



# **660HD - STX Quad - HAHT**

## **Owner's Manual**

### **&**

## **Parts Book**

Purchase Date
Serial Number
Model Number
Tractor Model
Dealer

# Contents

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Description	Page
To The Owner & Maintenance _____	2
Safety Precautions & Torque Specifications _____	3
Skid Shoe and Tilt Plate Adjustment _____	4
660HD Blade Assembly _____	5
Hydraulic Angle System Operating Instructions _____	6
Relief Valve Instructions _____	6-7
Hydraulic Angle - Hydraulic Tilt _____	8
Hydraulic Angle and Tilt Hose Routing _____	9
Angle Hydraulic Components _____	10
Quick Attach _____	10
Lift System & Hydraulic Components _____	11-12
Wiring Harness and Electrical System _____	13
Hydraulic Schematic _____	14
Blank Page _____	15
Contact Us, Improvements, & Warranty _____	16

## To The Owner

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This manual contains information concerning the operation, adjustment, and maintenance of the 660HD blade assembly. You have purchased dependable, long lasting equipment, but only by proper care and operation can you expect to receive the performance and long service built into our products. Please have all operators read this manual carefully and keep the manual available for ready reference. If you have any questions or concerns, contact Grouser Products.

## Maintenance

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**Due to the harsh environment many of our equipment operates in, the following tasks should be performed every 10 hours or less.**

- Inspect all equipment before operation for existing or potential damages.
- Lubricate all joints with high quality grease.
- Inspect and tighten all bolts to torque specifications on page 3.
- Check replaceable cutting edge for wear ensuring there is enough material to prevent permanent damage to the blade.
- Make sure all non-rotating pins are secured properly.
- Check hydraulic cylinders and hoses for damage or leaks. For replacement parts, see pages 9 or 12 for your specific system.
- Check skid shoes for wear and replace if necessary. For adjustment, see page 4.
- Inspect all tilt-ways for aggressive wear. See page 4 for tilt plate adjustment.

# Safety Precautions

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take the following precautions before operating this equipment. In addition to these precautions, please follow all safety and operational instructions of your tractor manufacturer.

## The Dozer:

1. The 660HD Dozer should be operated only by those who are responsible and instructed to do so.
2. Read the owner's manual carefully before using this equipment. Lack of operating knowledge can lead to accidents.
3. Keep the dozer maintained in reliable and satisfactory condition to ensure your safety.
4. Make sure the area is clear of people before moving any equipment.
5. Do not modify or permit anyone else to modify or alter the equipment and its components without first consulting Grouser Products or a Grouser dealer.

## Servicing the Dozer:

1. Read and follow all safety instructions provided by the tractor manufacturer.
2. Always use proper personal safety gear when performing maintenance on equipment.
3. Before servicing, relieve hydraulic pressure, stop engine and fully engage parking brake.
4. Escaping hydraulic fluid under pressure can penetrate skin causing serious injury. If fluid is injected into skin, obtain medical attention immediately.
  - DO NOT use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.
  - Stop the engine and relieve pressure before connecting or disconnecting lines.
  - Tighten all connections before starting the engine or pressurizing lines.

## Storing the Dozer:

1. Thoroughly clean the dozer before storage. Use paint where necessary to prevent rust.
2. Check the dozer for worn or damaged parts. Install new parts as required.
3. Lubricate all pins and joints.

# Torque Specifications

All bolts should be tightened to specifications set by the manufacturer or previously stated amounts. If neither of these can be found the following torque chart should be used.

Size	Torque (ft-lbs)			
	SAE Grade 5		SAE Grade 8	
	UNC	UNF	UNC	UNF
5/16	17	19	24	27
3/8	30	35	45	50
7/16	50	55	70	80
1/2	75	85	110	120
9/16	110	120	150	170
5/8	150	170	210	240
3/4	260	300	380	420
7/8	430	470	600	670
1	640	720	910	1020

Size	Torque (ft-lbs)	
	Grade 8.8	Grade 10.9
M18 x 2.50	202	284
M20 x 2.50	286	401
M22 x 2.50	388	547
M24 x 3.00	493	694

# Skid Shoe and Tilt Plate Adjustment

## Skid Shoe Adjustment:

1. Raise and secure blade to access skid shoe bolts and nuts.
2. Loosen nuts and set skid shoe depth by sliding the shoe back and forth in direction 'A' shown in Figure 1.
3. Once the depth is set, tighten bolts to 150 ft-lbs.
4. When skid shoes are worn down, replace with new skid shoes.

## Tilt Plate Adjustment:

1. Remove bolts and tilt plates.

Note: Don't remove all of the bolts at the same time.

2. Add or remove washers as needed to adjust tilt-way clearance to have  $1/16''$  -  $1/8''$  of clearance in direction 'B' shown in Figure 1.
3. Once the tilt-way clearance is set, tighten bolts to 640 ft-lbs.

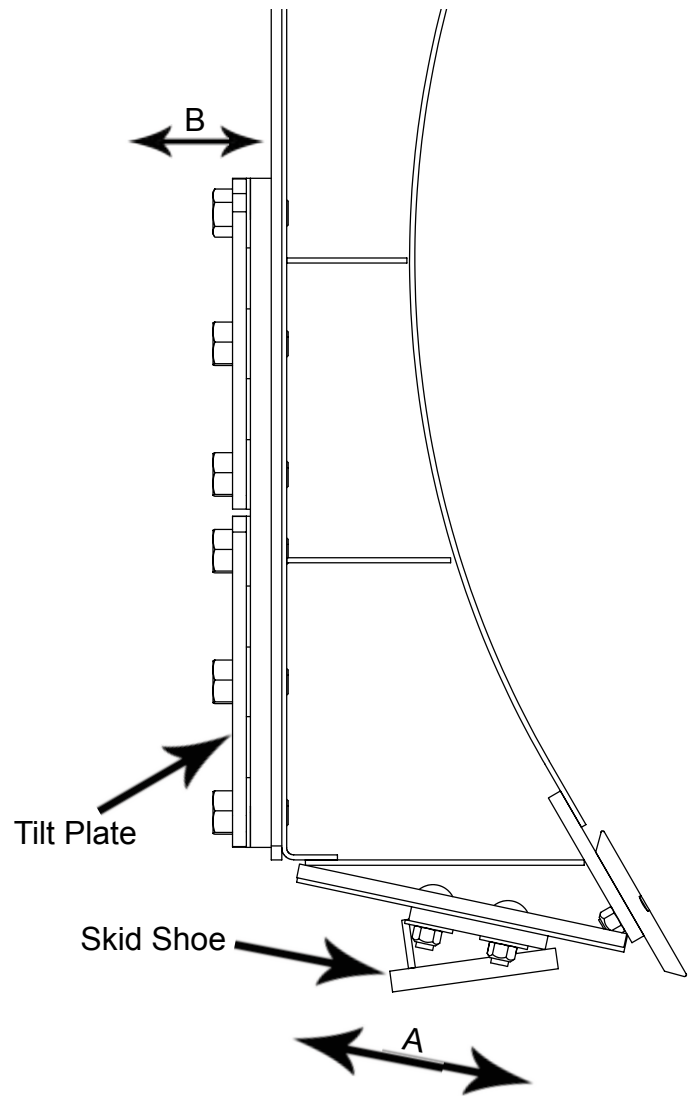


Figure 1

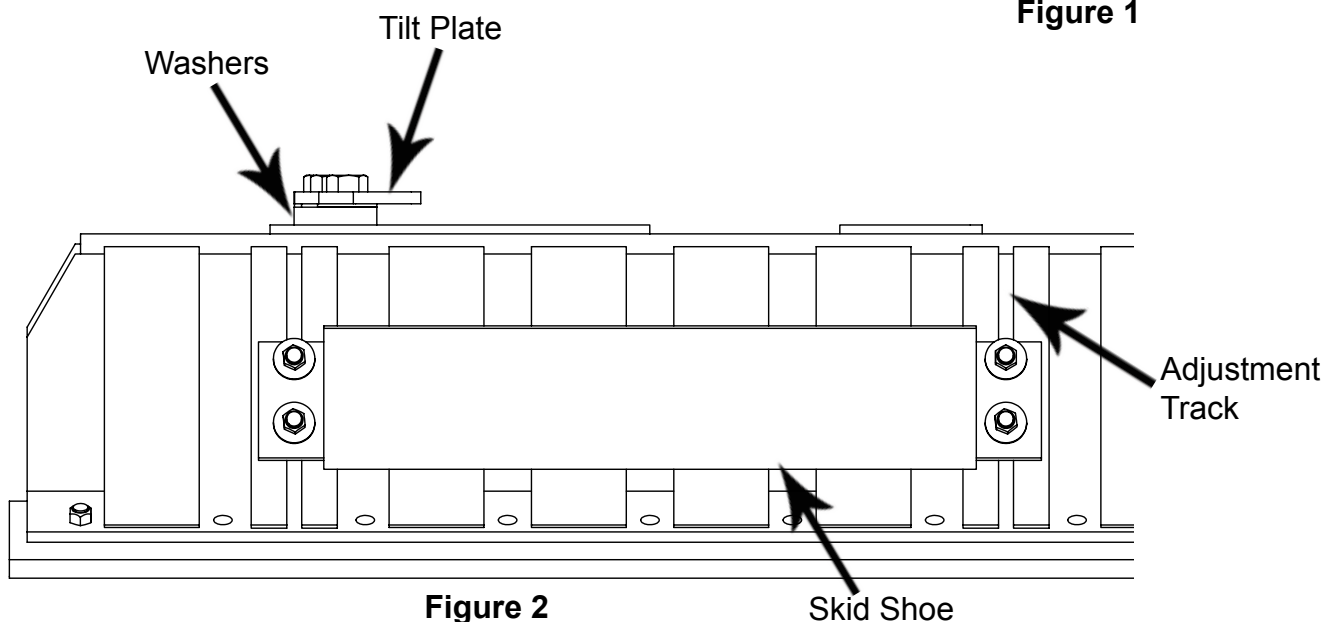
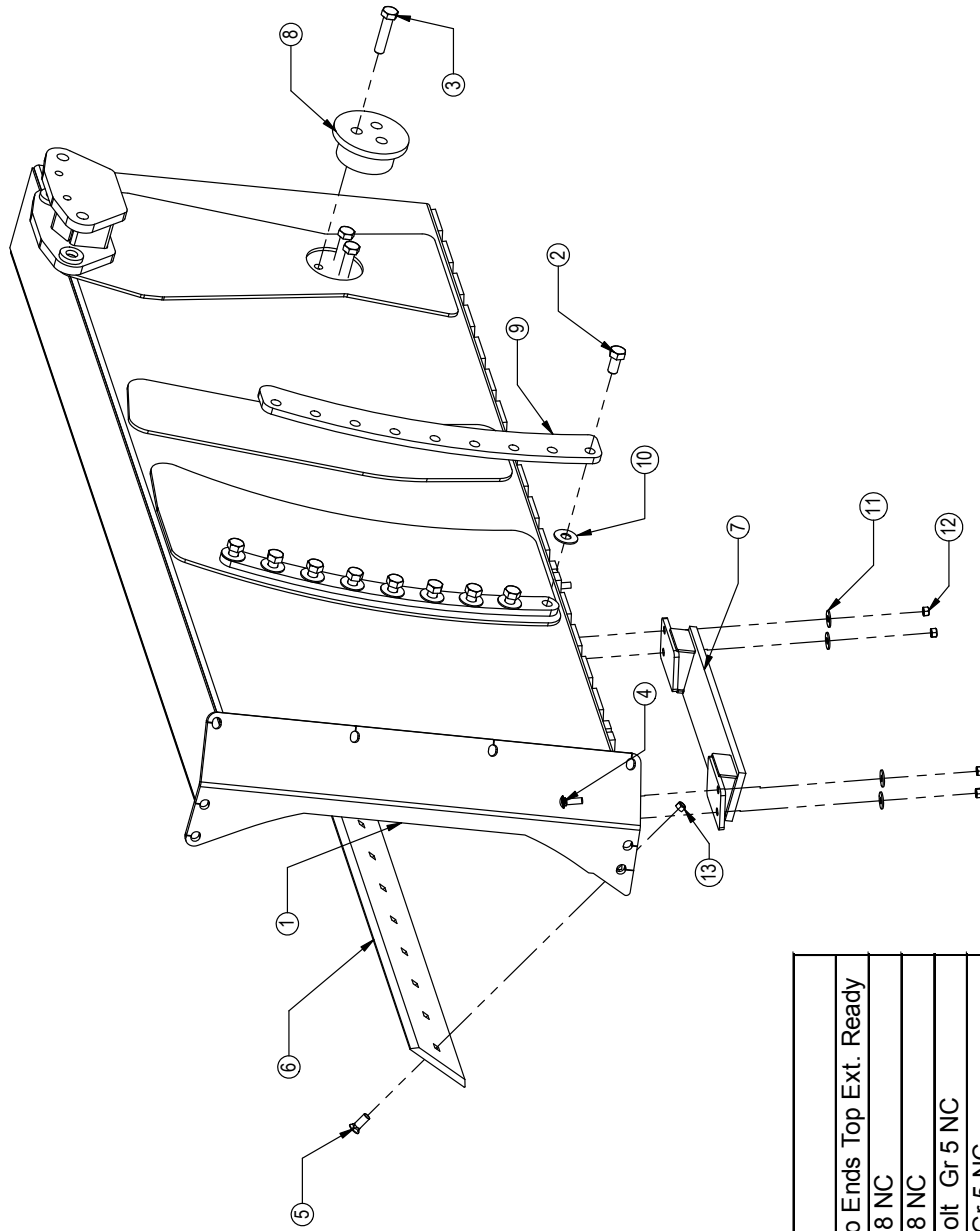


Figure 2

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# Blade Assembly



Item No.	Qty.	Part No.	Description
1	1	15-12462-16	HD 16' Blade Combo Ends Top Ext. Ready
2	18	16-20562	1" x 3" Hex Bolt Gr 8 NC
3	3	16-20568	1" x 5" Hex Bolt Gr 8 NC
4	8	16-21188	5/8" x 2" Carriage Bolt Gr 5 NC
5	32	16-21688	3/4" x 2" Flaw Bolt Gr 5 NC
6	2	29-11118-8	8' - 3/4" x 8" Cutting Edge (4500, 6500)
7	2	50-16710	Skid Shoe 33"
8	1	52-12380	HD Center Tilt Way Cover
9	2	52-16030	HD Tilt Plate Covers
10	18	57-20749	1" Flat Washer
11	8	57-20816	5/8" Flat Washer Grade 8 (USS)
12	8	70-20646	5/8" Hex Top Lock Nut Gr 5 NC
13	32	70-20647	3/4" Hex Top Lock Nut Gr 5 NC



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**Blade Assembly**

Date:

3/11/2013

# Hydraulic Instructions

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Prior to operating the blade, bleed all air out of the hydraulic system. Start with the furthest location away from the remote until all air is out.

## Hydraulic Angle System Operating Instructions

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If your Grouser blade was purchased with the Hydraulic Angle Option, you will have the ability to angle the blade 30 degrees left or right. To achieve these angles, the two cylinders are designed to operate independently of each other through an electric diverter valve. To angle the blade to the left, actuate the tractor hydraulic control lever in the cab with the diverter valve un-powered. To angle the blade to the right, apply power to the diverter valve and then actuate the tractor hydraulic control lever.

## 2-Lever Angle System Operating Instructions

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If your Grouser blade was purchased with the 2-Lever Hydraulic Angle Option, you will have the ability to angle the blade 30 degrees left or right. To achieve these angles, the two cylinders are designed to operate independently of each other with the use of 2 tractor hydraulic control levers and a safety relief valve. To angle the blade to the left or right, actuate the tractor hydraulic control lever corresponding to the left or right cylinder.

The safety relief valve allows the cylinder to retract if its internal pressure exceeds 2,000 psi. With this safety feature in place, when either cylinder reaches the end of its stroke, the safety relief valve will reroute pressure to the opposite cylinder causing it to extend. Refer to the Relief Valve Instructions below for possible adjustments.

## Relief Valve Instructions

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**Set the safety relief valve at a higher pressure than tractor:** To increase the pressure of the relief valve, install a 0-5,000 psi pressure gauge into the base end of right angle cylinder (see page 26). Loosen the jam nut on the safety valve and tighten the Allen screw 1/2 turn. Next, extend the right side cylinder out until the safety valve activates, while the safety valve is in function, record the pressure reading on the gauge. Continue to tighten the Allen screw in 1/2 turn increments and record the pressure until a high enough relief setting is obtained. **Do not exceed the 3,000-psi operating pressure of the cylinders.** Tighten the jam nut and remove the gauge.

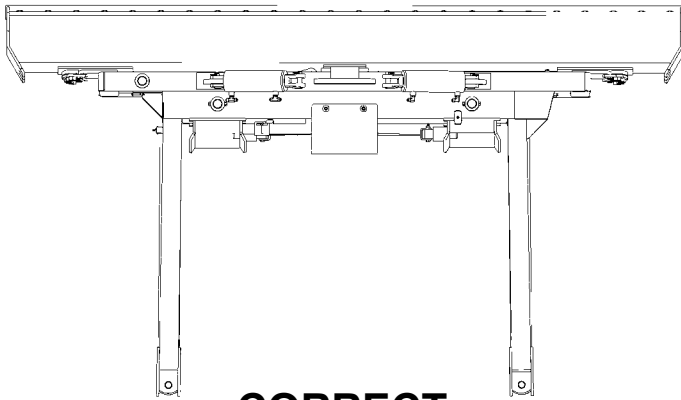
**Automatic lever release:** In certain newer model tractors, the hydraulic control lever will automatically release and instantly stop oil flow once the end of the stroke is reached.

(Continued on next page)

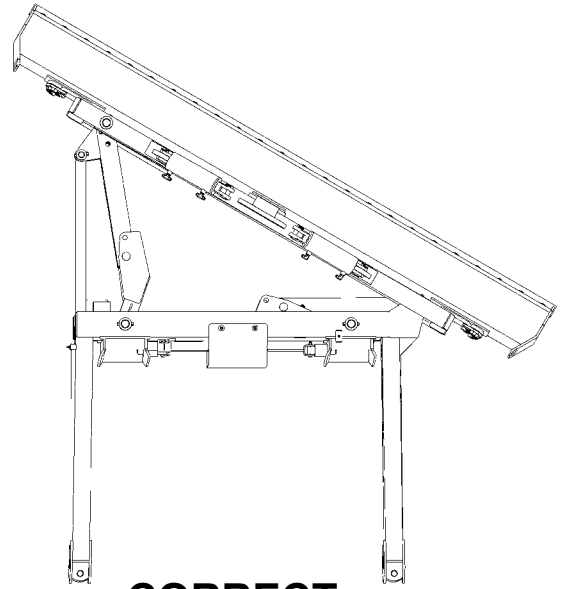
**CAUTION: Do not bypass the safety relief valve and plumb each cylinder to separate valves on the tractor.**

To ensure proper use and life of equipment, it is recommended to have both cylinders closed for straight ahead dozing and only one cylinder partially or fully extended for angled dozing as shown in the diagrams below. **If the angle system is not used correctly, frame damage may occur.** Some damaged frames can be repaired, please contact Grouser Products for repair instructions if needed.

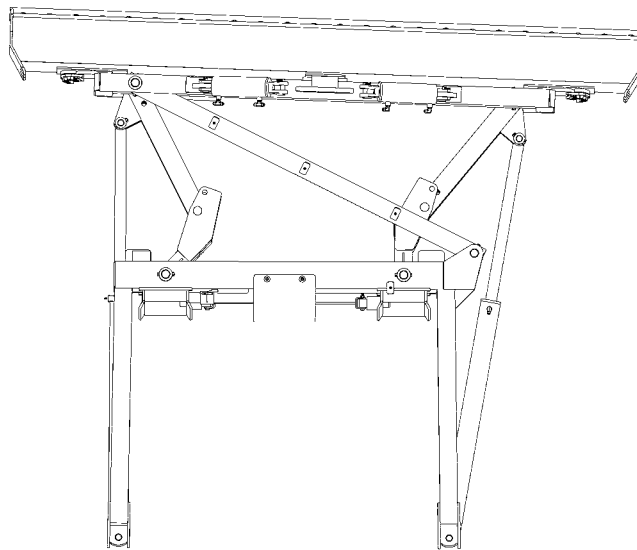
**Please contact Grouser Products with any questions by:**  
Phone - 701-282-7710 or 800-747-6182; Fax - 701-282-8131



**CORRECT**



**CORRECT**  
(Left or Right)



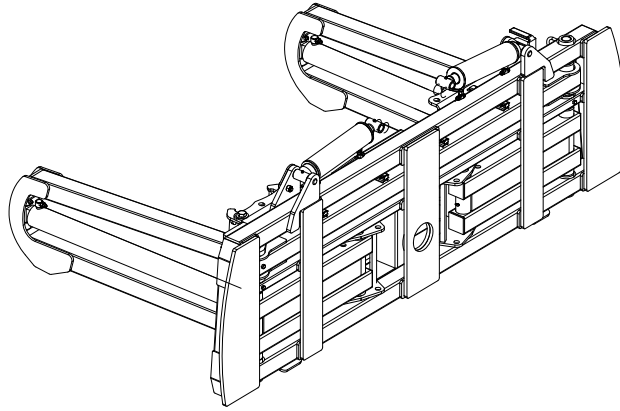
**INCORRECT**

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# Hydraulic Angle - Hydraulic Tilt

To avoid frame damage, please read Hydraulic Angle System Operating Instructions (pages 6-7) before use!

Item No.	Qty.	Part No.	Description
1	1	11-12397	660HD Stabilizer Arm
2	1	11-8082	Angle Arm Right
3	1	11-9039	Angle Arm Left
4	4	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC
5	4	16-20132	1/2" x 3" Hex Bolt Gr 5 NC
6	4	16-20220	3/4" x 2-1/2" Hex Bolt Gr 5 NC
7	2	16-20424	1/2" x 3-1/2" Hex Bolt Gr 8 NC
8	3	16-20427	1/2" x 4-1/2" Hex Bolt Gr 8 NC
9	5	18-3074	Hose Hold Down Clamp
10	5	18-3075	Hose Hold Down Clamp Plate
11	4	19-13515	3/4" ID - Non Rotating Pin Spacer Bushing
12	2	26-34725	4x43.5 Cylinder w/ tube ends -Top Port (647196)
13	2	26-34728	4x12 Cylinder w/ tube ends (647193)
14	1	32-14700	450, 660 & 760 Bolt on QA Angle Frame
15	1	32-16135	660HD HA Tilt Frame
16	4	43-16116	1-1/4" Pin Weld - HD Tilt
17	1	43-8130	1-15/16" x 23-1/4" Pin (Tilt Frame / Angle Arm Right)
18	2	43-8131	1-15/16" x 31" Pin (Angle Frame/ Angle Arm)
19	1	43-8132	1-15/16" x 35-1/2" Pin (Tilt Frame / Angle Arm Left)
20	1	43-8133	1-15/16" x 7-1/8" Stabilizer Arm Pin
21	2	43-8134	1-1/2" x 8" Angle Cylinder Pin Base End
22	2	43-9352	1-1/2" x 7-1/2" Angle Cylinder Pin
23	4	57-20747	3/4" Flat Washer
24	2	58-9371	Grease Zerk 1/8" NPT 45°
25	6	58-9372	Grease Zerk 1/8" NPT 90°
26	1	70-20581	5/16" Hex Nut Gr 5 NC
27	9	70-20604	1/2" Hex Center Lock Nut Gr 5 NC
28	4	70-20607	3/4" Hex Center Lock Nut Gr 5 NC



Refer to Page 9 & 10 for hydraulic components and hoses.  
 Refer to Page 10 for Quick Attach Lever System Assembly.  
 \* Parts not shown.



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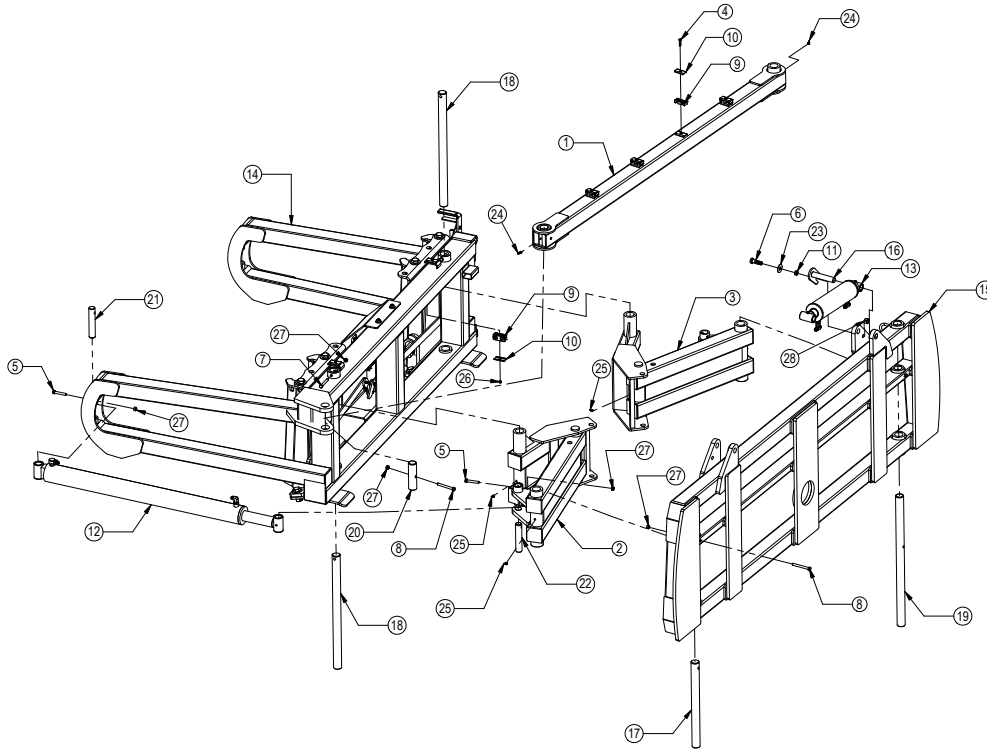
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# Hydraulic Angle - Hydraulic Tilt



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# Hydraulic Angle - Hydraulic Tilt

Item No.	Qty.	Part No.	Description
1	5	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC
2	2	16-20043	5/16" x 3-1/4" Hex Bolt Gr 5 NC
3	3	16-20125	1/2" x 1-1/4" Hex Bolt Gr 5 NC
4	2	16-35C612	3/8" x 3/4" Flanged Bolt (Yellow Zinc)
5	1	18-12630	450/660HD Bulkhead Union Bolt On Plate
6	1	18-14737	Female Coupler Mount
7	8	18-3074	Hose Hold Down Clamp
8	8	18-3075	Hose Hold Down Clamp Plate
9	4	25-34321	Tappet Quick Coupler Female
10	10	25-34322	Tappet Quick Coupler Male
11*	4	25-3453	Pioneer Dust Cap Tilt (Green)
12*	2	25-3454	Pioneer Dust Plug Tilt (Green)
13*	4	25-3455	Pioneer Dust Cap Angle (Red)
14*	2	25-3456	Pioneer Dust Plug Angle (Red)
15	2	26-34728	4 x 12 Cylinder Tube Ends (647193)
16	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
17	4	31-34000	Bulkhead Union JIC (2700-8-8)
18	8	31-34040	Straight JIC x O-Ring (6400-8-8)
19	5	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
20	12	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-08-10)

\* Parts not shown.

NOTE: When ordering cylinder seal kits, the part number on the cylinder is needed. The number is stamped on the base end of the cylinder opposite of the hydraulic ports.

No. On Cylinder	Part No.	Description
26-34728	49-12272	Seal Kit 4" Bore x 2" Rod (647204) Nitrided Rod
26-34725	49-12274	Seal Kit 4 x 43.5 (647210) Nitrided Rod

Item No.	Qty.	Part No.	Description
21	1	31-34060	Branch Tee JIC x O-Ring (6803-8-8-8)
22	1	31-34080	Swivel Nut Branch Tee JIC (6600-8-8-8)
23	1	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)
24	2	35-30130	63" x 1/2" -8JIC/-8JIC Hose
25	2	35-30134	75" x 1/2" -8JIC/-8JIC Hose
26	4	35-30138	87" x 1/2" -8JIC/-8JIC Hose (3.5M)
27	2	35-30145	108" x 1/2" -8JIC/-8JIC Hose
28	1	35-30153	205" x 1/2" -8JIC/-8JIC Hose
29	1	35-30156	215" x 1/2" -8JIC/-8JIC Hose
30	4	35-30160	288" (24') x 1/2" -8JIC/-8JIC Hose (3.5M)
31	2	35-30124	45" x 1/2" -8JIC/-8JIC Hose (3.5M)
32	1	44-14738	Female Coupler Retainer
33	1	56-13305	Hydraulic Valve
34	6	57-20744	1/2" Flat Washer
35*	1	70-20581	5/16" Hex Nut NC
36	3	70-20604	1/2" Hex Center Lock Nut Gr 2 NC
37	6	70-20622	3/8" Flange Hex Nut Gr 5 NC
38	4	70-20807	3/4" Hex Jam Nut NF



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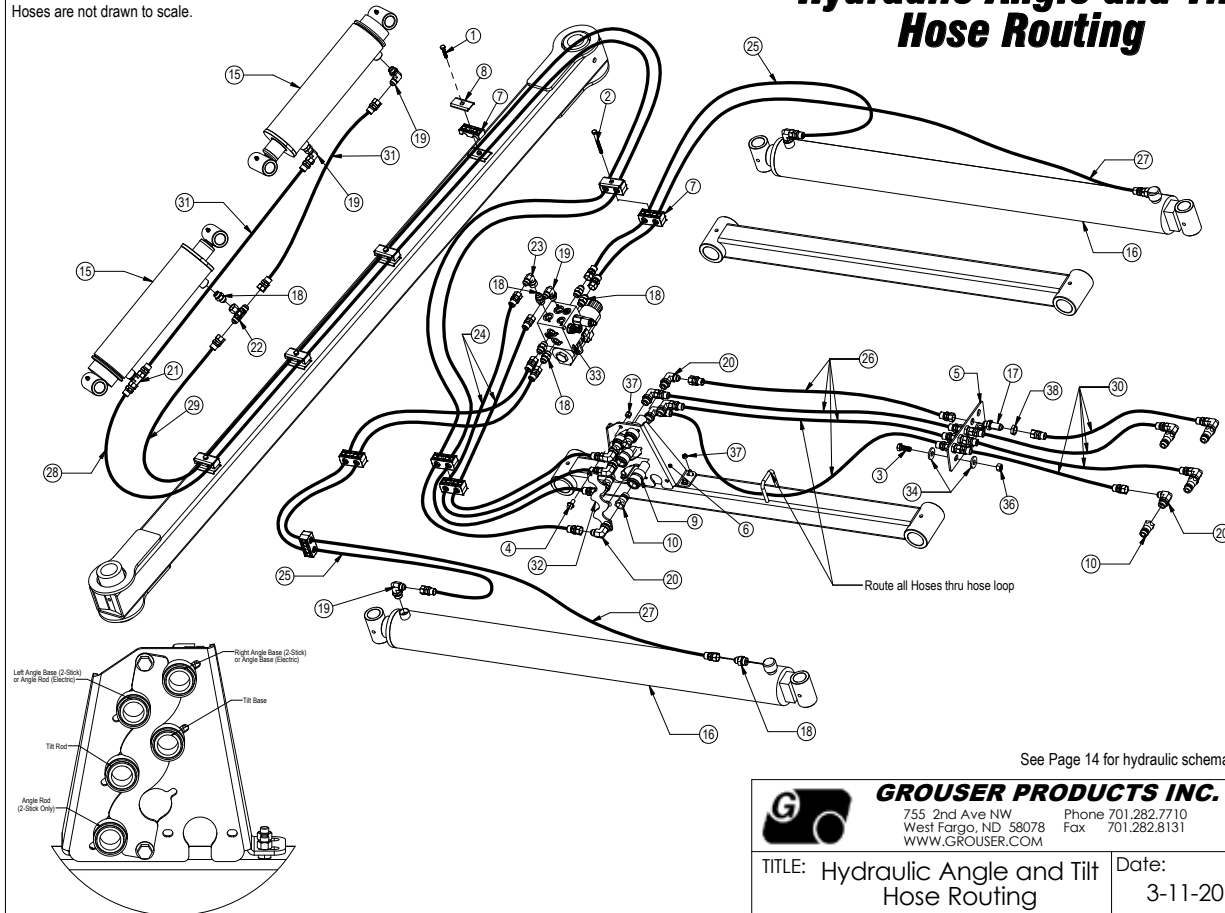
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Hoses are not drawn to scale.

# Hydraulic Angle and Tilt Hose Routing



See Page 14 for hydraulic schematic



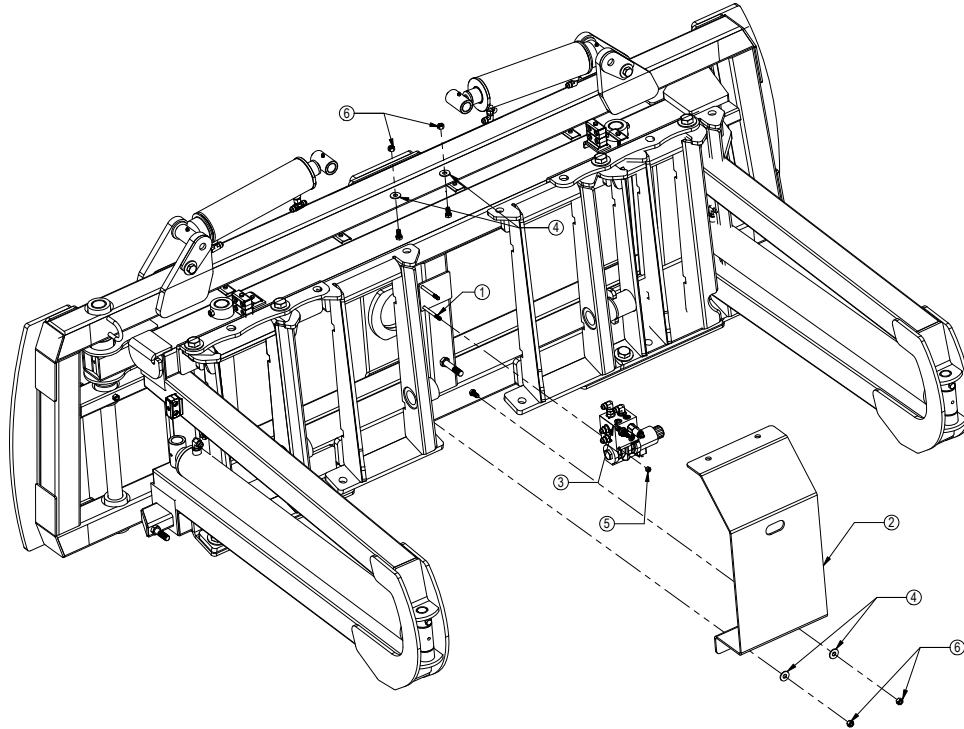
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# Angle Hydraulic Components



Some Parts No Shown For Clarity

Item No.	Qty.	Part No.	Description
1	2	16-20077	3/8" x 4-1/2" Hex Bolt Gr 5 NC
2	1	18-1701	Hydraulic Valve Cover
3	1	56-13305	Hydraulic Valve
4	4	57-20744	1/2" Flat Washer
5	2	70-20582	3/8" Hex Nut NC
6	4	70-20604	1/2" Hex Center Lock Nut Gr 5 NC



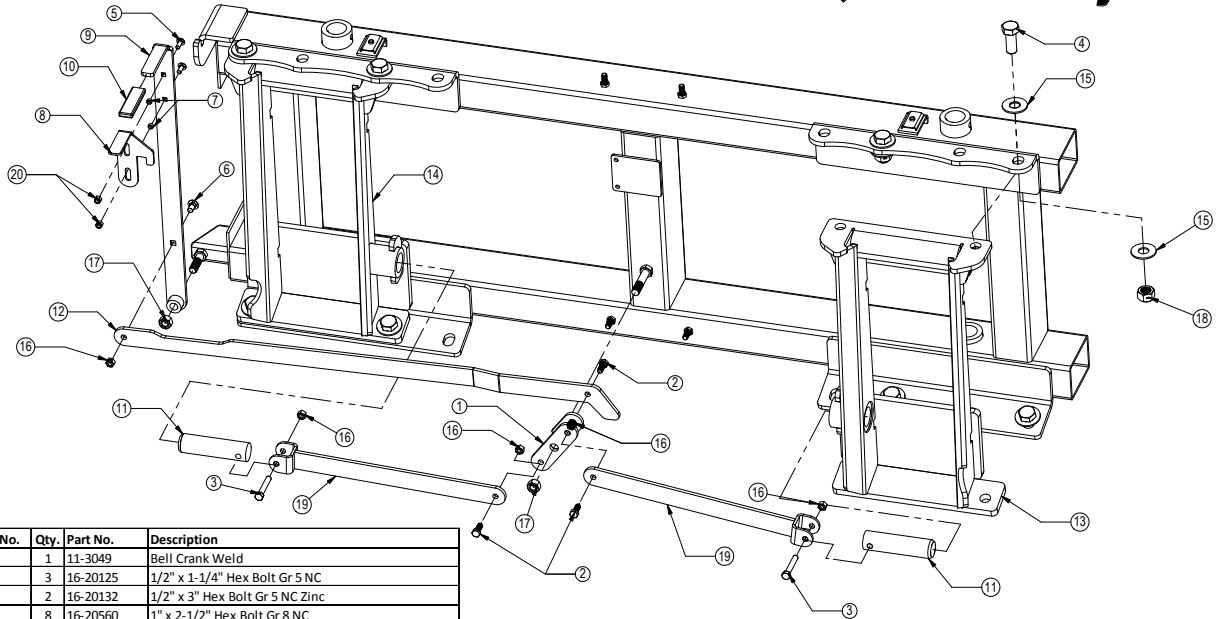
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# Quick Attach System



Item No.	Qty.	Part No.	Description
1	1	11-3049	Bell Crank Weld
2	3	16-20125	1/2" x 1-1/4" Hex Bolt Gr 5 NC
3	2	16-20132	1/2" x 3" Hex Bolt Gr 5 NC Zinc
4	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
5	2	16-21064	3/8" x 1" Carriage Bolt
6	1	16-21125	1/2" x 1-1/4" Carriage Bolt
7	2	19-13577	NR Pin Spacer Clevis End
8	1	39-14663	AG Pin Puller Latch
9	1	39-14665	AG Pin Puller Handle Weld
10	1	39-3072	Handle Cover (Orange)
11	2	43-3050	QA Lock Pin
12	1	44-14709	450, 660 & 760 Pin Puller Link Plate
13	1	45-16035-R	HD Female Vertical Bolt On Quick Attach, Right
14	1	45-16035-L	HD Female Vertical Bolt On Quick Attach, Left
15	16	57-20819	1" Flat Washer Heavy Duty Gr 8 (USS)
16	6	70-20604	1/2" Hex Center Lock Nut Gr 2 NC
17	2	70-20607	3/4" Hex Center Lock Nut Gr 2 NC
18	8	70-20609	1" Hex Center Lock Nut Gr 2 NC
19	2	75-14655	AG Pro Pin Puller Link Weld
20	2	70-20622	3/8" Flange Hex Nut Gr 5 NC

Some Parts Hidden For Clarity



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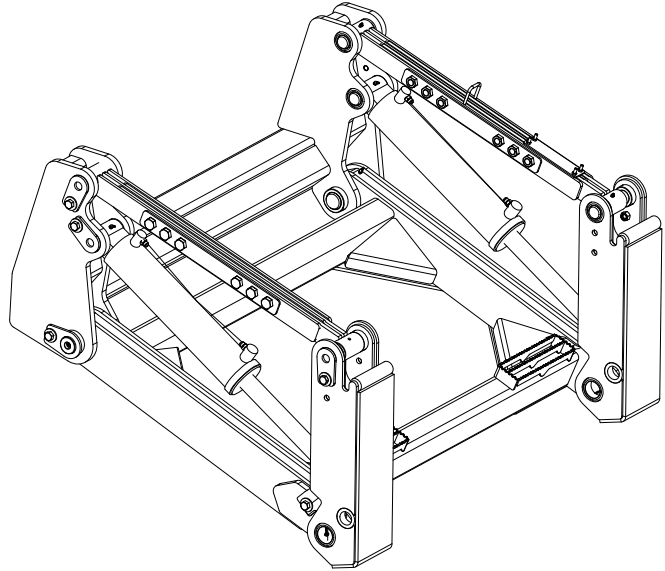
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# Lift System

Item No.	Qty.	Part No.	Description
1L	1	11-16330-L	HD Manual Pitch Top Arm, Female Left
1R	1	11-16330-R	HD Manual Pitch Top Arm, Female Right
2	2	11-16335	HD Manual Pitch Top Arm, Male
3	8	16-20216	3/4" x 1-1/2" Hex Bolt Gr 5 NC
4	2	16-20220	3/4" x 2-1/2" Hex Bolt Gr 5 NC
5	2	16-20227	3/4" x 4-1/2" Hex Bolt Gr 5 NC
6	12	16-20566	1" x 4" Hex Bolt Gr 8 NC
7	8	19-13515	3/4" ID - Non Rotating Pin Spacer Bushing
8	4	19-13525	2.75 x 2.50 x 4.75 Spring Bushing
9	2	26-5200	5x20 Cylinder w/ tube ends
10	1	32-13640	660HD Lift Frame - Boxed Design
11*	1	43-12929-L	Pin Weld - Long Ear (Lift Cyl./Lift Frame) - Left
12	1	43-12929-R	Pin Weld - Long Ear (Lift Cyl./Lift Frame) - Right
13	2	43-13478	Pin Weld (Top Arm / QA)
14	4	43-13482	Pin Weld (Top Arm / UC)
15	2	43-14720	Pin (Lift Frame / QA)
16	2	43-14725	Pin Weld (Lift Frame / UC)
17	2	45-12175	HD Series Universal Male QA
18	10	57-20747	3/4" Flat Washer
19	8	58-9369	Grease Zerk 1/8" NPT Straight
20	12	70-20599	1" Hex Center Lock Nut
21	4	70-20607	3/4" Hex Center Lock Nut



Refer to Page 12 for hydraulic components and hoses.

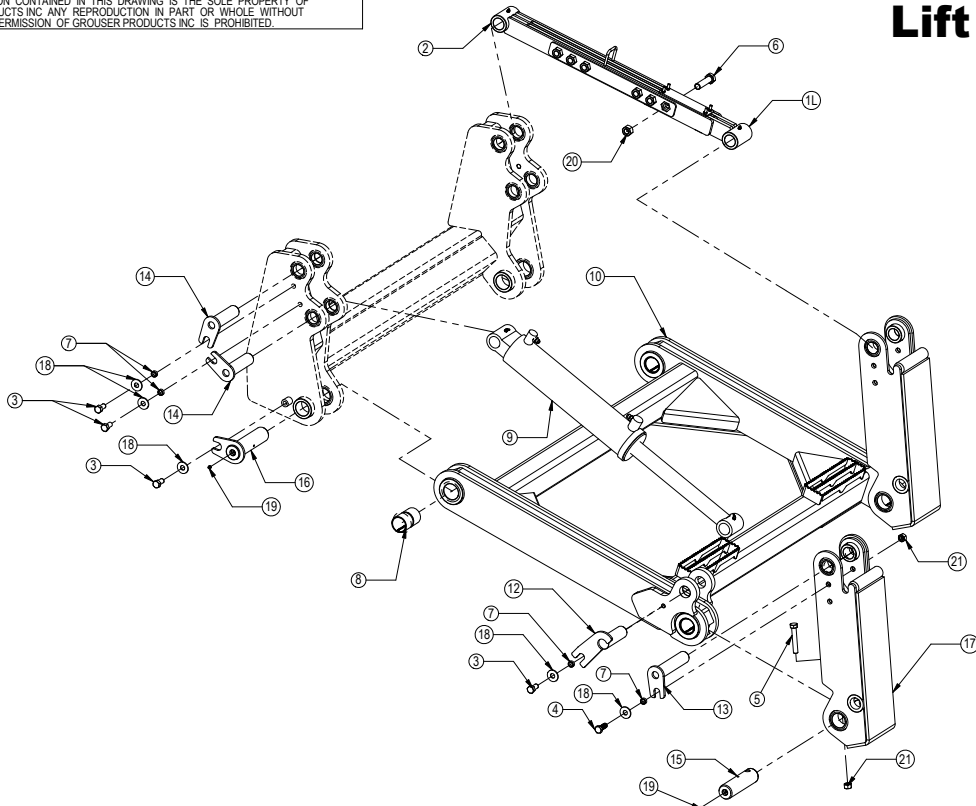
\* Parts Not Shown

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# Lift System



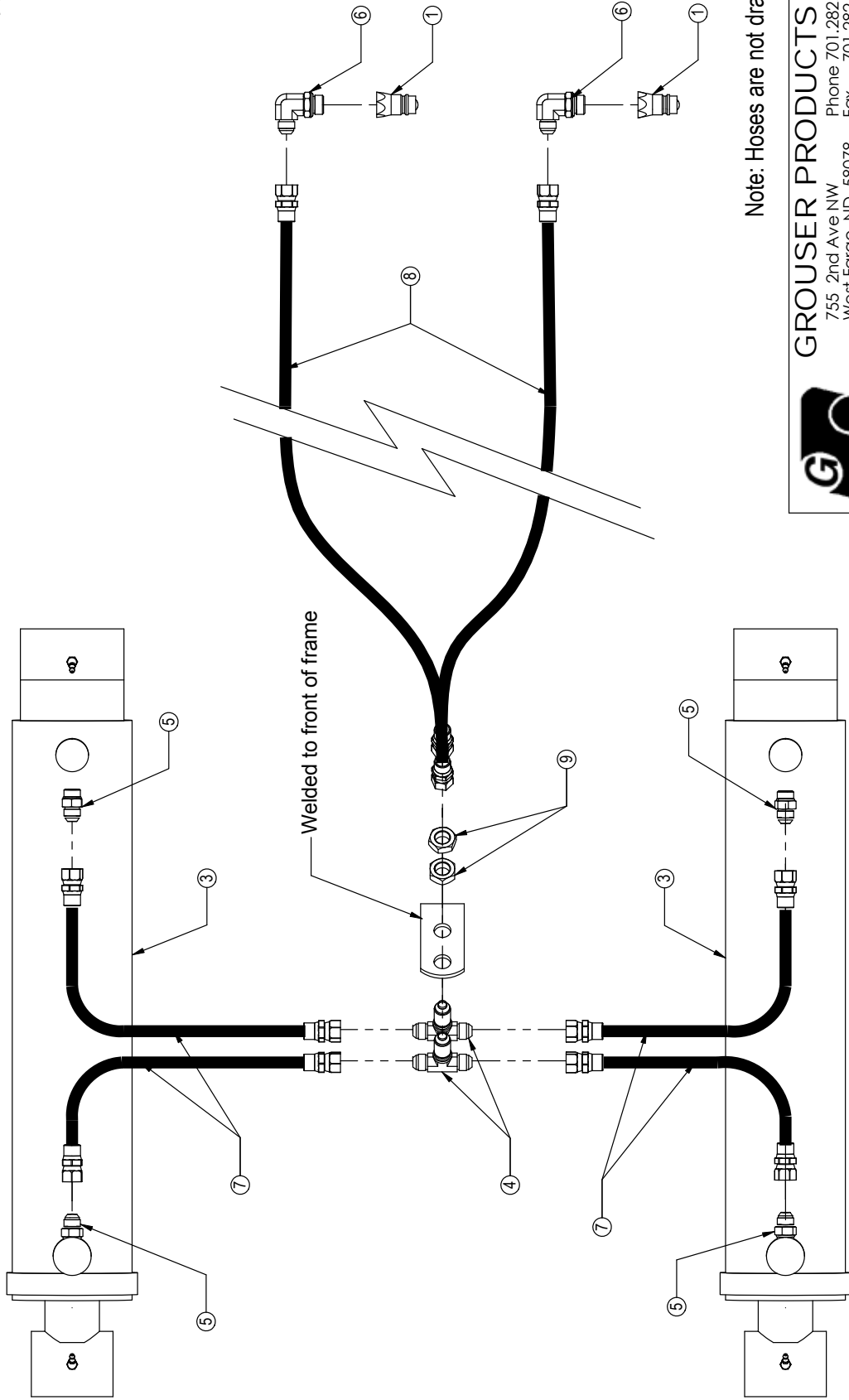
Note: Some parts are not shown.

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# Lift System Hydraulic Components



\* Part Not Shown.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	25-34322	Tappet Quick Coupler Male (8010-16)
2*	2	25-3457	Pioneer Dust Cap Lift (Orange)
3	2	26-5200	5x20 Cylinder w/ tube ends
4	2	31-34021	Bulkhead Branch Tee JIC (2703-10-10-10)
5	4	31-34042	Straight JIC x O-Ring (6400-10-10)
6	2	31-34052	Straight Thread Elbow 90° JIC x O-Ring (6801-10-10)
7	4	35-30934	75" x 5/8" -10JIC/-10JIC Hose (R16)
8	2	35-30960	288" x 5/8" -10JIC/-10JIC Hose (R16)
9	2	70-20808	7/8" Hex Jam Nut NF

Note: Hoses are not drawn to scale.

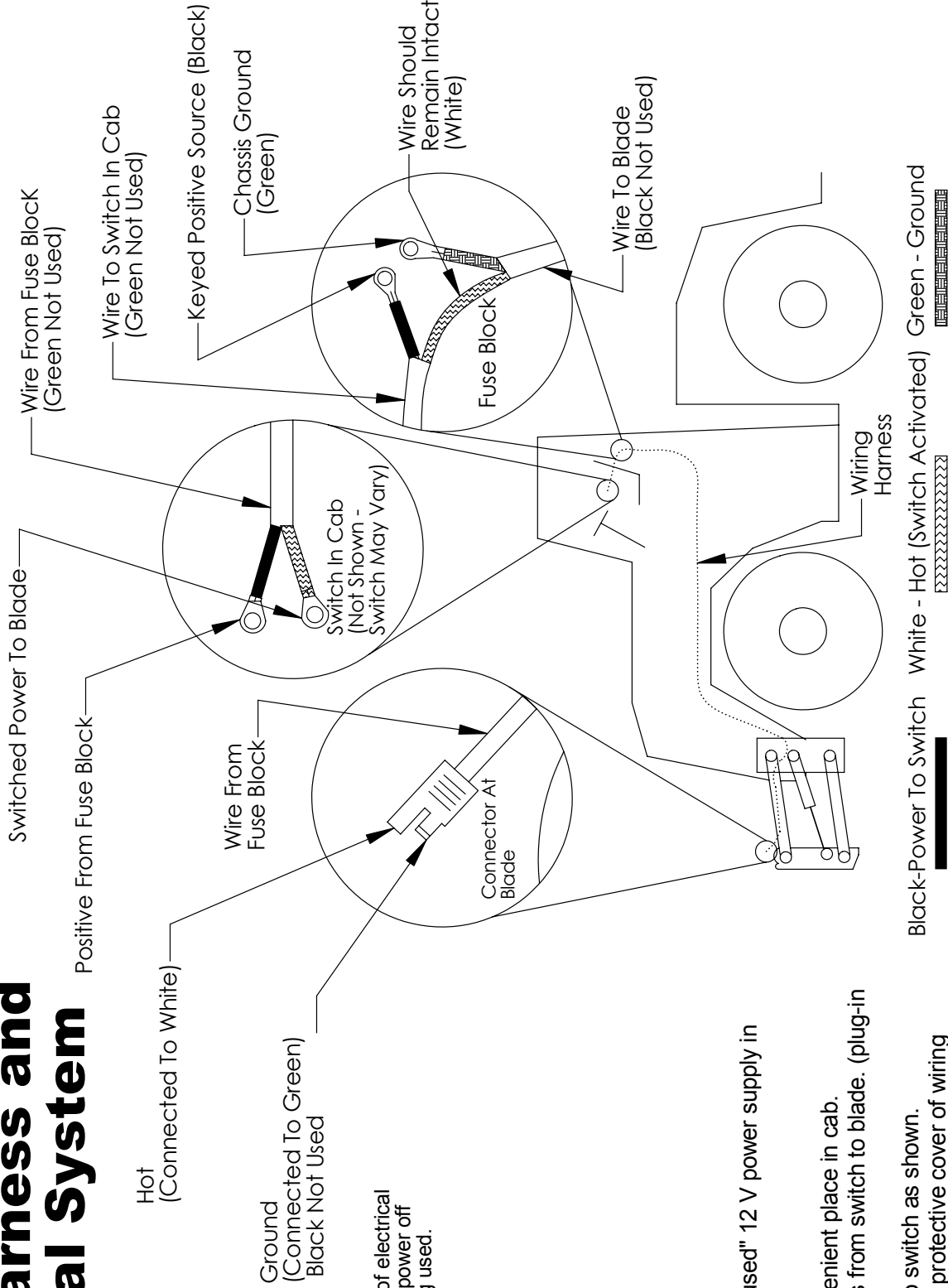


**GROUSER PRODUCTS INC.**  
 755 2nd Ave NW  
 West Fargo, ND 58078  
 Phone 701.282.7710  
 Fax 701.282.8131  
 WWW.GROUSER.COM

TITLE: Lift System Hydraulic Components  
 Date: 5-1-2009

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# Wiring Harness and Electrical System



## Instructions

1. Locate "keyed and fused" 12 V power supply in cab of tractor.
2. Disconnect battery.
3. Install switch in convenient place in cab.
4. Route wiring harness from switch to blade. (plug-in connector at blade)
5. Connect wire ends to switch as shown.
6. Remove 12" of outer protective cover of wiring harness where it passes by the 12 V power supply.
7. Separate and cut Black wire. Connect switch side of wire to 12 V supply.
8. Separate and cut Green wire. Connect blade side of wire to chassis ground.
9. White wire remains intact.

Black-Power To Switch  
White - Hot (Switch Activated) Green - Ground



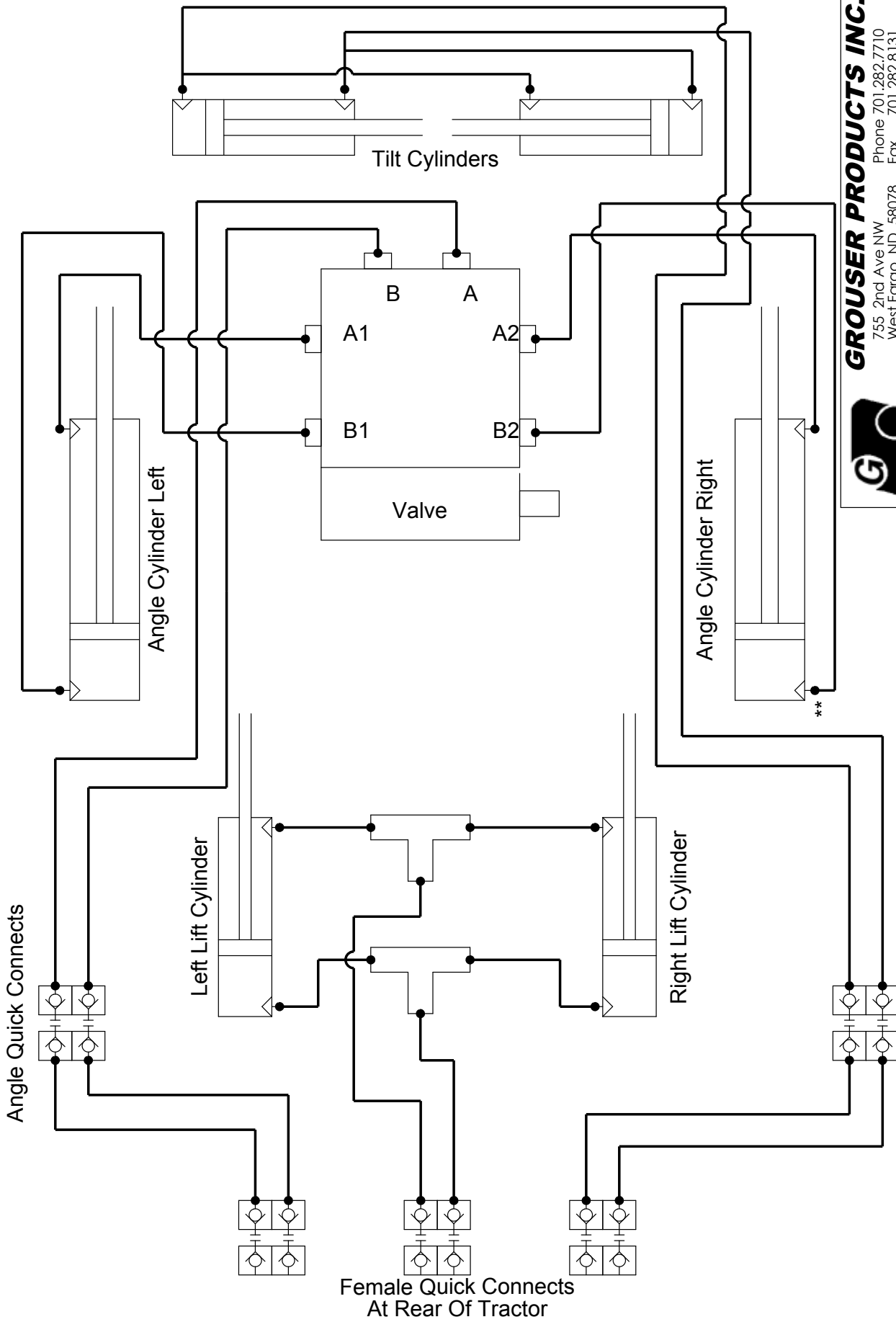
**GROUSER PRODUCTS INC.**  
755 2nd Ave NW  
West Fargo, ND 58078  
WWW.GROUSER.COM  
Phone 701.282.7710  
Fax 701.282.8131

TITLE: **Wiring Harness and  
Electrical System**

Date:  
**6-22-2006**

# Hydraulic Schematic

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 West Fargo, ND 58078  
 Phone 701.282.7710  
 Fax 701.282.8131  
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TITLE:

Hydraulic Schematic

Date: 3-26-2011

\*\* Denotes location of gauge for adjustment of relief valve.



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# Contact Us

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As always, if you have any questions about your 660HD Dozer or other products made by Grouser, feel free to contact us.

## **Grouser Products**

755 2nd Ave NW - West Fargo, ND 58078

**Phone:** 1-800-747-6182

**Fax:** 1-701-282-8131

**E-mail:** [grouser@grouser.com](mailto:grouser@grouser.com)

**Website:** [www.grouser.com](http://www.grouser.com)

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# Improvements

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Grouser Products Inc. is continually striving to improve its products. We reserve the right to change prices, specification, or equipment at any time without notice. We also reserve the right to make improvements or changes when it becomes practical and possible to do so without incurring any obligation to make changes or additions to the equipment sold previously.

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# Warranty

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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 in the setup process.

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.

