



Belly Blade

Installation Instructions

John Deere 4000 , 20 Series
With and Without Factory Loader
No Cab

Purchase Date
Serial Number
Model Number
Tractor Model
Dealer

Index

Description	Page
Bolt Torque Specifications	2
Kit Inventory	3
General Information	4
Safety Information	4
Preparing Tractor for Installation	5
Bracket Installation	5,6
Plumbing	6,7
Placing Undercarriage Under Tractor	8
Installing Undercarriage	8,9
Valve Stand and Bracket Installation	10
Valve Installation	10,11,12
Blade Installation	12,13
Hydraulic Schematic	14
Notes	15
Warranty Statement	16

Bolt Torque Specifications

Bolt Dia. (inch)	Thread per inch	Grade 5	Grade 8
		Torque (ft·lbs.)	Torque (ft·lbs.)
1/4	20	8	12
1/4	28	10	14
5/16	18	17	25
5/16	24	19	29
3/8	16	30	45
3/8	24	35	50
7/16	14	50	70
7/16	20	55	80
1/2	13	75	110
1/2	20	90	120
9/16	12	110	150
9/16	18	120	170
5/8	11	150	220
5/8	18	180	240
3/4	10	260	380
3/4	16	300	420
7/8	9	430	600
7/8	14	470	660
1	8	640	900
1	12	710	990

Bolt Dia. (mm)	Pitch	Grade 8.8	Grade 10.9
		Torque (ft·lbs.)	Torque (ft·lbs.)
4	0.70	2	
5	0.80	4	
5	1.00	7	11
7	1.00	12	
8	1.25	17	26
8	1.00	18	
10	1.50	35	51
10	1.20	37	
10	1.00	39	
12	1.75	59	88
12	1.50	62	
12	1.25	65	
14	2.00	94	139
14	1.50	101	
16	2.00	146	210
18	2.50	210	
20	2.50	292	
22	2.50	398	
44	3.00	503	

Kit Inventory

Qty.	PN	Description
2	16-1217540	12mm x 1.75mm x 40mm Metric Hex Bolt Gr 10.9 Coarse
8	16-1217550	12mm x 1.75mm x 50mm Metric Hex Bolt Gr 10.9 Coarse
3	16-20062	3/8" x 3/4" Hex Bolt Gr 5 NC
1	16-20074	3/8" x 3-1/2" Hex Bolt Gr 5 NC
10	16-20219	3/4" x 2-1/4" Hex Bolt Gr 5 NC
8	16-21218	3/4" x 2" Carriage Bolt Gr 5 NC
1	17-12195	JD 4000, 20 Large Frame Valve Mount
1	18-10227	JD Valve Support Bracket (top)
1	18-10228	JD Valve Support Bracket (bottom)
2	18-10248	2.50" U-Clamp
2	18-12190	200 JD 4000, 20 Large Frame Rear Bracket
2	18-12193	200 JD 4000, 20 Large Frame Front Bracket
1	31-34183	Male Elbow 45° JIC x Metric (7802-8-18)
1	35-10225	-10 JIC x -10 Face Seal 45° Hose - 94"
1	35-10226	-10 JIC x -10 Face Seal 45° Hose - 101"
1	35-30039	-8 JIC x -8 JIC Hose - 90"
5	39-10199	Belly Blade Control Handles
1	43-7995	Pin 1" x 2.125"
1	43-7767	Cylinder Hitch Pin Clip
1	54-12185	John Deere 4000, 20 Large Frame Undercarriage
1	56-10280-B	Belly Blade Valve System
2	57-20742	3/8" Flat Washer
2	57-20743	7/16" Flat Washer
8	57-20744	1/2" Flat Washer
3	57-20762	3/8" Lock Washer
28	57-20747	3/4" Flat Washer
10	59-34950	Zip Ties (large)
1	70-20582	3/8" Hex Nut Gr 5 NC
18	70-20607	3/4" Hex Center Lock Nut Gr 5 NC

No Loader Parts:

Qty.	PN	Description
8	16-1620040	16mm x 2.00mm x 40mm Metric Hex Bolt Gr. 10.9 Coarse
2	44-10264	JD No Loader Bracket
8	57-20746	5/8" Flat Washer

Blade Assembly - Shipment includes one of the following

Qty	PN	Description
1	15-10300-6	6 ft. Moldboard
1	15-10300-7	7 ft. Moldboard
1	15-10300-8	8 ft. Moldboard
1	15-10300-9	9 ft. Moldboard
1	15-10300-10	10 ft. Moldboard

General Information

Locate the Belly Blade assembly identification number and record the information on the front of this manual. This may be needed when contacting your service center or dealer.



Using Your Manual



Read this manual completely prior to assembling to help you and others avoid injuries. This manual provides information on the proper way of installing the Belly Blade to prevent injuries and any machine damage.

These instructions show the Belly Blade installation process with the tractor on a hoist. All references to the tractor or undercarriage are taken from the view at the tractor's seat.

Your machine may vary slightly from the machine in this manual, but the same installation procedure will be compatible.

Important Messages

This manual contains messages that will bring attention to potential safety concerns and machine damage. Read all of the information carefully and thoroughly to avoid injury and machine damage. Below is an example.

**Caution**

Avoid injury! This text will explain the possible hazards or death to the bystanders or the operator if the correct procedures are ignored.

Safety Information

1. Wear protective eye wear.
2. Always block tractor safely.
3. Engage parking brake before raising the tractor.
4. Follow all tractor manufacturing safety recommendations when working on the tractor.

Accident Prevention

An accident prevention program can be successful when a responsible equipment operator is cooperating. An operator can prevent accidents when they accept a full measure of their responsibility. The designers, manufacturers, and engineers can help, but a single careless act by the operator can outweigh all of their efforts.

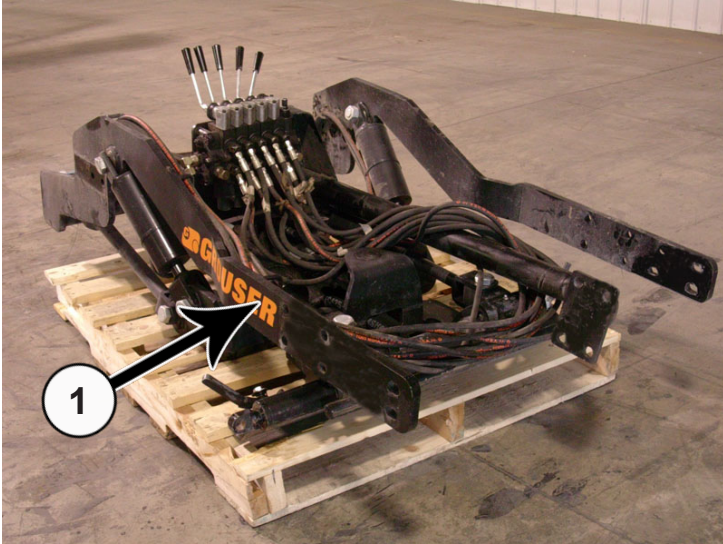
No equipment can be safer than the person running the controls. A careful, informed operator is the best safety device.

Preparing Tractor For Installation

1. Park the tractor on a smooth, level surface.
2. Set parking brake and block front tires to keep from rolling.
3. Disconnect the battery.

NOTE: To ease assembly, remove rear tires and support the tractor safely.

IMPORTANT: Raise the tractor high enough for the undercarriage to fit under the rear axle when installing the undercarriage.



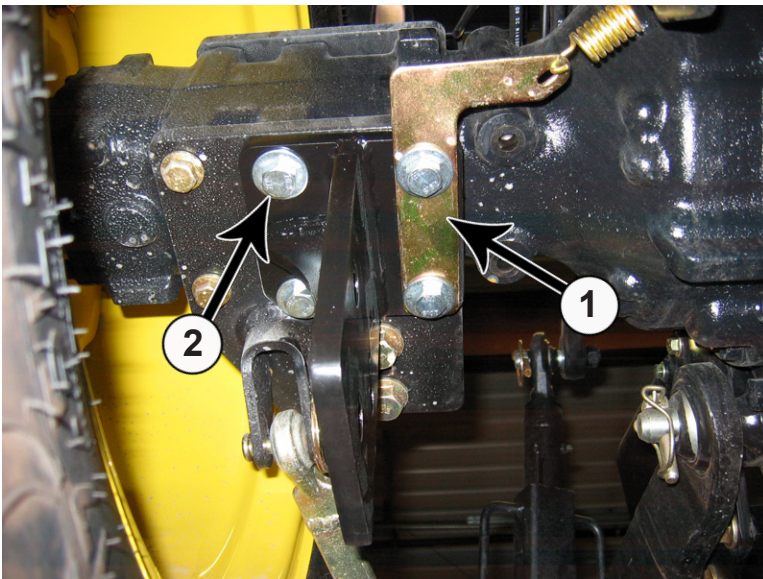
4. The Belly Blade will arrive on a pallet. Unwrap and set the blade aside. Remove the undercarriage assembly from the pallet (1).

5. Check the inventory and ensure that all parts are included with the Belly Blade Kit. If any parts are missing, contact your dealer.

6. If the rear tires are not removed, raise the back of tractor, and place blocks safely underneath the tractor tires or use an appropriate hoist. Keep enough distance between the blocks, so the undercarriage will fit.

7. If the rear tires are removed, raise the back of the tractor and use jack stands that are recommended for your tractor to support the tractor safely. Keep enough distance between the jack stands, so the undercarriage will fit.

Bracket Installation



8. Remove the right brake return bracket and spring (1).

9. Remove the set of bolts next to the set that were taken out in Step #8 (2).

10. Position the rear bracket (PN: 18-12190) on the right rear axle so the gusset is facing towards the tire. Start 2 - 12mm x 50mm bolts (PN: 16-1217550) and a 1/2" washer (PN: 57-20744) on each bolt in the holes on the gusset side of the bracket.

11. Attach the brake return bracket with the rear bracket with 2 - 12mm x 50mm bolts (PN: 16-1217550) and a 1/2" washer (PN: 57-20744) on each bolt in the holes originally used for the brake return bracket.

12. Attach the spring to the brake return bracket (1).

13. Attach a rear bracket on the left side the same way as the right side.

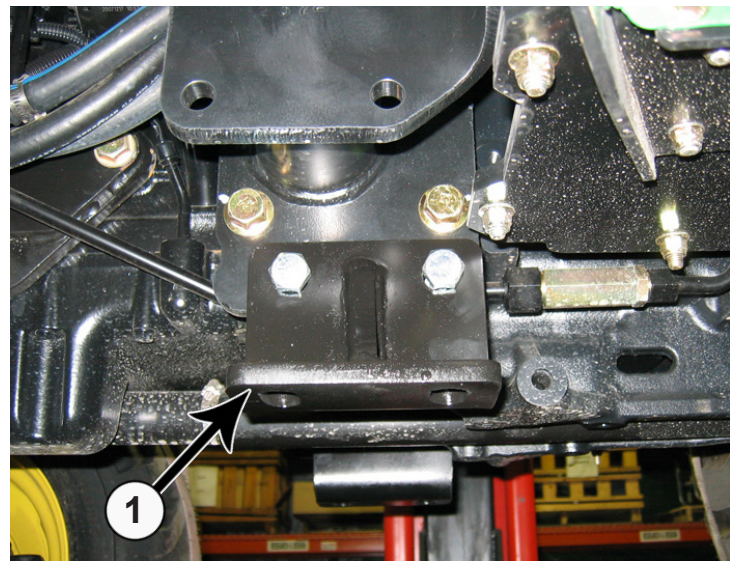
NOTE: If machine does not have a loader, continue with Steps #14-15. If machine has a loader, skip to Step #16.

14. Install a no loader bracket (PN: 44-10264) with 4 - 16mm x 40mm bolts (PN: 16-1620040) and 4 - 5/8" washers (PN: 57-20746) on each side of the tractor in front of the operator's platform.

15. Attach the front brackets (PN: 18-12193) to the no loader brackets with 2 - 3/4" x 2-1/4" bolts (PN: 16-20219), 4 - 3/4" washers (PN: 57-20747) and 2 - 3/4" center locking nuts (PN: 70-20607) for each side.

NOTE: See photo below for any clarification. The photo shows the front bracket when installed on a machine with a loader.

NOTE: Continue installation with Step #18.



16. Drill out mounting holes on the loader bracket to fit a 3/4" bolt.

17. Attach the front brackets (PN: 18-12193) to the loader brackets with 2 - 3/4" x 2-1/4" bolts (PN: 16-20219), 4 - 3/4" washers (PN: 57-20747) and 2 - 3/4" center locking nuts (PN: 70-20607) for each side (1).

18. Torque all bolts to the correct specifications after all bolts have been installed.

Plumbing

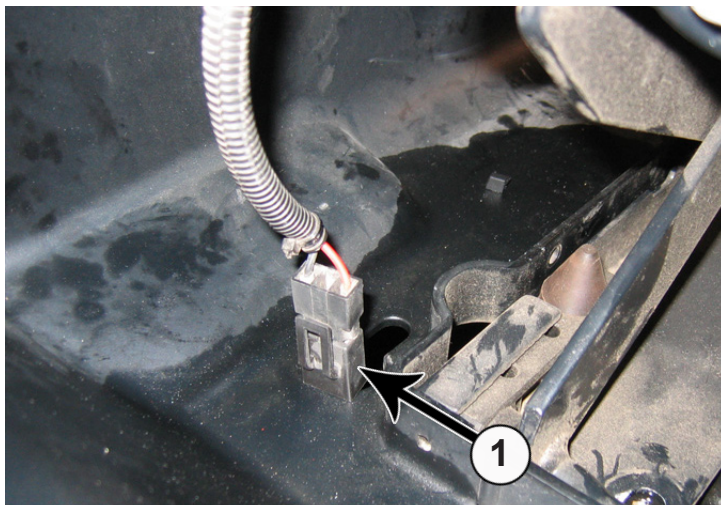
NOTE: 1. Have an oil pan available to collect hydraulic oil when removing hydraulic lines.
2. Before removing any hydraulic lines, release all hydraulic pressure with the engine off.



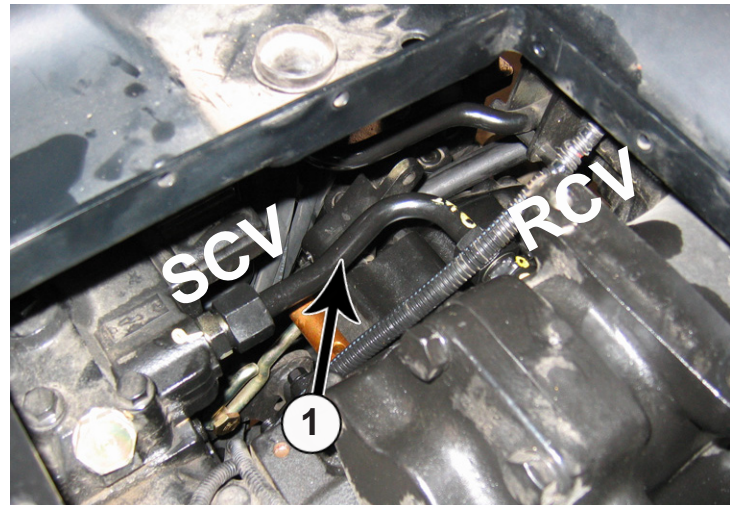
Caution



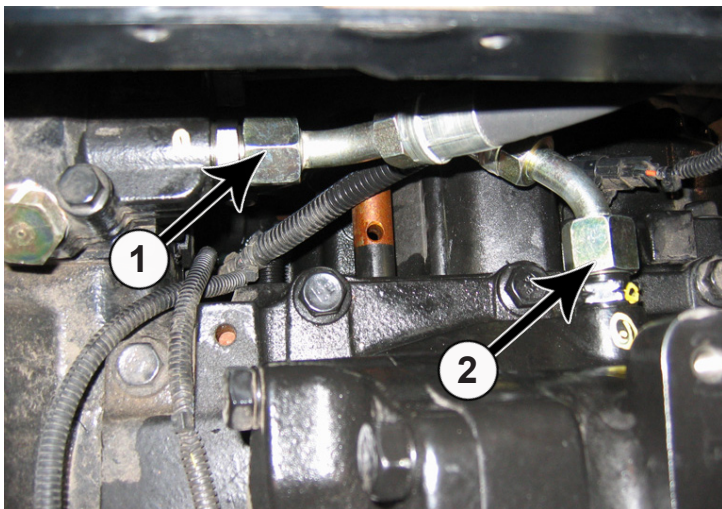
Avoid injury! Hydraulic oil that is under pressure will penetrate the skin and cause a serious injury. If this occurs, it needs to be surgically removed by a doctor familiar with this type of injury within a few hours or gangrene may result.



19. Remove seat and disconnect the seat safety connector (1).



20. Locate and remove the SCV to RCV hydraulic oil line below and to the right of the seat area (1).

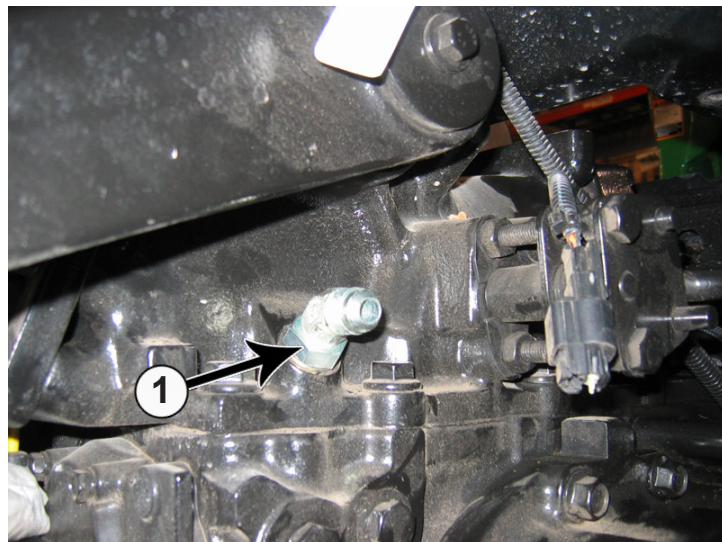


21. Attach the 101" hose (PN: 35-10226) to the SCV side of the tractor transmission (front fitting) (1).

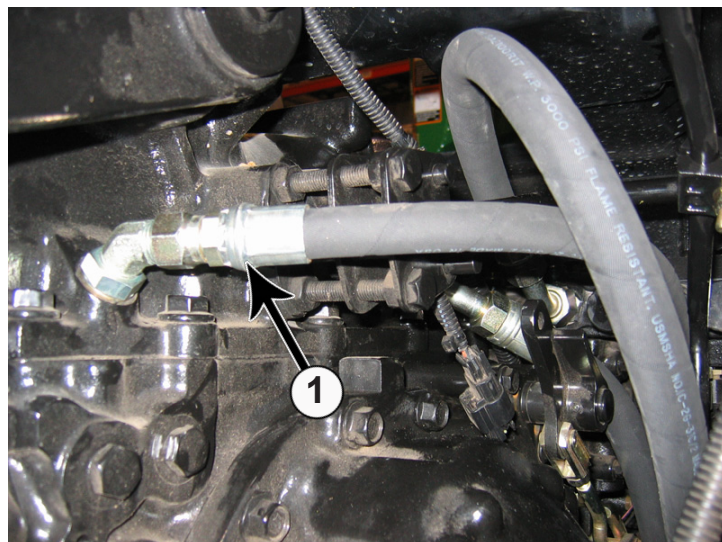
22. Attach the 94" hose (PN: 35-10225) to the RCV side of the tractor transmission (rear fitting) (2).

23. Route hoses to the front right side and under the operator platform. Lay the end of the hoses on the operator's platform. The hoses will be attached later to the Belly Blade Control Valve (BBCV) in Step #46 & 48.

NOTE: Keep hoses away from all sharp edges and strap the hoses securely to the tractor.

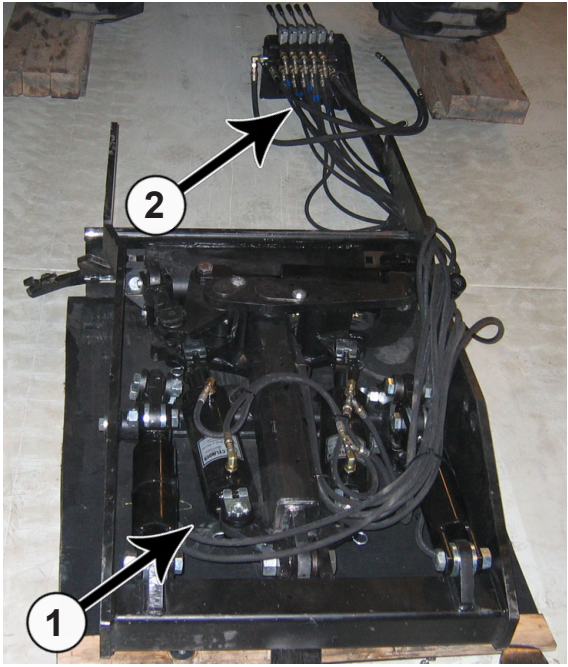


24. Remove Tank plug and install the 45° fitting (PN: 31-34183) into the Tank port located behind and above the right axle (1).

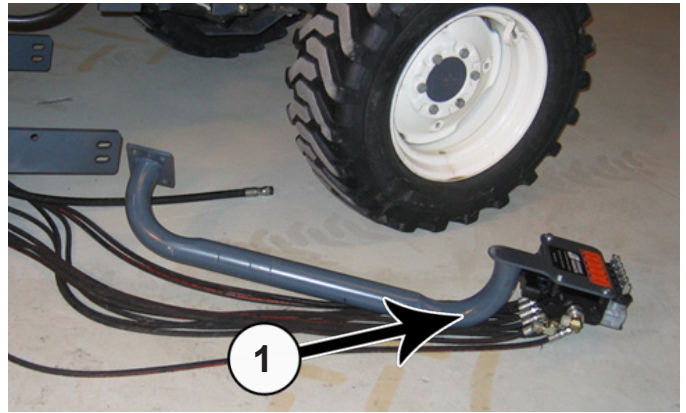


25. Attach the 90" hose (PN: 35-30039) to the 45° fitting from the previous step (1). Route the hose to the front right side of the operator platform and lay the end of the hose on the platform. The hose will be attached later to the BBCV in Step #47.

Placing Undercarriage Under Tractor



26. Align the undercarriage (1) behind the tractor. Lay out the valve and hoses in front of the undercarriage (2).



27. Guide the undercarriage and the valve stand under the tractor. Make sure the valve and valve stand exit the right side of the tractor (1).

Installing Undercarriage

NOTE: When jacking up the undercarriage, make sure to not jack too high or you may hit other parts of the tractor.

NOTE: When raising the undercarriage, properly guide the hoses to avoid pinching them between the tractor frame and the undercarriage.

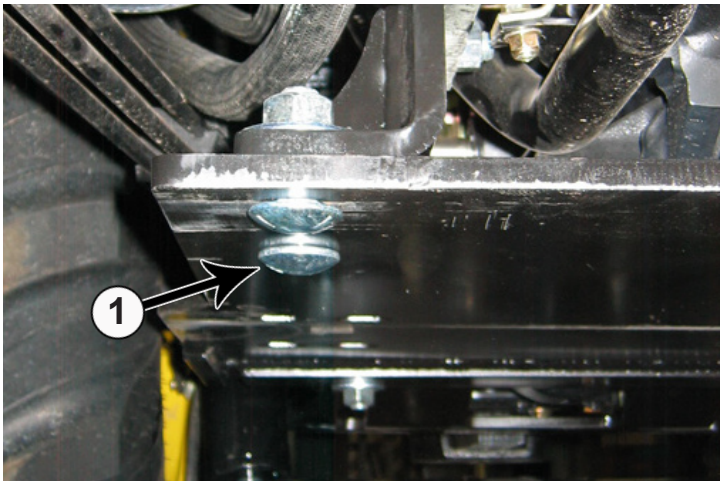


Caution



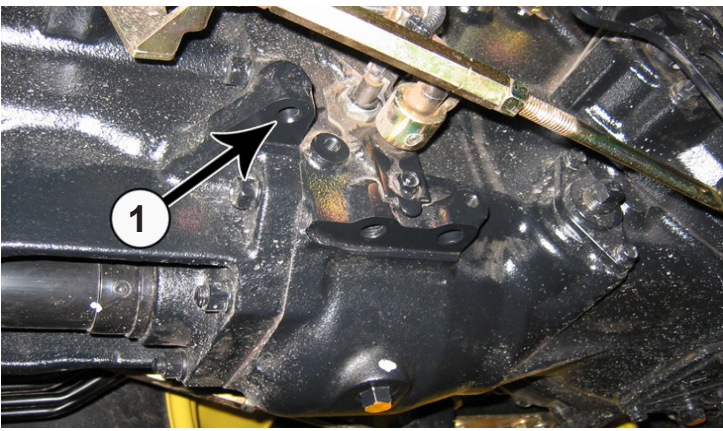
Avoid injury! Watch for pinch points when raising the undercarriage.

NOTE: Do not tighten until all mounting bolts have been installed.

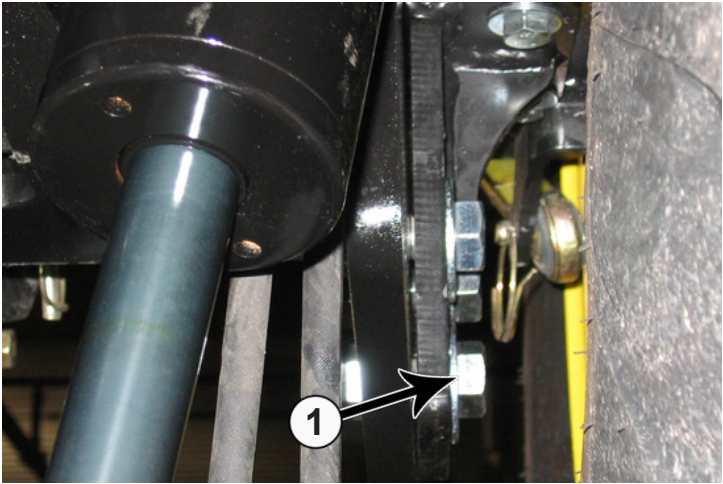


28. Use jacks to raise the undercarriage until the front undercarriage holes line up with the holes on the front bracket.

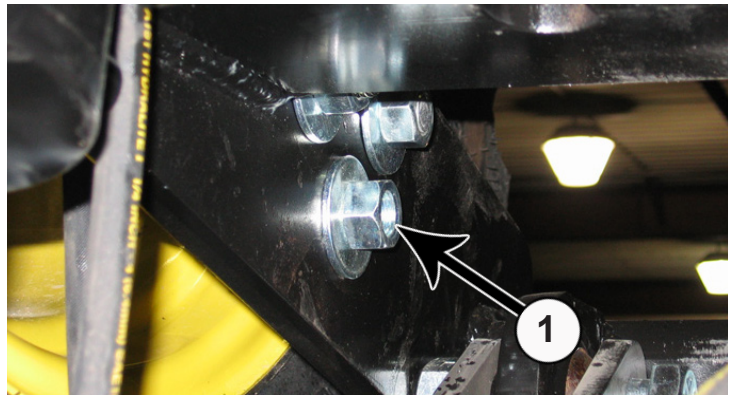
29. Once the front holes are aligned, attach the undercarriage to the front brackets with 2 - 3/4" carriage bolts (PN: 16-21218), 2 - 3/4" flat washers (PN: 57-20747), and 2 - 3/4" nuts (PN: 70-20607) for each side. The carriage bolts should be inserted from the bottom of the undercarriage (1).



30. Attach the middle of the undercarriage to the tractor above the drive shaft and in front of the oil drain with a 12mm x 40mm bolt (PN: 16-1217540) and a 7/16" washer (PN: 57-20743) on each side (1).



31. Continue to raise the rear of the undercarriage between the rear brackets until the rear holes line up with the holes on the rear brackets. Insert 3 - 3/4" x 2-1/4" bolts (PN: 16-20219) with a 3/4" flat washer (PN: 57-20747) on each bolt through the holes of the bracket and undercarriage on both sides (1).



32. Secure the undercarriage to the rear brackets by installing a 3/4" flat washer (PN: 57-20747) and 3/4" nut (PN: 70-20607) on each bolt that was installed in the previous step (1).

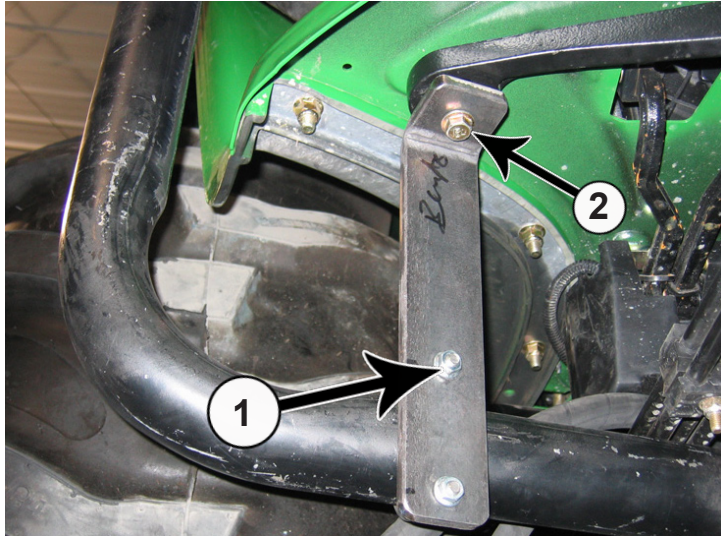
33. Torque all fasteners to the correct specifications after all bolts and nuts have been installed.

34. Remove the jacks.

Valve Stand and Bracket Installation

NOTE: Make sure that the hoses stay above the undercarriage on the right side of the tractor to keep them away from the blade.

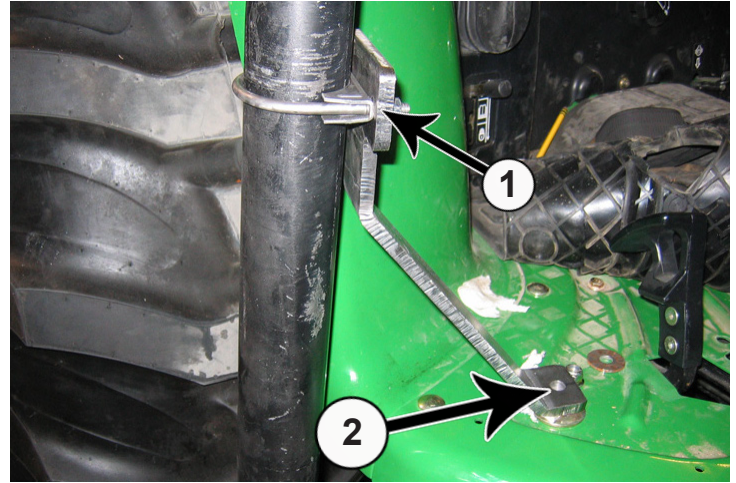
35. Use 4 - 3/4" carriage bolts (PN: 16-21218) with 4 - 3/4" flat washers (PN: 57-20747) and 4 - 3/4" nuts (PN: 70-20607) to securely attach the valve stand (PN: 17-12195) to the undercarriage on the right side. The carriage bolts should be inserted from the bottom of the undercarriage.



36. Attach the bottom valve support bracket (PN: 18-10228) to the valve stand below the operator platform with a U-bolt (PN: 18-10248) (1). The bracket will be attached to the operator platform in a later step.

37. Remove the floor mat from the right side of the operator platform.

38. Remove bolt from operator platform where the new brackets will be attached (2).



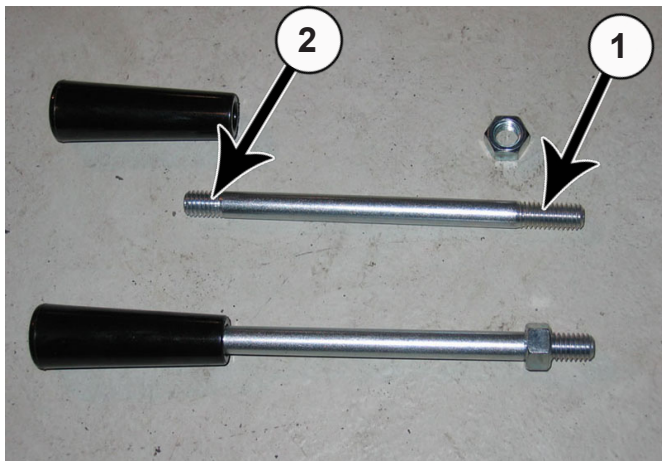
39. Attach the top valve support bracket (PN: 18-10227) to the valve stand above the operator platform with a U-bolt (PN: 18-10248) (1).

40. Use a 3/8" bolt (PN: 16-20074), 2 - 3/8" washers, and a 3/8" nut (PN: 70-20582) to join the top and bottom support brackets to the operator platform where the bolt was removed in Step #38 (2).

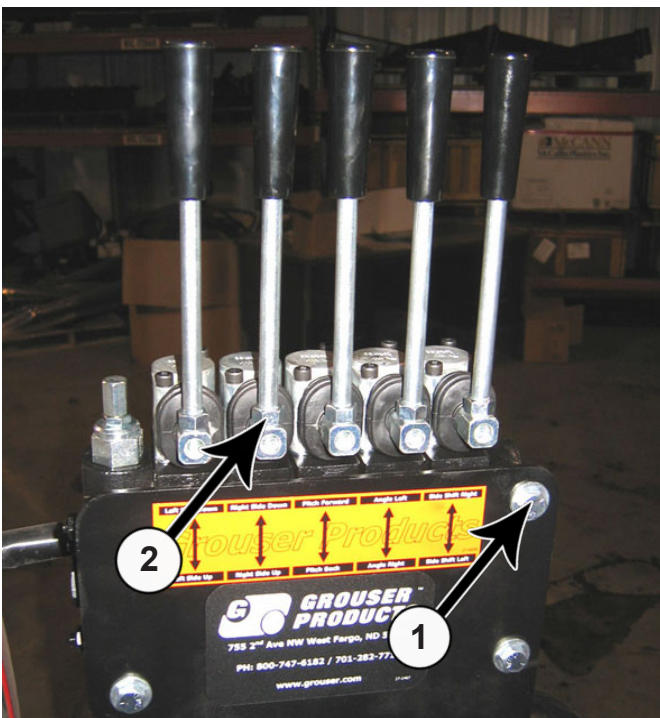
41. Torque all bolts to the correct specification.

42. Replace the floor mat.

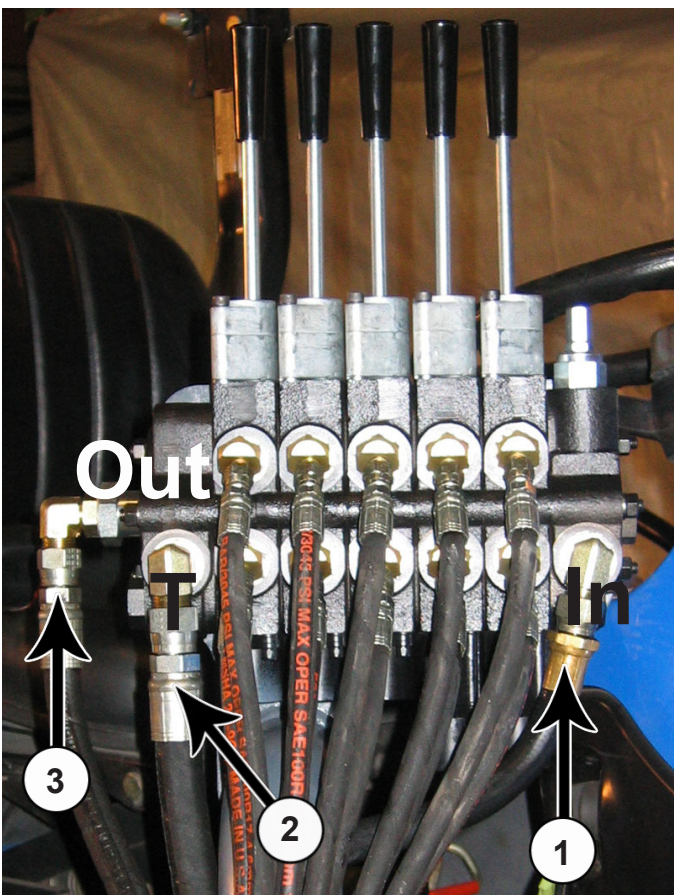
Valve Installation



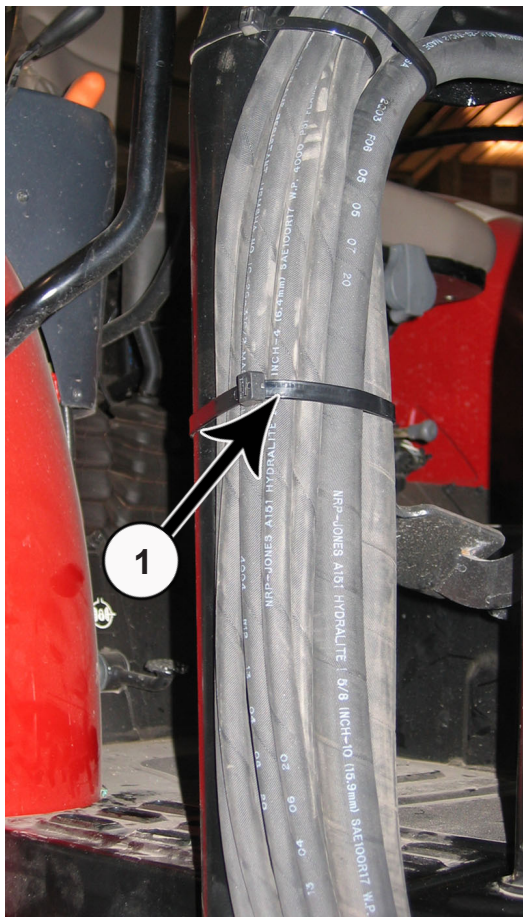
43. Assemble control valve handles (PN: 39-10199). Put the nut on the side of the bolt that has longer threads (1). Put the black handle on the other end that has shorter threads (2).



- 44.** Attach the control valve to the valve stand with 3 - 3/8" x 3/4" bolts (PN: 16-20062) and 3 - 3/8" lock washers (PN: 57-20762) (1).
- 45.** Insert assembled handles into belly blade control valve. Tighten the lock nut on each (2).



- 46.** Attach the previously installed 101" hose from Step #21 to the **In** port on the BBCV (1).
- 47.** Attach the previously installed 90" hose from Step #25 to the **Tank** port on the BBCV (2).
- 48.** Attach the previously installed 94" hose from Step #22 to the **Out** port on the BBCV (3).



49. Make sure all hoses underneath the tractor are clear of any moving parts on the Belly Blade and tractor. Ensure that all hoses are above the undercarriage. Group hoses together and secure hoses with zip ties (1) (PN: 59-34950).

50. Reinstall tires on the tractor and lower the tractor. The undercarriage installation is complete.

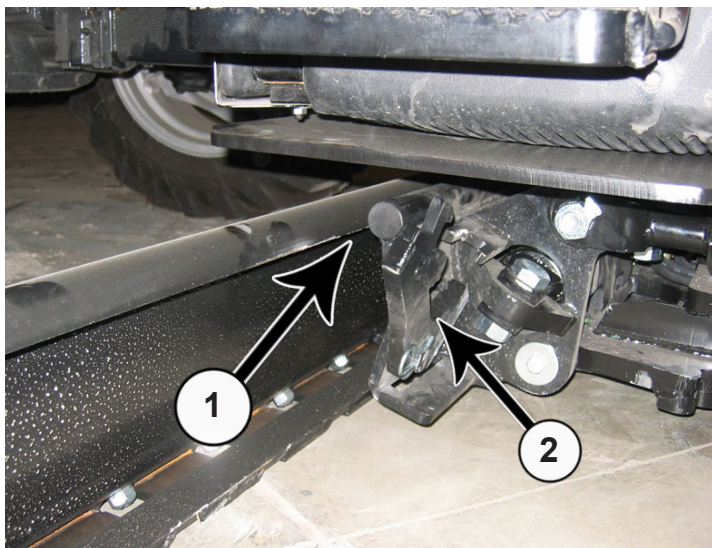
51. Reconnect the battery.

52. Start the tractor and run the controls to check for any leaks.

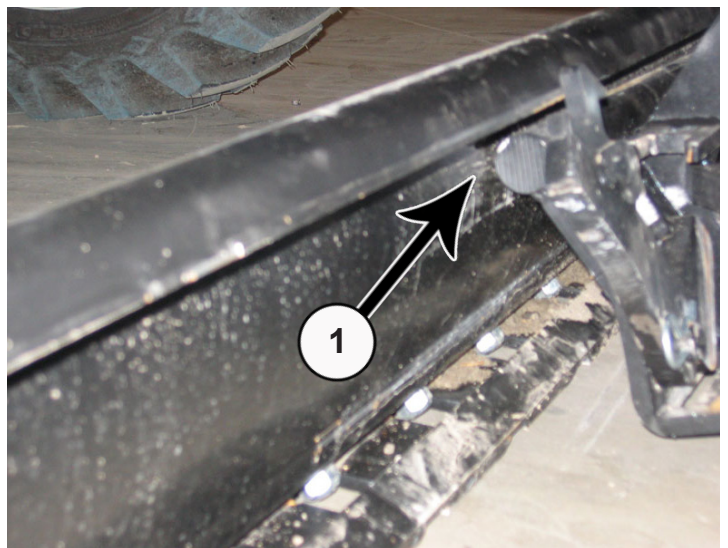
Note: Watch the blade carefully for any collisions when running the controls.

53. Check the hydraulic fluid level in the tractor. Refer to the tractor owner's manual for the correct fluid level. Add oil as recommended.

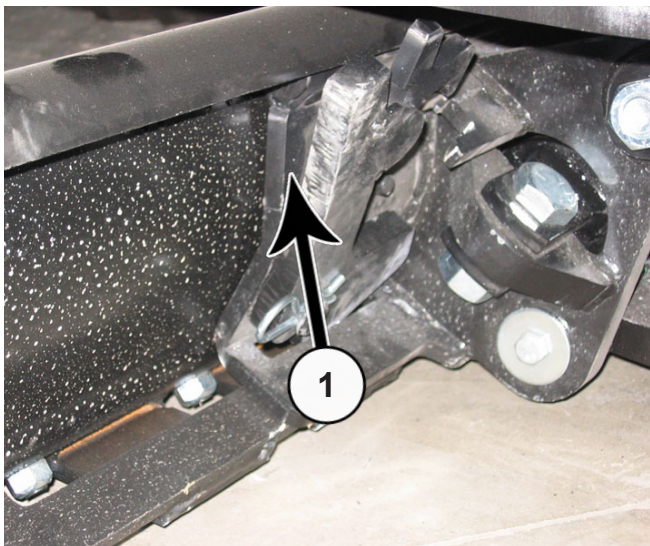
Blade Installation



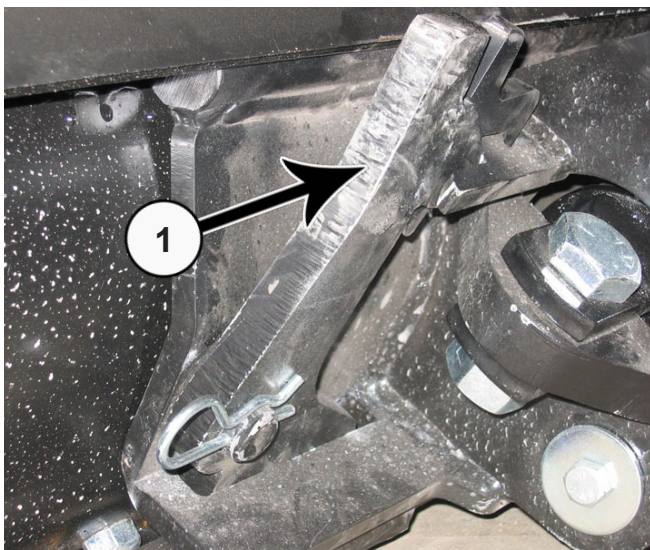
54. Slide blade under tractor until the quick attach is in line with the center of the blade (1). Make sure that the quick attach locking levers are still up (2) .



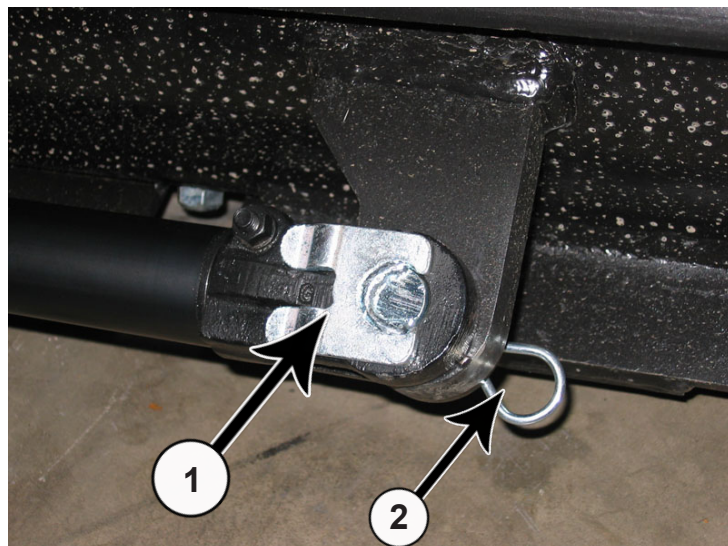
55. Pitch the male quick attach forward. Position the blade so the top round bar will hook under blade lip (1).



56. Pitch the male quick attach back to lift the blade off the ground (1).



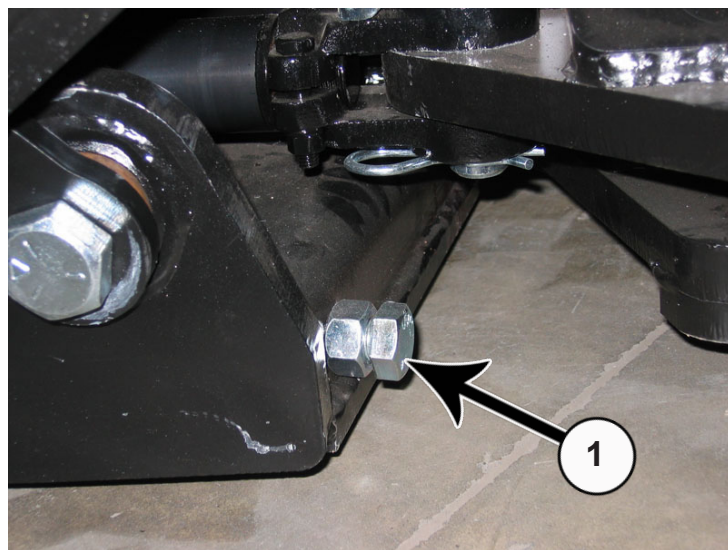
57. Lock the quick attach lever on each side (1). Verify that the lever engaged the corresponding slot on the bottom of the blade.



58. Extend the side shift cylinder out to the cylinder connector. Insert pin (PN: 43-7995) (1) and the clip pin (PN: 43-7767) on the bottom (2).

59. After mounting the blade, apply up and down pressure to verify proper blade installation.

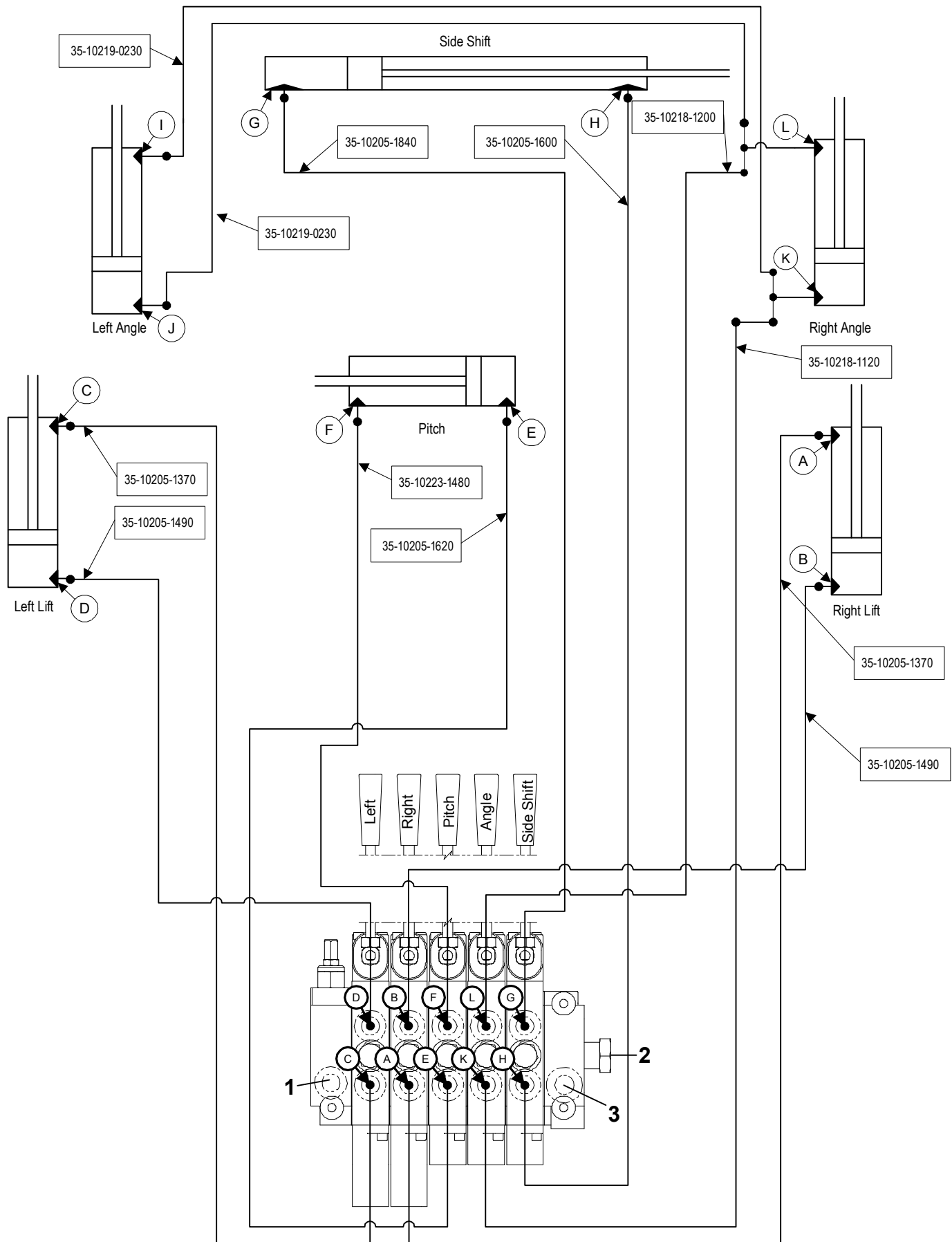
60. Cycle through blade functions checking for interferences.



61. Adjust angle stops (1) so blade does not interfere with tires during angle of blade. Use a wrench to loosen the nut and to the turn the bolt either in or out depending if the blade is hitting the tire. After adjustment, tighten the nut.

62. Tractor and blade are ready for use. Refer to the blade operator's manual for safety, operation, and maintenance information.

Hydraulic Schematic



As Viewed From Drivers Seat

Notes

Warranty Statement

Grouser Products warrants to the original purchaser of each item that the product be free from defects in material and workmanship under normal use and service for a period of one year. If such equipment is found to be defective within one year, it is the obligation of Grouser Products under this warranty to repair or replace (exclusive of the cost of labor and transportation), any equipment or parts, in the judgment of Grouser Products to be defective in material or workmanship.

All equipment or parts claimed to be defective in material or workmanship must be made available for inspection at the place of business of a dealer authorized to handle the equipment covered by this warranty, or, upon request by Grouser Products, shipped to the Grouser Products factory in West Fargo, North Dakota. Grouser Products shall have no obligation to bear the cost of labor or transportation in connection with replacement or repair of any such defective parts. Grouser Products will pay \$35 / hr. on the modification or repair of defective parts in the setup procedure.

This warranty covers only defects in material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper assembly, improper adjustments, improper maintenance including lack of proper lubrication, or improper use. Therefore, Grouser Products liability under this warranty shall not be effective or actionable unless the equipment is assembled, maintained and operated in accordance with the operating instructions accompanying the equipment. Grouser Products shall have no liability if the equipment has been altered or reworked without the written authorization of Grouser Products.

Grouser Products' parts, which are furnished under this warranty and properly installed, shall be warranted to the same extent as the original parts under this warranty if, and only if, such parts are found to be defective within the original warranty period covering the original equipment.

Contact Information

1-800-747-6182 or 1-701-282-7710

755 2nd Ave NW • West Fargo, ND 58078

Fax: 1-701-282-8131

E-mail: grouser@grouser.com

Website: www.grouser.com