



12-20 (V6) Blade - 450-660
Owner's Manual
&
Parts Book

Purchase Date
Serial Number
Model Number
Tractor Model
Dealer

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To The Owner

This manual contains information concerning the operation, adjustment, and maintenance of the 12-20 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.

Warning

When using the dozer blade, pay special attention to the area between the blade and the hood of the tractor. In the right conditions, material can build up. Grouser Products is not responsible for careless operation of the blade.

Maintenance

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 4.
- 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 hydraulic pages for your specific system.
- Check skid shoes for wear and replace if necessary. For adjustment, see page 5.
- Inspect all tilt-ways for aggressive wear. See page 5 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 12-20 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.

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 inside and outside of 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.

Angle / Tilt Function Abbreviation Key

HAHT	Hydraulic Angle - Hydraulic Tilt	6-Way
HANT	Hydraulic Angle - No Tilt	4-Way
NAHT	No Angle - Hydraulic Tilt	4-Way
NANT	No Angle - No Tilt	2-Way

Torque Specifications

All bolts should be tightened to the specifications that are stated. If specifications are not stated, follow torque charts below.

Size	Torque - Dry (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

	Torque - Dry (ft-lbs)
Size	Grade 10.9
M18 x 2.50	284
M20 x 2.50	401
M22 x 2.50	547
M24 x 3.00	694

Disconnecting the Blade

When disconnecting the blade from the lift system, a block needs to be put under the cutting edge to provide the proper blade angle for disconnecting the quick attach. You will need about 5-6" of height.

Skid Shoe and Tilt Plate Adjustment

Skid Shoe Adjustment:

1. Adjust ratchet on skid shoe mount to get skid shoe to desired height.
2. When skid shoes are worn down, replace with new skid shoes.

Tilt Plate Adjustment:

1. Remove nuts and tilt plates.

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

If you can't easily remove the bottom tilt plates, the tilt frame will need to be tilted further than with the cylinders. To do this follow Steps #2-6. Otherwise continue with Step #4.

2. Remove the hose clamps behind the top of the tilt frame that are holding the blade hoses.
3. Unattach the tilt cylinders from the blade and move out of the way. Tilt the tilt frame all the way up on one side to get easier access to the bottom tilt plates on the opposite side. Then tilt the tilt frame the other direction to work with the other bottom tilt plates.
4. Add or remove washers as needed to adjust tilt-way clearance to have 1/16" - 1/8" of clearance in direction 'A' shown in Figure 1.
5. Once the tilt-way clearance is set, tighten bolts to 640 ft-lbs.
6. If you removed the hoses clamps and unattached the cylinders, reattach the hose clamps and cylinders.

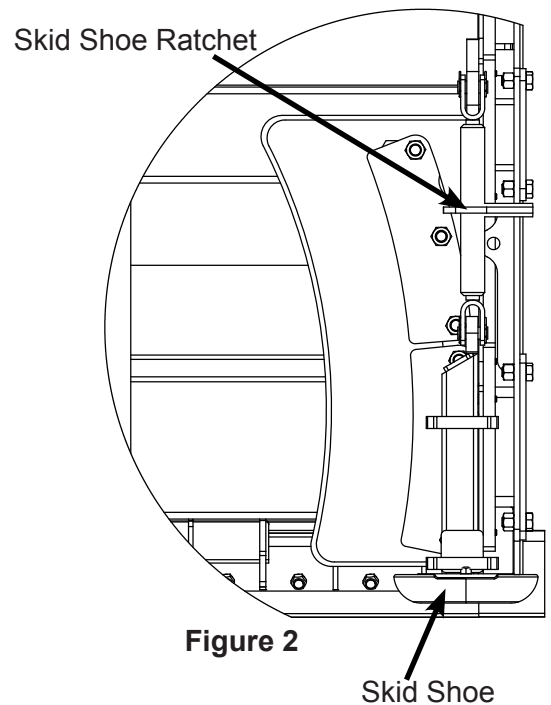


Figure 2

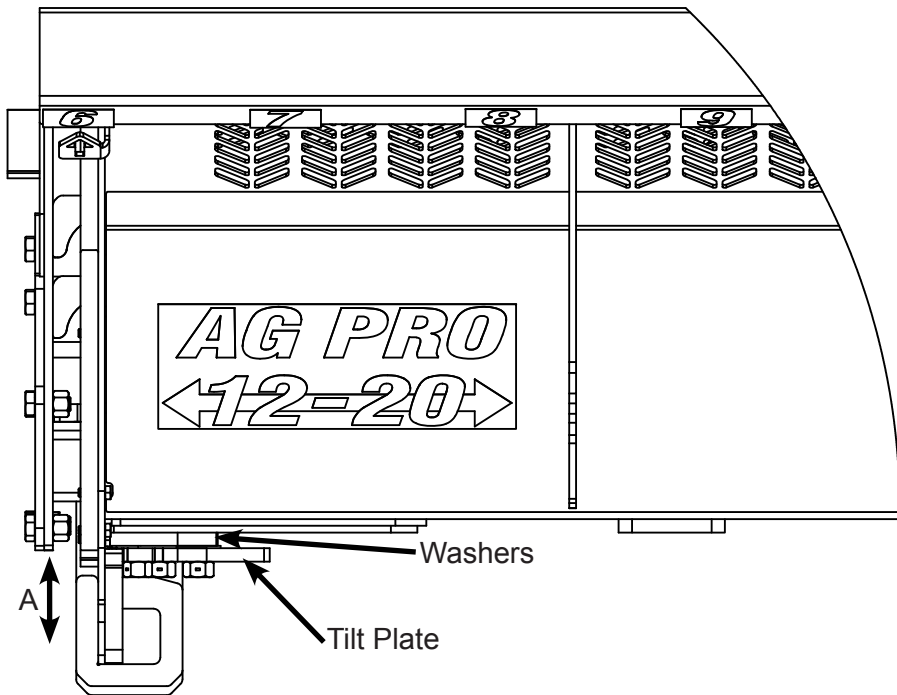


Figure 1

Hydraulic Instructions

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

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

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 becomes excessive. 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. If this occurs, refer to the Relief Valve Instructions on the next page for possible adjustments. Only one cylinder should be extended when angled dozing.

Relief Valve Instructions

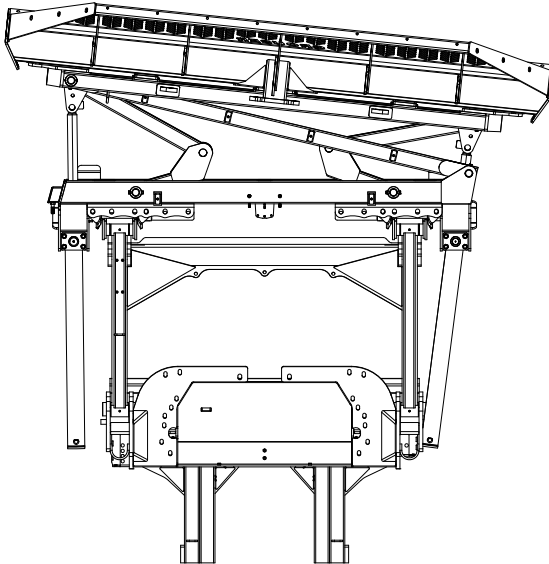
Set the safety relief valve at a higher pressure than tractor: To increase the pressure of the relief valve, install a 0-5,000 psi pressure gauge into the base end of right angle cylinder (see page 26). Loosen the jam nut on the safety valve and tighten the Allen screw 1/2 turn. Next, extend the right 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. Follow the same steps for the left side cylinder.

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.

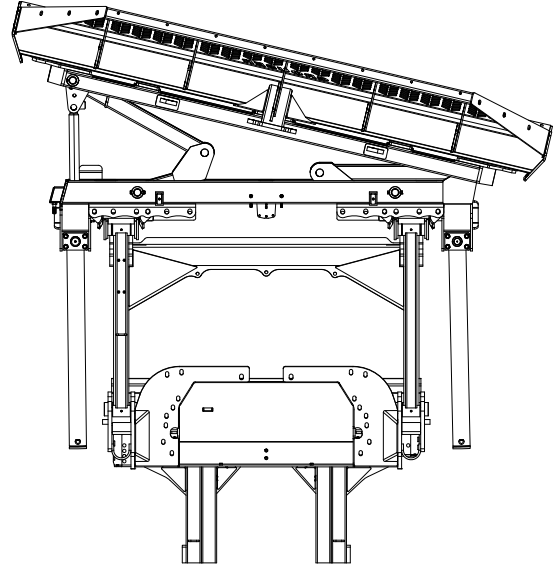
CAUTION: Do not bypass the safety relief valve and plumb each cylinder to separate valves on the tractor.

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



INCORRECT



CORRECT

(Left or Right)

Unpacking Components

Unstrap and remove the lift frame, hoses, top arms, and any boxes of hardware from the undercarriage. If any components are missing, call Grouser.

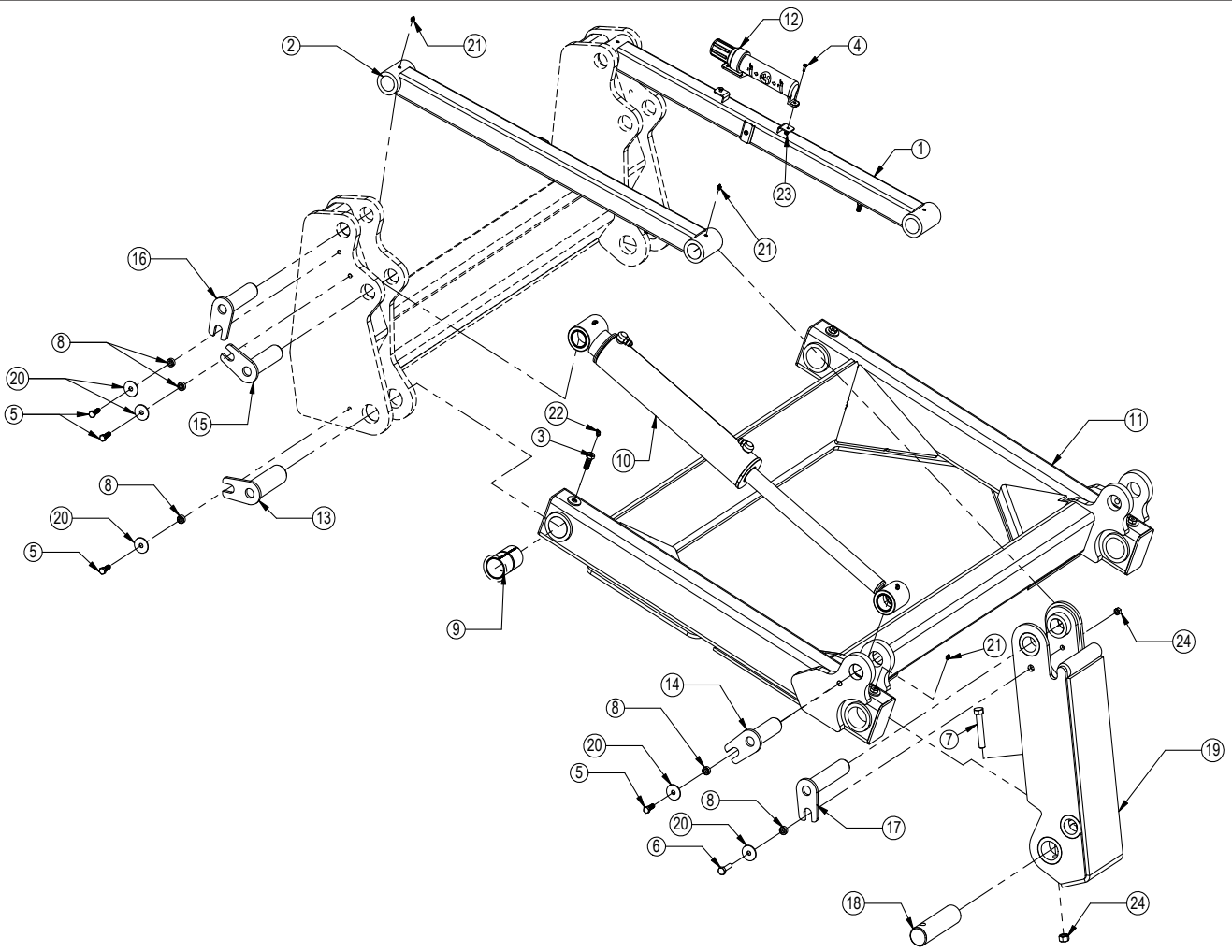
Assembling Lift Components

Install undercarriage per the tractor specific mounting instructions. Some assembly of Lift system components is necessary. Follow the steps listed below. Refer to Page 9 for the correct hardware and orientation of parts.

1. Remove all pins on each side of the undercarriage.
2. Position the lift frame between the two plates on both sides of the undercarriage.
3. Align the lift frame to the bottom holes of the undercarriage and attach with the proper pins and hardware.
4. Lift the end of the cylinders up and attach to the undercarriage with the proper pins and hardware.
5. Attach the top arms to the top of the undercarriage with the proper pins and hardware.
6. Remove the male quick attaches that are in the female quicks on the blade, angle frame, or tilt frame.
7. Attach the male quick attaches to the lift frame and top arms with the proper pins and hardware.
8. Install lift cylinders and attach hoses to the cylinders. Refer to Page 10 for lift system hydraulics.
9. Attach the coupler mounting bracket to each top arm for Angle and Tilt connections. See pages 16-19 for correct hardware.
10. Take the long hoses and attach each one to their designated fitting from the coupler mount on the top arms and also attach some to the bulkhead tee fitting at the center of the undercarriage for lift. See pages 10, and 16-19 for the correct hose lengths.
11. Continue to route the hoses thru the tractor. Keep away from all moving parts.
Note: Installer is responsible to route hoses in a practical manner. The hoses need to be routed away from sharp corners and moving parts and need to be secure.
12. If applicable, attach the wire harness to the left top arm. Hold in place with a zip tie. Run the other end of the wire harness up into the cab of the tractor.
13. Locate the fused power supply. Connect the red wire to power and the black to ground. Install provided switch into an open switch hole in the right overhead console or another convenient place in the tractor. Connect the wire harness to the switch.
14. Pull the pin puller handle on the left side of the quick attach system towards the outside of the blade to open the quick attach system. Refer to Page #12-13 for further clarification on the quick attach system.
15. Drive the tractor forward slowly until the top edge of the male quick attach is under the top lip of the female quick attach already on the blade assembly.
16. Lift the male quick up till the blade is off the ground and the female quick attaches are against the front of the male quick attaches.
17. Shut off machine and set the parking brake.
18. Move the pin puller handle on the left side of the blade assembly towards the center of the blade to lock the blade in place and use the latch to lock the handle in place. If applicable, turn up the blade stands on the blade.
19. Plug the male couplers into the female couplers on the top arms. If applicable, plug the male blade break away end of the wire harness into the female blade break away end of the wire harness on the top arm.

Initial System Startup

Start the tractor and run the blade thru all the functions. If any function does not work properly, bleeding of the system may be required. If problem still persists, call Grouser Products.

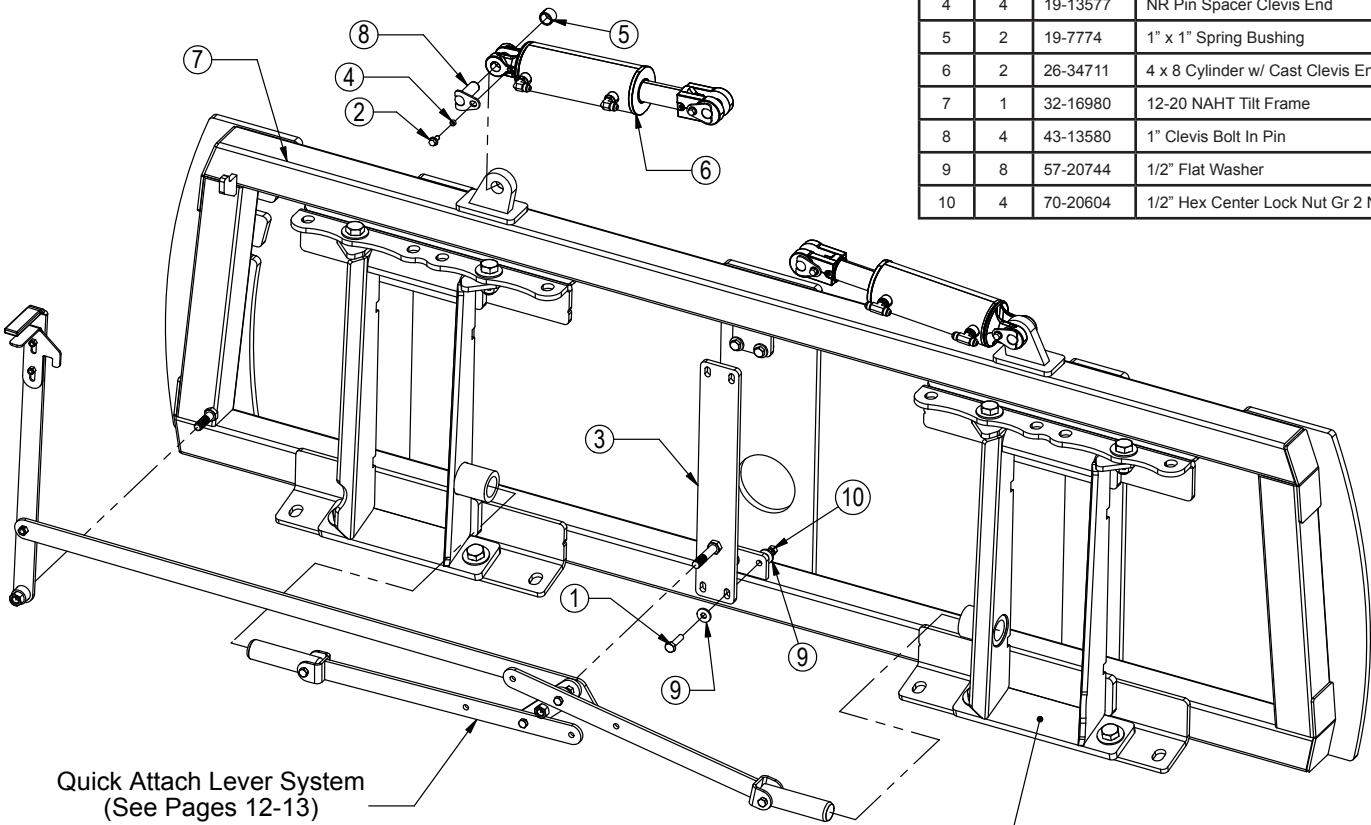


Item No.	Qty.	Part No.	Description
1	1	11-5025-L	Top Arm - Left
2	1	11-5025-R	Top Arm - Right (Revised)
3	4	16-1795	Lift Frame Grease Bolt
4	2	16-20002	1/4" x 3/4" Hex Bolt Gr 5 NC
5	8	16-20216	3/4" x 1-1/2" Hex Bolt Gr 5 NC
6	2	16-20220	3/4" x 2-1/2" Hex Bolt Gr 5 NC
7	2	16-20227	3/4" x 4-1/2" Hex Bolt Gr 5 NC
8	10	19-13515	3/4" ID - Non Rotating Pin Spacer Bushing
9	4	19-13525	2.75 x 2.50 x 4.75 Spring Bushing
10	2	26-34738	4x20 Long Cylinder - Bushed Tube Ends (647267)
11A	1	32-14060	450 LP Lift Frame
11B	1	32-12910	660 LP Lift Frame
12	1	34-14961	Manual Canister
13	2	43-13025	Pin Weld (Lift Frame / UC)
14	2	43-5033	Pin Weld (Lift Cyl. / Lift Frame)
15	2	43-5035	Pin Weld (Lift Cyl. / UC)
16	2	43-5037	Pin Weld (Top Arm / UC)
17	2	43-5042	Pin Weld (Top Arm / QA)
18	2	43-8896	QA Bottom Pin
19	2	45-5075	450-660 Male Quick Attach
20	10	57-20747	3/4" Flat Washer
21	6	58-9369	Grease Zerk 1/8" NPT Straight
22	2	58-9371	Grease Zerk 1/8" NPT 45°
23	2	70-20610	1/4" Nyloc Hex Nut Gr 5 NC
24	4	70-20607	3/4" Hex Center Lock Nut Gr 2 NC

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
26-34738	49-12272	Seal Kit 4" Bore x 2" Rod (647204) Nitrided Rod

Item No.	Qty.	Part No.	Description
1	4	16-20128	1/2" x 2" Hex Bolt Gr 5 NC
2	4	16-35C612	3/8" x 3/4" Flanged Bolt
3	1	18-14658	NAXT Center Bracket
4	4	19-13577	NR Pin Spacer Clevis End
5	2	19-7774	1" x 1" Spring Bushing
6	2	26-34711	4 x 8 Cylinder w/ Cast Clevis Ends
7	1	32-16980	12-20 NAHT Tilt Frame
8	4	43-13580	1" Clevis Bolt In Pin
9	8	57-20744	1/2" Flat Washer
10	4	70-20604	1/2" Hex Center Lock Nut Gr 2 NC



Quick Attach Lever System
(See Pages 12-13)

Quick Attach (See Pages 12-13)

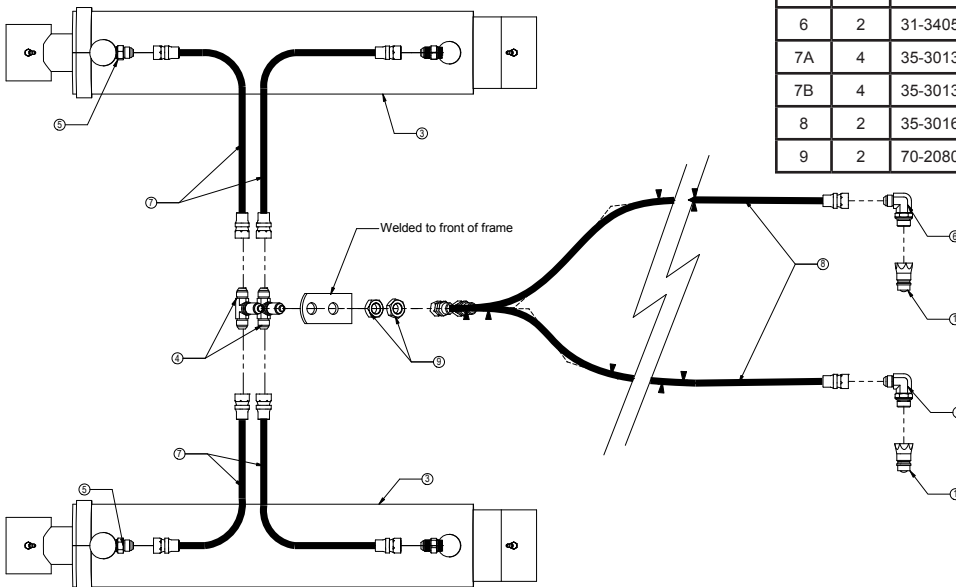
NOTE: When ordering cylinder seal kits, the part number on the cylinder is needed. The number is stamped on the base end of the cylinder opposite of the hydraulic ports.

No. On Cylinder	Part No.	Description
26-34738	49-12272	Seal Kit 4" Bore x 2" Rod (647204) Nitrided Rod

* Parts Not Shown

Item No.	Qty.	Part No.	Description
1	2	25-34342	Tappet Quick Coupler Male - Poppet Style
2*	2	25-3457	Pioneer Dust Cap Lift (Orange)
3	2	26-34738	4x20 Long Cylinder - Bushed Tube Ends
4	2	31-34020	Bulkhead Branch Tee JIC (2703-8-8-8)
5	4	31-34040	Straight JIC X O-Ring (6400-8-8)
6	2	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-08-10)
7A	4	35-30131	66" x 1/2" -8JIC/-8JIC Hose
7B	4	35-30134	75" x 1/2" -8JIC/-8JIC Hose
8	2	35-30160	288" x 1/2" -8JIC/-8JIC Hose
9	2	70-20807	3/4" Hex Jam Nut NF

Item #A for 450 and Item #B for 660 Dozer



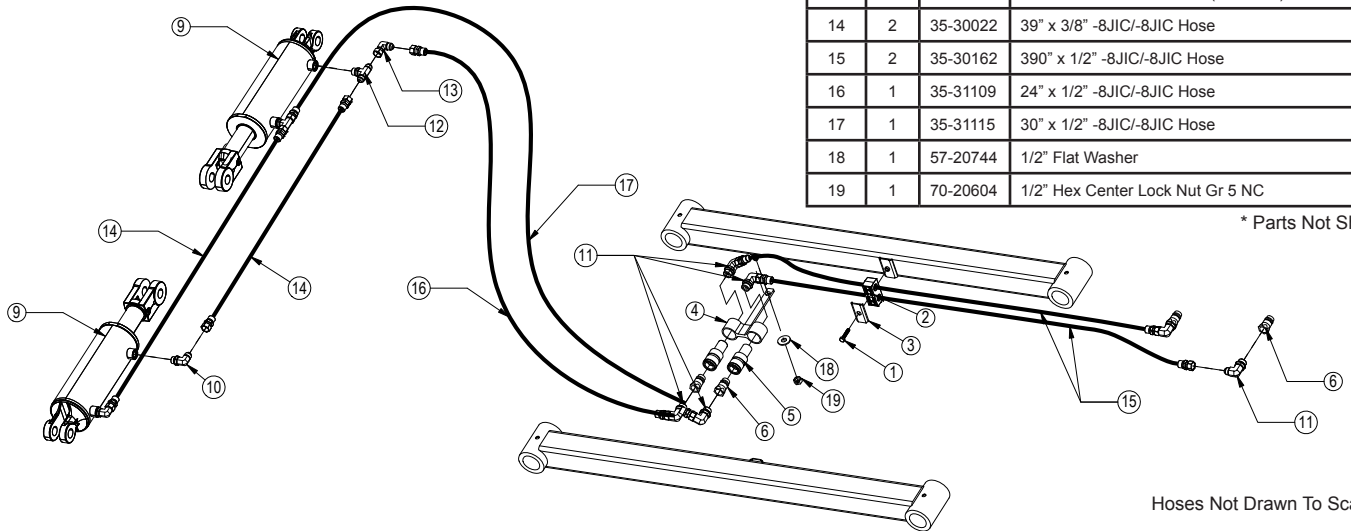
Hoses Not Drawn To Scale

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.

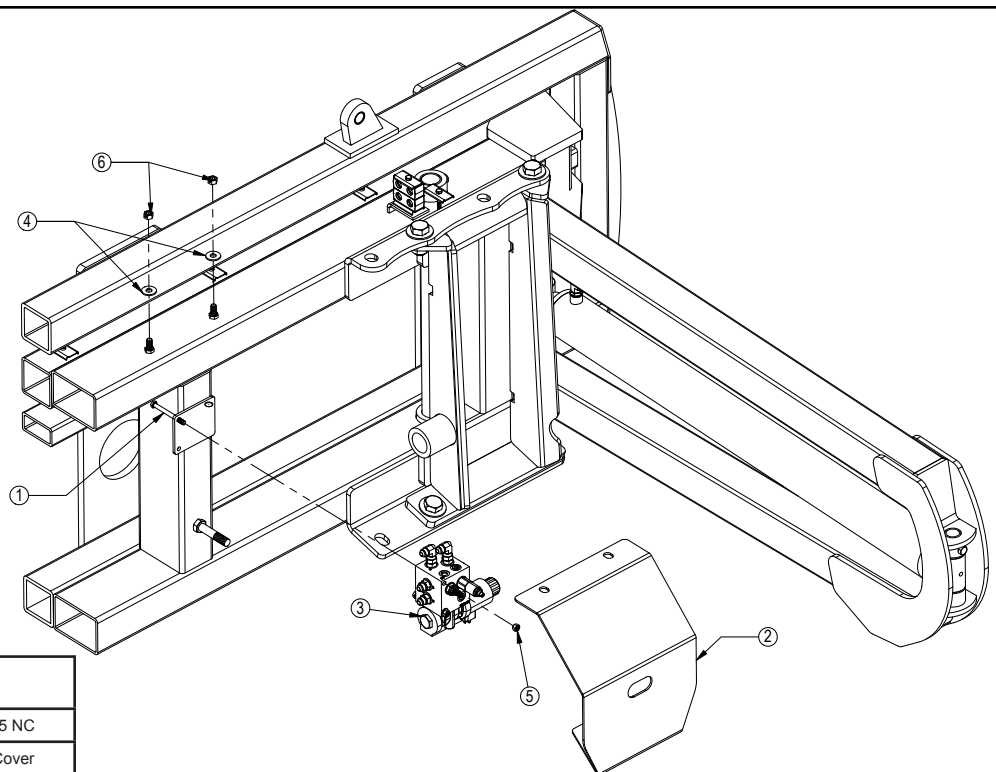
No. On Cylinder	Part No.	Description
26-34711	49-12271	Seal Kit 4 x 8 (647135) Nitrided Rod, Clevis Ends

Item No.	Qty.	Part No.	Description
1	1	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC
2	1	18-3074	Hose Hold Down Clamp
3	1	18-3075	Hose Hold Down Plate
4	1	18-8973	Coupler Mounting Bracket
5	2	25-34321	Tappet Quick Coupler Female
6	4	25-34342	Tappet Quick Coupler Male - Poppet Style
7*	4	25-3453	Pioneer Dust Cap Tilt (Green)
8*	2	25-3454	Pioneer Dust Plug Tilt (Green)
9	2	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends
10	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
11	6	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
12	2	31-34060	Branch Tee JIC x O-Ring (6803-8-8-8)
13	1	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)
14	2	35-30022	39" x 3/8" -8JIC/-8JIC Hose
15	2	35-30162	390" x 1/2" -8JIC/-8JIC Hose
16	1	35-31109	24" x 1/2" -8JIC/-8JIC Hose
17	1	35-31115	30" x 1/2" -8JIC/-8JIC Hose
18	1	57-20744	1/2" Flat Washer
19	1	70-20604	1/2" Hex Center Lock Nut Gr 5 NC

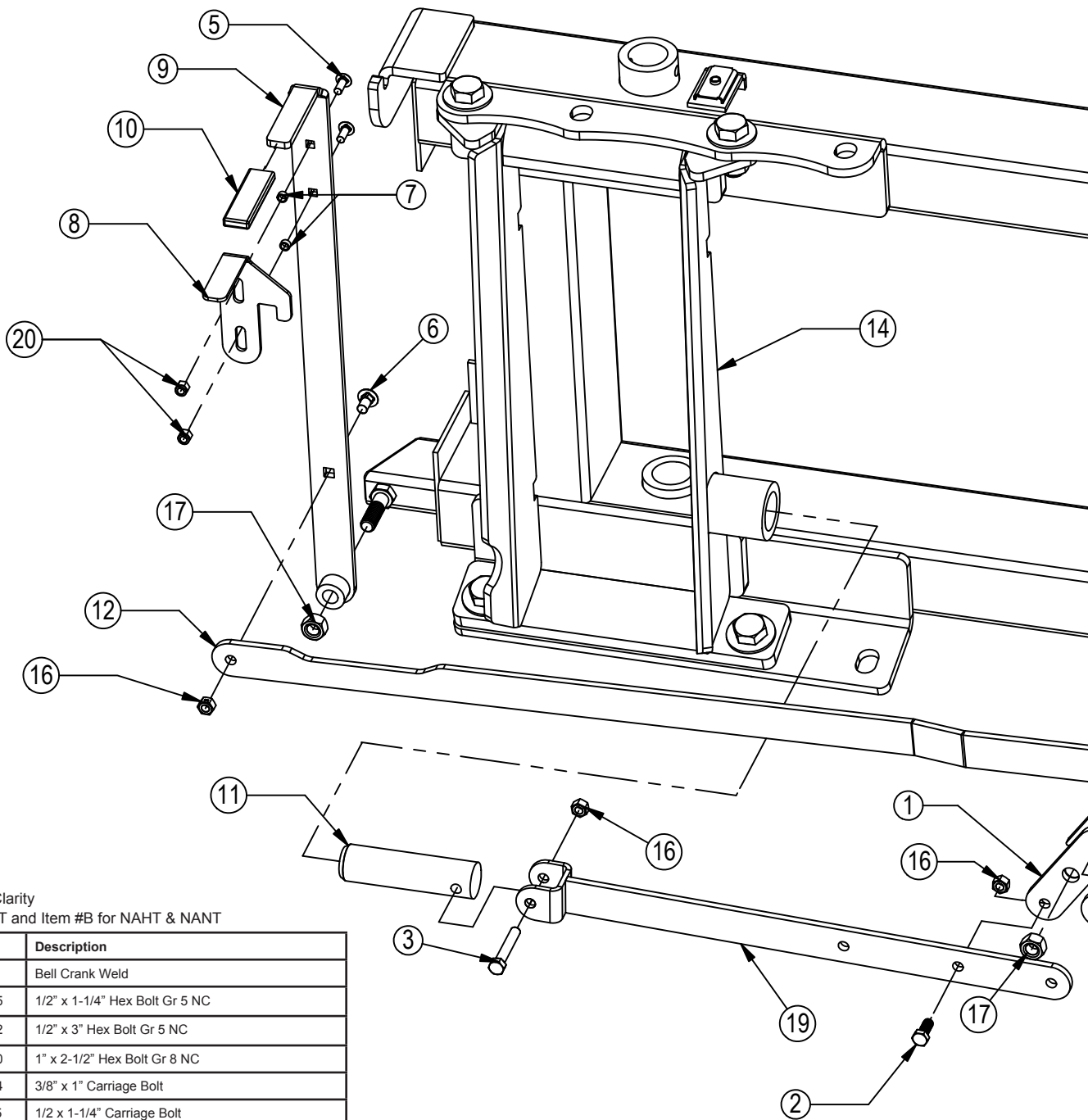
See Pages 20-21 for the remaining hydraulics.



* Parts Not Shown

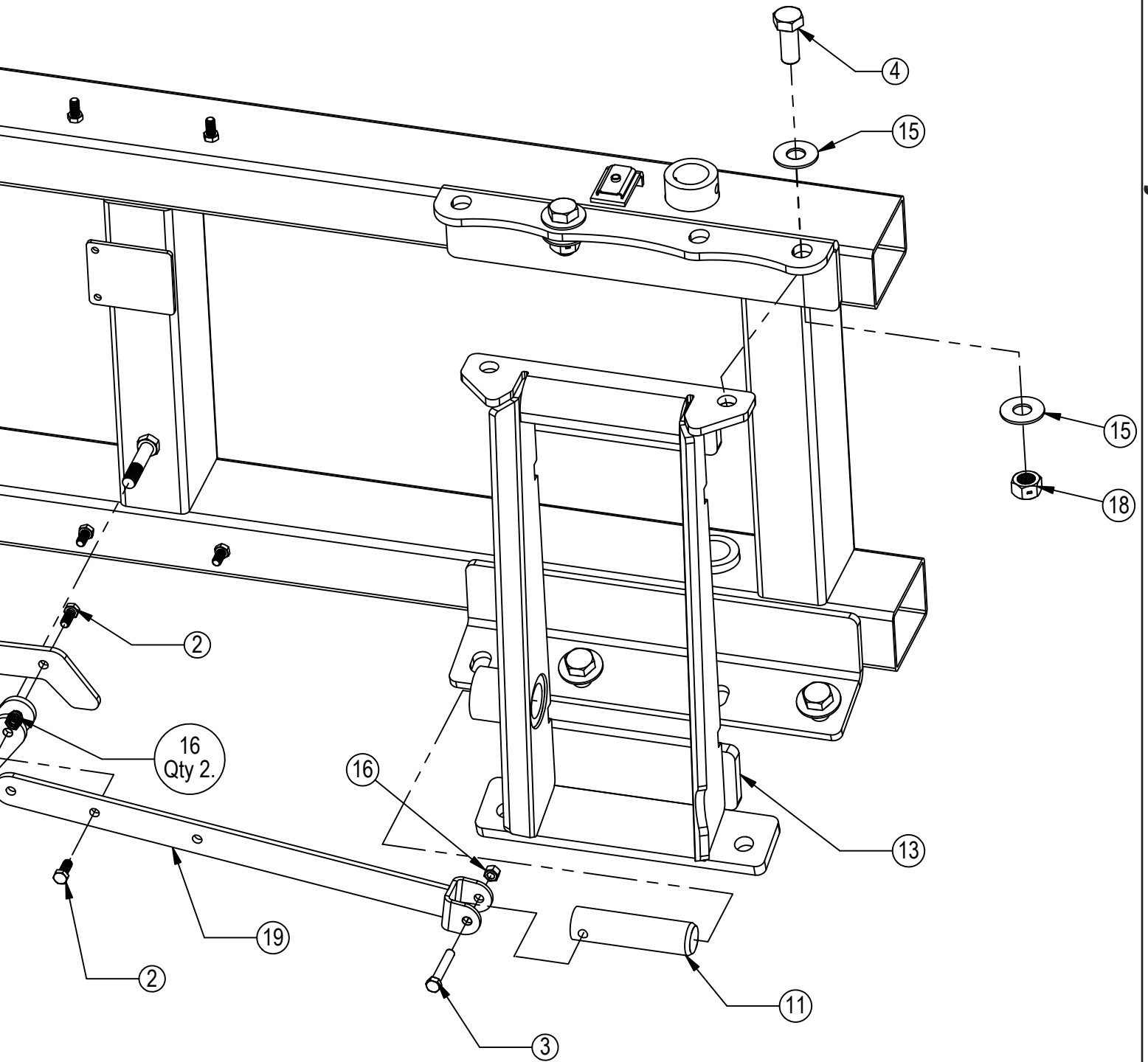


Item No.	Qty.	Part No.	Description
1	2	16-20077	3/8" x 4-1/2" Hex Bolt Gr 5 NC
2	1	18-1701	AG Pro Hydraulic Valve Cover
3	1	56-13305	Hydraulic Angle Valve
4	2	57-20744	1/2" Flat Washer
5	2	70-20582	3/8" Hex Nut
6	2	70-20604	1/2" Hex Center Lock Nut Gr 2 NC



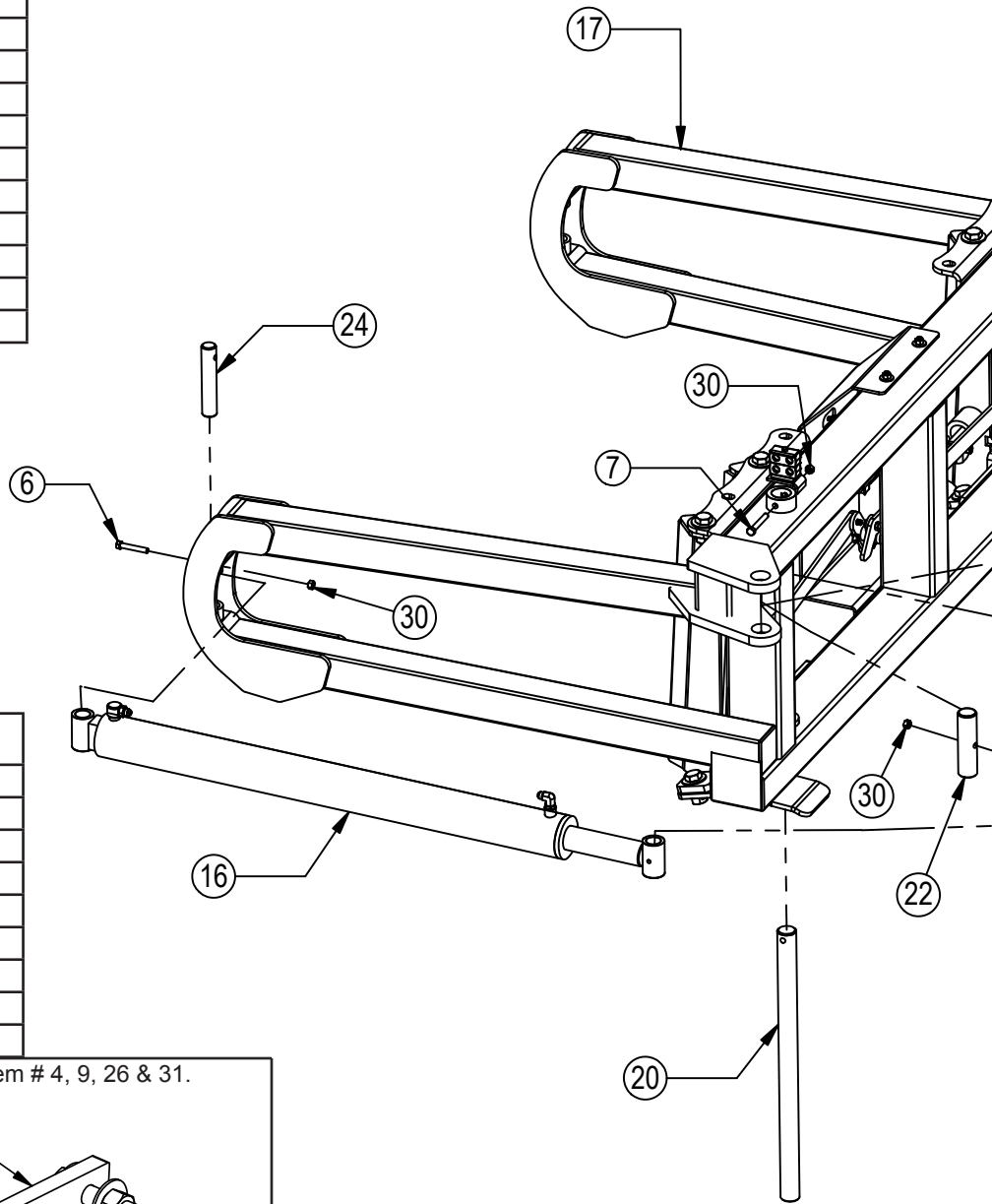
Some Parts Hidden For Clarity
 Item #A for HAHT & HANT and Item #B for NAHT & NANT

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
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 Pro Pin Puller Latch
9	1	39-14665	AG Pro Pin Puller Handle Weld
10	1	39-3072	Handle Cover (Orange)
11	2	43-3050	QA Lock Pin
12A	1	44-14709	Pin Puller Link Plate
12B	1	44-14662	Pin Puller Link Plate
13	1	45-14710-R	AG Pro Female Vertical Bolt On Quick Attach, Right
14	1	45-14710-L	AG Pro 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 Nut



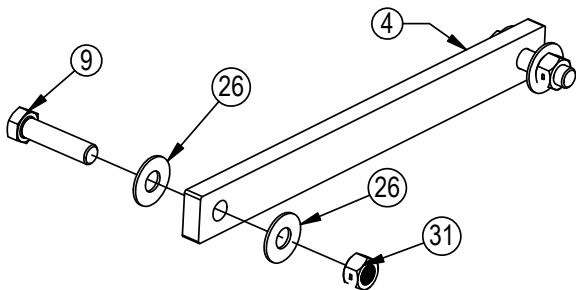
Hydraulic Angle - Hydraulic Tilt Or Hydraulic Angle - No Tilt

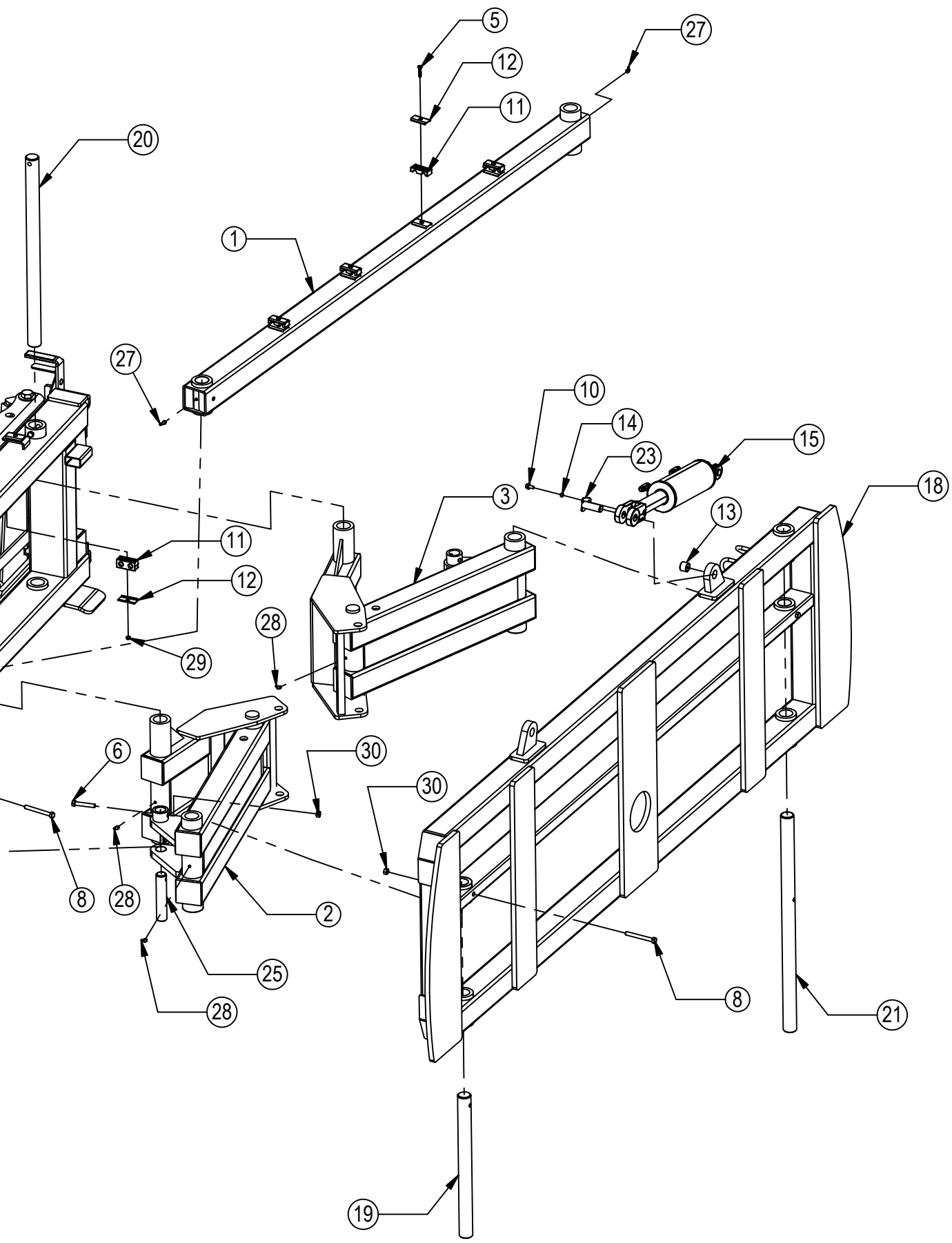
Item No.	Qty.	Part No.	Description
1	1	11-5055	450-660 Series Stabilizer Arm
2	1	11-8082	450-660 Series Angle Arm Right
3	1	11-9039	450-660 Series Angle Arm Left
4	1	14-9366	Non Tilt Bar
5	5	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC
6	4	16-20132	1/2" x 3" Hex Bolt Gr 5 NC
7	2	16-20424	1/2" x 3-1/2" Hex Bolt Gr 8 NC
8	3	16-20427	1/2" x 4-1/2" Hex Bolt Gr 8 NC
9	2	16-20564	1" x 3-1/2" Hex Bolt Gr 8 NC
10	4	16-35C612	3/8" x 3/4" Flanged Bolt
11	8	18-3074	Hose Hold Down Clamp
12	9	18-3075	Hose Hold Down Clamp Plate
13	2	19-7774	1" x 1" Spring Bushing
14	4	19-13577	NR Pin Spacer Clevis End
15	2	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends
16	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
17	1	32-14700	450-660 Angle Frame
18	1	32-16975	12-20 - 760 HA Tilt Frame
19	1	43-8130	1-15/16" x 23-1/4" Pin
20	2	43-8131	1-15/16" x 31" Pin
21	1	43-8132	1-15/16" x 35-1/2" Pin
22	1	43-8133	1-15/16" x 7-1/8" Stabilizer Arm Pin



Item No.	Qty.	Part No.	Description
23	4	43-13580	1" Clevis Bolt In Pin
24	2	43-8134	1-1/2" x 8" Angle Cylinder Pin Base End
25	2	43-9352	1-1/2" x 7-1/2" Angle Cylinder Pin Rod End
26	4	57-20749	1" Flat Washer
27	2	58-9371	Grease Zerk 1/8" NPT 45°
28	6	58-9372	Grease Zerk 1/8" NPT 90°
29	1	70-20581	5/16" Hex Nut
30	9	70-20604	1/2" Hex Center Lock Nut Gr 2 NC
31	2	70-20609	1" Hex Center Lock Nut Gr 2 NC

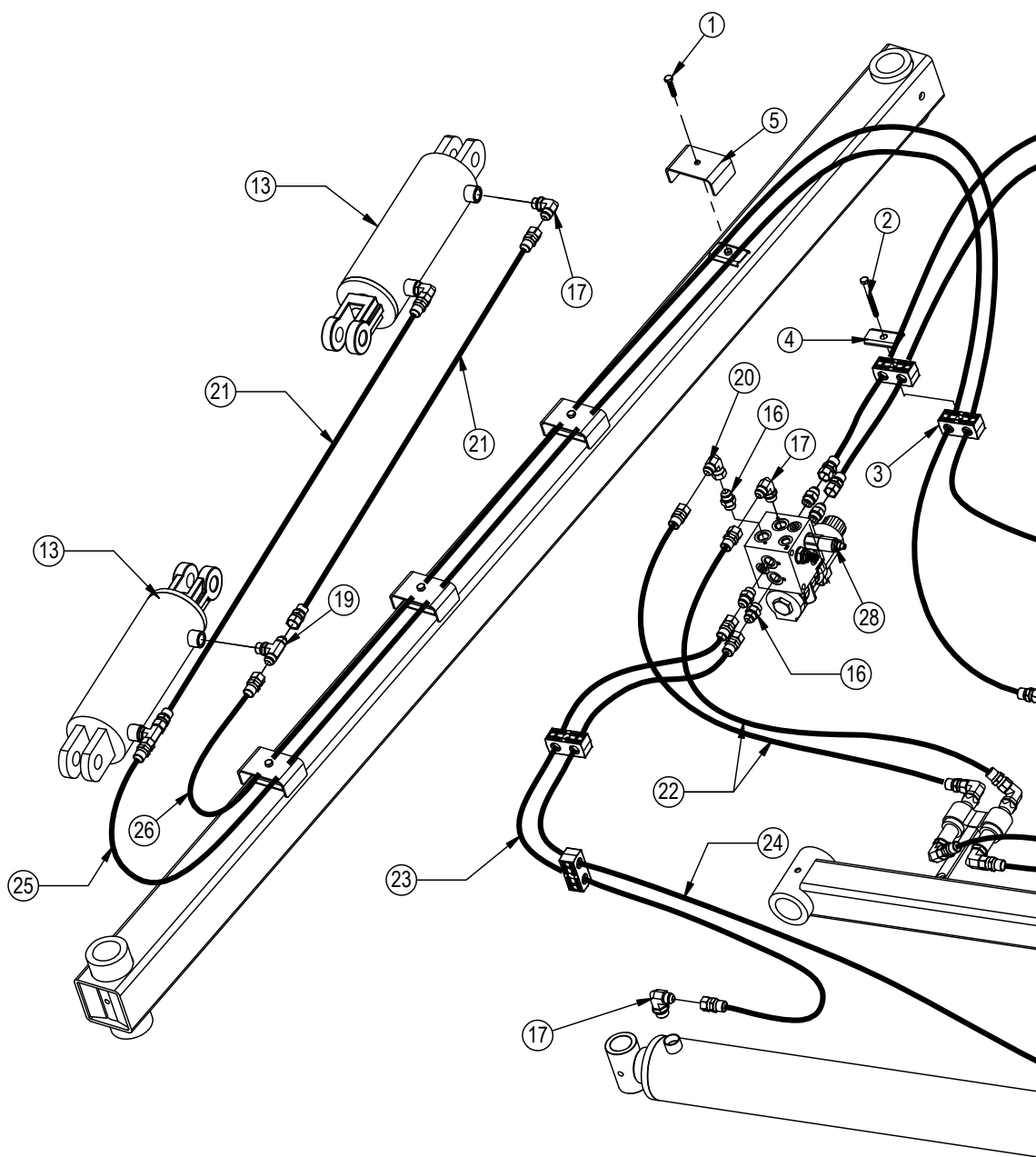
HANT - Replace item # 10, 13, 14, 15 & 23 with item # 4, 9, 26 & 31.

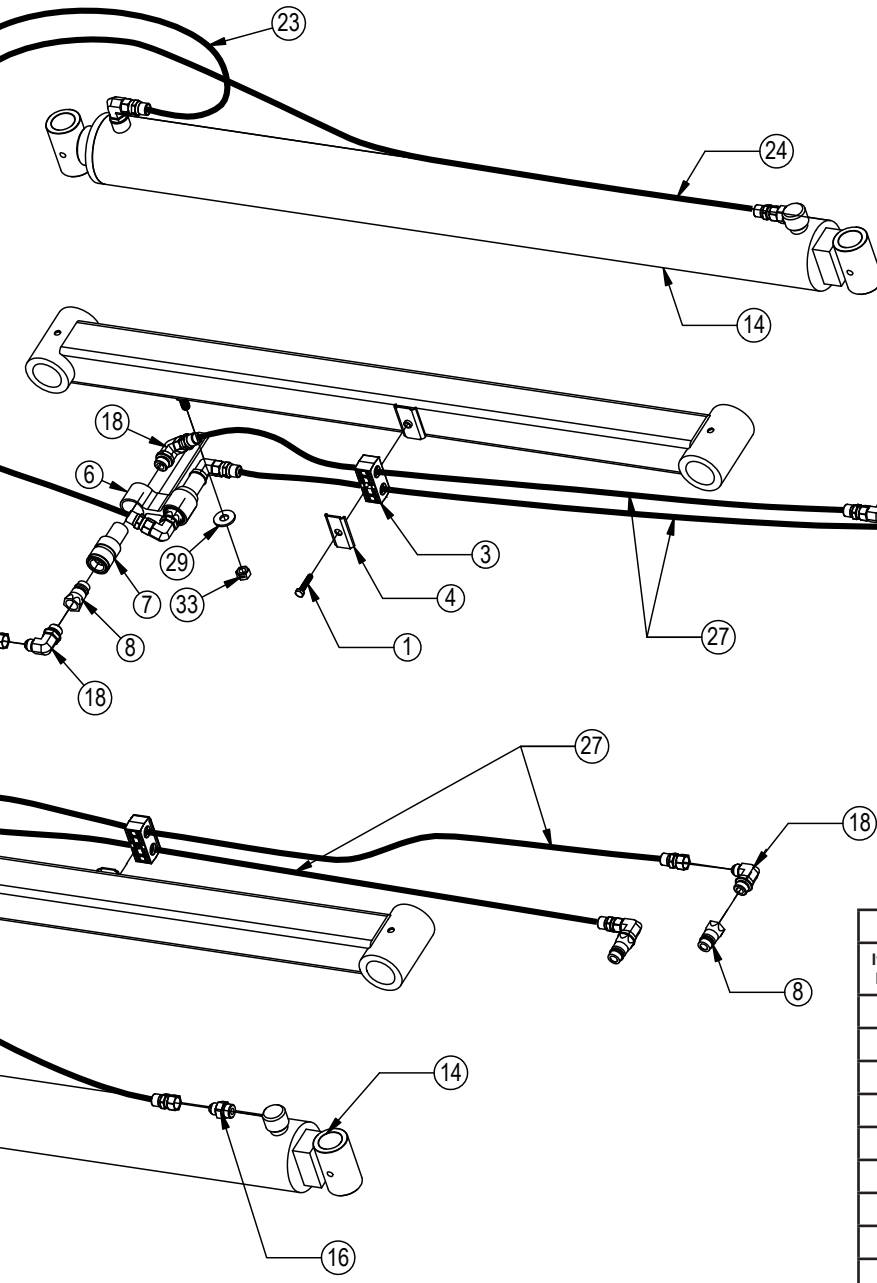




Hydraulic Angle - Hydraulic Tilt Or Hydraulic Angle - No Tilt Hose Routing

Hoses Not Drawn To Scale





Item No.	Part No.	Description	Configuration Qty.	HAHT Qty.	HANT Qty.
1	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC	7	3	
2	16-20043	5/16" x 3-1/4" Hex Bolt Gr 5 NC	1	-	
3	18-3074	Hose Hold Down Clamp	8	4	
4	18-3075	Hose Hold Down Clamp Plate	9	4	
5	18-15684	12-20 - HAXT Hose Hold Down Plate	4	4	
6	18-8973	Coupler Mounting Bracket	2	1	
7	25-34321	Tappet Quick Coupler Female	4	2	
8	25-34342	Tappet Quick Coupler Male - Poppet Style	8	4	
9*	25-3453	Pioneer Dust Cap Tilt (Green)	4	4	
10*	25-3454	Pioneer Dust Plug Tilt (Green)	2	-	
11*	25-3455	Pioneer Dust Cap Angle (Red)	4	-	
12*	25-3456	Pioneer Dust Plug Angle (Red)	2	2	
13	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends	2	-	
14	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port	2	2	

* Parts Not Shown

See Pages 20-21 for the remaining hydraulics.
See Page 26 for hydraulic schematics.

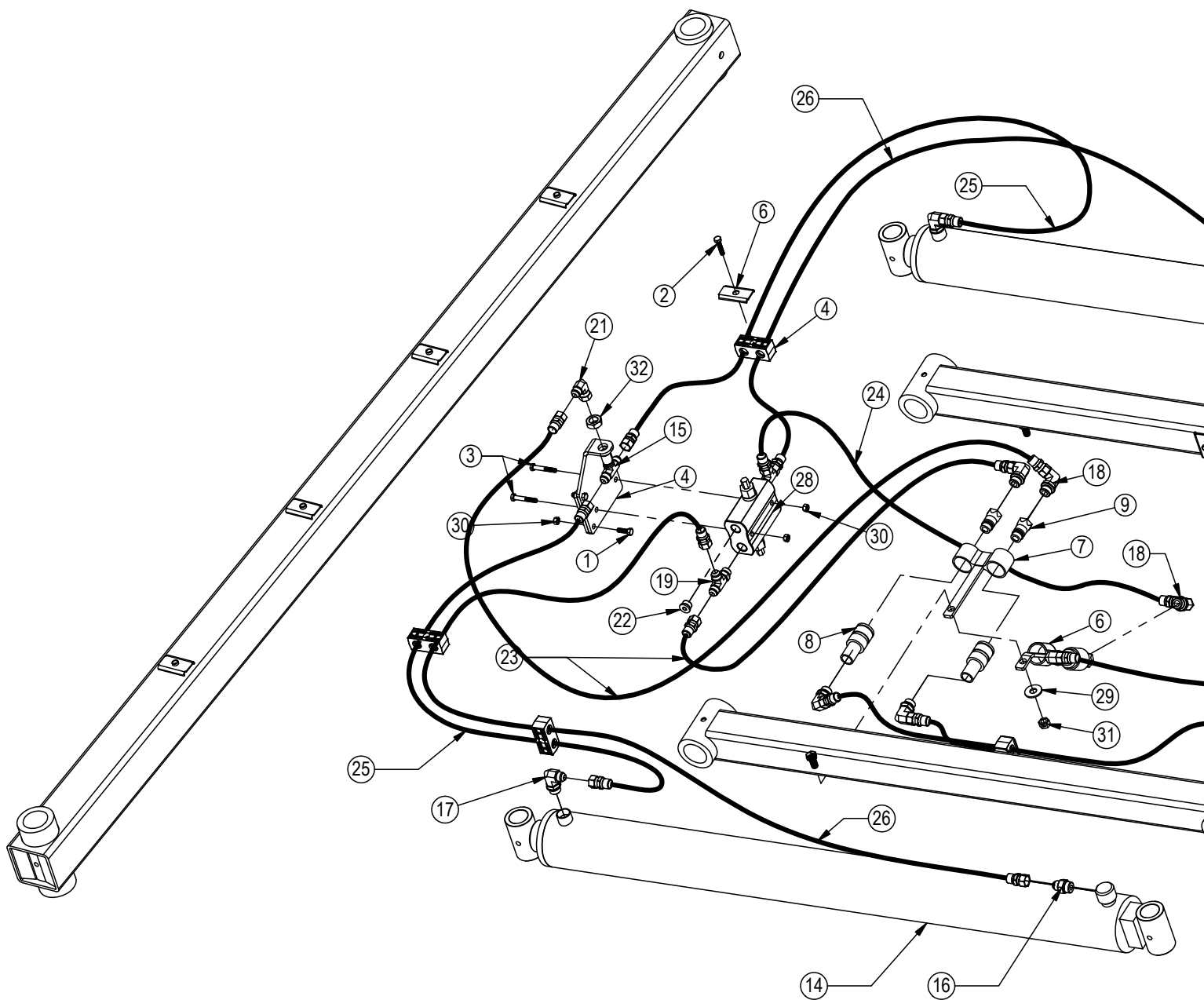
Item No.	Part No.	Description	Configuration Qty.	HAHT Qty.	HANT Qty.
15*	31-13332	-6 SAE Breather Fitting	1	1	
16	31-34040	Straight JIC x O-Ring (6400-8-8)	7	7	
17	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)	5	3	
18	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)	12	6	
19	31-34060	Branch Tee JIC x O-Ring (6803-8-8-8)	2	-	
20	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)	1	1	
21	35-30022	39" x 3/8" -8JIC/-8JIC Hose	2	-	
22	35-30121	35" x 1/2" -8JIC/-8JIC Hose	2	2	
23	35-30134	75" x 1/2" -8JIC/-8JIC Hose	2	2	
24	35-30145	108" x 1/2" -8JIC/-8JIC Hose	2	2	
25	35-30149	156" x 1/2" -8JIC/-8JIC Hose	1	-	
26	35-30150	160" x 1/2" -8JIC/-8JIC Hose	1	-	
27	35-30162	390" x 1/2" -8JIC/-8JIC Hose	4	2	
28	56-13305	Hydraulic Angle Valve	1	1	
29	57-20744	1/2" Flat Washer	2	1	
30*	69-13351	Wire Harness - Valve to Disconnect	1	1	
31*	69-1531	Wire Harness - Disconnect to Tractor	1	1	
32*	70-20581	5/16" Flange Hex Nut NC	1	1	
33	70-20604	1/2" Hex Center Lock Nut Gr 5	2	1	

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
26-34711	49-12271	Seal Kit 4 x 8 (647135) Nitrided Rod, Clevis Ends
26-34725	49-12274	Seal Kit 4 x 43.5 (647210) Nitrided Rod

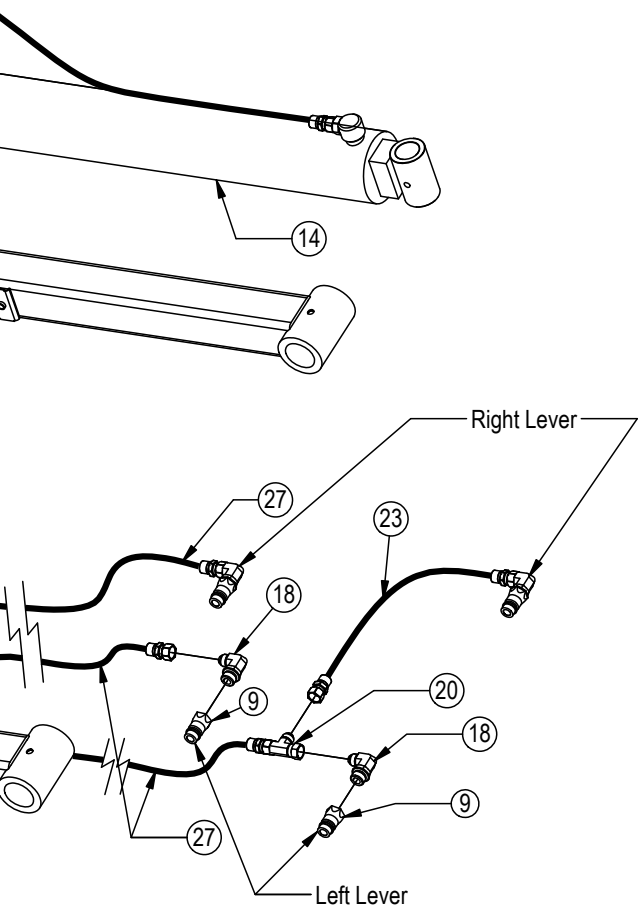
Hydraulic Angle - 2 Lever System Hose Routing

Hoses Not Drawn To Scale



Item No.	Qty.	Part No.	Description
1	2	16-20035	5/16" x 1" Hex Bolt Gr 5 NC
2	2	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC
3	2	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
4	1	18-14695	Bracket, Relief Valve
5	5	18-3074	Hose Hold Down Clamp
6	4	18-3075	Hose Hold Down Clamp Plate
7	2	18-8973	Coupler Mounting Bracket
8	3	25-34321	Tappet Quick Coupler Female
9	7	25-34342	Tappet Quick Coupler Male - Poppet Style
10*	3	25-3401	Pioneer Dust Cap Left Angle (Yellow)
11*	1	25-3402	Pioneer Dust Plug Left Angle (Yellow)
12*	4	25-3455	Pioneer Dust Cap Right Angle (Red)

* Parts Not Shown



See Pages 20-21 for the remaining hydraulics.
See Page 27 for hydraulic schematics.

Item No.	Qty.	Part No.	Description
13*	2	25-3456	Pioneer Dust Plug Right Angle (Red)
14	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
15	1	31-34020	Bulkhead Branch Tee JIC (2703-8-8)
16	2	31-34040	Straight JIC x O-Ring (6400-8-8)
17	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
18	10	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
19	2	31-34070	Run Tee JIC x O-Ring (6804-8-8)
20	1	31-34090	Swivel Nut Run Tee JIC (6602-8-8-8)
21	1	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)
22	2	31-34123	Hex Socket O-Ring Plug (6409-8-8)
23	3	35-30121	35" x 1/2" -8JIC/-8JIC Hose
24	1	35-30127	54" x 1/2" -8JIC/-8JIC Hose
25	2	35-30134	75" x 1/2" -8JIC/-8JIC Hose
26	2	35-30145	108" x 1/2" -8JIC/-8JIC Hose
27	3	35-30162	390" x 1/2" -8JIC/-8JIC Hose
28	1	56-7772	Relief Valve
29	1	57-20744	1/2" Flat Washer
30	5	70-20581	5/16" Hex Nut NC
31	1	70-20604	1/2" Hex Center Lock Nut
32	1	70-20807	3/4" Hex Jam Nut NF

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
26-34725	49-12274	Seal Kit 4 x 43.5 (647210) Nitrided Rod

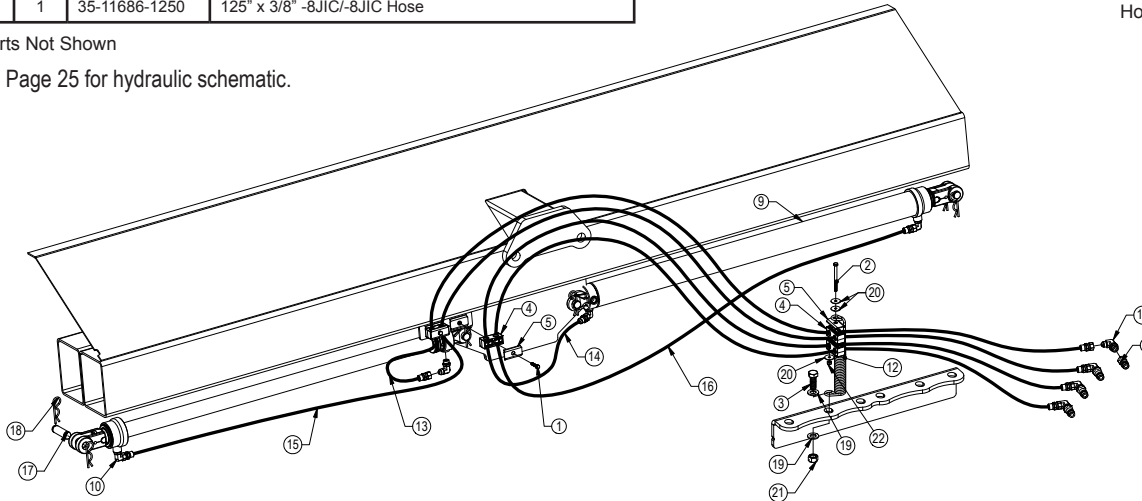
Item No.	Qty.	Part No.	Description
1	2	16-20036	5/16" X 1-1/2" Hex Bolt Gr 5 NC
2	1	16-20047	5/16" X 4-1/2" Hex Bolt Gr 5 NC
3	1	16-20218	3/4" X 2" Hex Bolt Gr 5 NC
4	4	18-3074	Hose Hold Down Clamp
5	4	18-3075	Hose Hold Down Clamp Plate
6	4	25-34342	Tappet Quick Coupler Male - Poppet Style
7*	2	25-3403	Pioneer Dust Cap Slider (Blue)
8*	2	25-3405	Pioneer Dust Cap Slider (Brown)
9	2	26-34741	3 x 48 Welded Cylinder (647660)
10	4	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
11	4	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
12	1	34-13807	Spring, Hose Support
13	1	35-11686-1250	125" x 3/8" -8JIC/-8JIC Hose

Item No.	Qty.	Part No.	Description
14	1	35-11686-1390	139" x 3/8" -8JIC/-8JIC Hose
15	1	35-11686-1610	161" x 3/8" -8JIC/-8JIC Hose
16	1	35-11686-1870	187" x 3/8" -8JIC/-8JIC Hose
17	2	43-16306	Cylinder Pin
18	8	43-7767	Hitch Pin Clip
19	2	57-20757	3/4" SAE Hardened Flat Washer - 1-1/2" OD
20	3	57-20791	5/16" Fender Washer (1.25" OD)
21	1	70-20607	3/4" Hex Center Lock Nut Gr 2 NC
22	1	70-20611	5/16" Nyloc Hex Nut Gr 5 NC
23*	2	16-20127	1/2" X 1" Hex Bolt Gr 5 NC
24*	2	34-17585	12-20 Cylinder Strap
25*	2	70-20604	1/2" Hex Center Lock Nut NC

Hoses Not Drawn To Scale

* Parts Not Shown

See Page 25 for hydraulic schematic.

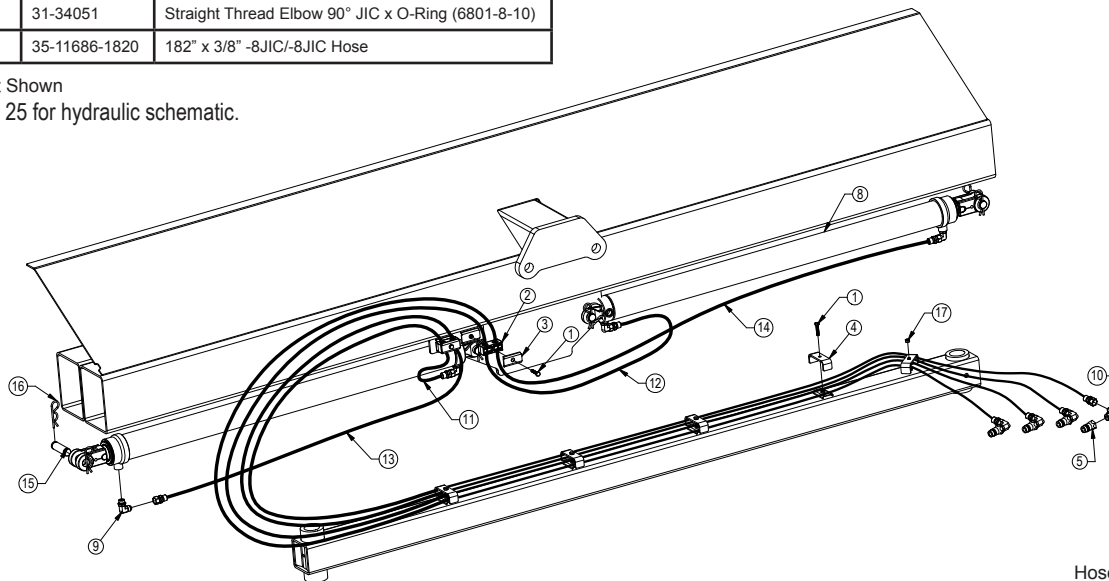


Item No.	Qty.	Part No.	Description
1	6	16-20036	5/16" X 1-1/2" Hex Bolt Gr 5 NC
2	2	18-3074	Hose Hold Down Clamp
3	2	18-3075	Hose Hold Down Clamp Plate
4	5	18-15684	Hose Hold Down Clamp Plate
5	4	25-34342	Tappet Quick Coupler Male - Poppet Style
6*	2	25-3403	Pioneer Dust Cap Slider (Blue)
7*	2	25-3405	Pioneer Dust Cap Slider (Brown)
8	2	26-34741	3 x 48 Welded Cylinder (647660)
9	4	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
10	4	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
11	1	35-11686-1820	182" x 3/8" -8JIC/-8JIC Hose

Item No.	Qty.	Part No.	Description
12	1	35-11686-1960	196" x 3/8" -8JIC/-8JIC Hose
13	1	35-11686-2330	233" x 3/8" -8JIC/-8JIC Hose
14	1	35-11686-2540	254" x 3/8" -8JIC/-8JIC Hose
15	2	43-16306	Cylinder Pin
16	8	43-7767	Hitch Pin Clip
17	1	70-20581	5/16" Hex Nut Gr 5 NC
18*	2	16-20127	1/2" X 1" Hex Bolt Gr 5 NC
19*	2	34-17585	12-20 Cylinder Strap
20*	2	70-20604	1/2" Hex Center Lock Nut NC

* Parts Not Shown

See Page 25 for hydraulic schematic.



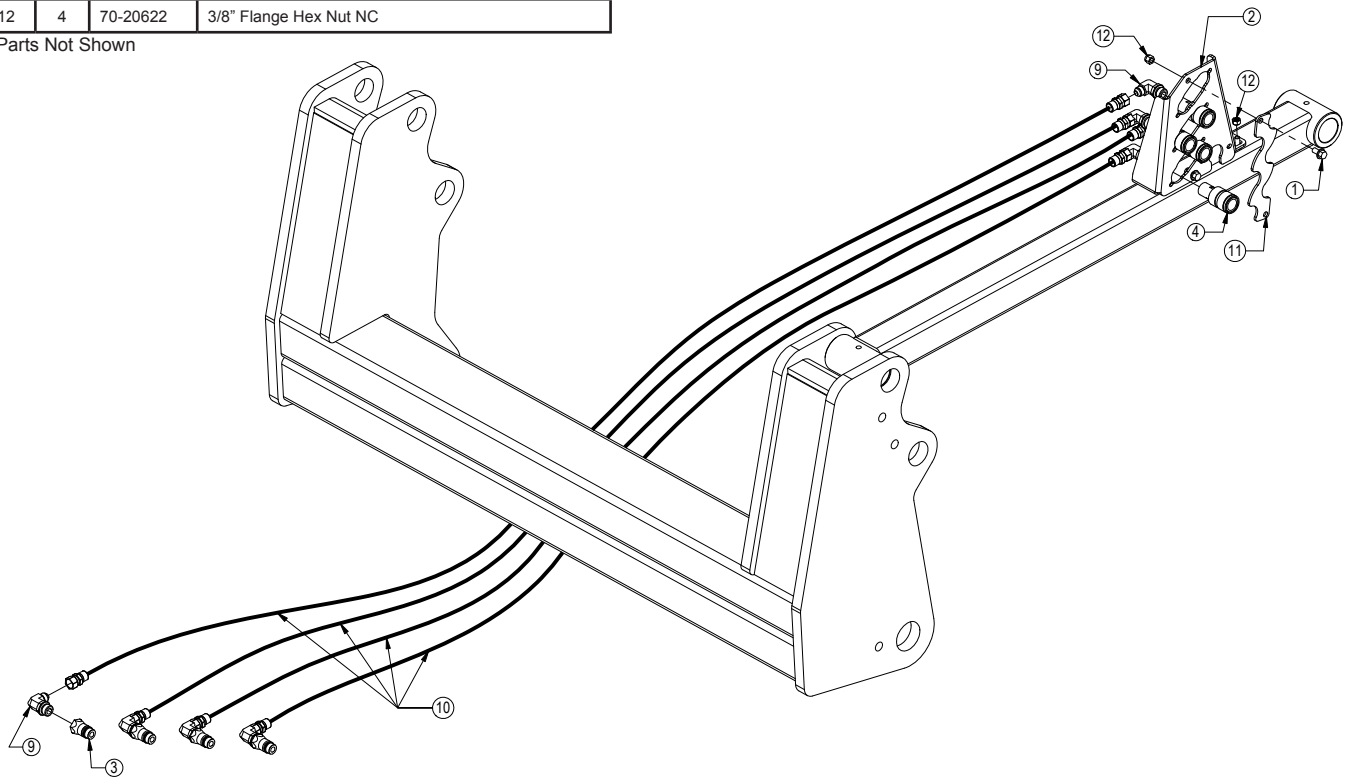
Hoses Not Drawn To Scale

Item No.	Qty.	Part No.	Description
1	2	16-35C612	3/8" x 3/4" Flanged Bolt
2	1	18-14737	700 Series Female Coupler Mount - Universal
3	4	25-34342	Tappet Quick Coupler Male - Poppet Style
4	4	25-34321	Tappet Quick Coupler Female
5*	2	25-3403	Pioneer Dust Cap Slider (Blue) - Left Side Cylinder
6*	2	25-3404	Pioneer Dust Plug Slider (Blue) - Left Side Cylinder
7*	2	25-3405	Pioneer Dust Cap Slider (Brown) - Right Side Cylinder
8*	2	25-3406	Pioneer Dust Plug Slider (Brown) - Right Side Cylinder
9	8	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
10	4	35-30162	390" (26.5') x 1/2" -8JIC/-8JIC Hose
11	1	44-14738	700 Series Female Coupler Retainer-Universal
12	4	70-20622	3/8" Flange Hex Nut NC

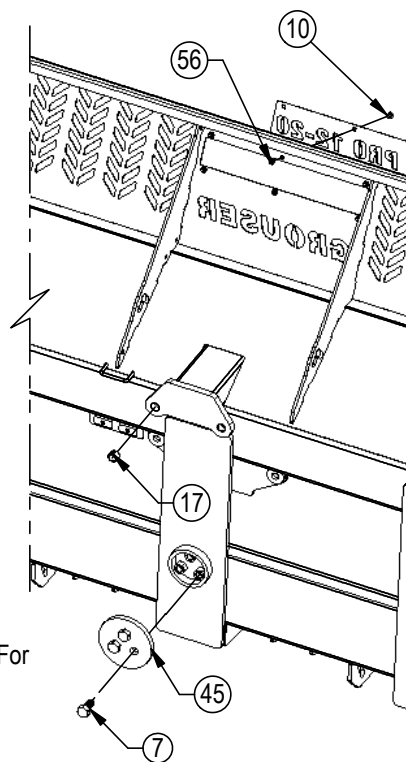
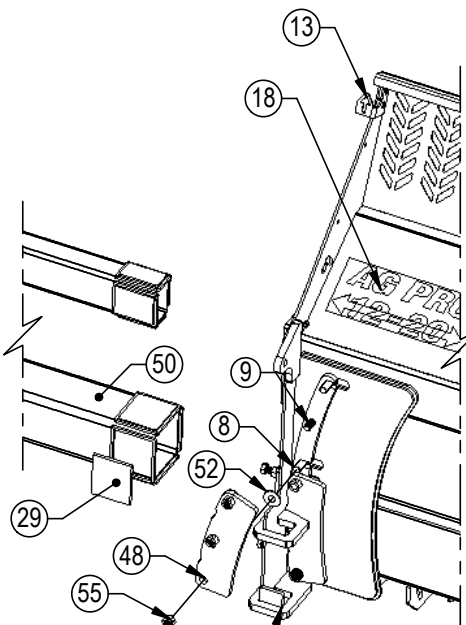
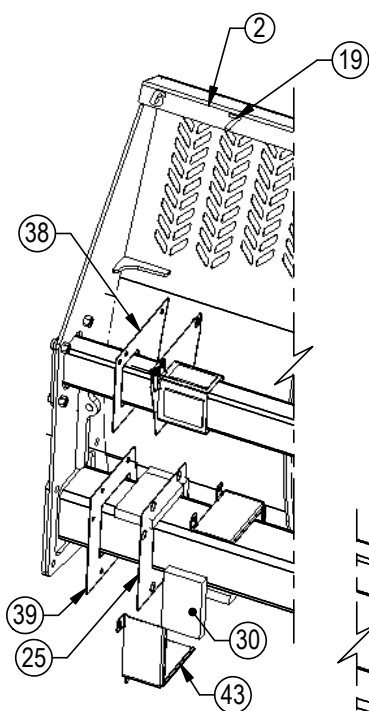
See Page 25 for hydraulic schematic.

Hoses Not Drawn To Scale

* Parts Not Shown



Blade Assembly

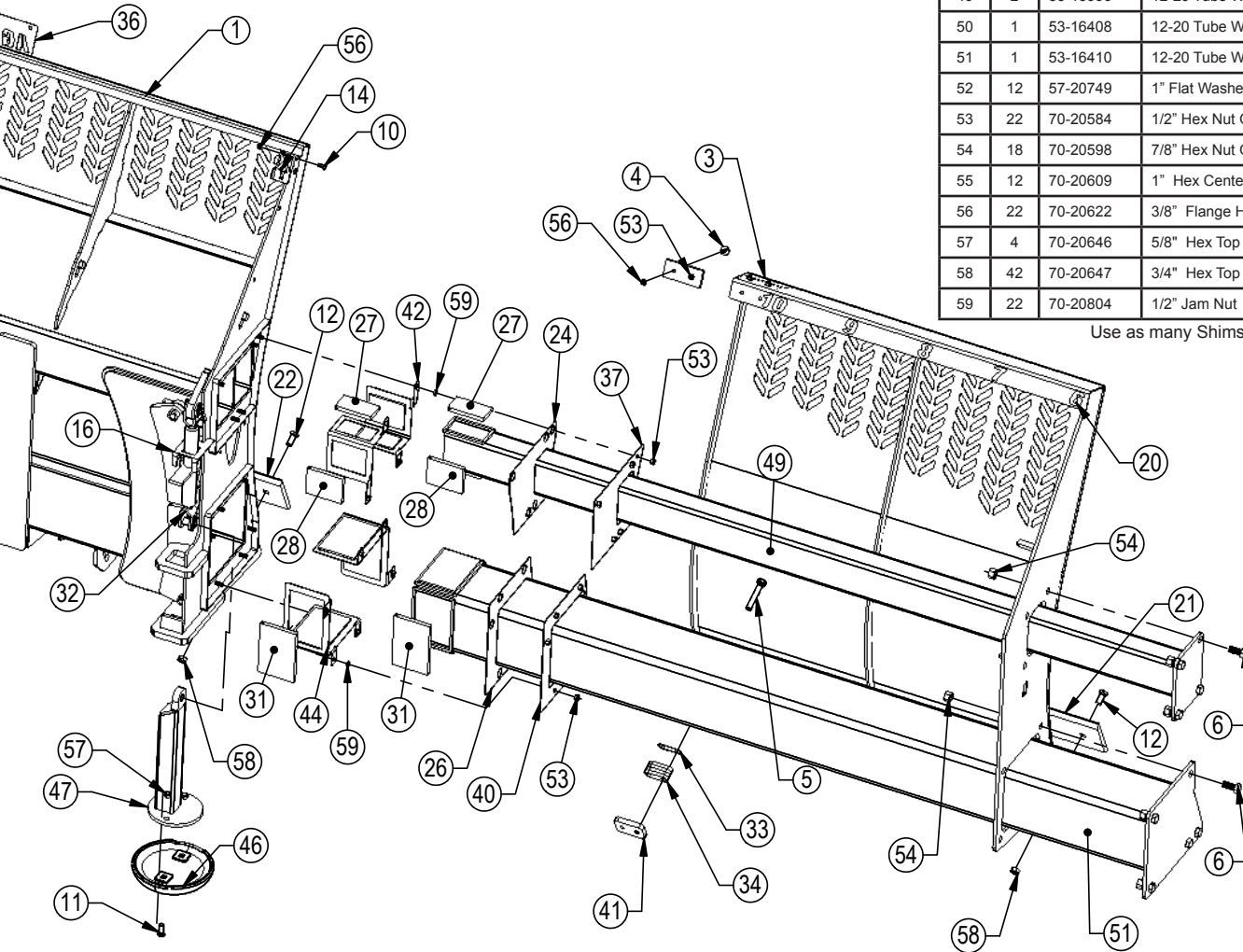


Left Side Skid Shoe Assembly Not Shown For Clarity.

Item No.	Qty.	Part No.	Description
1	1	15-17570	12-20 XAXT (V6) - Blade Weld
2	1	15-16855-L	12-20 Blade End Weld Left
3	1	15-16855-R	12-20 Blade End Weld Right
4	12	16-16305	3/8 x 1.25" Flanged Elevator Bolt
5	4	16-20517	3/4" x 4-1/2" Hex Bolt Gr 8 NC
6	18	16-20538	7/8" x 2" Hex Bolt Gr 8 NC
7	3	16-20558	1" x 2" Hex Bolt Gr 8 NC
8	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
9	4	16-20562	1" x 3" Hex Bolt Gr 8 NC
10	10	16-21064	3/8" x 1" Carriage Bolt Gr 5 NC
11	4	16-21666	5/8" x 1-3/4" Plow Bolt Gr 5 NC
12	42	16-21748	3/4" x 2" Plow Bolt Gr 5 NC
13	1	18-16304-L	Bracket, Location Left 12-20 Slider
14	1	18-16304-R	Bracket, Location Right 12-20 Slider
15*	1	18-18595-L	Ratchet Keeper - Left
16	1	18-18595-R	Ratchet Keeper - Right
17	2	19-7774	1" x 1" Spring Bushing (125100100)
18	1	27-15598	Ag Pro 12-20 Decal
19	1	27-15612-L	Ag Pro 12-20 Width Decal - Left
20	1	27-15612-R	Ag Pro 12-20 Width Decal - Right
21	3	29-11118-5	5' - 3/4" x 8" Cutting Edge (4500, 6500)
22	1	29-11118-6	6' - 3/4" x 8" Cutting Edge (4500, 6500)
23	6	34-16158	Bearing, 2.625 x 6.00 W/ Holes
24	2	34-16419	12-20 Top Seal
25	1	34-16420	12-20 - 8" Tube Seal - Bottom Left
26	1	34-16421	12-20 - 10" Tube Seal - Bottom Right
27	8	34-16425	12-20 Top Narrow UHMW
28	8	34-16426	12-20 Top Wide UHMW
29	4	34-16427	12-20 8" Inner UHMW
30	4	34-16428	12-20 8" Outer UHMW

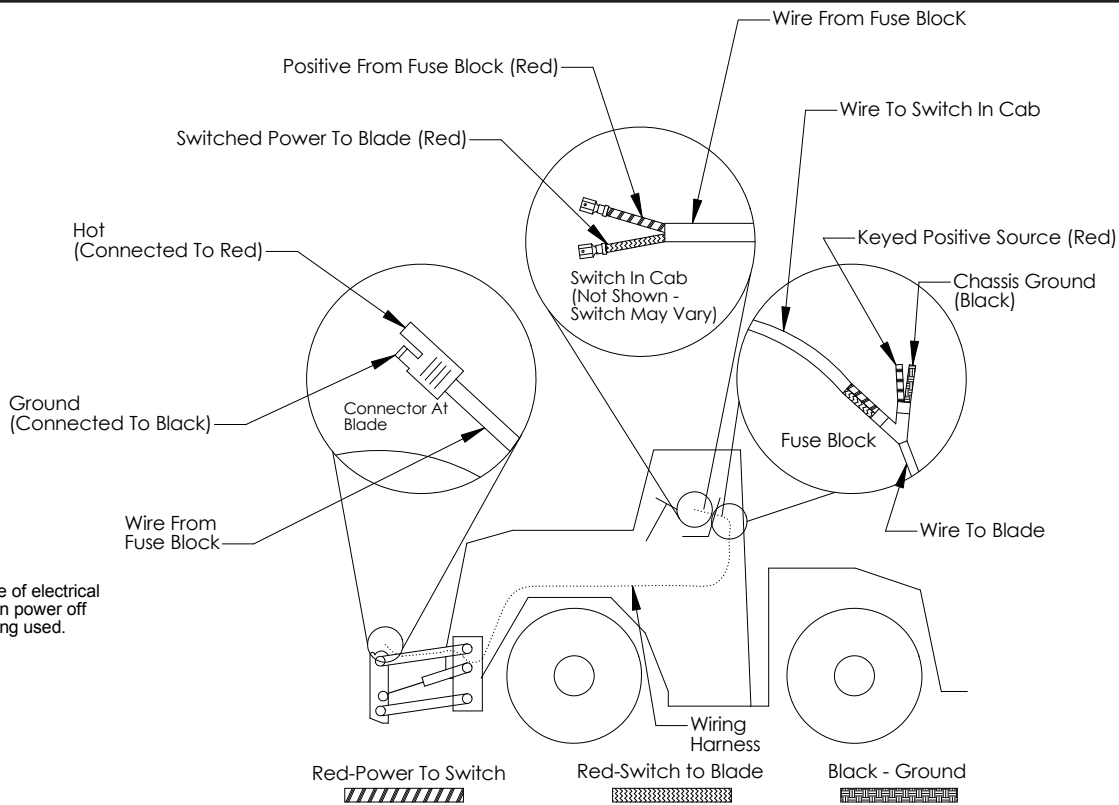
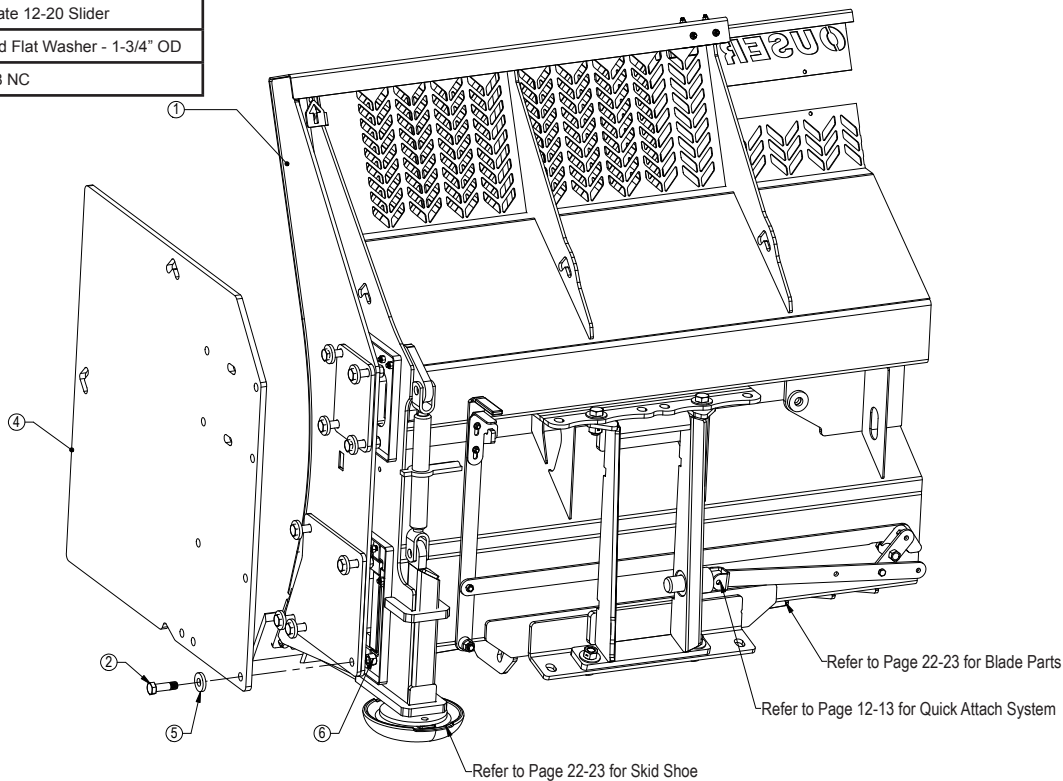
Item No.	Qty.	Part No.	Description
31	8	34-16429	12-20 10" UHMW
32	2	34-17565	Ratchet Jack
33	12	44-16977	12-20 Standoff Shim
34	2	44-16525	12-20 Standoff (1.25" x 2")
35*	1	44-15600	12-20 Custom Name Plate - (6.2" x 25.6")
36	1	44-15605	Ag Pro 12-20 Name Plate - (6.2" x 25.6")
37	1	44-16401	12-20 Plate, Top Cover Right
38	1	44-16402	12-20 Plate, Top Cover Left
39	1	44-16403	12-20 Plate, 8" Cover
40	1	44-16404	12-20 Plate, 10" Cover
41	2	44-16417	12-20 Plate, Slider
42	4	44-16422	12-20 Top Outer Retainer
43	2	44-16423	12-20 8" Outer Retainer
44	2	44-16424	12-20 10" Outer Retainer
45	1	44-3749	Backdrag Brace Plate
46	2	50-15458	12" Round Mushroom Skid Shoe
47	2	50-17580	12-20 Skid Shoe Mount - Mushroom
48	4	52-18299	12-20 Tilt Plate (Painted)
49	2	53-16990	12-20 Tube Weld - 4x6
50	1	53-16408	12-20 Tube Weld - 8x8
51	1	53-16410	12-20 Tube Weld - 10x10
52	12	57-20749	1" Flat Washer
53	22	70-20584	1/2" Hex Nut Gr 5 NC
54	18	70-20598	7/8" Hex Nut Gr 8 NC
55	12	70-20609	1" Hex Center Lock Nut Gr 2 NC
56	22	70-20622	3/8" Flange Hex Nut Gr 5 NC
57	4	70-20646	5/8" Hex Top Lock Nut Gr 5 NC
58	42	70-20647	3/4" Hex Top Lock Nut Gr 5 NC
59	22	70-20804	1/2" Jam Nut

Use as many Shims (Item #33) as necessary



Item No.	Qty.	Part No.	Description
1	1	15-17590	NANT - Blade Weld 12-20 Slider (V6)
2	18	16-20542	7/8" X 3" Hex Bolt Gr 5 NC
3*	2	44-16470	Box End Plate 12-20 Slider
4	2	44-16480	Silage Box End Plate 12-20 Slider
5	18	57-20758	7/8" SAE Hardened Flat Washer - 1-3/4" OD
6	18	70-20598	7/8" Hex Nut Gr 8 NC

* Parts Not Shown

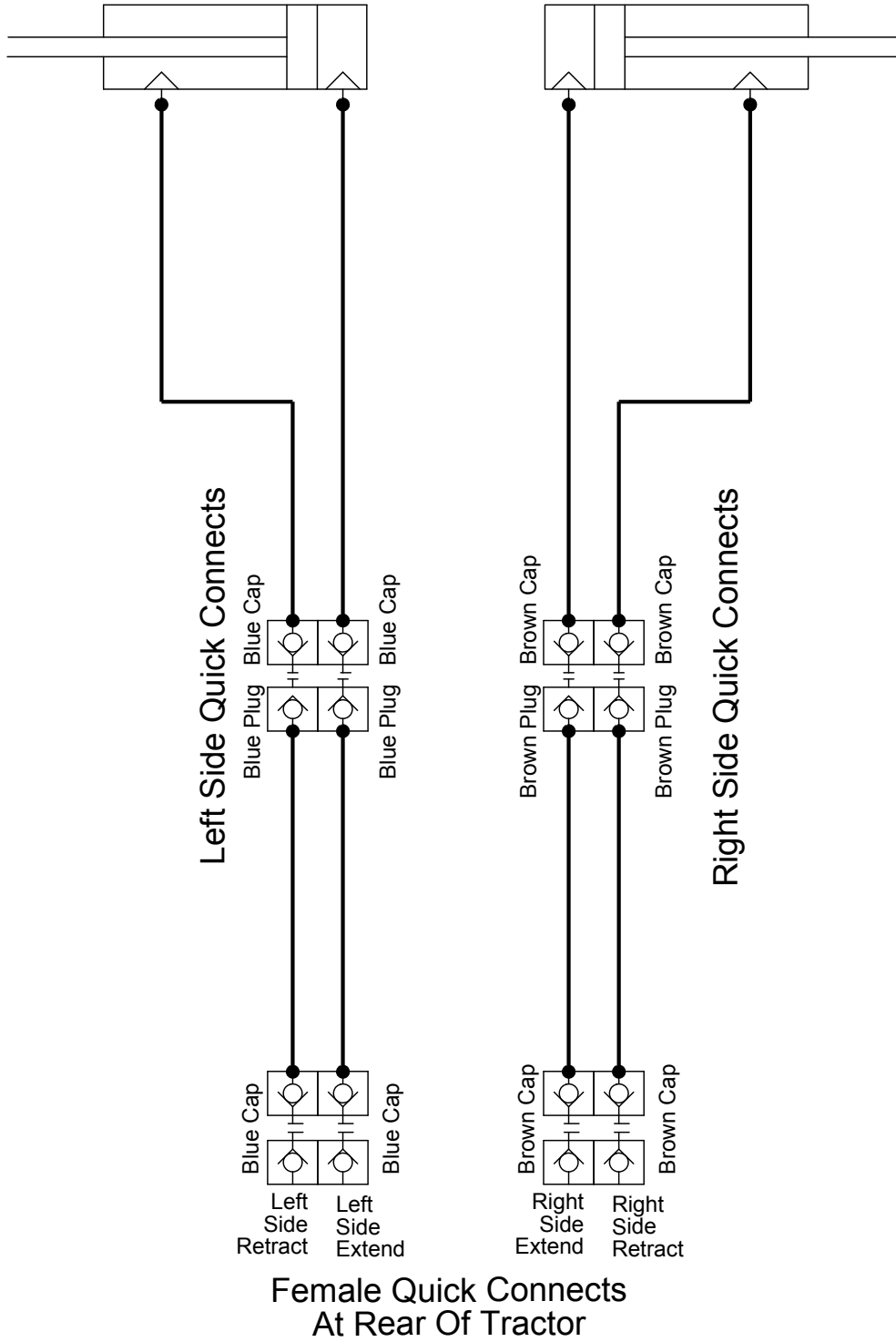


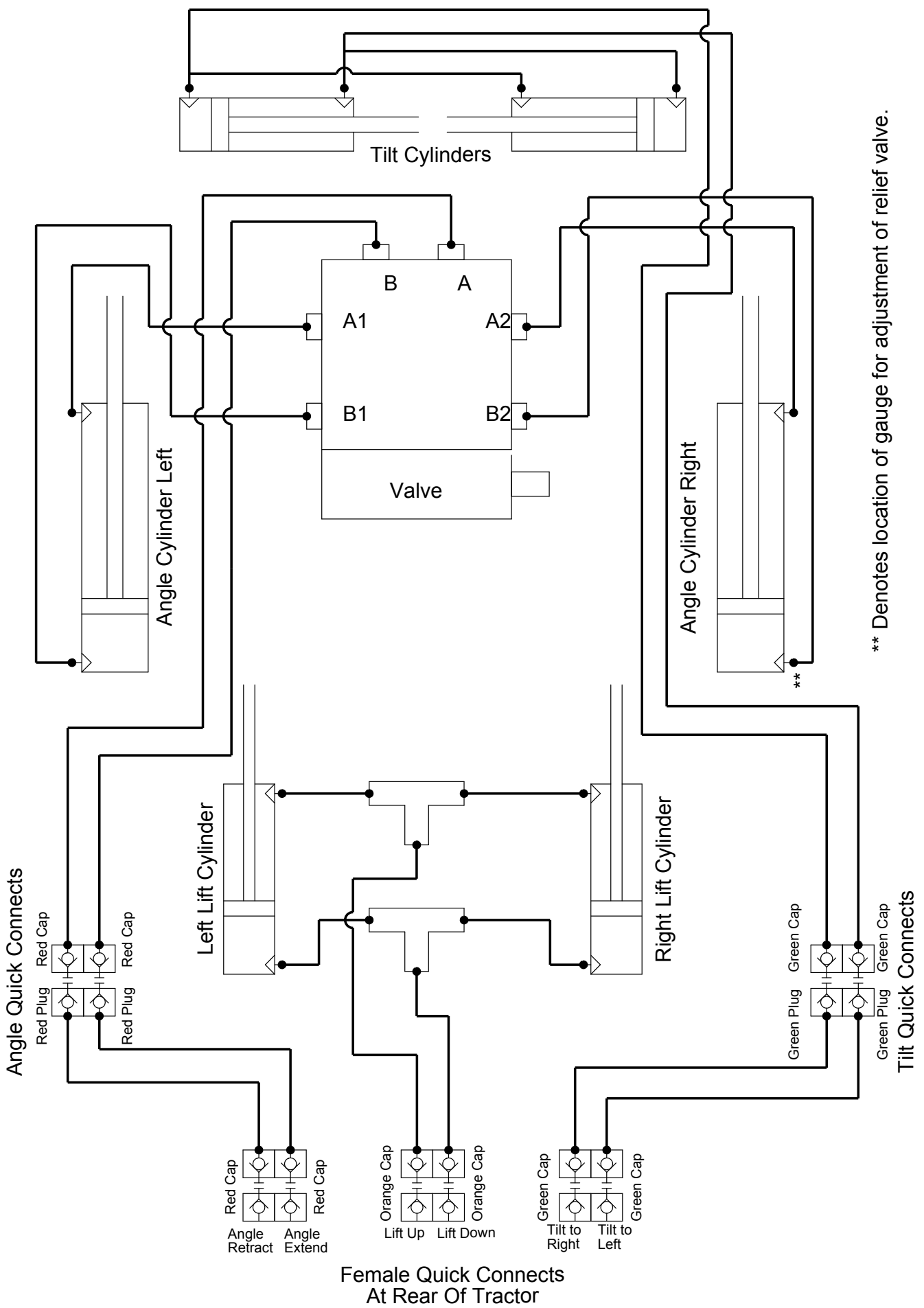
Note: To maximize life of electrical system and valve, turn power off when dozer is not being used.

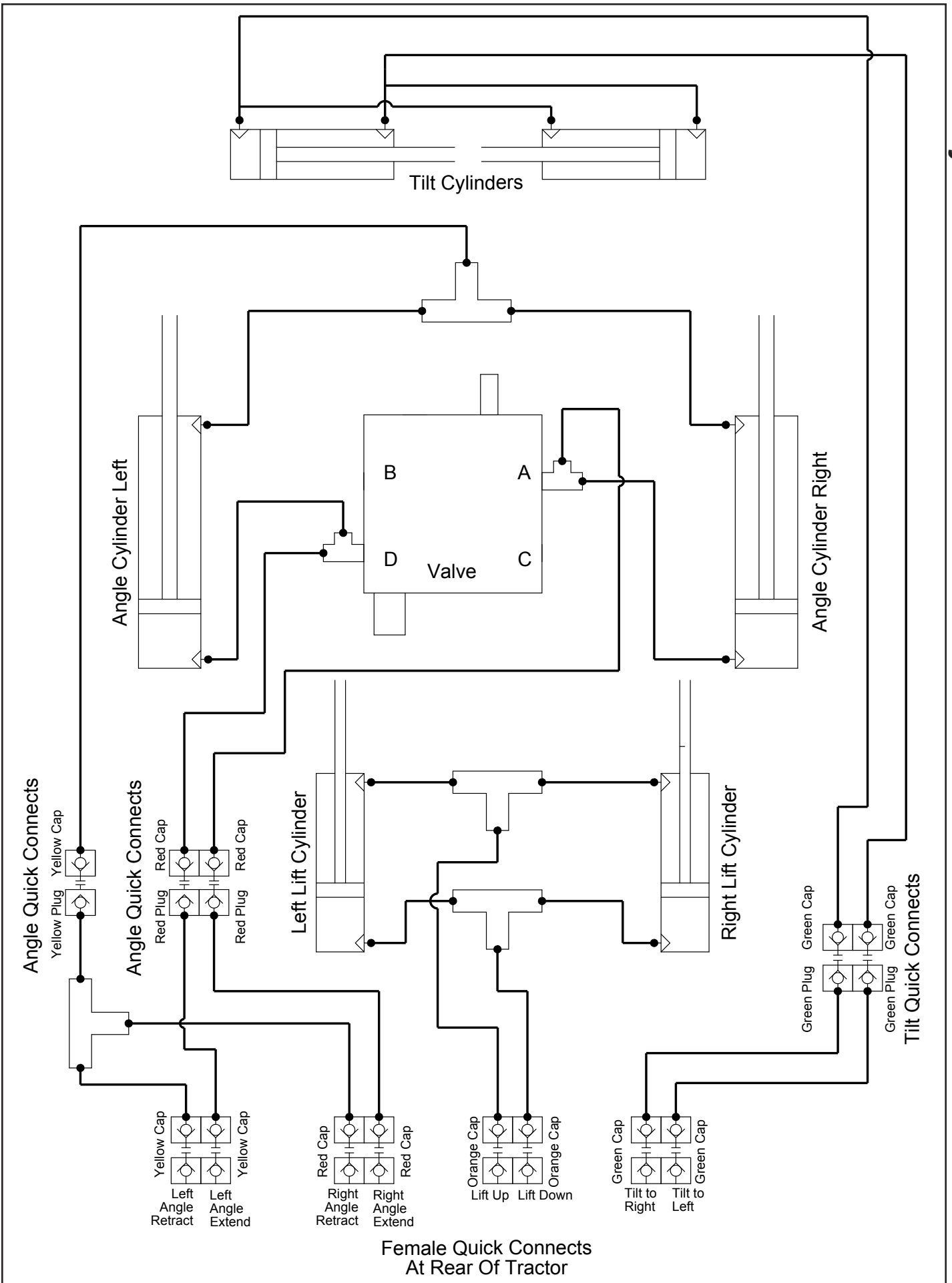
Instructions

1. Locate "keyed and fused" 12 V power supply in cab of tractor.
2. Disconnect battery.
3. Connect the red wire to power and the black wire to ground.
4. Install switch in convenient place in cab.
5. Route wire harness from switch to the blade. (plug-in connector at blade)
6. Connect the switch to the wire harness.
7. Reconnect the battery.

12-20 Blade Cylinders







Contact Us

As always, if you have any questions about your 12-20 Dozer or other products made by Grouser, feel free to contact us.

Grouser Products

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Improvements

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.

Warranty

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.

