



12-20 (V6) - AG PRO PLUS

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. Slide the ratchet keeper out of the way.
2. Loosen the jam nut on the ratchet.
3. Use the ratchet to adjust the skid shoe up or down in the.
4. Once the depth is set, slide the ratchet keeper back down into place to hold the ratchet from rotating.
5. Tighten the jam nut to lock the ratchet in place.
6. Place the handle in the manual holder container which is on the left top arm.
7. 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.

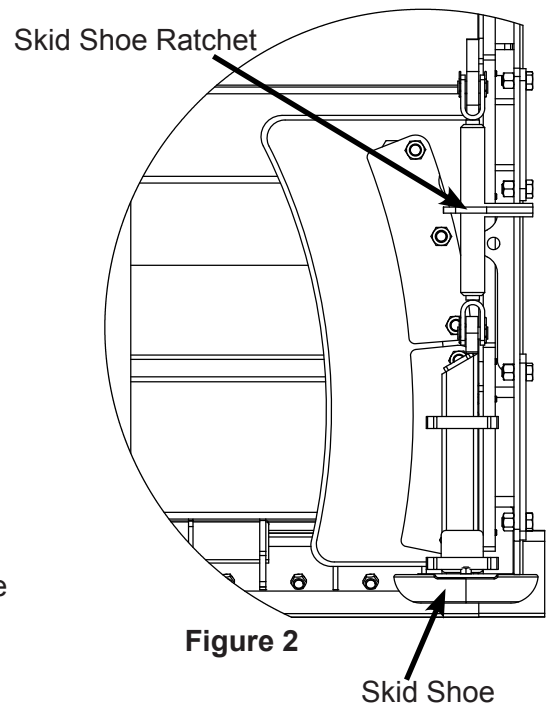


Figure 2

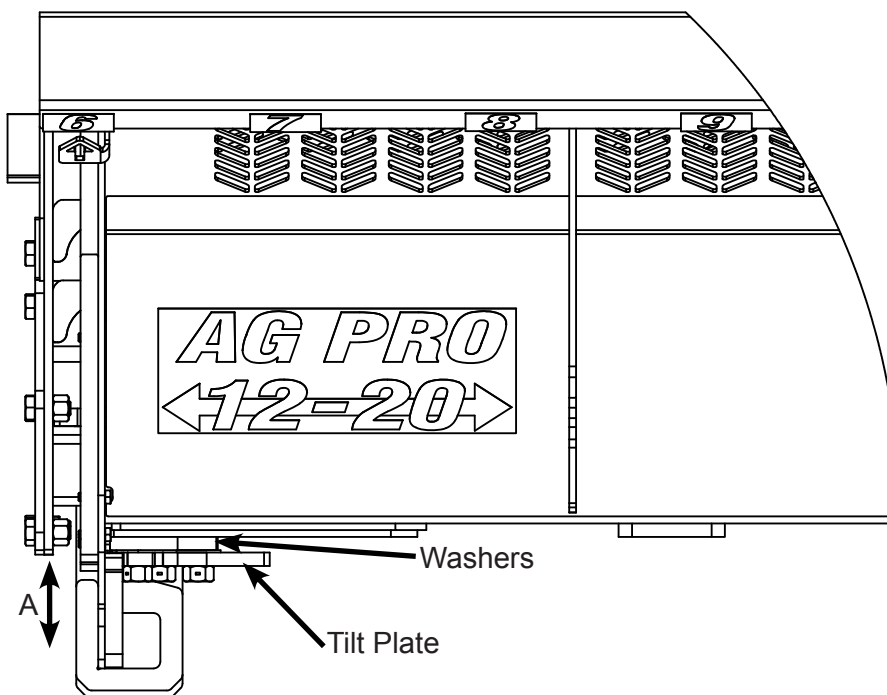


Figure 1

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 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

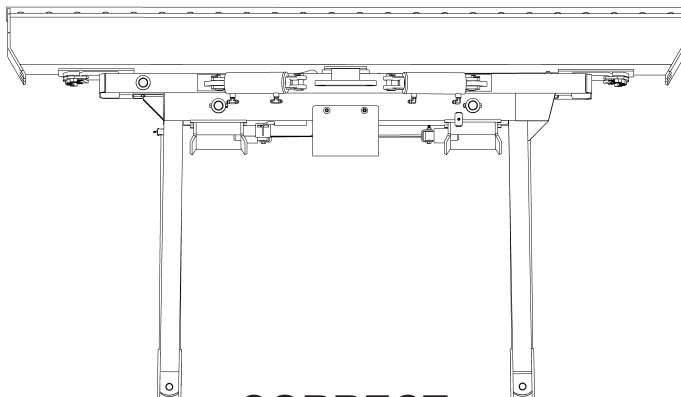
Set the safety relief valve at a higher pressure than tractor: To increase the pressure of the relief valve, install a 0-5,000 psi pressure gauge into the base end of right angle cylinder (see page 30). Loosen the jam nut on the safety valve and tighten the Allen screw 1/2 turn. Next, extend the right 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.

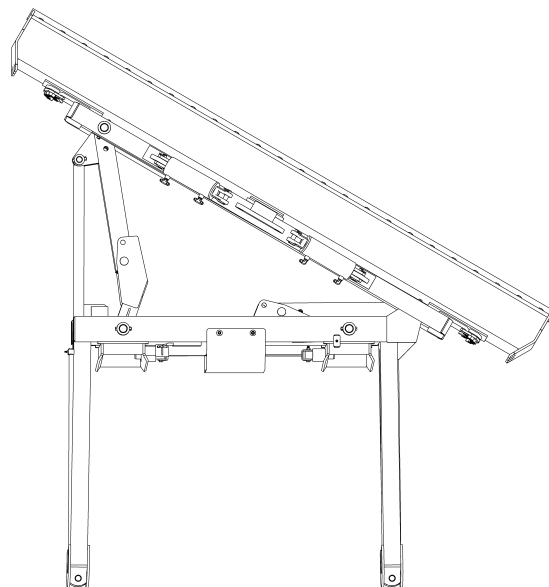
CAUTION: Do not bypass the safety relief valve and plumb each cylinder to separate valves on the tractor.

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.

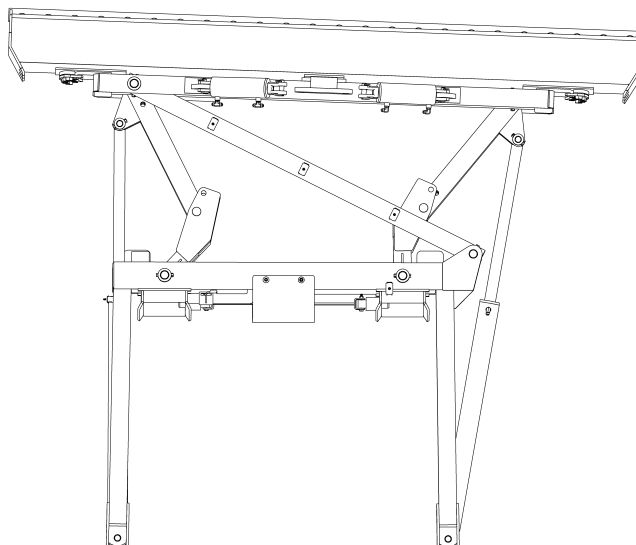
Please contact Grouser Products with any questions by:
Phone - 701-282-7710 or 800-747-6182; Fax - 701-282-8131



CORRECT



CORRECT
(Left or Right)



INCORRECT

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. If the quick couplers and coupler mount are not already attached to the left top arm, attach the coupler mount to the top arm with 2 - 1/2" Carriage bolts and 2 - 1/2" Nuts. See Page 22 for proper orientation.
9. Take the lift hoses that are already attached to the bulkhead fittings on the undercarriage and attach them to the lift cylinders.

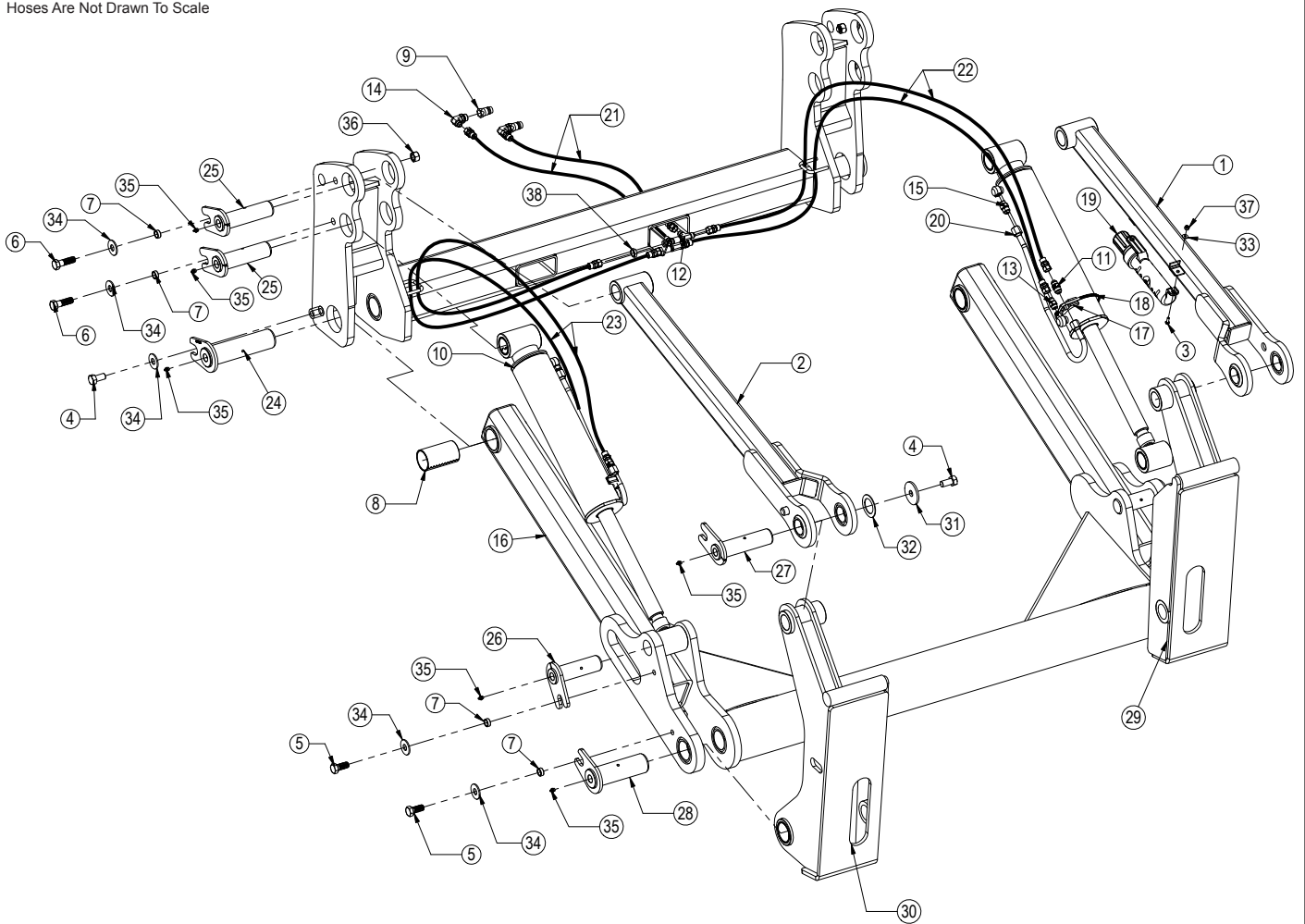
Note: For Step #10-16, refer to Page 22-23 for further information on hose routing and hose positions. The amount and location of the female couplers is determined by functions the blade is set up for.

10. Run the remaining hoses on the undercarriage to the top arm and attach a 90° fitting to all the hoses.
11. Install a female quick coupler onto each 90° fitting from the previous step.
12. Install each coupler into the designated hole on the coupler mount and hold them in place with the coupler retainer plate, 3/8" x 3/4" bolts and 3/8" flange nuts.
13. Take the long hoses and attach each one to a fitting at the center of the undercarriage.
14. Mark each hose clearly so that once the hoses are routed to the back of the tractor, it's easy to determine what cylinder base or rod end they are connected to.
15. Route the hoses thru the hose loops on the undercarriage.
16. Continue to route the hoses thru the tractor. Keep away from all moving parts.
17. If applicable, attach the wire harness to the coupler mount. Hold in place with a zip tie. Run the other end of the wire harness up into the cab of the tractor.
18. 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.
19. 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 #14-15 for further clarification on the quick attach system.
20. 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.
21. Lift the male quick attaches up till the blade is off the ground and the female quick attaches are against the front of the male quick attaches.
22. Shut off machine and set the parking brake.
23. 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.
24. Plug the male couplers into the female couplers on the top arm. Refer to Page #22-23 for proper coupler locations for all functions. 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.

Hoses Are Not Drawn To Scale



Item #A for Claas Tractors.

Item #B for Steiger, New Holland, Claas and JD 9R Tractors

Item #C for Versatile and Challenger Tractors.

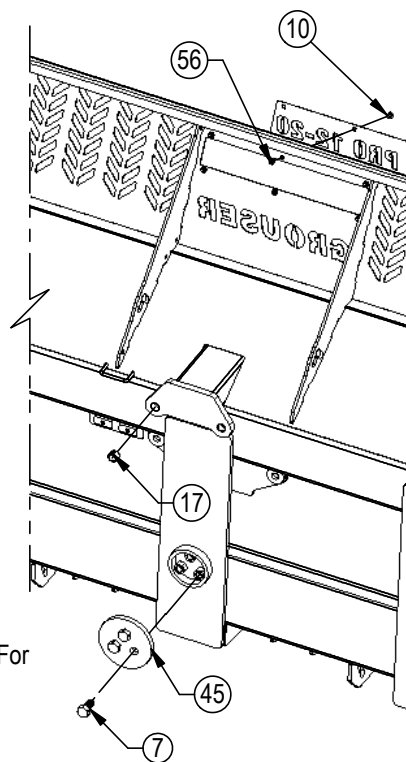
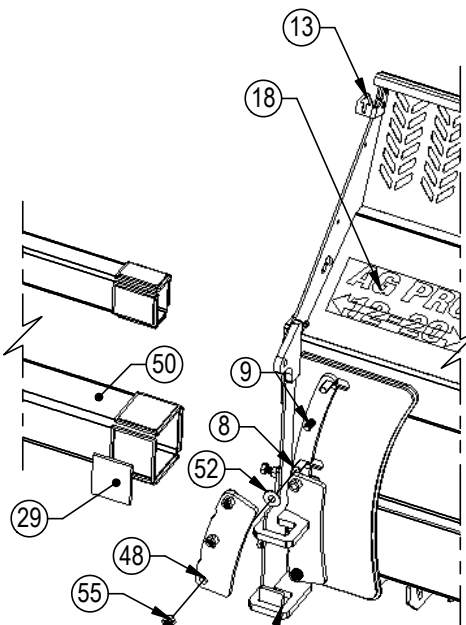
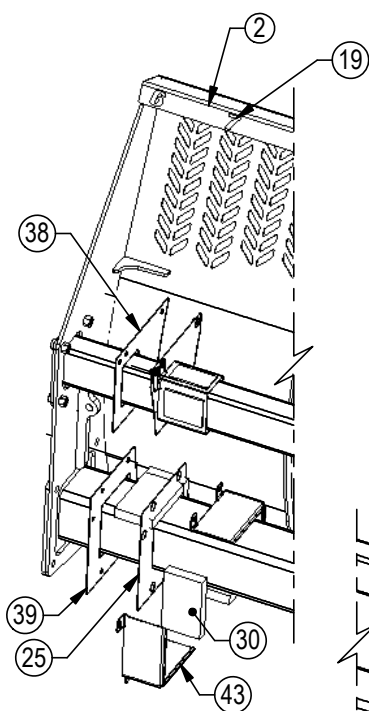
Item No.	Qty.	Part No.	Description
1	1	11-18165-L	Top Arm - Left
2	1	11-18165-R	Top Arm - Right
3	2	16-20002	1/4" x 3/4" Hex Bolt Gr 5 NC
4	4	16-20216	3/4" x 1-1/2" Hex Bolt Gr 5 NC
5	4	16-20217	3/4" x 1-3/4" Hex Bolt Gr 5 NC
6	4	16-20220	3/4" x 2-1/2" Hex Bolt Gr 5 NC
7	8	19-13515	3/4" ID - Non Rotating Pin Spacer Bushing
8	2	19-13525	2.75 x 2.50 x 4.75 Spring Bushing
9	2	25-34342	Tappet Quick Coupler Male
10	2	26-34745	4.5 x 18 Cylinder Tube Ends (658292)
11	2	31-11699-10-8	JIC Union (2403-10-8)
12	2	31-34030	Bulkhead Run Tee JIC (2704-8-8-8)
13	2	31-34040	Straight JIC x O-Ring (6400-8-8)
14	2	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-08-10)
14A	2	31-6802-08-10	Straight Thread Elbow 45° JIC x O-Ring (6802-08-10)
15	2	31-6400-10-08	Straight JIC x O-Ring (6400-10-8)
16	1	32-18630	Ag Pro Plus - Lift Frame (2.0)
17	2	34-12932	Cylinder Saddle (ZR518)
18	2	34-12994	Hose Clamp
19	1	34-14961	Manual Canister

Item No.	Qty.	Part No.	Description
20	2	35-18240	Ag Pro Plus - Steel Line (Lift Cylinder)
21C	2	35-30172	318" (26.5') x 1/2" -8JIC/-8JIC Hose
21B	2	35-30183	293" (24.42") x 1/2" -8JIC/-8JIC Hose w/165" Cordura
22	2	35-31128	57" x 1/2" -8JIC/-8JIC Hose W/Cordura
23	2	35-31134	75" x 1/2" -8JIC/-8JIC Hose W/Cordura
24	2	43-14725	AG Pin (Lift Frame / UC)
25	4	43-18120	Ag Pro + UC Top Pin (2" x 7.13")
26	2	43-18175	Ag Pro + Lift Cyl Pin (2" x 6.38")
27	2	43-18127	Ag Pro + Top Arm/QA Pin (2" x 7.5")
28	2	43-18635	Ag Pro + QA Pin (2.5" x 7.50")
29	1	45-18130-L	Ag Pro + Series Male QA - Left
30	1	45-18130-R	Ag Pro + Series Male QA - Right
31	2	57-1530	3" OD x .75" ID x .25" Flat Washer
32	2	57-1811	2" Narrow Rim Washer
33	2	57-20740	1/4" Flat Washer
34	10	57-20747	3/4" Flat Washer
35	12	58-9369	Grease Zerk 1/8" NPT Straight
36	2	70-20607	3/4" Hex Center Lock Nut Gr 2 NC
37	2	70-20610	1/4" Nyloc Hex Nut NC
38	2	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
26-34745	49-12278	Seal Kit 4.5" Bore x 2" Rod (658366) Nitrided Rod

Blade Assembly

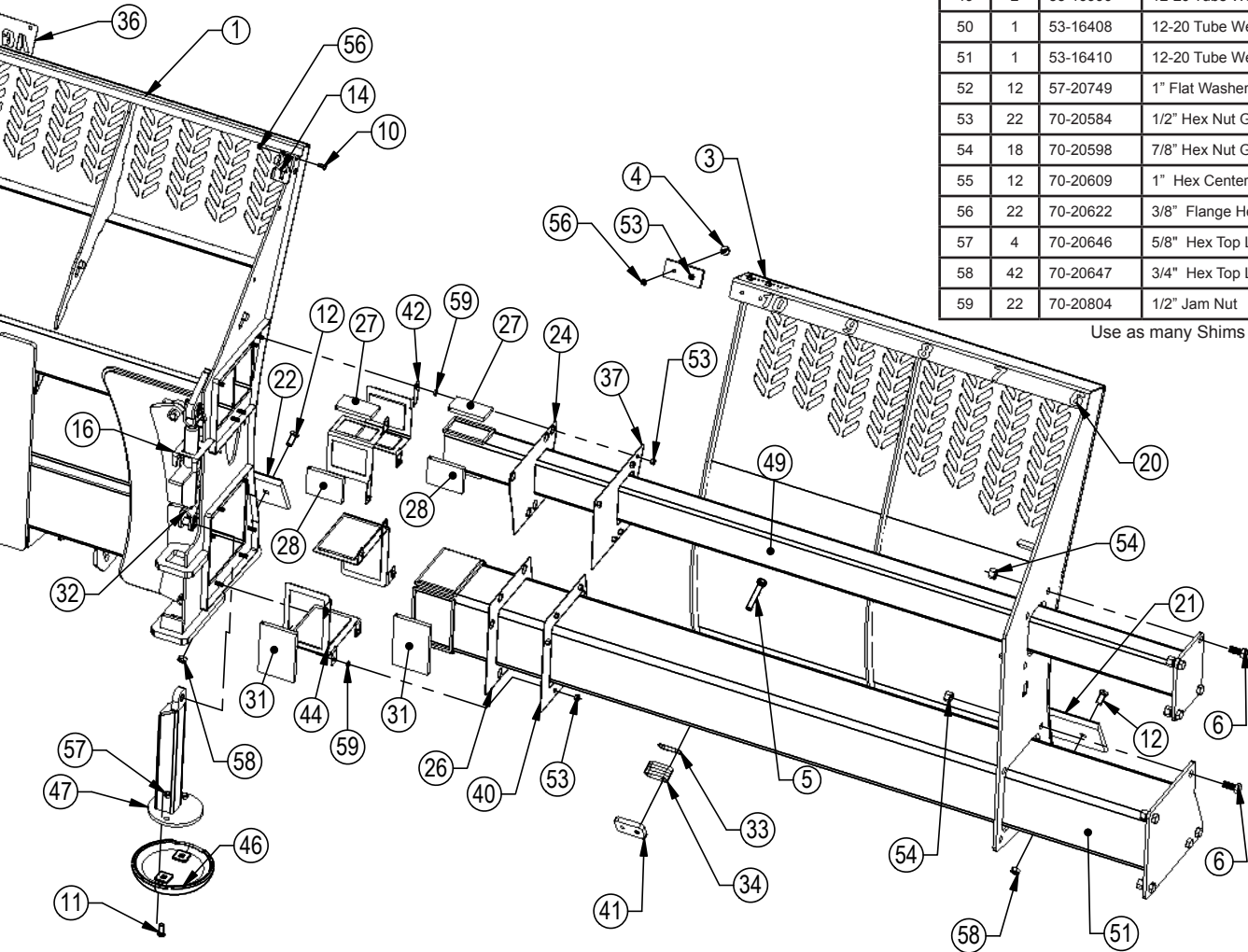


Left Side Skid Shoe Assembly Not Shown For Clarity.

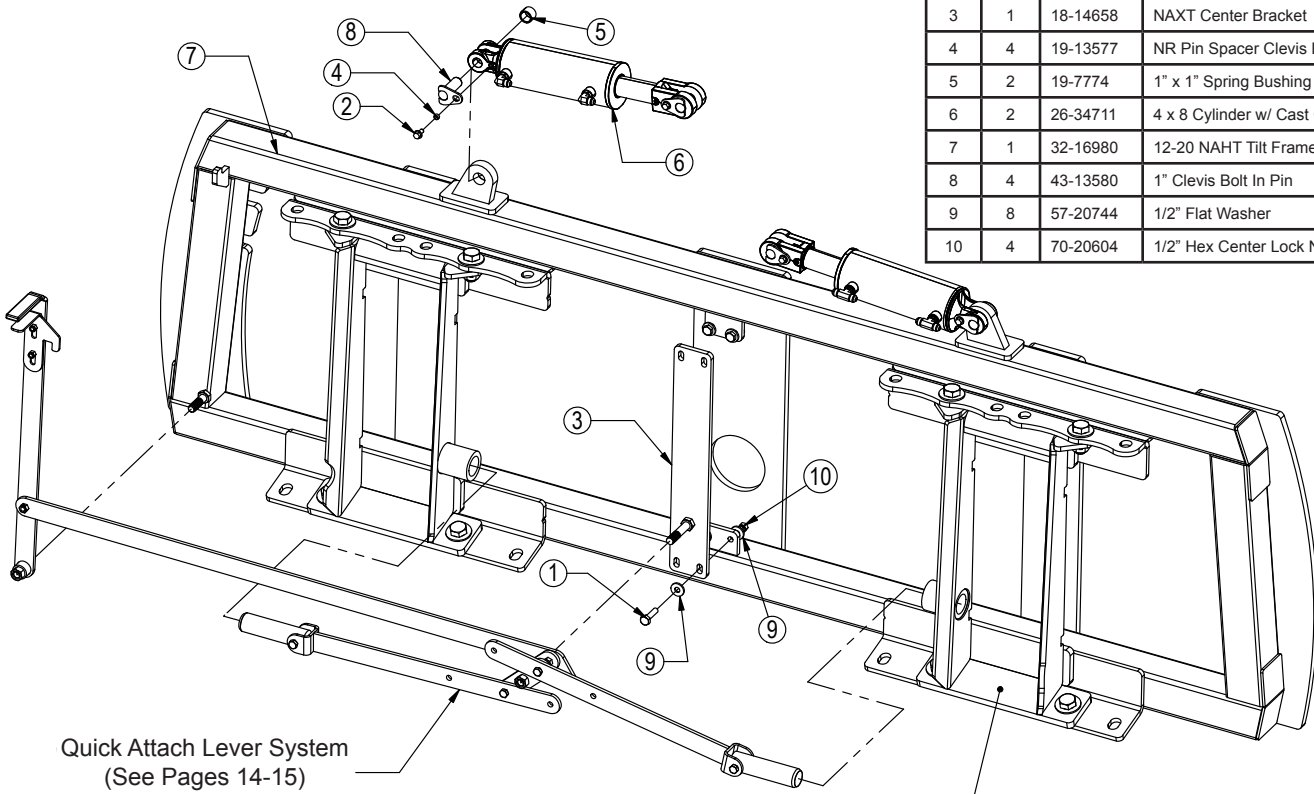
Item No.	Qty.	Part No.	Description
1	1	15-17570	12-20 XAXT (V6) - Blade Weld
2	1	15-16855-L	12-20 Blade End Weld Left
3	1	15-16855-R	12-20 Blade End Weld Right
4	12	16-16305	3/8 x 1.25" Flanged Elevator Bolt
5	4	16-20517	3/4" x 4-1/2" Hex Bolt Gr 8 NC
6	18	16-20538	7/8" x 2" Hex Bolt Gr 8 NC
7	3	16-20558	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	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

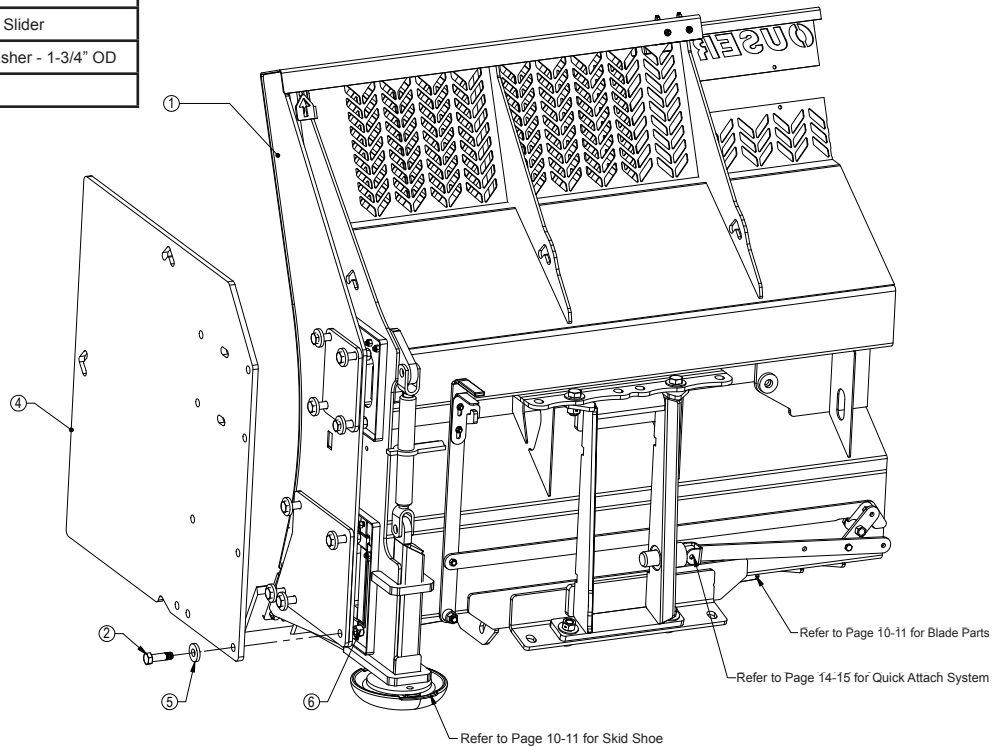


Quick Attach Lever System
(See Pages 14-15)

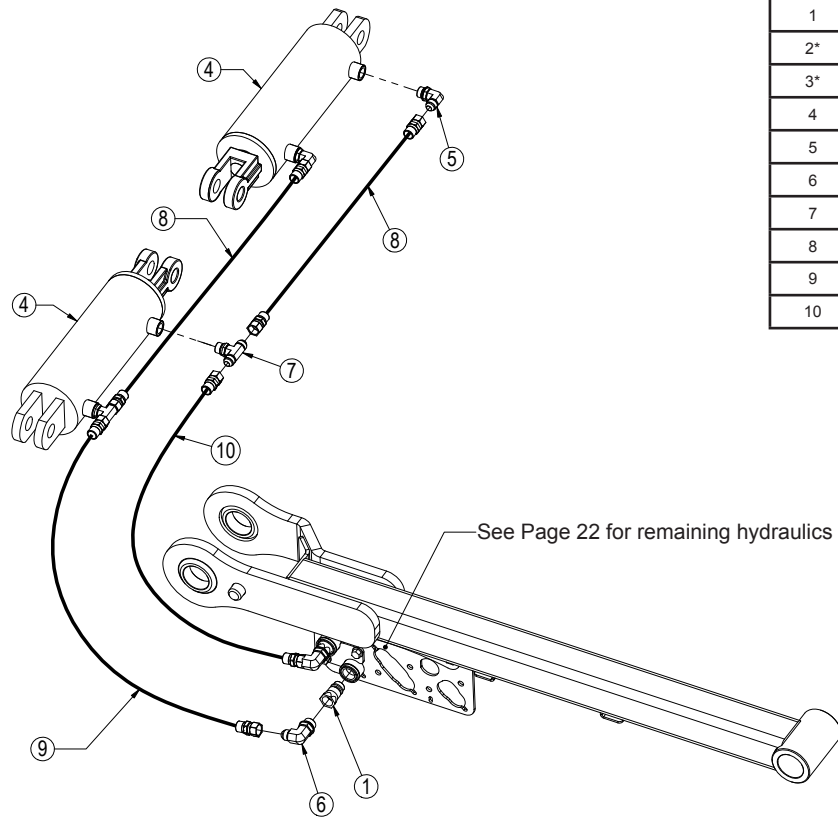
Quick Attach (See Pages 14-15)

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



Hoses Not Drawn To Scale

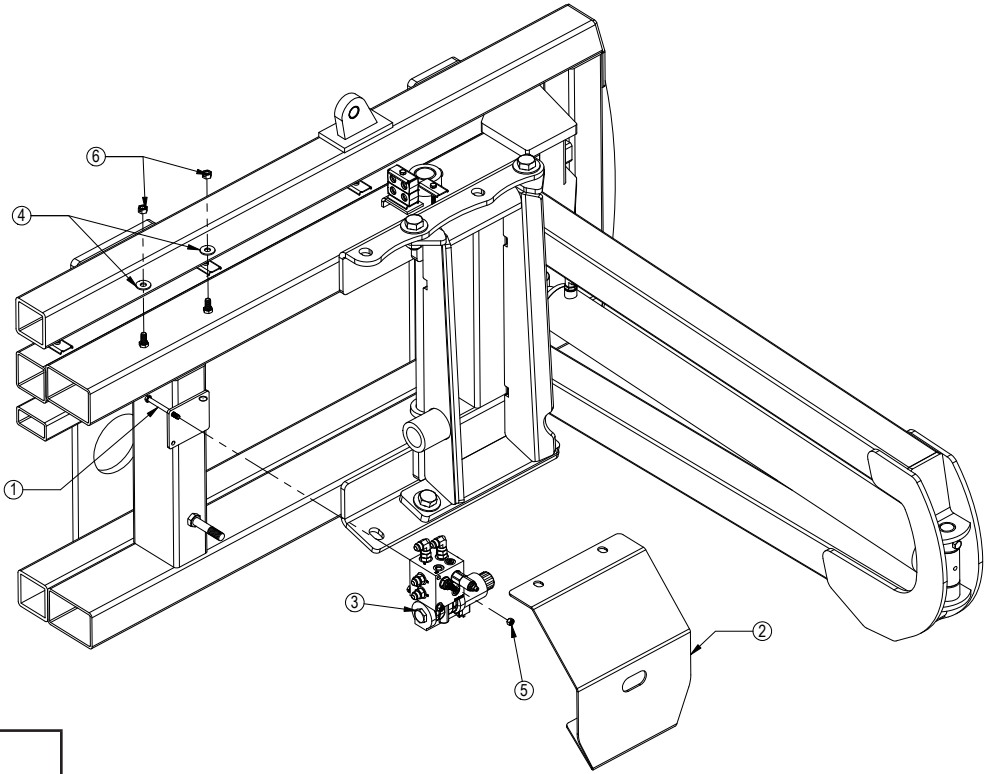


Item No.	Qty.	Part No.	Description
1	2	25-34342	Tappet Quick Coupler Male
2*	2	25-3453	Pioneer Dust Cap Tilt (Green)
3*	2	25-3454	Pioneer Dust Plug Tilt (Green)
4	2	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends
5	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
6	2	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
7	2	31-34060	Branch Tee JIC x O-Ring (6803-8-8-8)
8	2	35-30022	39" x 3/8" -8JIC/-8JIC Hose
9	1	35-31184	37" x 1/2" -8JIC/-8JIC Hose w/ Cordura (3.5M)
10	1	35-31185	47" x 1/2" -8JIC/-8JIC Hose w/ Cordura (3.5M)

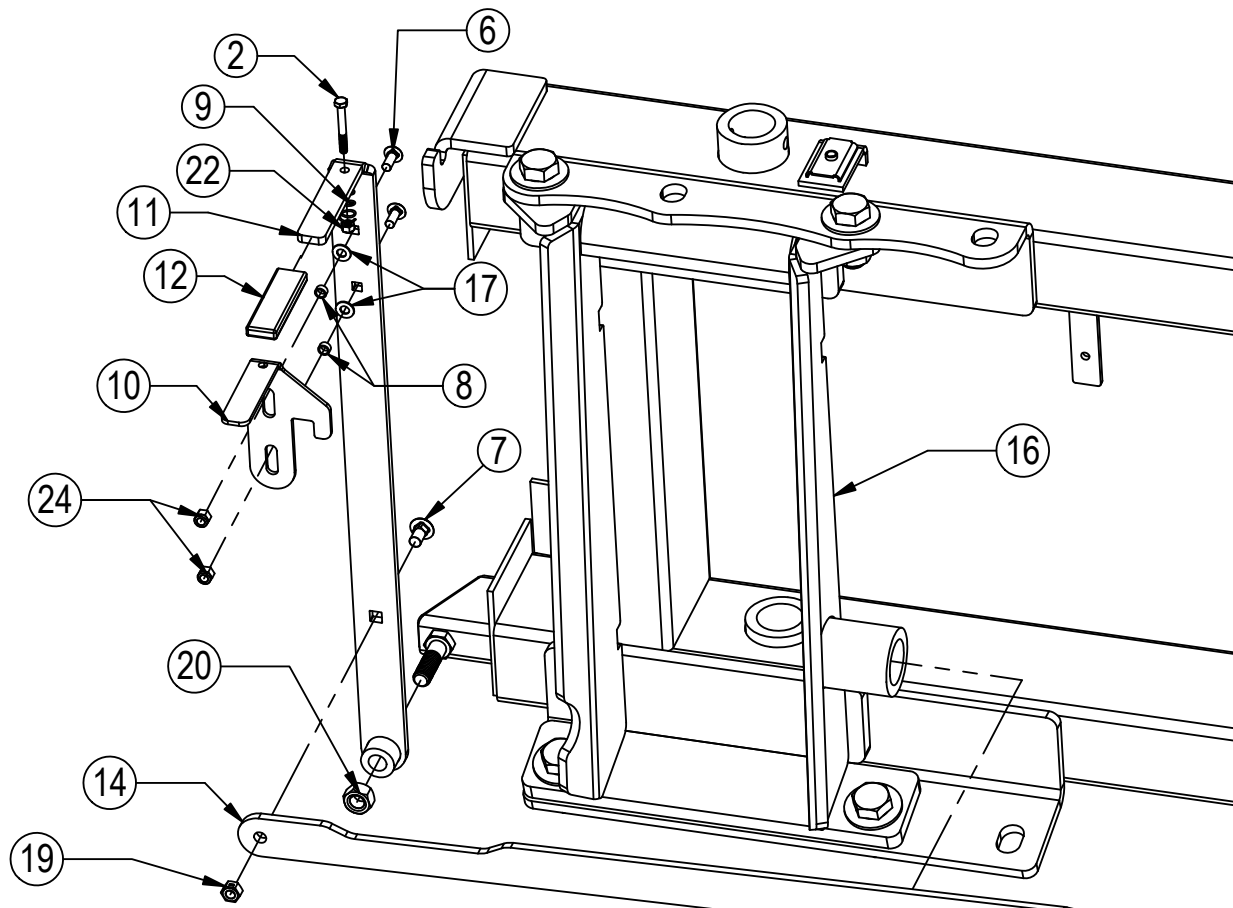
* Parts Not Shown

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

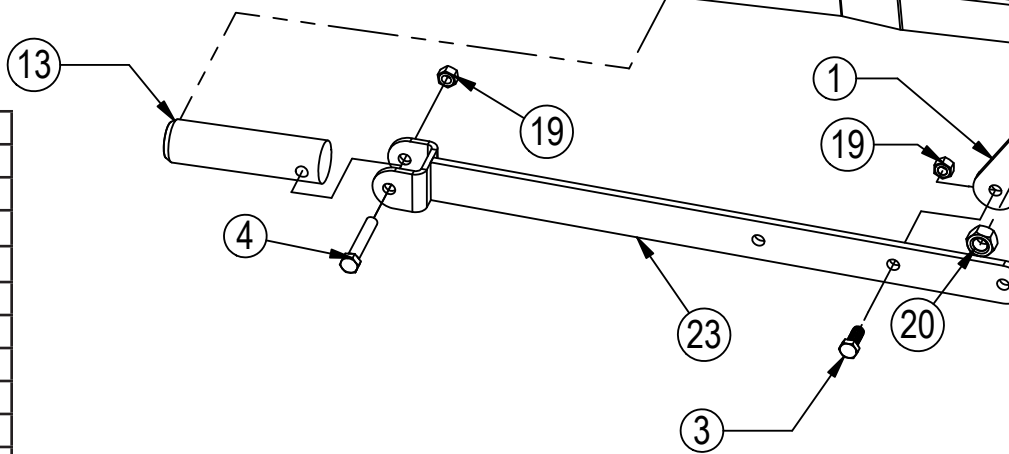


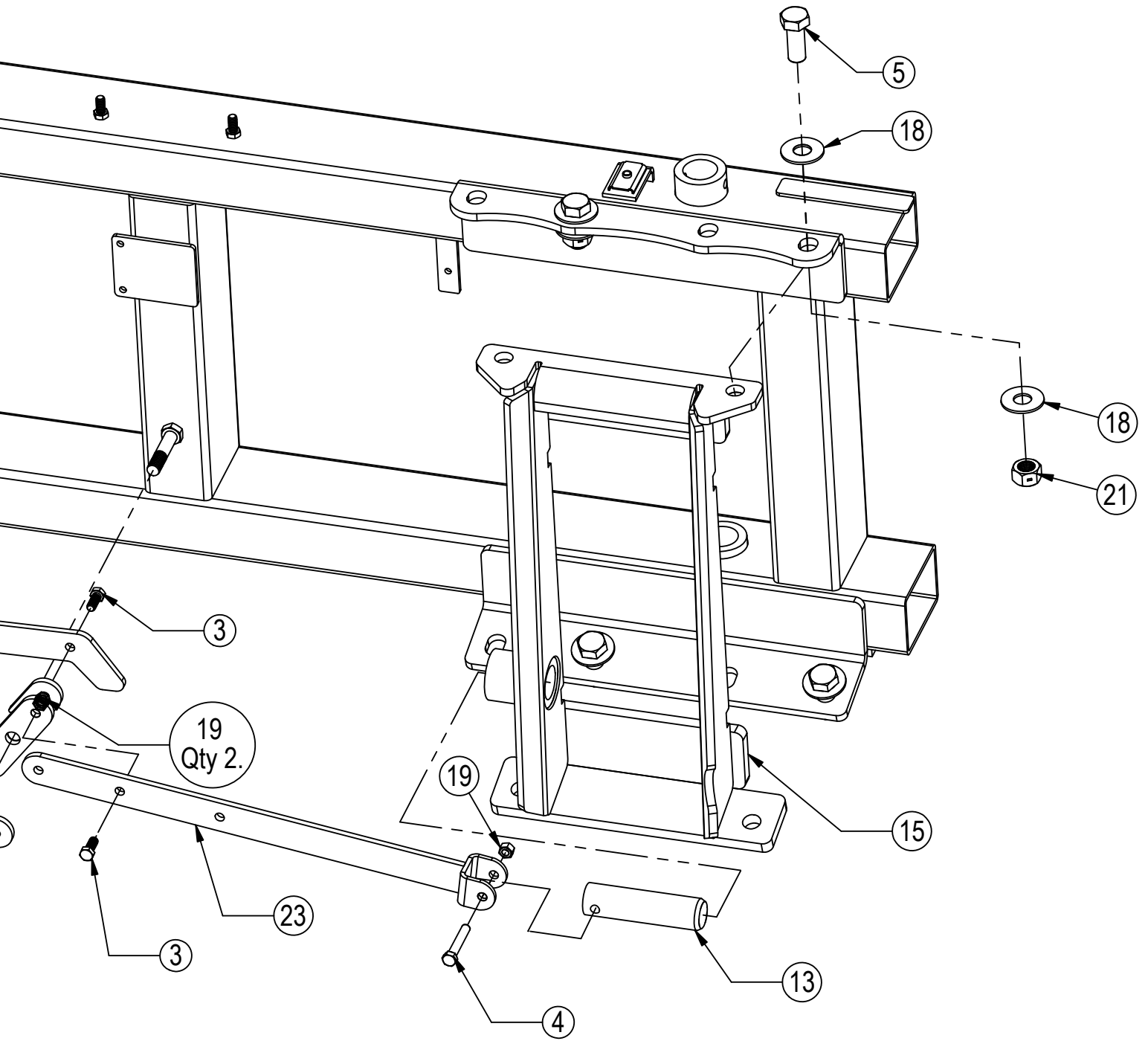
Item No.	Qty.	Part No.	Description
1	2	16-20077	3/8" x 4-1/2" Hex Bolt Gr 5 NC
2	1	18-1701	AG Pro Hydraulic Valve Cover
3	1	56-13305	Hydraulic Angle Valve
4	2	57-20744	1/2" Flat Washer
5	2	70-20582	3/8" Hex Nut
6	2	70-20604	1/2" Hex Center Lock Nut Gr 2 NC



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

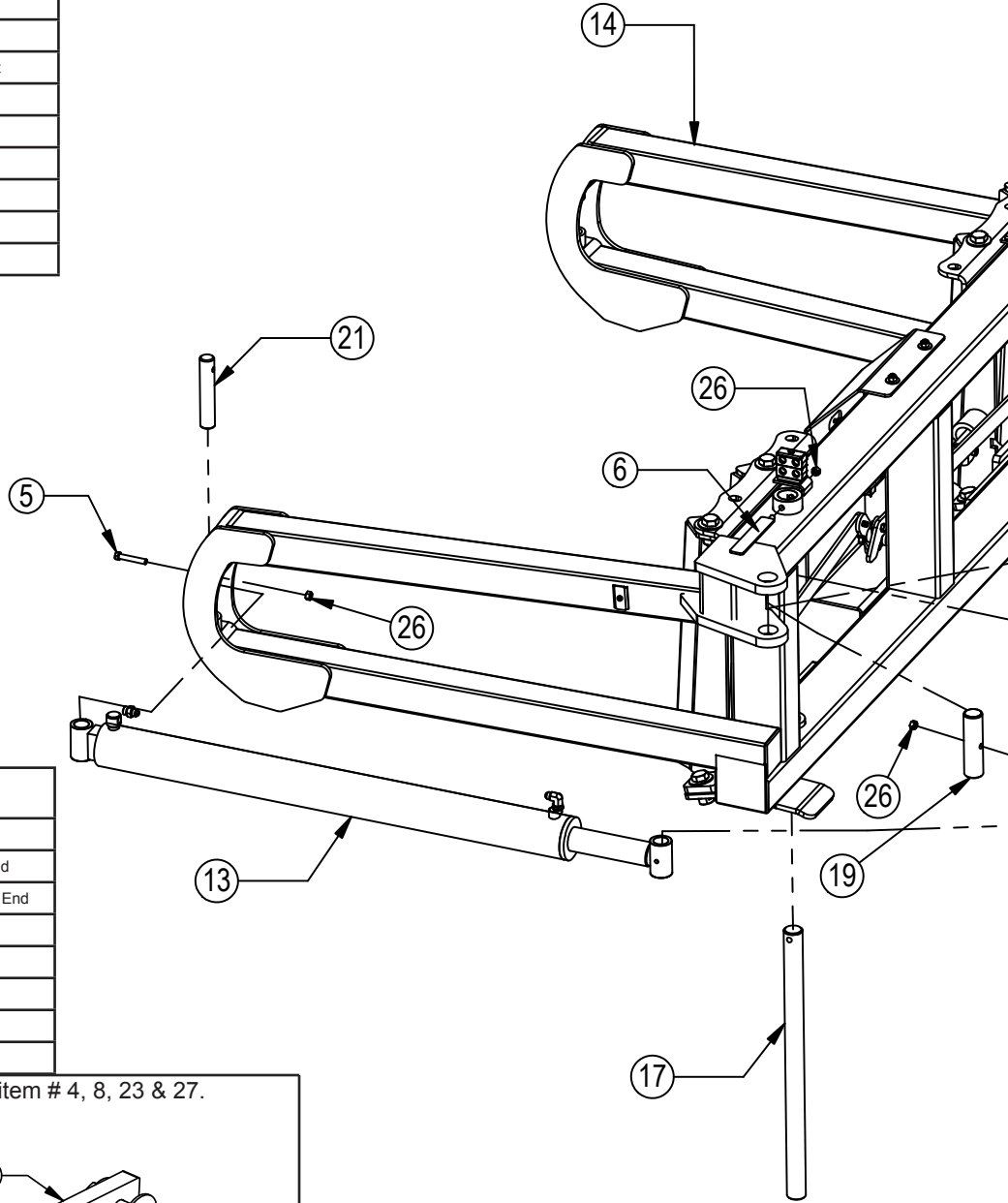
Item No.	Qty.	Part No.	Description
1	1	11-3049	Bell Crank Weld
2	1	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
3	3	16-20125	1/2" x 1-1/4" Hex Bolt Gr 5 NC
4	2	16-20132	1/2" x 3" Hex Bolt Gr 5 NC
5	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
6	2	16-21064	3/8" x 1" Carriage Bolt
7	1	16-21125	1/2" x 1-1/4" Carriage Bolt
8	2	19-13577	NR Pin Spacer Clevis End
9	1	34-17799	Pin Pulling Latch Spring
10	1	39-14663	AG Pro Pin Puller Latch
11	1	39-14665	AG Pro Pin Puller Handle Weld
12	1	39-3072	Handle Cover (Orange)
13	2	43-3050	QA Lock Pin
14A	1	44-14709	Pin Puller Link Plate
14B	1	44-14662	Pin Puller Link Plate
15	1	45-14710-R	Female Bolt On Quick Attach, Right
16	1	45-14710-L	Female Bolt On Quick Attach, Left
17	2	57-20742	3/8" Flat Washer
18	16	57-20819	1" Flat Washer Heavy Duty Gr 8 (USS)
19	6	70-20604	1/2" Hex Center Lock Nut Gr 2 NC
20	2	70-20607	3/4" Hex Center Lock Nut Gr 2 NC
21	8	70-20609	1" Hex Center Lock Nut Gr 2 NC
22	1	70-20611	5/16" Nyloc Hex Nut Gr 5 NC
23	2	75-14655	AG Pro Pin Puller Link Weld
24	2	70-20622	3/8" Flange Nut





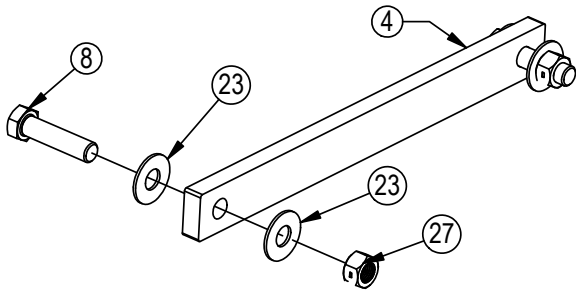
Hydraulic Angle - Hydraulic Tilt Or Hydraulic Angle - No Tilt

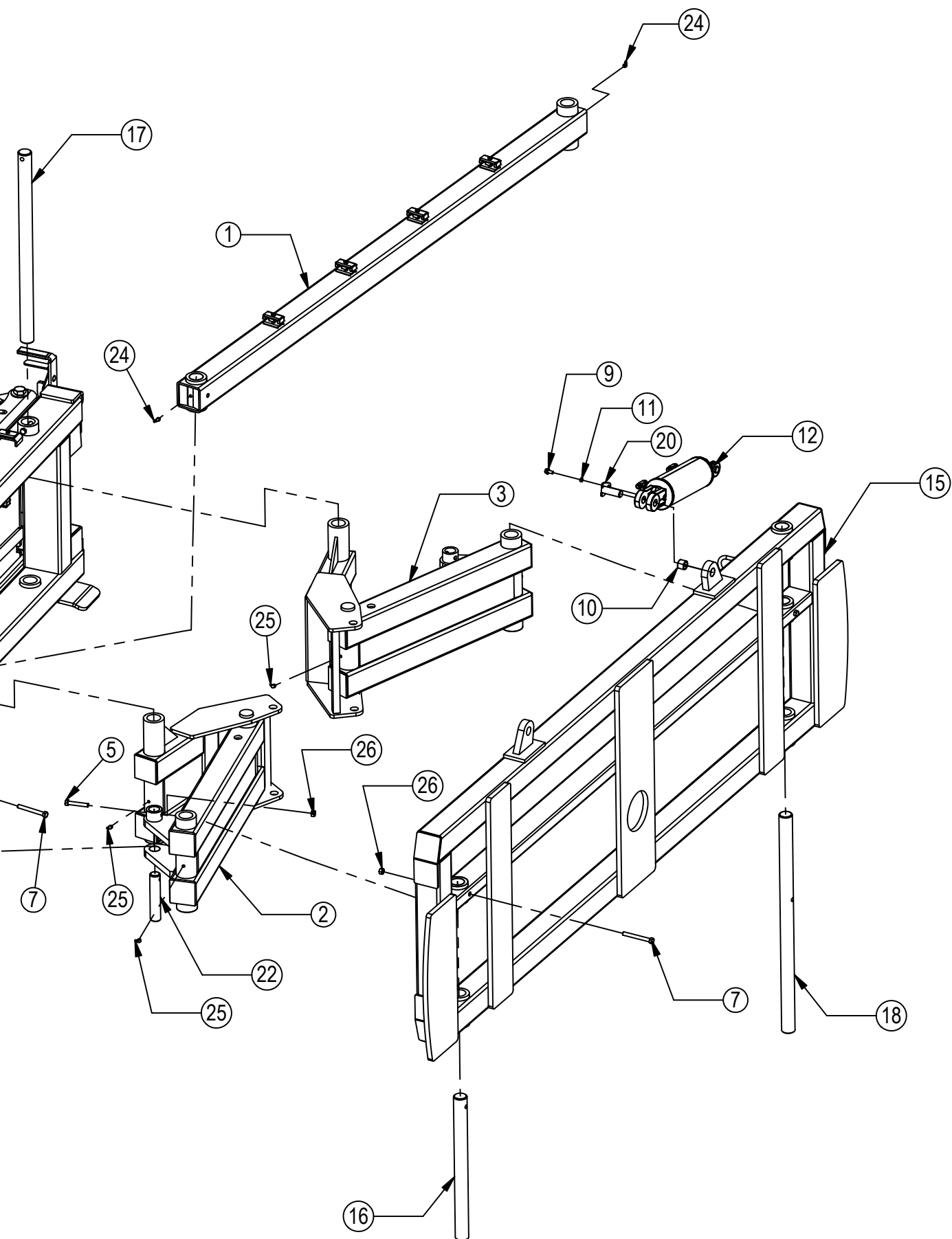
Item No.	Qty.	Part No.	Description
1	1	11-5055	Stabilizer Arm
2	1	11-8082	Angle Arm Right
3	1	11-9039	Angle Arm Left
4	1	14-9366	Non Tilt Bar
5	4	16-20132	1/2" x 3" Hex Bolt Gr 5 NC
6	2	16-20424	1/2" x 3-1/2" Hex Bolt Gr 8 NC
7	3	16-20427	1/2" x 4-1/2" Hex Bolt Gr 8 NC
8	2	16-20564	1" x 3-1/2" Hex Bolt Gr 8 NC
9	4	16-35C612	3/8" x 3/4" Flanged Bolt
10	2	19-7774	1" x 1" Spring Bushing
11	4	19-13577	NR Pin Spacer Clevis End
12	2	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends
13	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
14	1	32-18900	Angle Frame
15	1	32-16975	HA Tilt Frame
16	1	43-8130	1-15/16" x 23-1/4" Pin
17	2	43-8131	1-15/16" x 31" Pin
18	1	43-8132	1-15/16" x 35-1/2" Pin
19	1	43-8133	1-15/16" x 7-1/8" Stabilizer Arm Pin



Item No.	Qty.	Part No.	Description
20	4	43-13580	1" Clevis Bolt In 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 Rod End
23	4	57-20749	1" Flat Washer
24	2	58-9371	Grease Zerk 1/8" NPT 45°
25	6	58-9372	Grease Zerk 1/8" NPT 90°
26	9	70-20604	1/2" Hex Center Lock Nut Gr 2 NC
27	2	70-20609	1" Hex Center Lock Nut Gr 2 NC

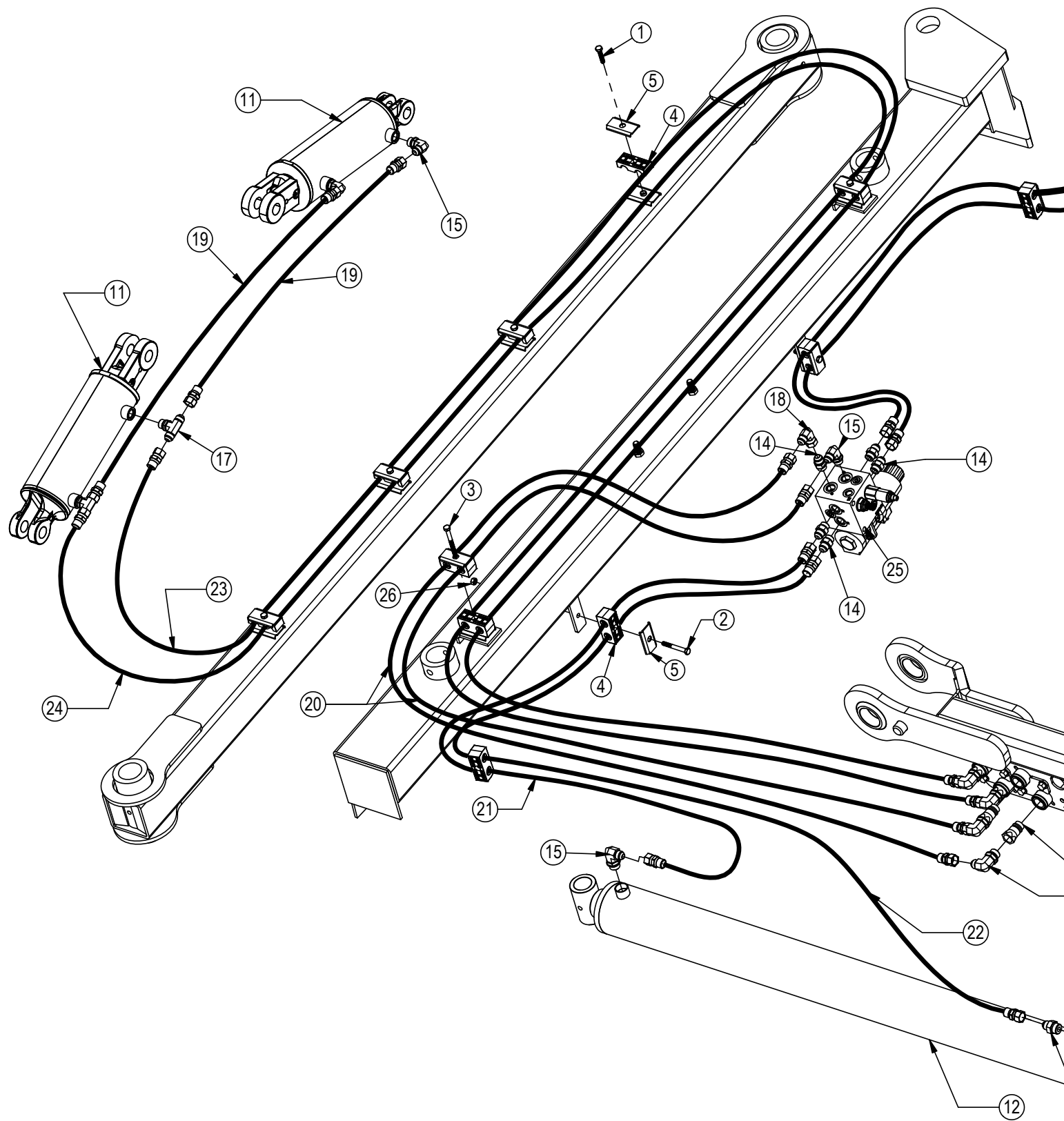
HANT - Replace item # 9, 10, 11, 12 & 20 with item # 4, 8, 23 & 27.





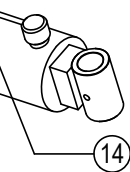
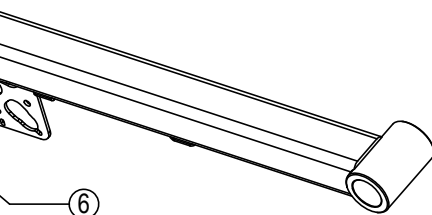
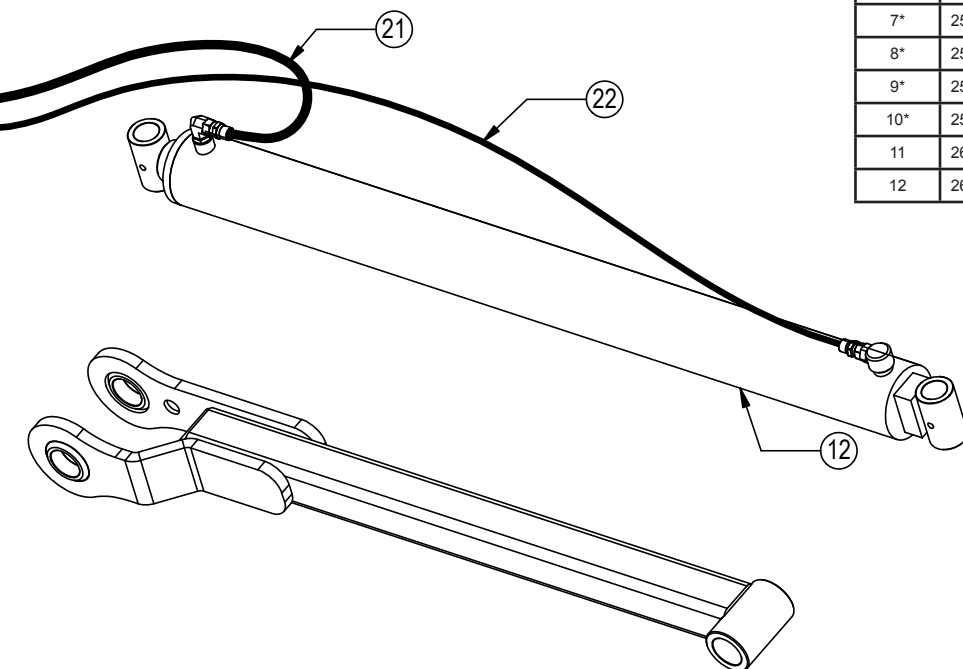
Hydraulic Angle - Hydraulic Tilt Or Hydraulic Angle - No Tilt Hose Routing

Hoses Not Drawn To Scale



		Configuration	HAHT	HANT
Item No.	Part No.	Description	Qty.	Qty.
1	16-20036	5/16" x 1-1/2" Hex Bolt Gr 5 NC	7	3
2	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC	2	2
3	16-20043	5/16" x 3-1/4" Hex Bolt Gr 5 NC	1	-
4	18-3074	Hose Hold Down Clamp	9	5
5	18-3075	Hose Hold Down Clamp Plate	10	5
6	25-34342	Tappet Quick Coupler Male	4	2
7*	25-3453	Pioneer Dust Cap Tilt (Green)	2	-
8*	25-3454	Pioneer Dust Plug Tilt (Green)	2	-
9*	25-3455	Pioneer Dust Cap Angle (Red)	2	2
10*	25-3456	Pioneer Dust Plug Angle (Red)	2	2
11	26-34711	4 x 8 Cylinder W/ Cast Clevis Ends	2	-
12	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port	2	2

* Parts Not Shown



See Page 22 for the remaining hydraulics and hydraulic connections.
See Page 26 for hydraulic schematics.

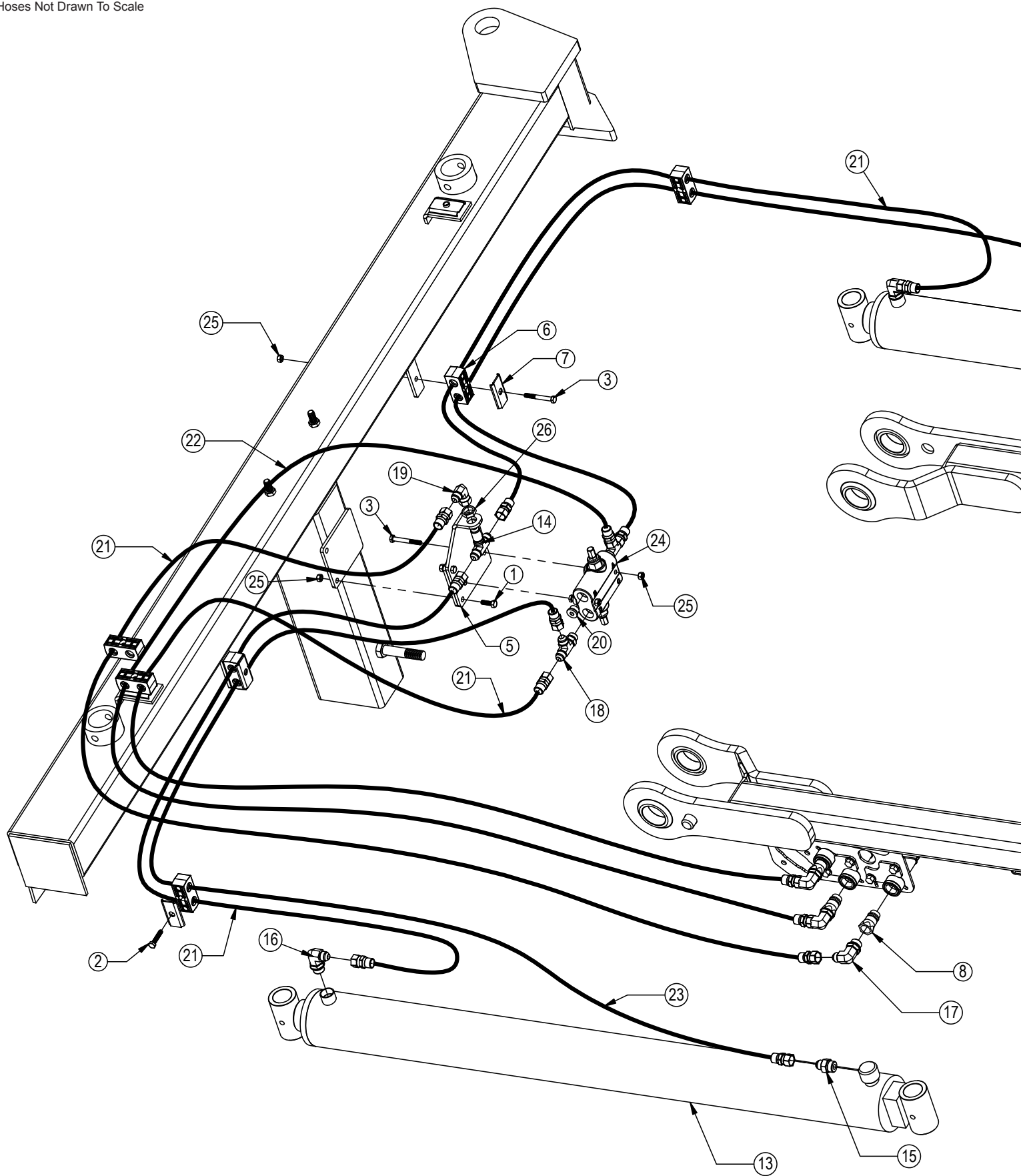
		Configuration	HAHT	HANT
Item No.	Part No.	Description	Qty.	Qty.
13*	31-13332	-6 SAE Breather Fitting	1	1
14	31-34040	Straight JIC x O-Ring (6400-8-8)	7	7
15	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)	5	3
16	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)	4	2
17	31-34060	Branch Tee JIC x O-Ring (6803-8-8-8)	2	-
18	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)	1	1
19	35-30022	39" x 3/8" -8JIC/-8JIC Hose	2	-
20	35-30131	66" x 1/2" -8JIC/-8JIC Hose (3.5M)	2	2
21	35-30132	69" x 1/2" -8JIC/-8JIC Hose	2	2
22	35-30141	96" x 1/2" -8JIC/-8JIC Hose	2	2
23	35-30071	217" x 3/8" -8JIC/-8JIC Hose	1	-
24	35-30075	207" x 3/8" -8JIC/-8JIC Hose	1	-
25	56-13305	Hydraulic Angle Valve	1	1
26	70-20581	5/16" Hex Nut NC	2	2

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

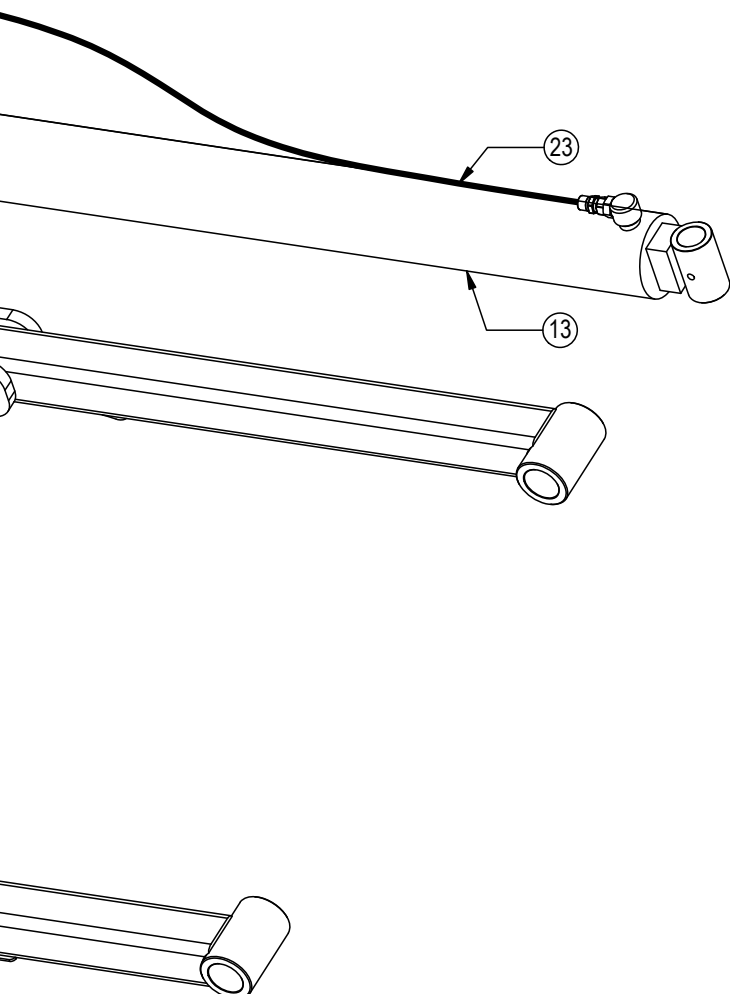
Hydraulic Angle - 2 Lever System Hose Routing

Hoses Not Drawn To Scale



Item No.	Qty.	Part No.	Description
1	2	16-20034	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	4	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
4*	1	16-20048	5/16" x 5" Hex Bolt Gr 5 NC
5	1	18-14695	Bracket, Relief Valve
6	6	18-3074	Hose Hold Down Clamp
7	5	18-3075	Hose Hold Down Clamp Plate
8	3	25-34342	Tappet Quick Coupler Male
9*	1	25-3401	Pioneer Dust Cap Left Angle (Yellow)
10*	1	25-3402	Pioneer Dust Plug Left Angle (Yellow)
11*	2	25-3455	Pioneer Dust Cap Right Angle (Red)

* Parts Not Shown



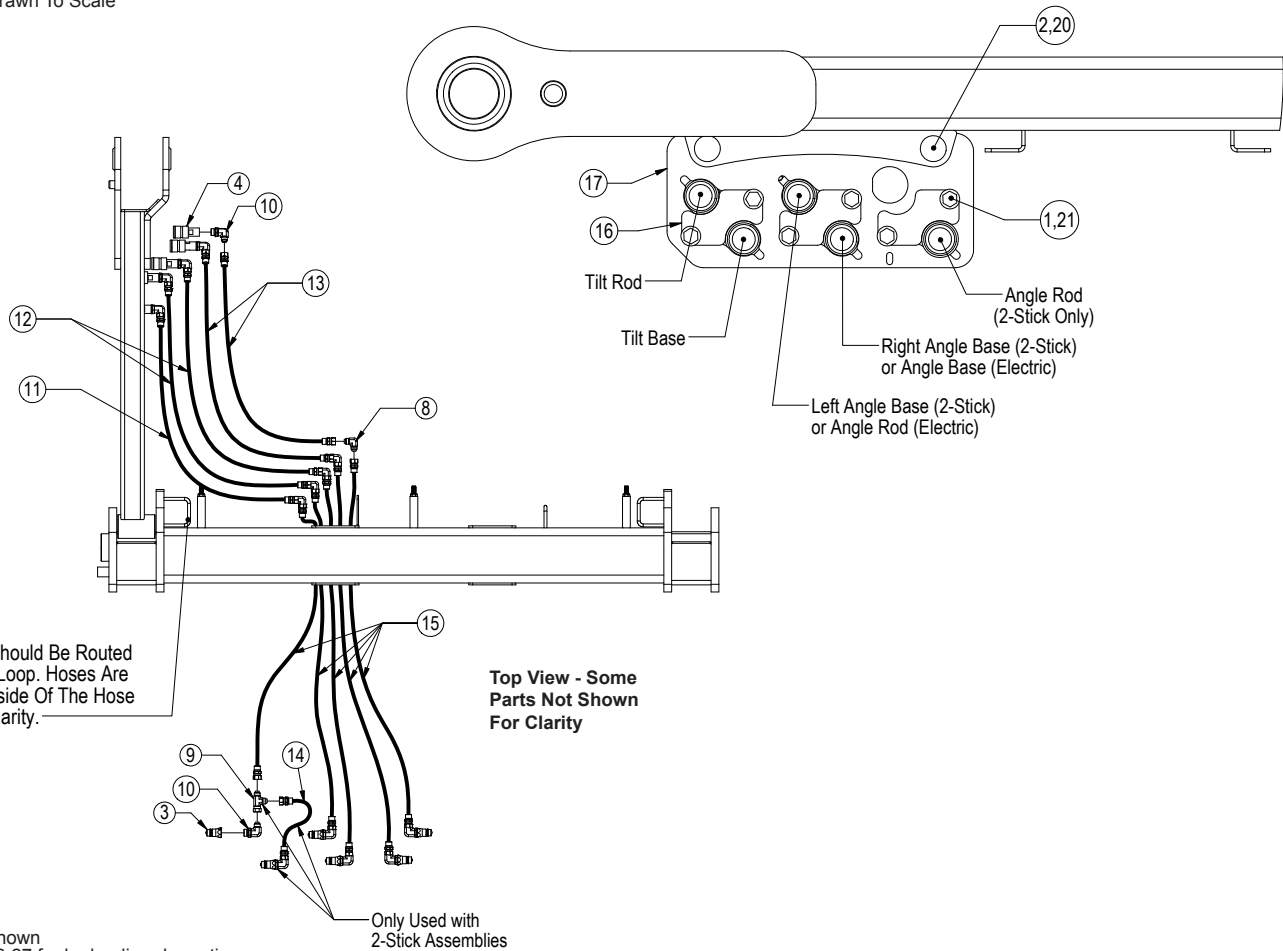
See Page 22 for the remaining hydraulics and hydraulic connections.
See Page 27 for hydraulic schematics.

Item No.	Qty.	Part No.	Description
12*	2	25-3456	Pioneer Dust Plug Right Angle (Red)
13	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
14	1	31-34020	Bulkhead Branch Tee JIC (2703-8-8)
15	2	31-34040	Straight JIC x O-Ring (6400-8-8)
16	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring (6801-8-8)
17	3	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
18	2	31-34070	Run Tee JIC x O-Ring (6804-8-8)
19	1	31-34100	Swivel Nut Elbow 90° JIC (6500-8-8)
20	2	31-34123	Hex Socket O-Ring Plug (6409-8-8)
21	4	35-30132	69" x 1/2" -8JIC/-8JIC Hose
22	1	35-30133	72" x 1/2" -8JIC/-8JIC Hose
23	2	35-30141	96" x 1/2" -8JIC/-8JIC Hose
24	1	56-7772	Relief Valve
25	6	70-20581	5/16" Hex Nut NC
26	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.

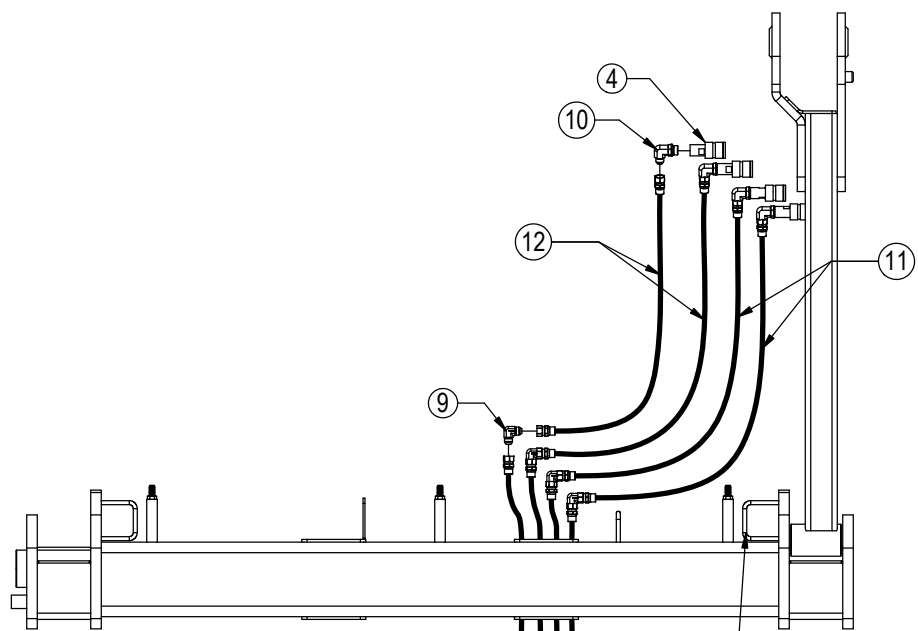
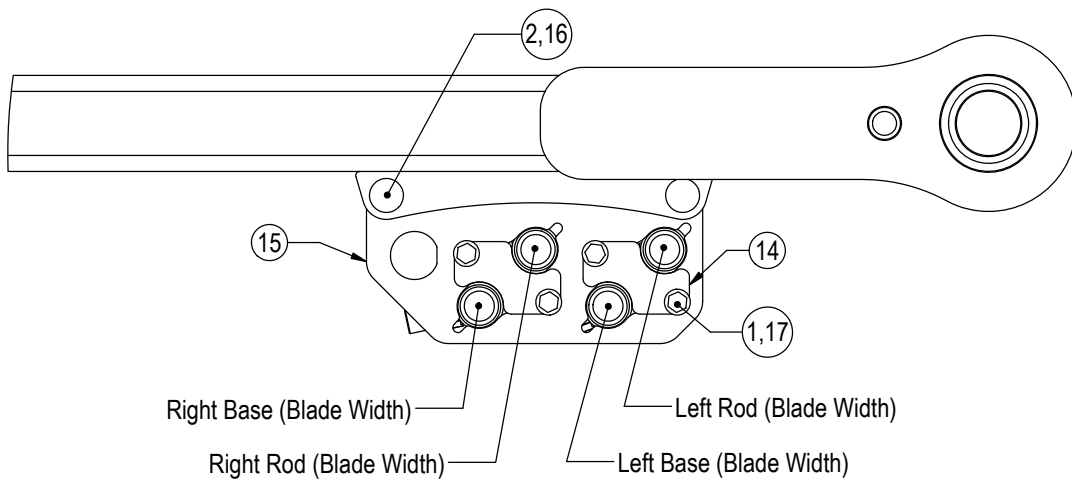
No. On Cylinder	Part No.	Description
26-34725	49-12274	Seal Kit 4 x 43.5 (647210) Nitrided Rod

Hoses Not Drawn To Scale



* Parts Not Shown
See Pages 26-27 for hydraulic schematics.
Item #A & B for Claas Tractors.
Item #C for Steiger, New Holland, Claas and JD 9R Tractors and Item #D for Versatile and Challenger Tractors.

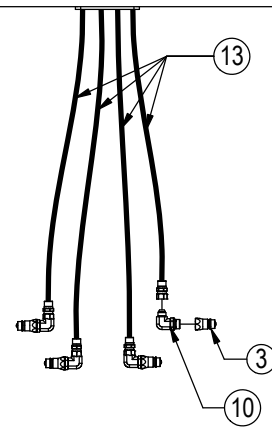
Item No.	Part No.	Description	Configuration					
			HAHT - 2 Stick	HAHT	HANT - 2 Stick	HANT	NAHT	NANT
			Qty.	Qty.	Qty.	Qty.	Qty.	Qty.
1	16-35C612	3/8" x 3/4" Flanged Bolt	6	4	4	2	2	-
2	16-21125	1/2" x 1-1/4" Carriage Bolt Gr 5 NC	2	2	2	2	2	-
3	25-34342	Tappet Quick Coupler Male	6	4	4	2	2	-
4	25-34321	Tappet Quick Coupler Female	5	4	3	2	2	-
5*	25-3401	Pioneer Dust Cap Left Angle (Yellow)	2	-	2	-	-	-
6*	25-3453	Pioneer Dust Cap Tilt (Green)	2	2	-	-	2	-
7*	25-3455	Pioneer Dust Cap Right Angle (Red)	2	2	2	2	-	-
8	31-15199-8-8	JIC Union Elbow 90° (2500-8-8)	5	4	3	2	2	-
9	31-34090	Swivel Nut Run Tee JIC (6602-8-8-8)	1	-	1	-	-	-
10	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)	11	8	7	4	4	-
10A	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)	5	4	3	2	2	-
10B	31-6802-08-10	Straight Thread Elbow 45° JIC x O-Ring (6802-08-10)	6	4	4	2	2	-
11	35-31132	69" x 1/2" -8JIC/-8JIC Hose W/Cordura	1	-	1	-	-	-
12	35-31133	72" x 1/2" -8JIC/-8JIC Hose W/Cordura	2	2	2	2	-	-
13	35-31134	75" x 1/2" -8JIC/-8JIC Hose W/Cordura	2	2	-	-	2	-
14	35-30121	35" x 1/2" -8JIC/-8JIC Hose	1	-	1	-	-	-
15D	35-30172	318" (26.5') x 1/2" -8JIC/-8JIC Hose	5	4	3	2	2	-
15C	35-30183	293" (24.42') x 1/2" -8JIC/-8JIC Hose w/165" Cordura	5	4	3	2	2	-
16	44-14734	Female Coupler Retainer	3	2	2	1	1	-
17	44-18180	Female Coupler Mount Bracket	1	1	1	1	1	-
18*	69-18890	Wire Harness - Valve to Disconnect	-	1	-	1	-	-
19*	69-1531	Wire Harness - Disconnect to Tractor	-	1	-	1	-	-
20	70-20604	1/2" Hex Center Lock Nut NC	2	2	2	2	2	-
21	70-20622	3/8" Flange Hex Nut NC	6	4	4	2	2	-



Item #A & B for Claas Tractors.
 Item #C for Steiger, New Holland, Claas and JD 9R Tractors
 Item #D for Versatile and Challenger Tractors.

All Hoses Should Be Routed Thru Hose Loop. Hoses Are Shown Outside Of The Hose Loop For Clarity.

Item No.	Qty.	Part No.	Description
1	4	16-35C612	3/8" x 3/4" Flanged Bolt
2	2	16-21125	1/2" x 1-1/4" Carriage Bolt Gr 5 NC
3	4	25-34342	Tappet Quick Coupler Male
4	4	25-34321	Tappet Quick Coupler Female
5*	2	25-3403	Pioneer Dust Cap Left Cylinder (Blue)
6*	2	25-3404	Pioneer Dust Cap Left Cylinder (Blue)
7*	2	25-3405	Pioneer Dust Cap Right Cylinder (Brown)
8*	2	25-3406	Pioneer Dust Cap Right Cylinder (Brown)
9	4	31-15199-8-8	JIC Union Elbow 90° (2500-8-8)
10	8	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
10A	4	31-34051	Straight Thread Elbow 90° JIC x O-Ring (6801-8-10)
10B	4	31-6802-08-10	Straight Thread Elbow 45° JIC x O-Ring (6802-08-10)
11	2	35-31133	72" x 1/2" -8JIC/-8JIC Hose W/Cordura
12	2	35-31134	75" x 1/2" -8JIC/-8JIC Hose W/Cordura
13D	4	35-30172	318" (26.5") x 1/2" -8JIC/-8JIC Hose
13C	4	35-30183	293" (24.42") x 1/2" -8JIC/-8JIC Hose w/165" Cordura
14	2	44-14734	Female Coupler Retainer
15	1	44-16236	Female Coupler Mount Bracket
16	2	70-20604	1/2" Hex Center Lock Nut NC
17	4	70-20622	3/8" Flange Hex Nut NC

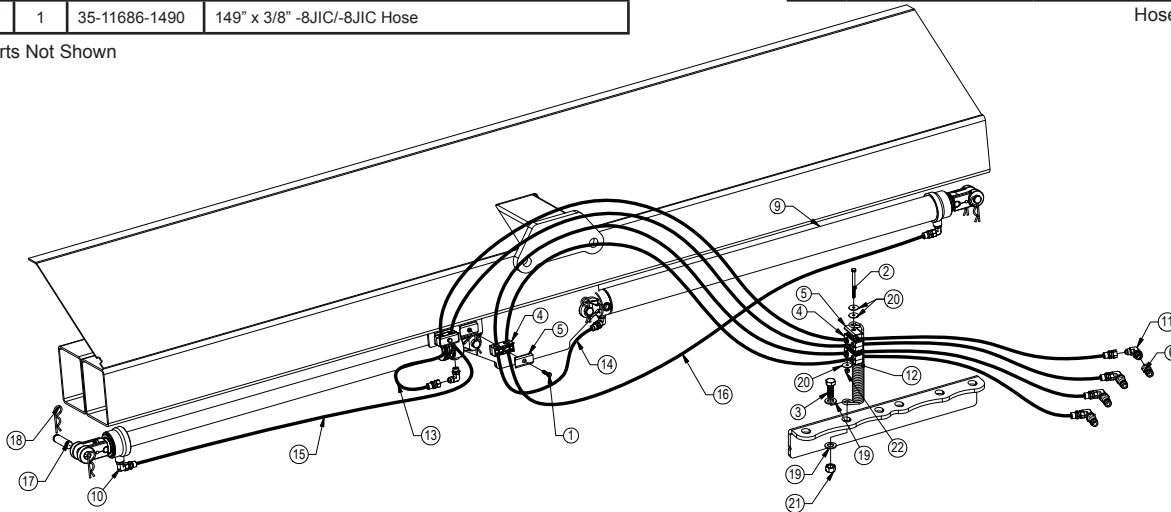


Item No.	Qty.	Part No.	Description
1	2	16-20036	5/16" X 1-1/2" Hex Bolt Gr 5 NC
2	1	16-20047	5/16" X 4-1/2" Hex Bolt Gr 5 NC
3	1	16-20218	3/4" X 2" Hex Bolt Gr 5 NC
4	4	18-3074	Hose Hold Down Clamp
5	4	18-3075	Hose Hold Down Clamp Plate
6	4	25-34342	Tappet Quick Coupler Male - Poppet Style
7*	2	25-3403	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	35-11686-1490	149" x 3/8" -8JIC/-8JIC Hose

Item No.	Qty.	Part No.	Description
14	1	35-11686-1610	161" x 3/8" -8JIC/-8JIC Hose
15	1	35-11686-1870	187" x 3/8" -8JIC/-8JIC Hose
16	1	35-11686-2120	212" 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	16-20125	1/2" X 1-1/4" 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

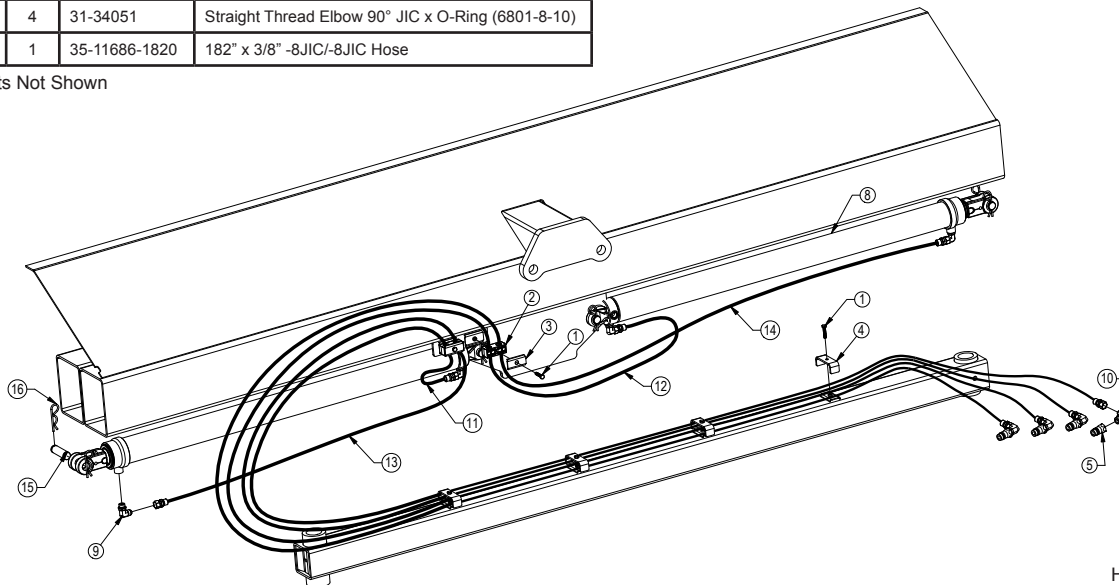
* Parts Not Shown



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

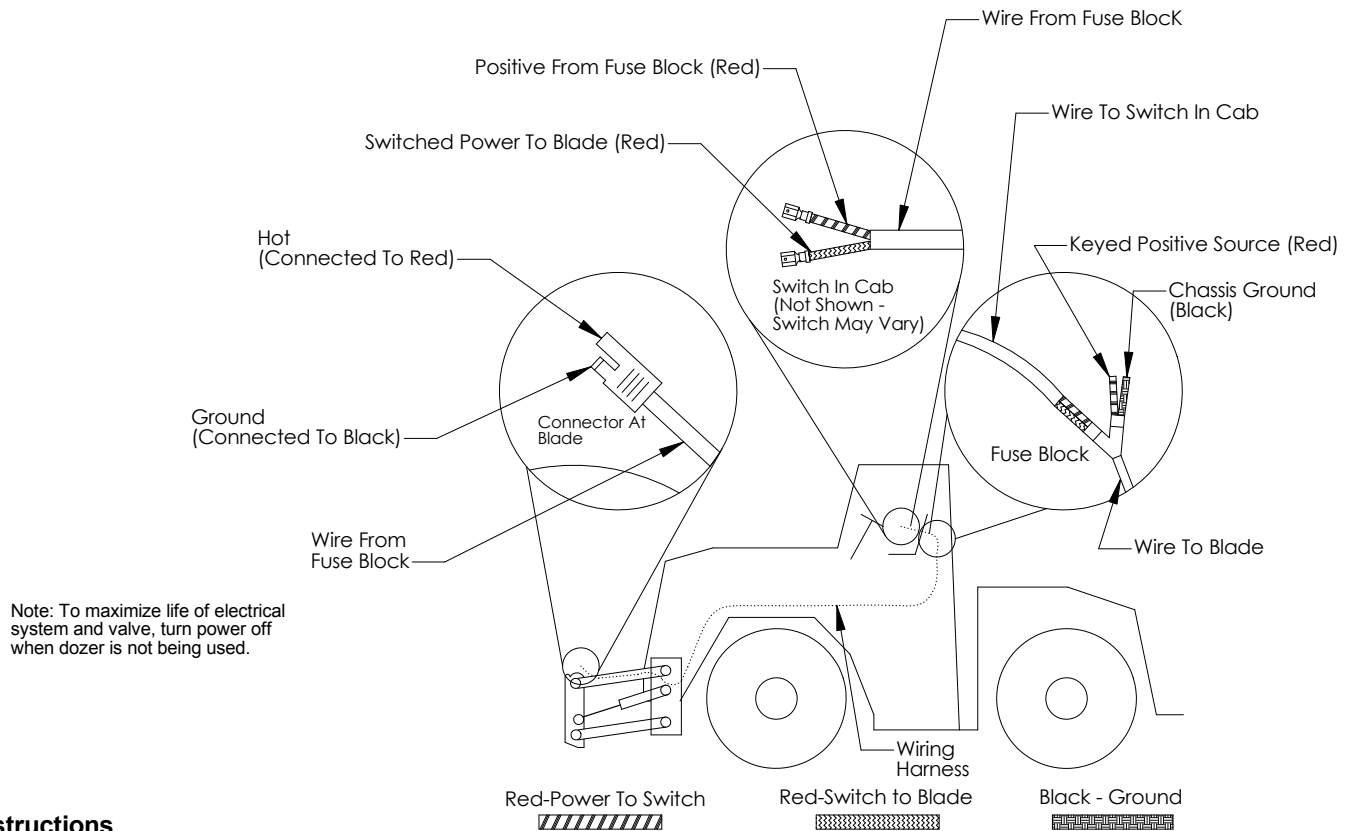
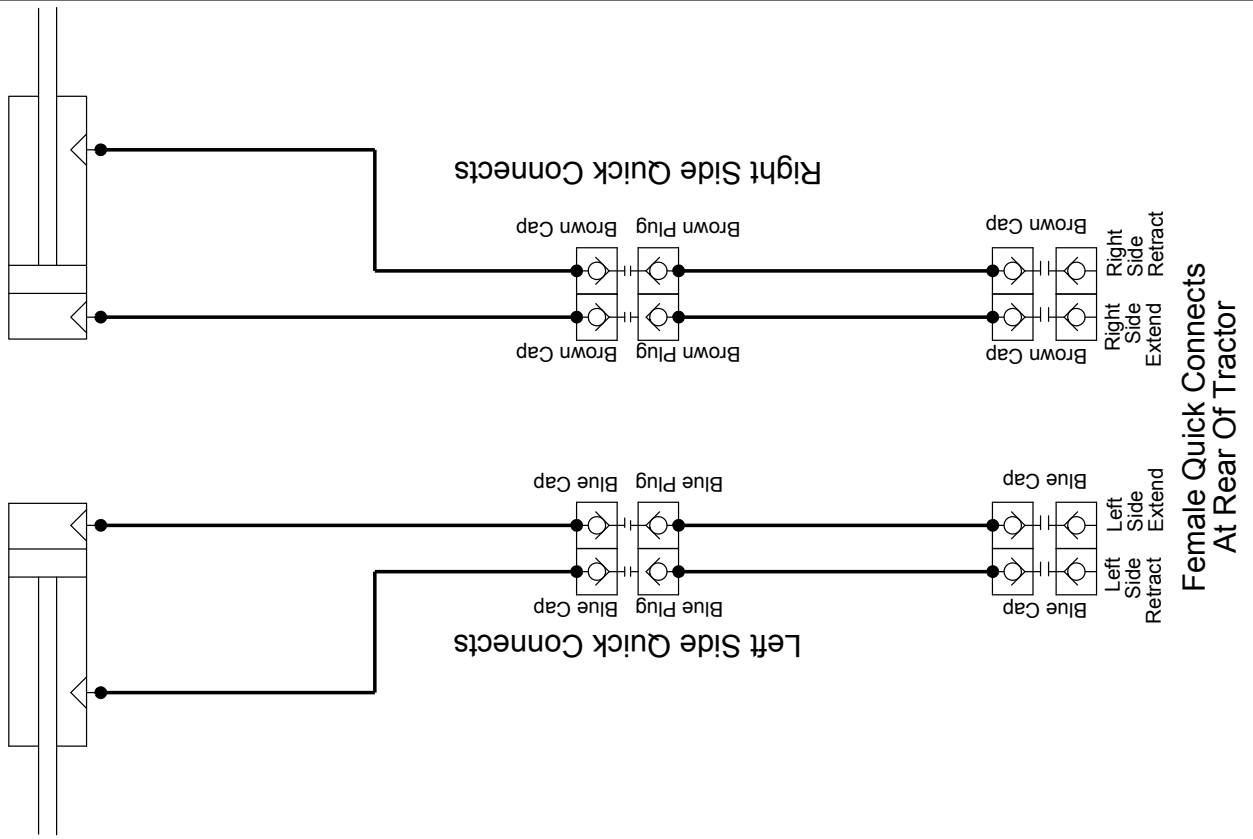
Item No.	Qty.	Part No.	Description
12	1	35-11686-1980	198" x 3/8" -8JIC/-8JIC Hose
13	1	35-11686-2270	227" x 3/8" -8JIC/-8JIC Hose
14	1	35-11686-2560	256" x 3/8" -8JIC/-8JIC Hose
15	2	43-16306	Cylinder Pin
16	8	43-7767	Hitch Pin Clip
17*	2	16-20125	1/2" X 1-1/4" Hex Bolt Gr 5 NC
18*	2	34-17585	12-20 Cylinder Strap
19*	2	70-20604	1/2" Hex Center Lock Nut NC

* Parts Not Shown



Hoses Not Drawn To Scale

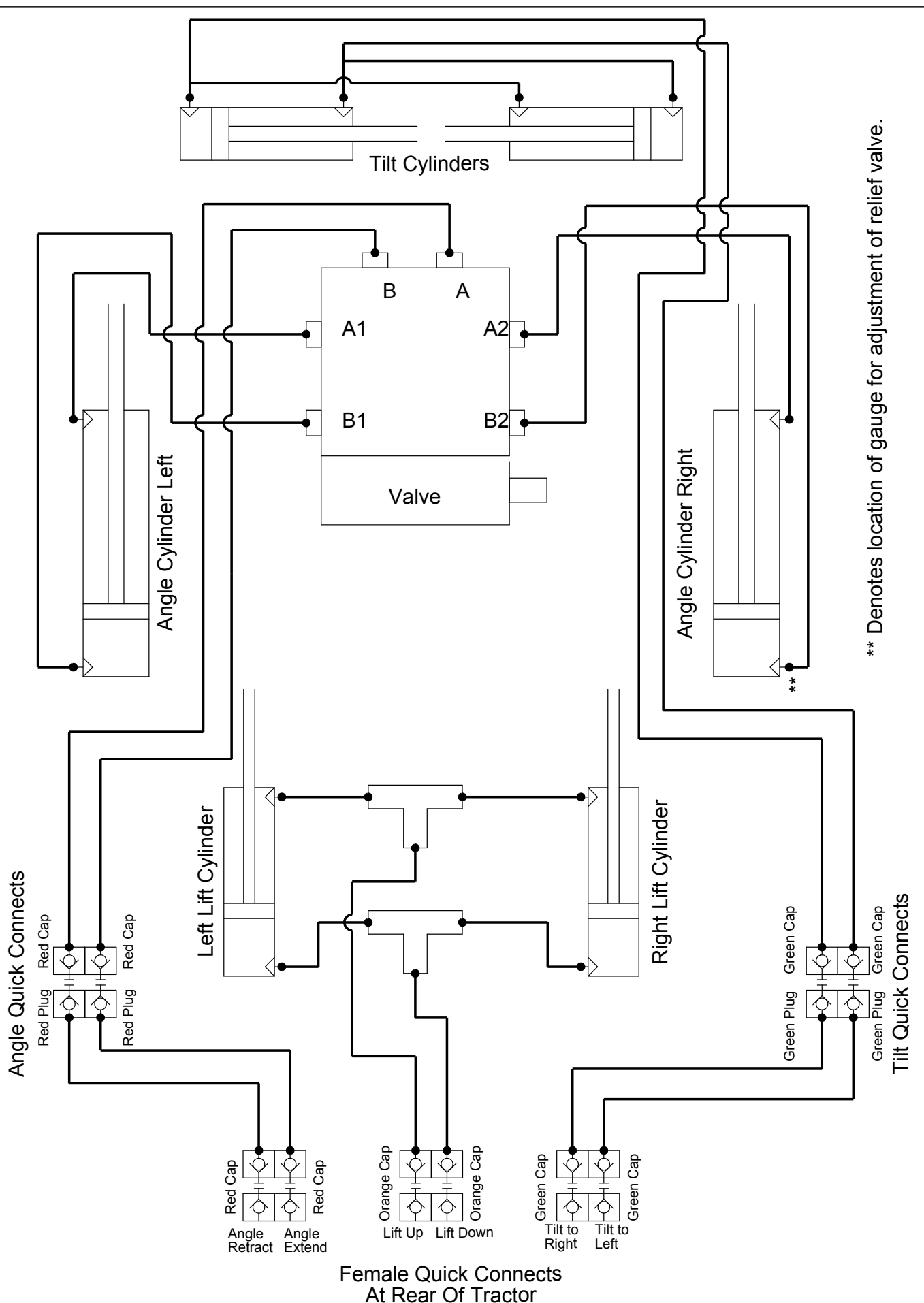
12-20 Blade Cylinders



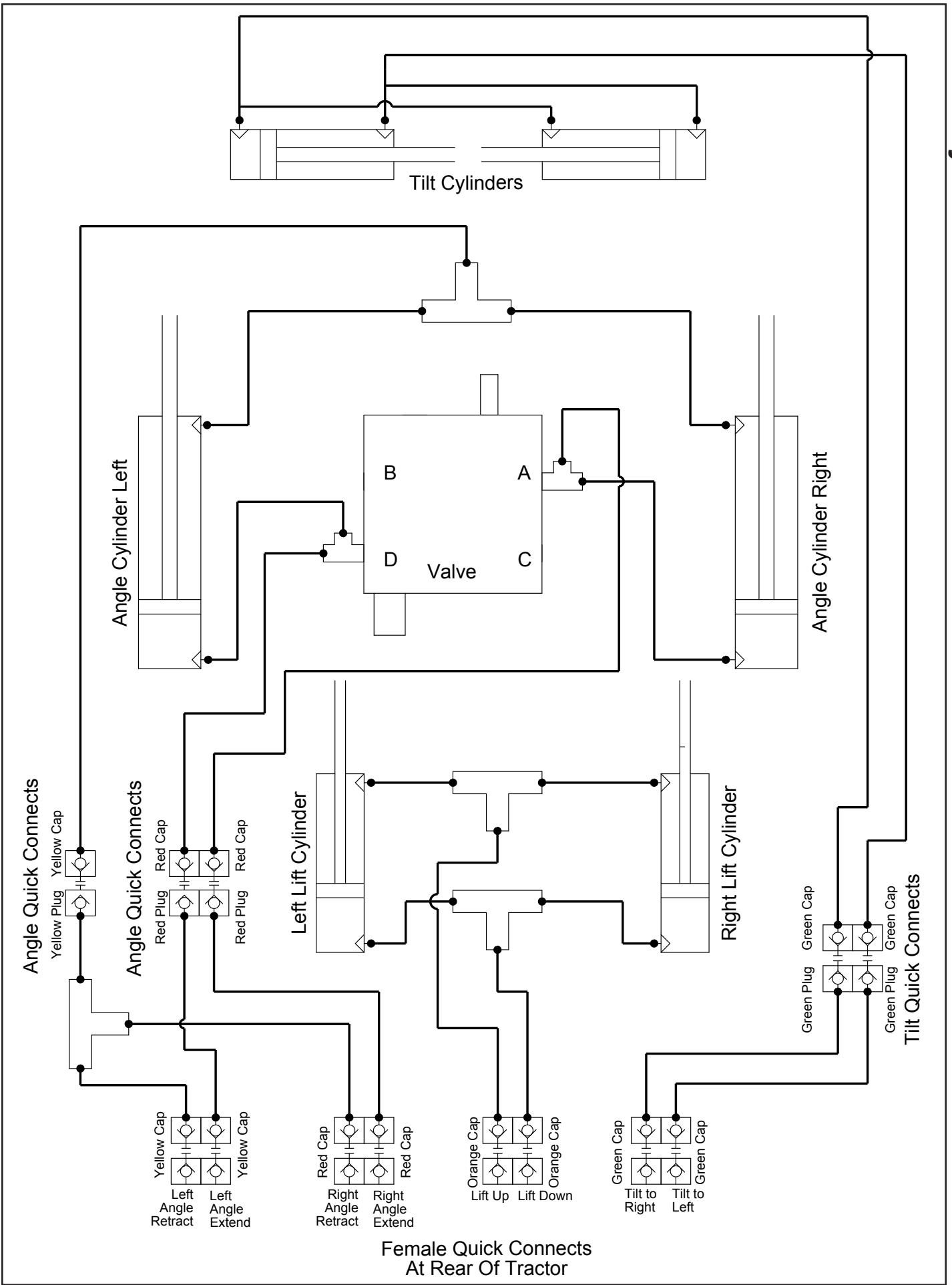
Note: To maximize life of electrical system and valve, turn power off when dozer is not being used.

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.



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



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.

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Website: www.grouser.com



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.

