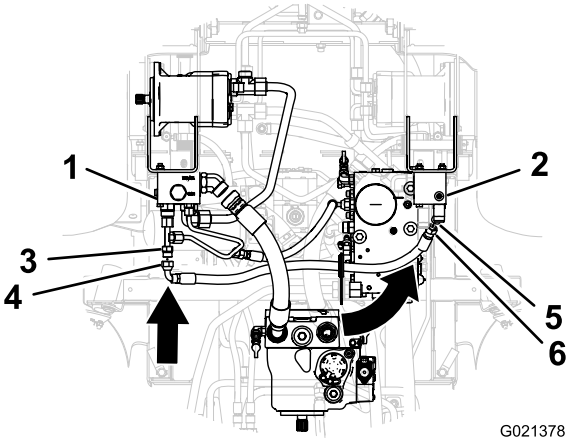


Figure 14

1. Flow-divider manifold
2. Rear-traction manifold
3. Straight-threaded fitting (T-fitting)
4. 90° fitting (cross hose)
5. 45° hydraulic fitting (rear-traction manifold)
6. Straight fitting (cross hose)

3. Align the straight fitting of the cross hose with the 45° hydraulic fitting in the rear-traction manifold (Figure 14).
4. Remove the cap from the 45° hydraulic fitting in the rear-traction manifold that you installed in step 3 of Removing the Traction-control Hose (page 5).
5. Thread the hose fittings of the cross hose onto the fittings of the T-fitting and the rear-traction manifold, and tighten the fittings to 51 to 63 N-m (37 to 47 ft-lb).

Installing the Rear-traction Hose

1. Align the fitting of the rear-traction hose through the cushioned guide of the support bracket, and slide the hose through the bracket (Figure 15).

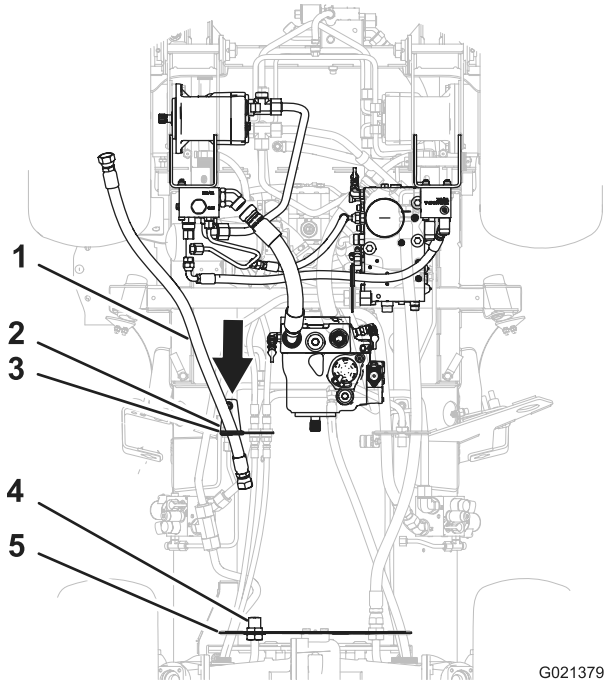


Figure 15

1. Rear-traction hose
2. Cushioned guide
3. Support bracket
4. Bulkhead fitting
5. Bulkhead

2. Align the rear fitting of the rear-traction hose with the bulkhead fitting (Figure 16).

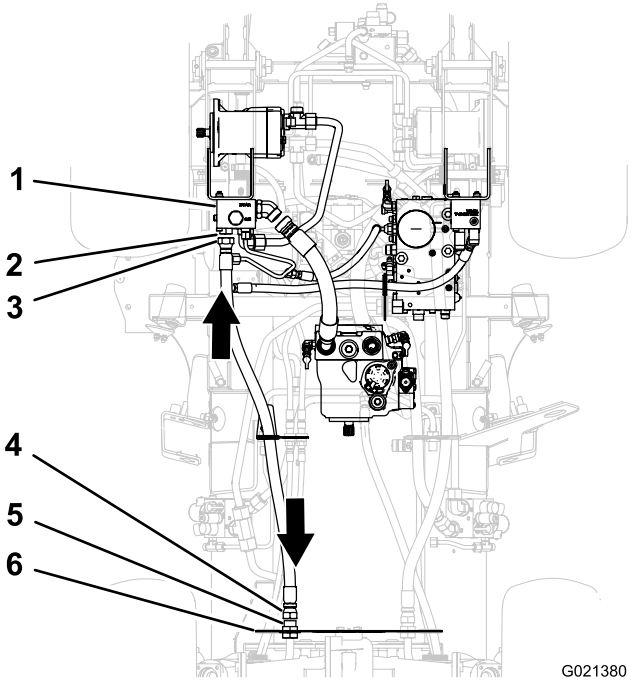


Figure 16

1. Flow-divider manifold
2. Straight-hydraulic fitting
3. Forward fitting (rear-traction hose)
4. Rear fitting (rear-traction hose)
5. Bulkhead fitting
6. Bulkhead

3. Align the forward fitting of the rear-traction hose with the straight-hydraulic fitting located in port M3 of the flow-divider manifold (Figure 16).
4. Remove the cap from the bulkhead fitting that you installed in step 3 of Removing the Hydraulic Hoses (page 2).
5. Thread the hose fittings of the rear-traction hose onto the fittings in the flow-divider manifold and the bulkhead fitting, and tighten the fittings to 116 to 142 N-m (85 to 105 ft-lb).

Installing the Hydraulic-pressure Hose

1. Remove the plug from the end of the hydraulic-pressure hose that you installed in step 3 of Removing the Hydraulic Hoses (page 2).
2. Remove the 45° fitting of the pressure hose from the straight fitting in the hydraulic pump (Figure 17).

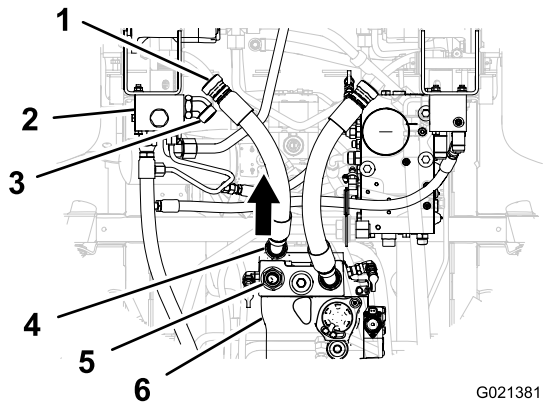


Figure 17

1. Straight fitting (hydraulic-pressure hose)
2. Flow-divider manifold
3. 45° hydraulic fitting
4. 45° fitting (hydraulic-pressure hose)
5. Straight-hydraulic fitting
6. Hydraulic pump

3. Align the straight fitting of the hydraulic-pressure hose with the 45° hydraulic fitting in the flow-divider manifold (Figure 18).

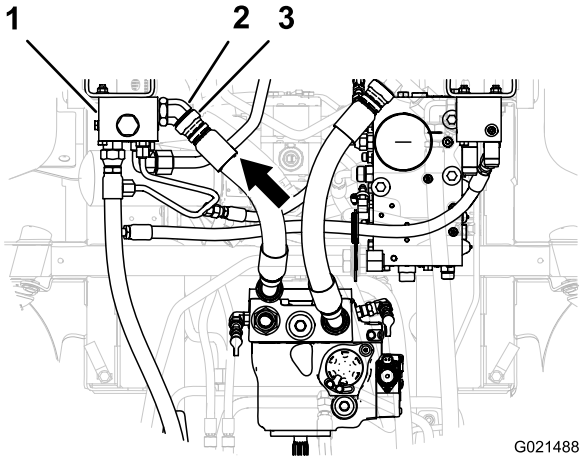


Figure 18

1. Flow-divider manifold
2. 45° hydraulic fitting
3. Straight fitting (hydraulic-pressure hose)

4. Thread the straight fitting of the hydraulic-pressure hose onto the 45° hydraulic fitting in the flow-divider manifold (Figure 18).
5. Align the 45° fitting of the pressure hose with the straight fitting in the hydraulic pump (Figure 19).

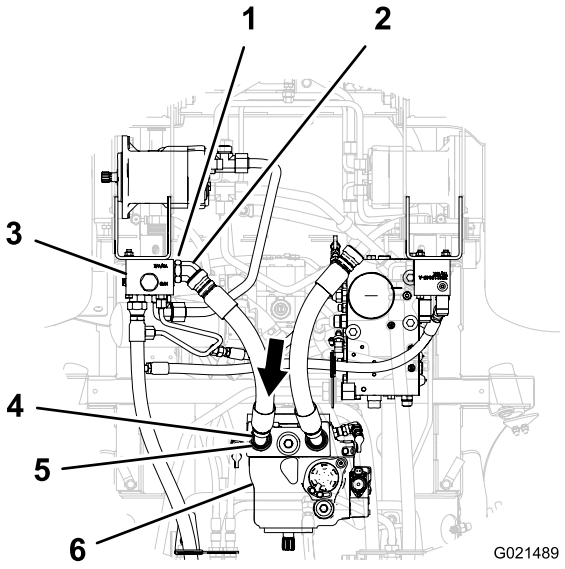


Figure 19

1. Jam nut
2. 45° hydraulic fitting
3. Flow-divider manifold
4. 45° fitting (hydraulic-pressure hose)
5. Straight-hydraulic fitting
6. Hydraulic pump

6. Thread the 45° fitting of the pressure hose onto the straight fitting in the hydraulic pump (Figure 19).
7. Tighten the jam nut of the 45° hydraulic fitting that in the flow-divider manifold (Figure 19).
8. Torque the straight and 45° fittings of the pressure-hose to 150 to 184 N-m (110 to 136 ft-lb).

Checking for Hydraulic Leaks

⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

- **Make sure that all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Get immediate medical help if fluid is injected into skin.**

1. Check and tighten all fittings and hydraulic connections.
2. Lower the machine and remove the jack stands.
3. Ensure that the hydraulic pump bypass valve is in the operation position; refer to the pushing or towing the machine instructions in the *Owner's Manual*.
4. Check the hydraulic oil level and replenish it as required.
5. Start the machine and allow the hydraulic system to pressurize.
6. Stop the engine and check the hydraulic tubes, hoses, and fittings for leaks.

   Note: Repair all leaks before operating the machine.

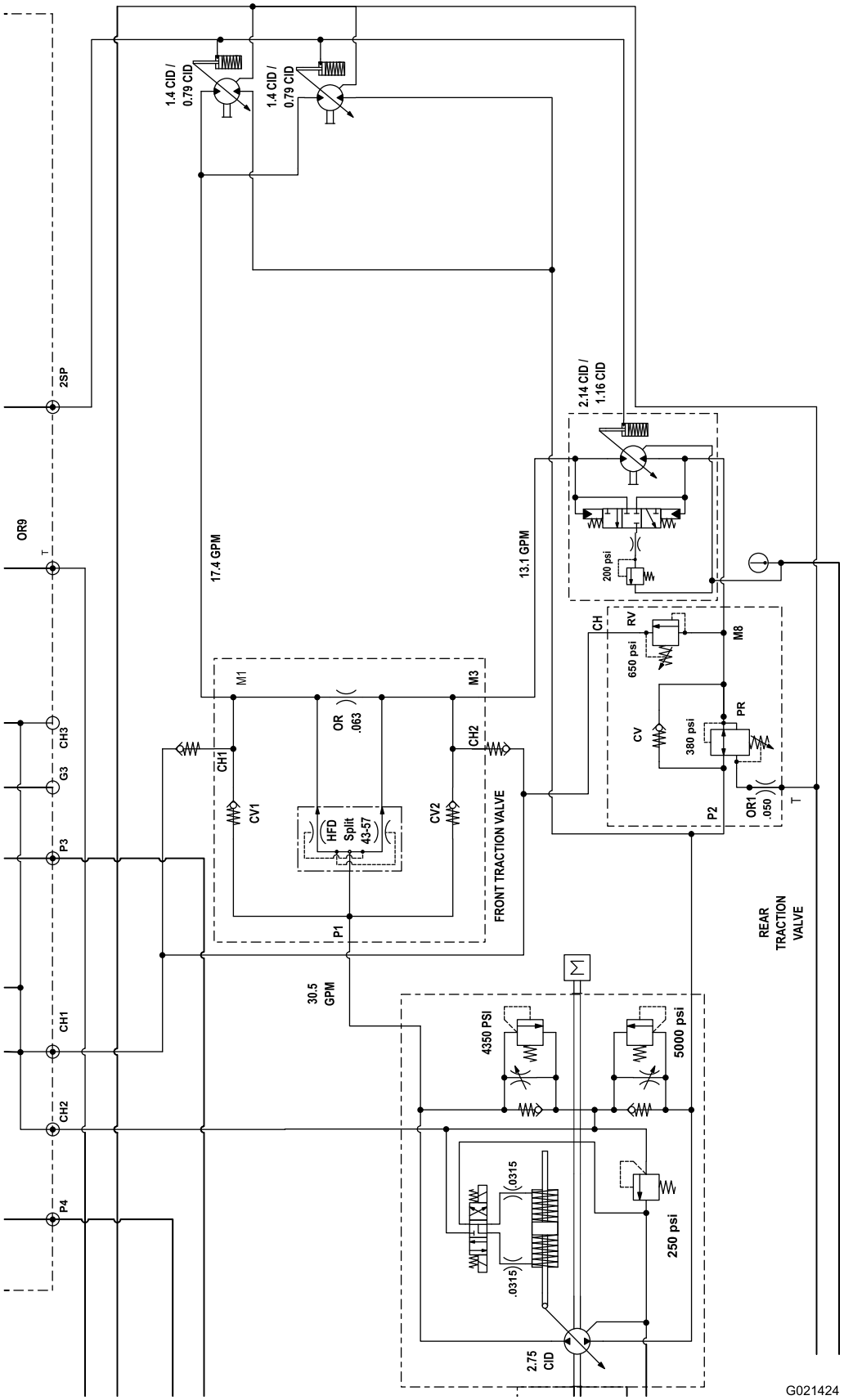
Operation

Operating Tips

The flow divider kit enhances the traction drive performance in compromised operating conditions.

Important: If both a front and rear wheels spin, feather the steering brake to control the transfer the torque from the spinning wheels to the opposite front wheel.

Schematics



Hydraulic Schematic (Rev. A)