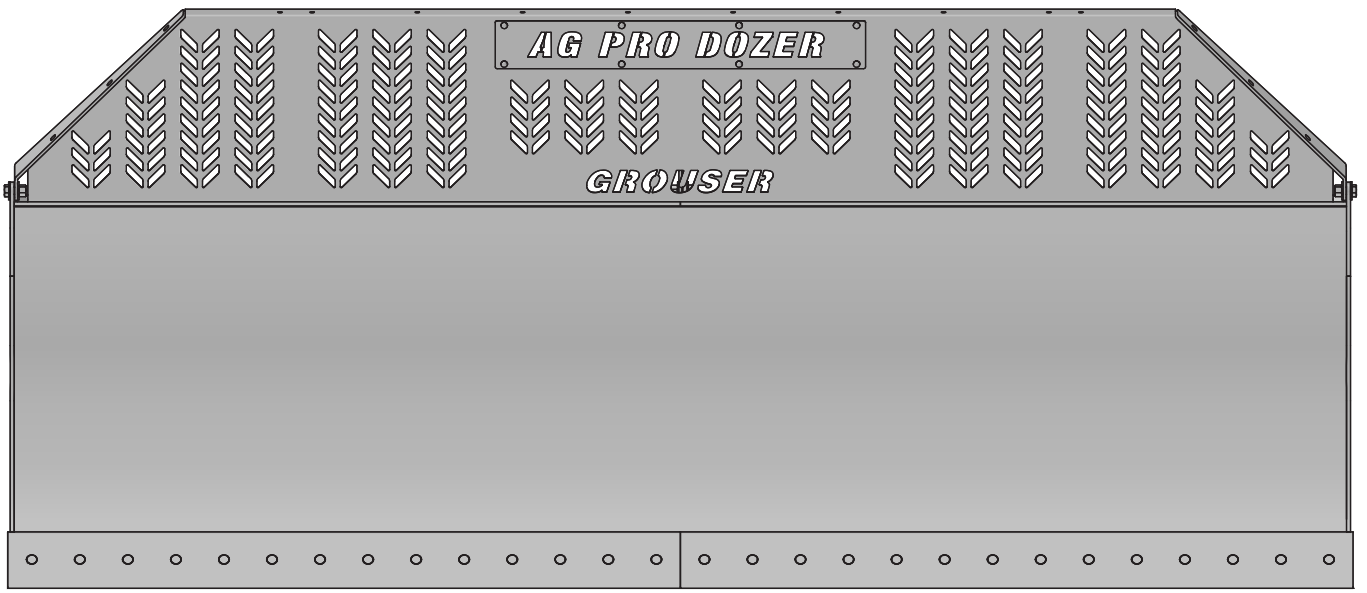
Ag Pro Classic

Owner's Manual & Parts Book



Purchase Date
Serial Number
Model Number
Tractor Model
Dealer

Grouser Products
755 2nd Ave NW - West Fargo, ND 58078
Phone: 1-701-282-7710
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Website: www.grouser.com

PN: 63-43874 Serial Number: 10206693-... Date 10-1-2020

Contents

Welcome to the Owner

Thank you for your recent purchase of a Grouser Ag Pro Classic Dozer. Welcome to the family of satisfied Grouser blade owners. Grouser Products is committed to offering quality products to help professionals in their daily jobs. We are also committed to providing you the highest level of customer satisfaction possible. Again, thank you for your patronage. We look forward to serving you.

This manual contains information concerning the operation, adjustment, safety and maintenance of the Ag Pro Classic Dozer. You have purchased a dependable, long lasting piece of equipment. You can expect to receive long lasting performance and long service built into our products with proper care and operation. Please have all operators read and understand this manual carefully. Keep the manual available for reference. If, for any reason, you have questions or comments, we would be happy to hear from you. Call our number, 701-282-7710, or send us an e-mail at info@grouser.com. You can expect us to respond to your e-mail in a timely manner.

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, please follow all safety and operational instructions of your tractor manufacturer.

The Ag Pro Classic Dozer:

1. The Ag Pro Classic 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 Ag Pro Classic 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.
6. Lower the blade to the ground when not in use.

Servicing the Ag Pro Classic 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 Ag Pro Classic:

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

Tighten all bolts to the values listed below unless otherwise noted. Refer to the parts lists for proper length and grade of the bolts.

	Torque - Dry (ft–lbs)			
	SAE Grade 5		SAE Grade 8	
Size	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

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

Install undercarriage per the tractor specific mounting instructions.

HAHT	Hydraulic Angle - Hydraulic Tilt
HANT	Hydraulic Angle - No Tilt
NAHT	No Angle - Hydraulic Tilt
NANT	No Angle - No Tilt

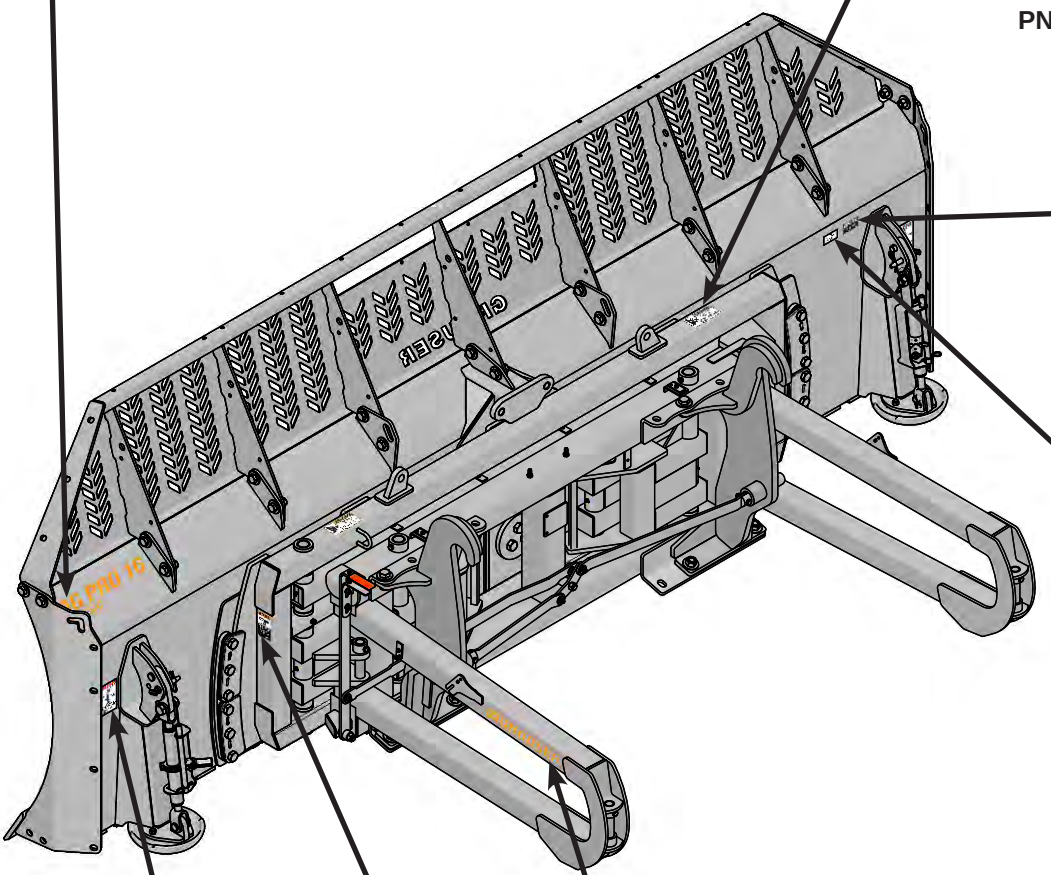
AG PRO16 CLASSIC

PN: 27-14845

PN: 27-14842-XX
XX = Length of Blade

PN: 27-40951

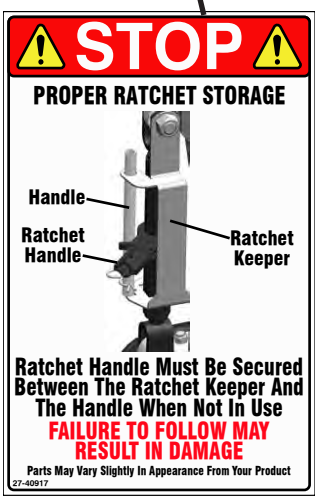
PN: 27-2409



PN: 27-40962

GROUSER

PN: 27-9504



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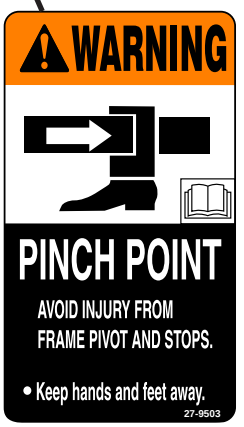
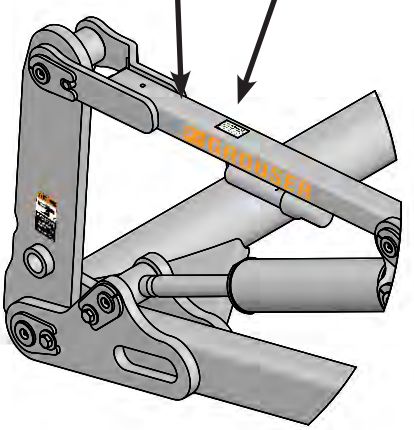
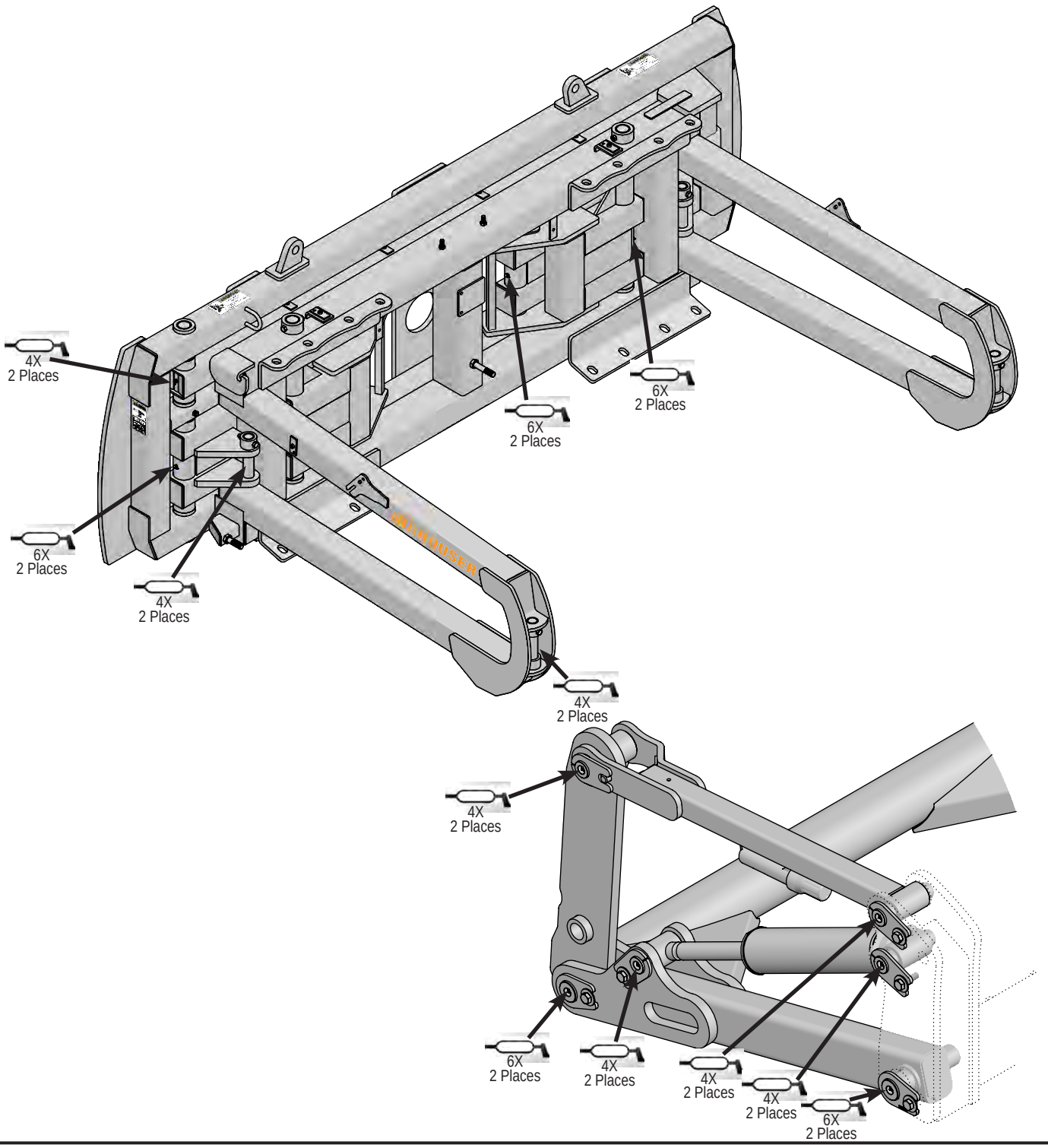


PN: 27-9503
Left and Right Side



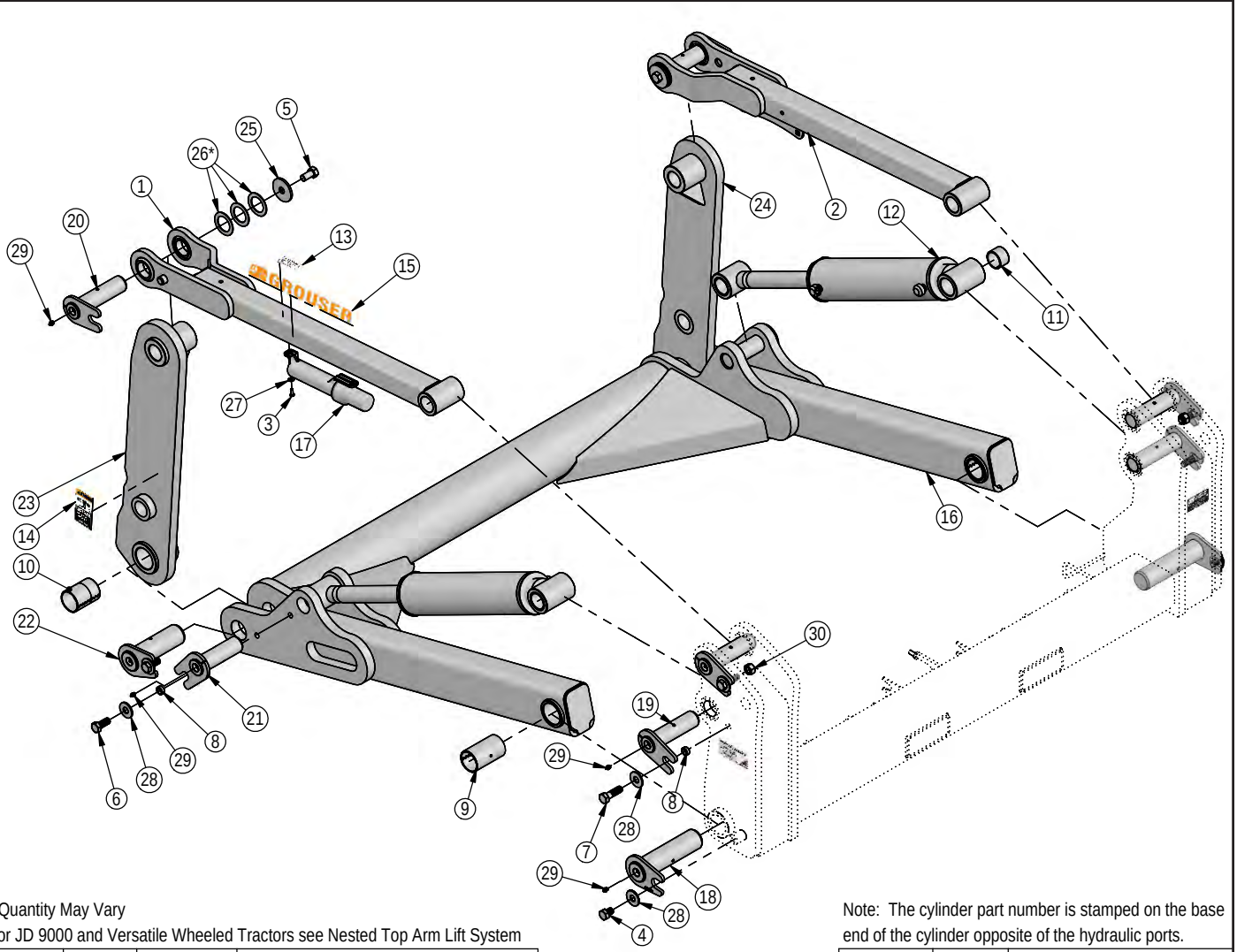
Due to the harsh environment this equipment operates in, the following tasks should be performed every 10 hours or less.

- Inspect all equipment before operation for existing or potential damage.
- Lubricate all joints with high quality grease. See below for grease locations.
- Inspect all bolts, and tighten any loose bolts to torque specifications on page 3.
- Check replaceable cutting edge for wear ensuring there is enough material to prevent permanent damage to the Ag Pro Classic Dozer. For cutting edge information, see pages 34 .
- Check hydraulic cylinders and hoses for damage or leaks. For replacement parts, see hydraulic pages 6-9 and 20-29.
- Make sure all non-rotating pins are secured properly.
- Inspect all decals and order replacement decals from your dealer if any are damaged or worn.
- For multi-coupler maintenance, see pages 36-37.
- Inspect all tilt-ways for wear. See page 14 for tilt plate adjustment.
- Replace parts with original parts only.



Some assembly of Lift System components is necessary. Follow the steps listed below. See diagram below for the correct hardware and orientation of parts.

1. Remove all pins and fasteners on each side of the undercarriage and set aside for later installation.
2. Position the lift frame between the two plates on both sides of the undercarriage and align to the bottom holes.
3. Insert pins and hardware to attach the lift frame, the base end of the lift cylinders, and the top arms to the undercarriage.
4. Insert pins and hardware to attach the male quick attaches to the lift frame, and to the top arms. Use 2" washers as shims to keep top arm pins tight and in place. Only use as many as needed until pin is tight.
5. Torque all fasteners according to the specifications on Page 3.
6. Continue with installing hoses on bottom of page 7.



* Quantity May Vary

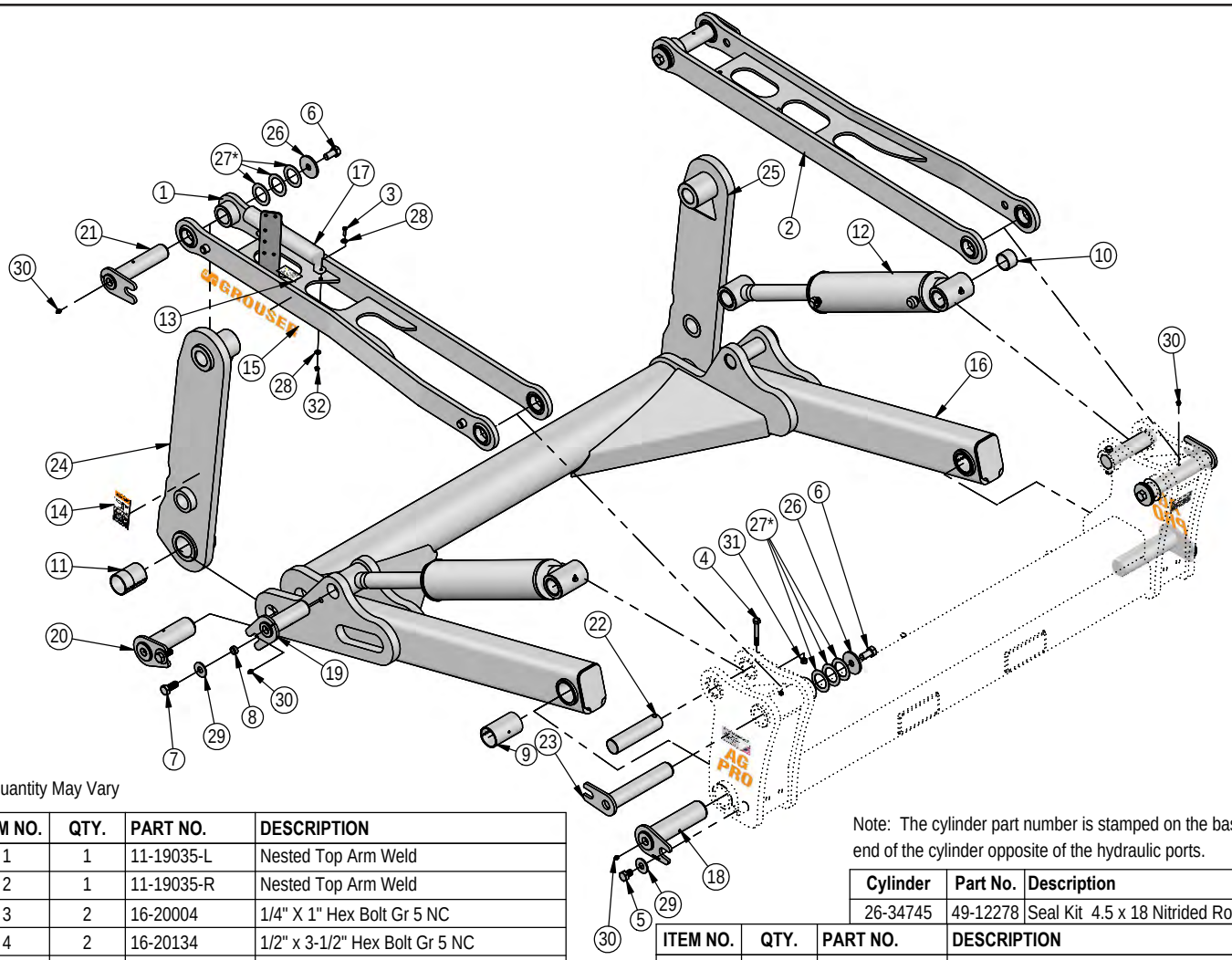
For JD 9000 and Versatile Wheeled Tractors see Nested Top Arm Lift System

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-19975-L	Top Arm Weld
2	1	11-19975-R	Top Arm Weld
3	2	16-20002	1/4" x 3/4 " Hex Bolt Gr 5 NC
4	2	16-20214	3/4" x 1" Hex Bolt Gr 5 NC
5	2	16-20216	3/4" x 1-1/2" Hex Bolt Gr 5 NC
6	4	16-20217	3/4" x 1-3/4" Hex Bolt Gr 5 NC
7	4	16-20220	3/4" x 2-1/2" Hex Bolt Gr 5 NC
8	8	19-13515	Spacer, NR Pin
9	2	19-13525	2.75 x 2.50 x 4.75 Spring Bushing
10	2	19-18089	2.75 x 2.50 x 3.75 Spring Bushing
11	8	19-16695	2.25 x 2.00 x 1.50 Spring Bushing
12	2	26-34745	4.5 x 18 Hydraulic Cylinder
13	1	27-40962	Warning Prop 65 Decal
14	2	27-9503	Pinch Decal (Foot)
15	2	27-9504	Grouser Horizontal Decal
16	1	32-42335	Lift Frame

Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

Cylinder	Part No.	Description
26-34745	49-12278	Seal Kit 4.5 x 18 Nitrided Rod

ITEM NO.	QTY.	PART NO.	DESCRIPTION
17	1	34-14961	Manual Canister Small
18	2	43-14725	Lift Frame / UC Pin
19	4	43-18120	Top Pin Weld
20	2	43-18127	Top Arm Pin Weld
21	2	43-18175	Lift Cyl Pin Weld
22	2	43-18635	Ag Pro Plus QA Pin
23	1	45-18110-L	Male Quick Attach, Ag Pro S
24	1	45-18130-R	Male Quick Attach, Ag Pro S
25	2	57-1530	3" OD X .75 ID X .25" HD Flat Washer
26*	6	57-1811	2" Washer
27	2	57-20740	1/4" Flat Washer
28	10	57-20747	3/4" Flat Washer
29	12	58-9369	Straight 1/8" NPT Grease Zerk
30	2	70-20607	3/4" Center Lock Hex Nut Gr 2 NC



* Quantity May Vary

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-19035-L	Nested Top Arm Weld
2	1	11-19035-R	Nested Top Arm Weld
3	2	16-20004	1/4" X 1" Hex Bolt Gr 5 NC
4	2	16-20134	1/2" x 3-1/2" Hex Bolt Gr 5 NC
5	2	16-20214	3/4" x 1" Hex Bolt Gr 5 NC
6	4	16-20216	3/4" x 1-1/2" Hex Bolt Gr 5 NC
7	4	16-20217	3/4" x 1-3/4" Hex Bolt Gr 5 NC
8	4	19-13515	Spacer, NR Pin
9	2	19-13525	2.75 x 2.50 x 4.75 Spring Bushing
10	8	19-16695	2.25 x 2.00 x 1.50 Spring Bushing
11	2	19-18089	2.75 x 2.50 x 3.75 Spring Bushing
12	2	26-34753	4.5 x 18 Hydraulic Cylinder With 90° Zerk
13	1	27-40962	Warning Prop 65 Decal
14	2	27-9503	Pinch Decal (Foot)
15	2	27-9504	Grouser Horizontal Decal
16	1	32-42335	Lift Frame
17	1	34-14961	Manual Canister Small
18	2	43-14725	Lift Frame / UC Pin

Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

Cylinder	Part No.	Description
26-34745	49-12278	Seal Kit 4.5 x 18 Nitrided Rod

ITEM NO.	QTY.	PART NO.	DESCRIPTION
19	2	43-18175	Lift Cyl Pin Weld
20	2	43-18635	Ag Pro Plus QA Pin
21	2	43-19040	Top Arm - Quick Attach Pin Weld
22	2	43-19041	Pin, Lift Cylinder
23	2	43-19043	Top Arm - Undercarriage Pin Weld
24	1	45-18110-L	Male Quick Attach, Ag Pro S
25	1	45-18110-R	Male Quick Attach, Ag Pro S
26	4	57-1530	3" OD X .75 ID X .25" HD Flat Washer
27*	12	57-1811	2" Washer
28	4	57-20740	1/4" Flat Washer
29	6	57-20747	3/4" Flat Washer
30	10	58-9369	Straight 1/8" NPT Grease Zerk
31	2	70-20604	1/2" Center Lock Hex Nut
32	2	70-20610	1/4" Nyloc Hex Nut Gr 5 NC

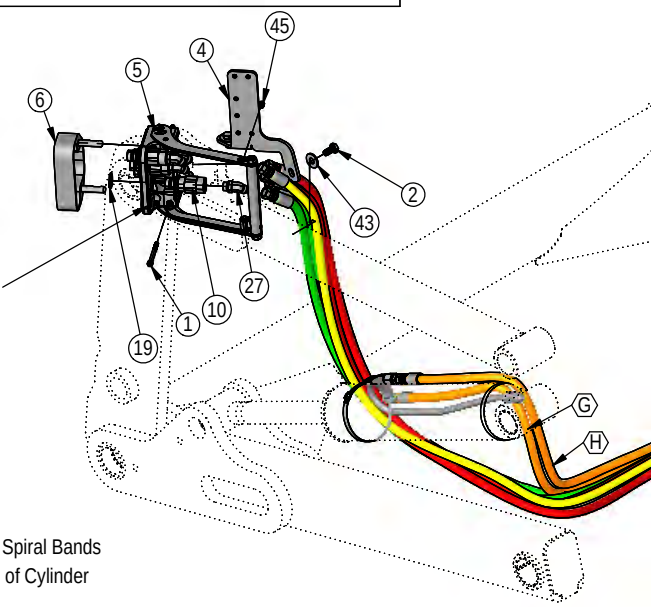
Note: Refer to Pages 8-10 for the correct hose lengths and hose location.

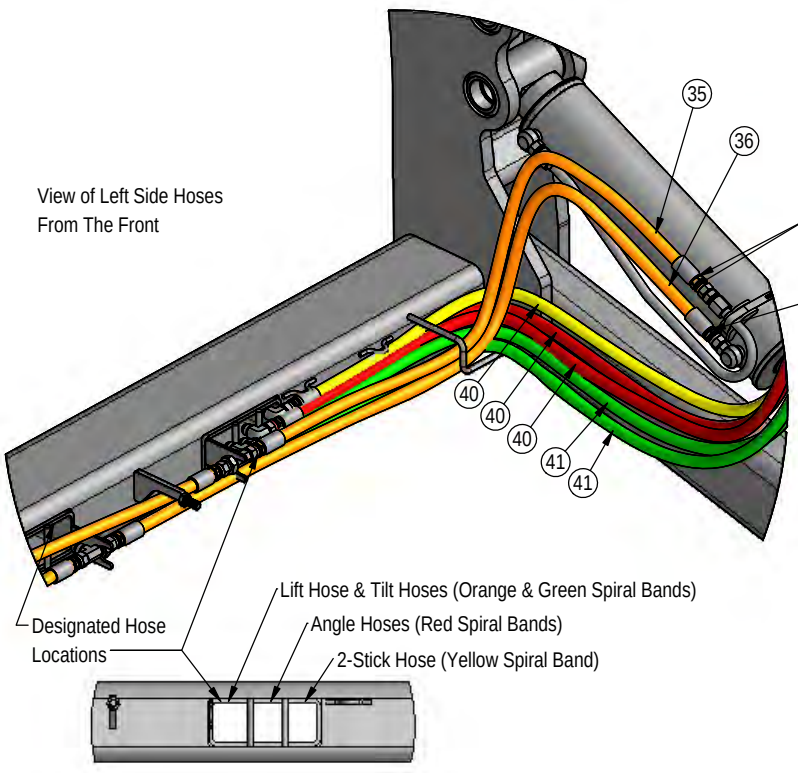
Note: All connections are identified by spiral bands. 2 bands are from base end of a cylinder and 1 band is from rod end of a cylinder. Orange = Lift, Green = Tilt, Red = Angle, and Yellow = Angle 2-Stick

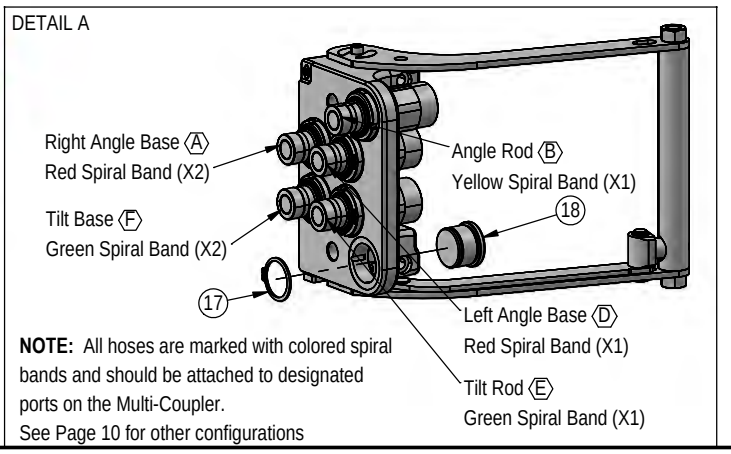
1. Connect lift hoses to lift cylinders.
2. Verify that hoses are not twisted and protected from rubbing on any sharp edges. See Pages 8-9 for proper hose routing.
3. Attach multi-coupler to top arm mount and install the 45° fittings.
4. Identify each remaining hose at front of undercarriage by the colored bands on end of hose and connect hose to corresponding 45° fitting on multi-coupler. Refer to Pages 8-10 for proper hose locations.
5. If applicable, attach wire harness to coupler mount on left top arm. Hold in place with a zip tie through one of the open holes on coupler mount. Run other end of wire harness up into cab of tractor. Refer to Page 40.
6. Hoses were plugged into rear of tractor during undercarriage installation. If system is Hydraulic Angle with 2-Stick, verify that 35" hose was installed and plumbed correctly at back of tractor. Refer to Page 8-9 or the Hydraulic Schematic on Page 38.
7. Continue on Page 11 for initial startup instructions.

ITEM NO.	PART NO.	HAHT 2-Stick QTY.	HAHT Electric QTY.	HANT 2-Stick QTY.	HANT Electric QTY.	NAHT QTY.	NANT QTY.	DESCRIPTION
1	16-18957	4	-	-	-	-	-	5/16" x 3-1/4" Allen Head Screw
2	16-20124	2	2	2	2	2	-	1/2" x 1" Hex Bolt Gr 5 NC
3	16-812525	-	2	2	2	2	-	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
4	18-19995-L	1	1	1	1	1	-	Multi-Coupler Mount
5	25-19861	1	-	-	-	-	-	Multi-Coupling Plate - 5 Port - Fixed
6	25-19863	1	-	-	-	-	-	Multi-Coupling Plate - 5 Port - Cap
7	25-19864	-	1	1	-	-	-	Multi-Coupling Plate - 4 Port Fixed
8	25-19867	-	1	1	-	-	-	Multi-Coupling Plate - 4 Port - Cap
9	25-19868	-	-	-	1	1	-	Multi-Coupling Plate - 2 Port - Fixed
10	25-19870	5	4	3	2	2	-	Multi-Coupling Plate - Male Coupler
11	25-19871	-	-	-	1	1	-	Multi-Coupling Plate - 2 Port - Cap
12	25-3401	2	-	2	-	-	-	Pioneer Dust Cap Left Angle (Yellow)
13	25-34342	8	6	6	4	4	2	Tappet Quick Coupler Male - Poppet Style
14	25-3453	2	2	-	-	2	-	Pioneer Dust Cap Tilt (Green)
15	25-3455	2	2	2	2	-	-	Pioneer Dust Cap Angle (Red)
16	25-3457	2	2	2	2	2	2	Pioneer Dust Cap Lift (Orange)
17	25-40407	1	-	1	-	-	-	Multi-Coupling Plate - Snap Ring
18	25-40414	1	-	1	-	-	-	Multi-Coupling Plate - Female Cap
19	25-43459	5	4	3	2	2	-	Multi-Coupling Plate - Snap Ring
20	31-11699-10-8	2	2	2	2	2	2	JIC Union
21	31-15199-8-8	5	4	3	2	2	-	JIC Union Elbow 90°
22	31-34030	2	2	2	2	2	2	Bulkhead Run Tee JIC
23	31-34040	2	2	2	2	2	2	Straight JIC x O-Ring
24A,B	31-34051	8	6	6	4	4	2	Straight Thread Elbow 90° JIC x O-Ring
24C	31-6802-08-10	8	6	6	4	4	2	Straight Thread Elbow 45° JIC x O-Ring
25	31-34090	1	-	1	-	-	-	Swivel Nut Run Tee JIC
26	31-34100	1	-	1	-	-	-	Swivel Nut Elbow 90° JIC

*Parts Not Shown
Hoses Not Drawn to Scale
Item A for CNH, JD 9R, JD 9030
Item B for Versatile, Challenger MT900 and JD 9RX
Item C for Claas Xerion Tractor
HAHT 2-Stick Shown. See Page 10 for remaining Multi-Coupler Configurations.
Every hydraulic function from the front to the back of the system is designated by a ○ and a letter and can also be referenced on the Hydraulic Schematics on Page 38-39.

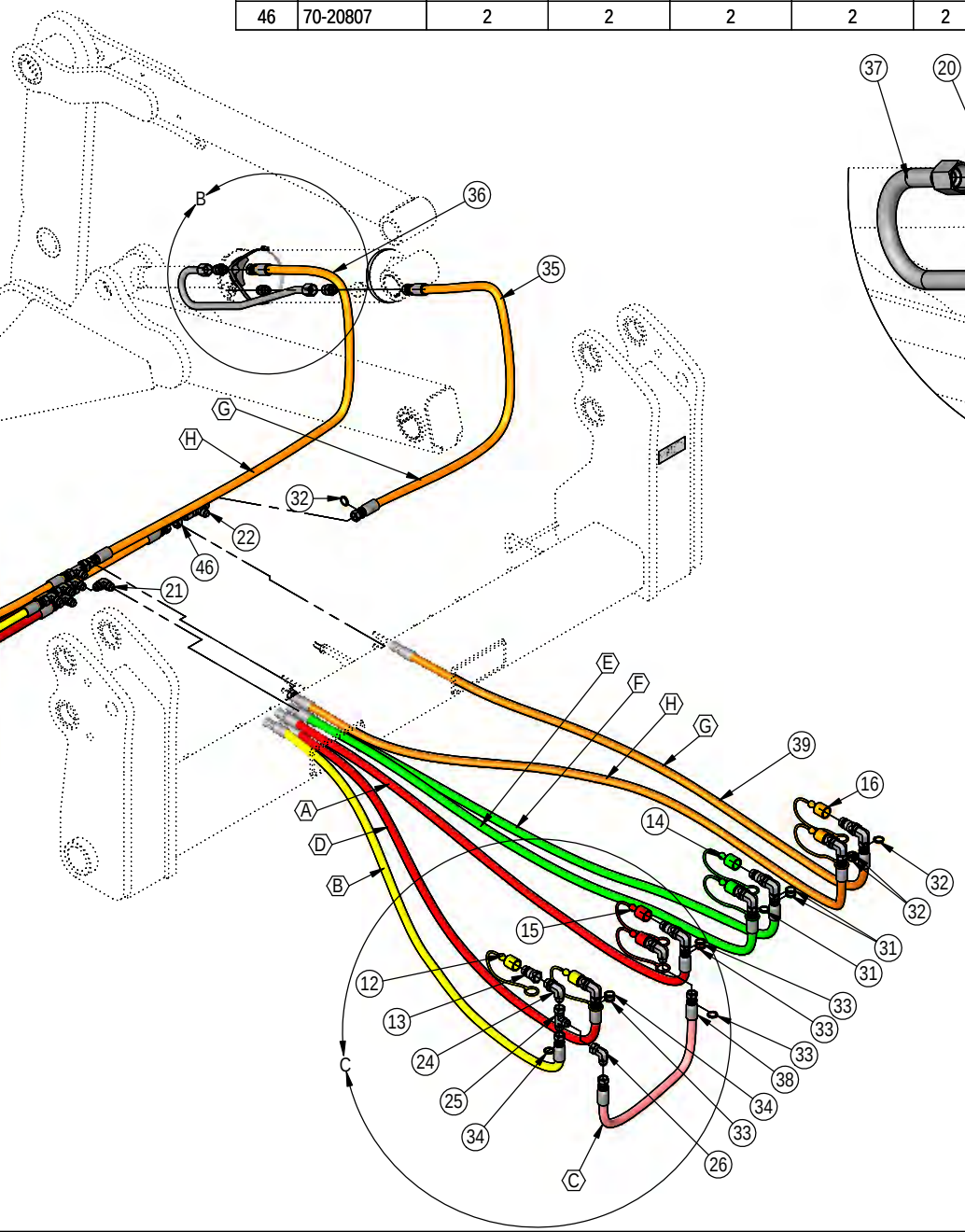


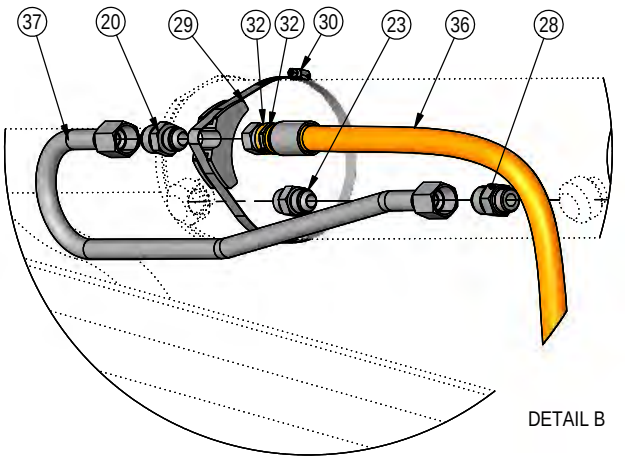




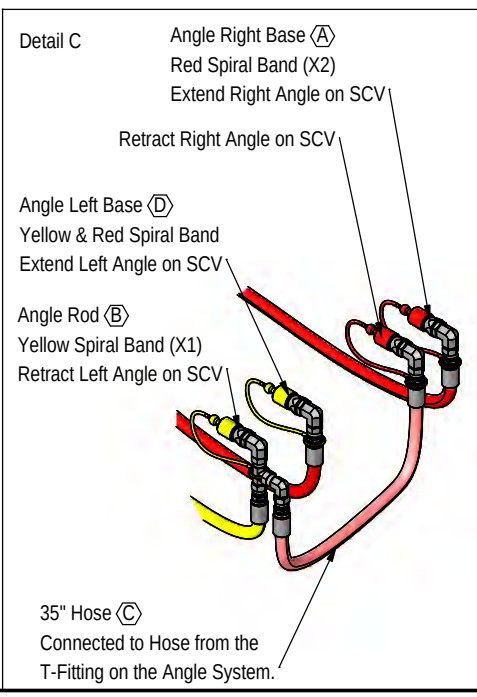
NOTE: All hoses are marked with colored spiral bands and should be attached to designated ports on the Multi-Coupler.
See Page 10 for other configurations

ITEM NO.	PART NO.	HAHT 2-Stick QTY.	HAHT Electric QTY.	HANT 2-Stick QTY.	HANT Electric QTY.	NAHT QTY.	NANT QTY.	DESCRIPTION
27	31-34150	5	4	3	2	2	-	Straight Thread Elbow 45° JIC x O-Ring
28	31-6400-10-08	2	2	2	2	2	2	Straight JIC x O-Ring
29	34-12932	2	2	2	2	2	2	Cylinder Saddle
30	34-16578	2	2	2	2	2	2	Hose Clamp (worm drive - 4.5)
31	34-18888-GR	9	9	-	-	9	-	-12 Green - Spiral Band
32	34-18888-OR	15	15	15	15	15	15	-12 Orange - Spiral Band
33	34-18888-RD	11	9	11	9	-	-	-12 Red - Spiral Band
34	34-18888-YL	4	-	4	-	-	-	-12 Yellow - Spiral Band
35	35-12633-0535	2	2	2	2	2	2	53.5" x 1/2" -8JIC/-8JIC Hose w/ Cordura
36	35-12633-0670	2	2	2	2	2	2	67" x 1/2" -8JIC/-8JIC Hose w/ Cordura
37	35-18240	2	2	2	2	2	2	Lift Cylinder Steel Line
38	35-30121	1	-	1	-	-	-	35" x 1/2" -8JIC / -8JIC Hose
39A,C	35-30183	7	6	5	4	4	2	293" (24.42") x 1/2" -8JIC/-8JIC Hose w/165" Cordura
39B	35-18953-3200	7	6	5	4	4	2	320" (26.67") x 1/2" -8JIC/-8JIC Hose w/180" Cordura
40	35-31135	3	2	3	2	-	-	78" x 1/2" -8JIC/-8JIC Hose w/Cordura
41	35-31136	2	2	-	-	2	-	81" x 1/2" -8JIC/-8JIC Hose w/Cordura
42	57-20740	-	2	2	2	2	-	1/4" Flat Washer
43	57-20744	2	2	2	2	2	-	1/2" Flat Washer
44*	69-1531	-	1	-	1	-	-	Electric Wire Harness - Tractor Side
45	70-20611	4	-	-	-	-	-	5/16" Nyloc Hex Nut Gr. 5
46	70-20807	2	2	2	2	2	2	3/4" Hex Jam Nut NF



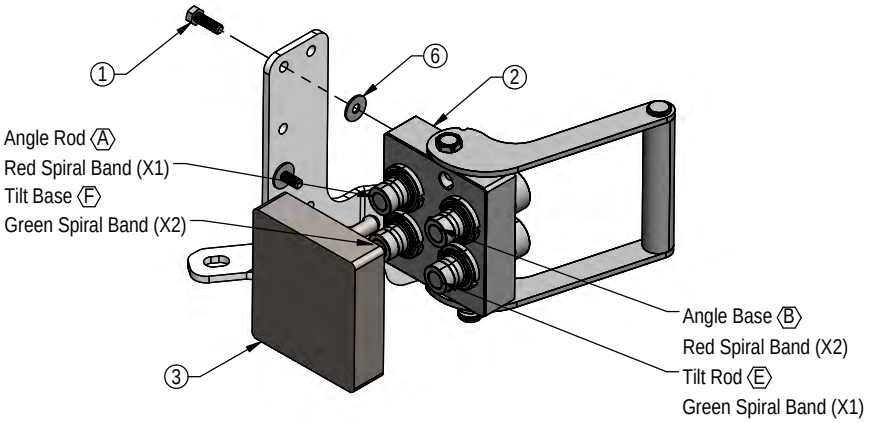


DETAIL B

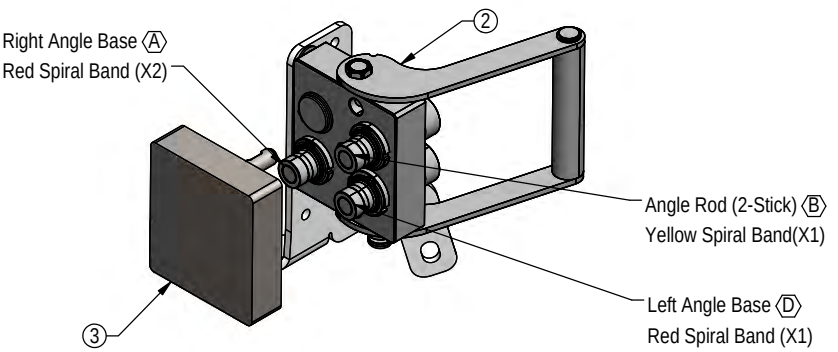


ITEM NO.	PART NO.	HAHT Electric QTY.	HANT 2-Stick QTY.	HANT Electric QTY.	NAHT QTY.	DESCRIPTION
1	16-812525	2	2	2	2	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
2	25-19864	1	1	-	-	Multi-Coupling Plate - 4 Port Fixed
3	25-19867	1	1	-	-	Multi-Coupling Plate - 4 Port - Cap
4	25-19868	-	-	1	1	Multi-Coupling Plate - 2 Port - Fixed
5	25-19871	-	-	1	1	Multi-Coupling Plate - 2 Port - Cap
6	57-20740	2	2	2	2	1/4" Flat Washer

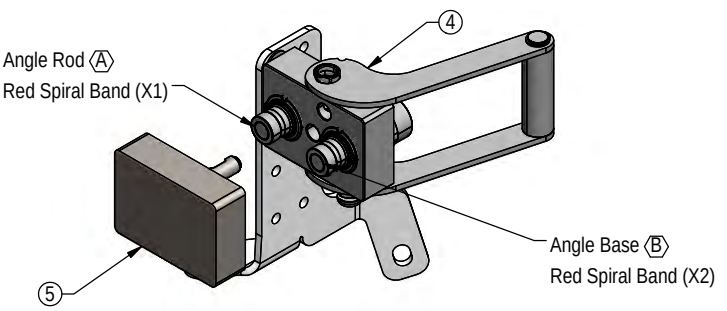
HAHT Electric



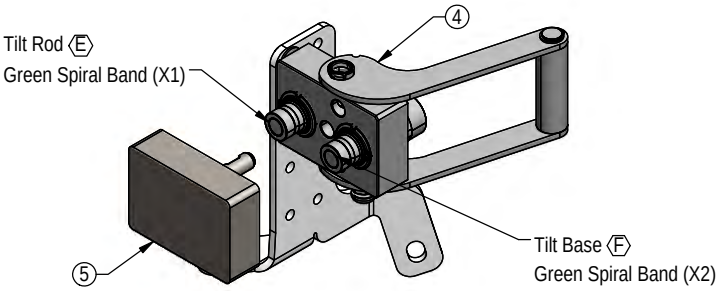
HANT 2-Stick



HANT Electric



NAHT



Prior to operating the blade system, all air must be purged from the hydraulic system. Follow the steps below for each function on your blade.

Lift Function:

1. With the lift frame down and blocked, loosen the fittings on both ends of the lift cylinders.
2. Actuate the raise function to supply oil to the rod end of the cylinders.
3. When oil starts to flow from the fittings, stop oil flow, and tighten the fitting on the rod end of the lift cylinders.
4. Continue to flow oil until the system is fully raised and then block the lift frame.
5. Actuate the function in the opposite direction to supply oil to the base end of the lift cylinders.
6. When all air is removed from the lift system, stop oil flow and tighten the fittings on the base end of the lift cylinders.
7. Raise lift system and remove blocks. Cycle up and down 5 more times.
8. Check tractor oil level and fill if necessary.
9. Continue with connecting the blade on Page 12.

Tilt Function:

1. Use a lift or jack to tilt the blade system until the left side is fully up, loosen the fittings on the rod and base end of both tilt cylinders.
2. Actuate the tilt function to extend the right tilt cylinder and supply oil to the base end of the right cylinder and to the rod end of the left cylinder.
3. When oil starts to flow from the fittings, stop oil flow, and tighten the fitting on the base end of the right cylinder and rod end of the left cylinder.
4. Remove the lift or jack.
5. Continue to actuate the tilt function until oil flows out of the remaining open ports.
6. Actuate the tilt function in the opposite direction.
7. When all air is removed from the tilt system, stop oil flow, and tighten the remaining fittings on the cylinders.
8. Cycle both cylinders in and out 5 more times.
9. Check tractor oil level and fill if necessary.

Angle Function:

1. Loosen the fittings on the rod and base end of the left angle cylinder.
2. Actuate the angle function to extend the left angle cylinder and supply oil to the base end of the left cylinder.
3. When oil starts to flow from the fittings, stop oil flow, and tighten the fitting on the base end of the left cylinder.
4. Continue to actuate the left angle function in the same direction until the cylinder is fully extended.
5. Actuate the left angle function in the opposite direction.
6. When oil starts to flow from the rod end fitting, stop oil flow, and tighten the rod end fitting on the left angle cylinder.
7. Continue to actuate the left angle fuction until cylinder is fully retracted.
8. Loosen the fittings on the rod and base end of the right angle cylinder.
9. Actuate the angle function to extend the right angle cylinder and supply oil to the base end of the right cylinder.
10. When oil starts to flow from the fittings, stop oil flow, and tighten the fitting on the base end of the right cylinder.
11. Continue to actuate the right angle function in the same direction until the cylinder is fully extended.
12. Actuate the right angle function in the opposite direction.
13. When oil starts to flow from the rod end fitting, stop oil flow, and tighten the rod end fitting on the right angle cylinder.
14. Continue to actuate the right angle function until cylinder is fully retracted.
15. Cycle the left cylinder in and out 5 more times and then the right cylinder in and out 5 more times.
16. Check tractor oil level and fill if necessary.

Run the blade through all the functions. If any function does not operate correctly, refer to corresponding section above and re-bleed. If problem still persists, call Grouser Products.

To Connect:

Note: If necessary, use a spotter to help center the blade on the lift system.

1. Before standing blade upright for initial connection, remove the 3/4" pin (#27 on Page 16) so the skid shoes can move freely. The blade will lean back further for easier connection. Store the pin in the storage location (See Page 14 for location).
2. If necessary, lift the locking latch and pull the quick attach lock handle on the left side of the lift system to open the quick attach system. Refer to Page #18-19 for further clarification on the quick attach system.
3. Drive the tractor forward slowly until the top edge of the male quick attach is under the top hook of the female quick attach on the blade assembly.
4. Raise the lift system until the male quick attach engages the female hook. If both sides don't fully engage, reposition. Continue to raise the lift system until the blade is off the ground and the female quick attaches are against the front of the male quick attaches.
5. Shut off the tractor engine and set the parking brake.
6. Push the quick attach lock handle to engage the quick attach pins and lift the locking latch to lock the handle in place.
7. Clean and connect hydraulic multi-coupler on the top arm. Refer to Pages 36-37 for cleaning and connecting information.
8. 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.
9. Lock the mushroom skid shoe link back in place with the 3/4" pin you removed in Step #1.
10. If initial startup, refer to Page 11 before operating any function of the blade.

To Disconnect:

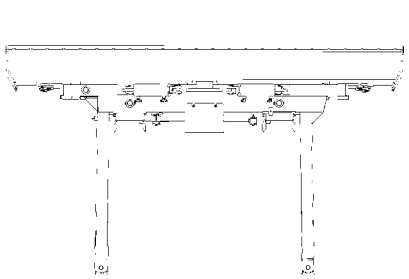
1. Lower the blade until the cutting edge is off the ground a few inches.
2. Shut off the tractor engine and set the parking brake.
3. Unhook the multi-coupler on the top arm.
4. Remove the multi-coupler cover from the parking station on the blade assembly and install on the multi-coupler on the top arm.
5. Plug the blade side multi-coupler into the parking station.
6. Lift the locking latch and pull the quick attach lock handle to disengage the quick attach pins.
7. Remove the 3/4" pin so the skid shoes can move freely and the blade can lean back. Store the pin.
8. Start tractor, disengage the parking brake, and lower the blade until cutting edge is on the ground.
9. Continue to slowly lower the lift system to disengage the blade.
10. Slowly back away from the blade. When lift system is clear from the blade, raise the lift system.
11. Shut off the tractor engine and set the parking brake.

With the Electric 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.

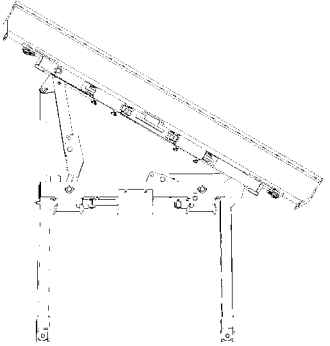
The safety relief valve allows the cylinder to retract if its internal pressure becomes excessive. With this safety feature in place, when either cylinder reaches the end of its stroke, the safety relief valve will reroute pressure to the opposite cylinder causing it to extend. If this occurs, refer to the Relief Valve adjustment below for possible adjustments. Only one cylinder should be extended when angled dozing.

With the **2-Stick 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.

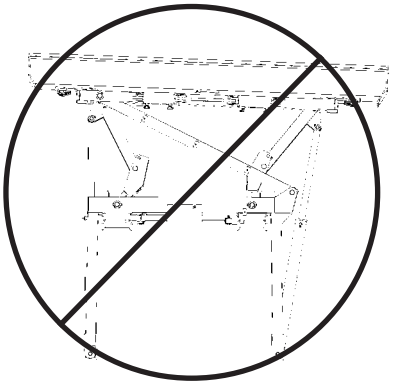
To ensure proper use and life of equipment, it is recommended to have both cylinders closed for straight ahead dozing and only one cylinder partially or fully extended for angled dozing as shown in the diagrams below. If the angle system is not used correctly, frame damage may occur. Diagrams below may look slightly different than your system, but the information is still compatible and important to your system.



CORRECT



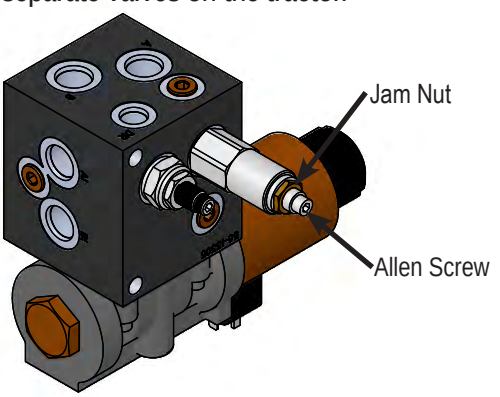
CORRECT
(Left or Right)



Incorrect

When either angle cylinder reaches the end of its stroke and the safety relief valve reroutes pressure to the opposite cylinder causing it to extend, adjust the relief valve. To set the electric safety relief valve at a higher pressure than tractor: Use a pressure gauge connected between the tractor pump and the port A on the electric relief valve on the blade to check the tractor pressure and record the reading. To increase the pressure of the relief valve, install a 0-5,000 psi pressure gauge between the hose and fitting in the base end of right angle cylinder. Make sure both angle cylinders are retracted. Loosen the jam nut on the valve system relief cartridge. Next, start tractor and extend the right side cylinder out until the safety valve activates, while the safety valve is in function (pressure being rerouted to opposite cylinder causing opposite cylinder to extend), record the pressure reading on the gauge. Tighten the Allen screw in small increments and record the pressure until the pressure is about 50-100 psi higher than the tractor pressure. Do not exceed the 3,500-psi operating pressure of the cylinders. Tighten the jam nut and remove the gauge.

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



Skid Shoe Adjustment

Skid Shoe Adjustment:

1. Remove the handle from the ratchet keeper by pulling the hitch clip pin and insert it into the handle receiver on the ratchet jack.
2. Loosen the locking nut on the ratchet jack.
3. Hold the body of the ratchet jack and rotate the ratchet jack handle to raise or lower the skid shoes.
4. If the skid shoe is not moving in the proper direction, flip the forward/reverse lever on the handle (see Figure 2). Rotate the ratchet jack handle again to move the skid shoe in the desired direction.
5. After the skid shoe is adjusted, rotate the ratchet jack handle until it rests against the ratchet keeper. Return the removable handle to the ratchet keeper ensuring that the ratchet jack handle is captured by the removable handle and the ratchet keeper. Secure the handle to the ratchet keeper with the hitch clip pin.
6. Tighten the locking nut against the ratchet jack body to keep it from moving.
7. When skid shoes are worn up to the bolt heads, replace skid shoes.

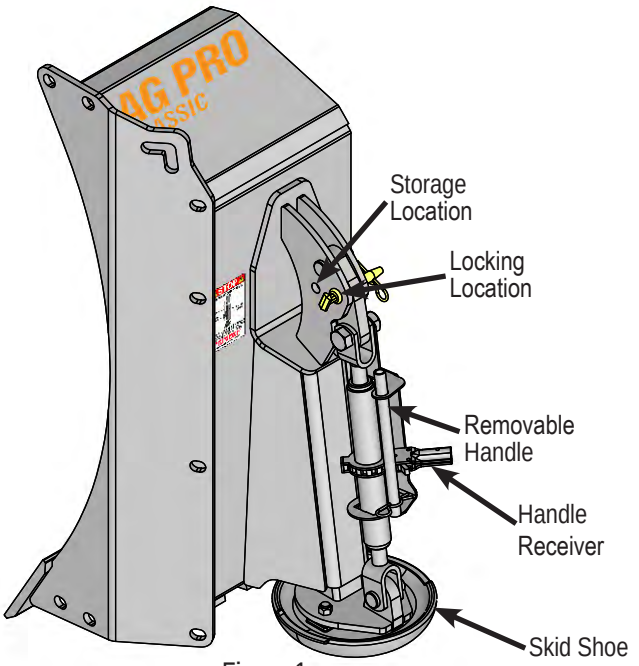


Figure 1

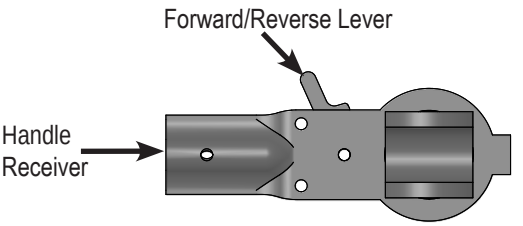


Figure 2

Tilt Plate Adjustment

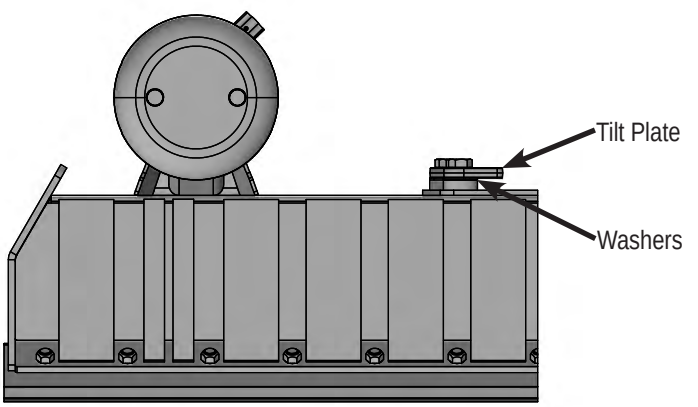
Preferred Method:

1. The preferred blade position for adjusting the tilt plates is laying face down on blocks.
2. Remove the 6 bolts from the right tilt plates.
3. Add or remove washers as needed to adjust tilt-way clearance to 1/16” - 1/8”.
4. Reinstall the bolts in the right tilt plates.
5. Follow Steps #2-4 for the left tilt plates.
6. Once the tilt-way clearance is set, torque bolts to 640 ft-lbs.

Non-Preferred Method:

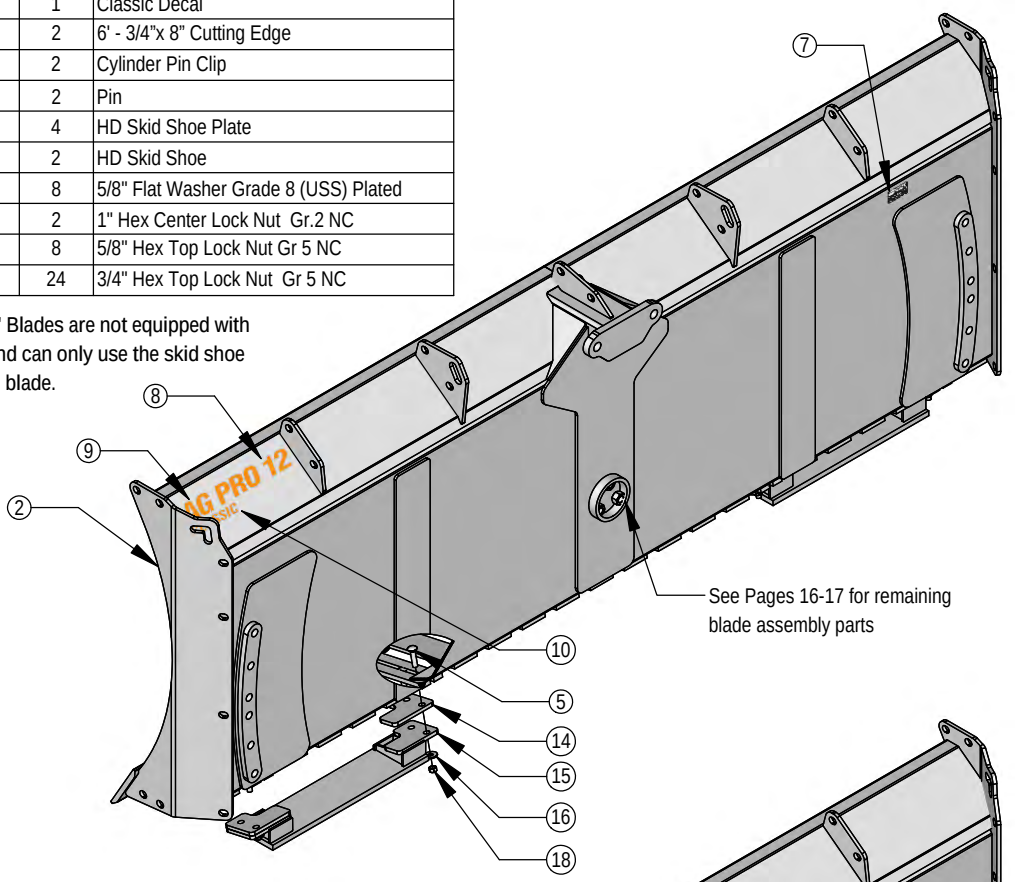
Note: Do not remove all of the bolts at the same time if the blade is not laying face down.

1. The non-preferred blade position for adjusting the tilt plates is the blade in the upright position.
2. Remove the 3 bolts from the top right tilt plate and the bottom left tilt plate..
3. Add or remove washers as needed to adjust tilt-way clearance to 1/16” - 1/8”.
4. Reinstall the bolts in the top right tilt plate and the bottom left tilt plate.
5. Follow Steps #2-4 for the bottom right tilt plate and the top left tilt plate.
6. Once the tilt-way clearance is set, torque bolts to 640 ft-lbs.

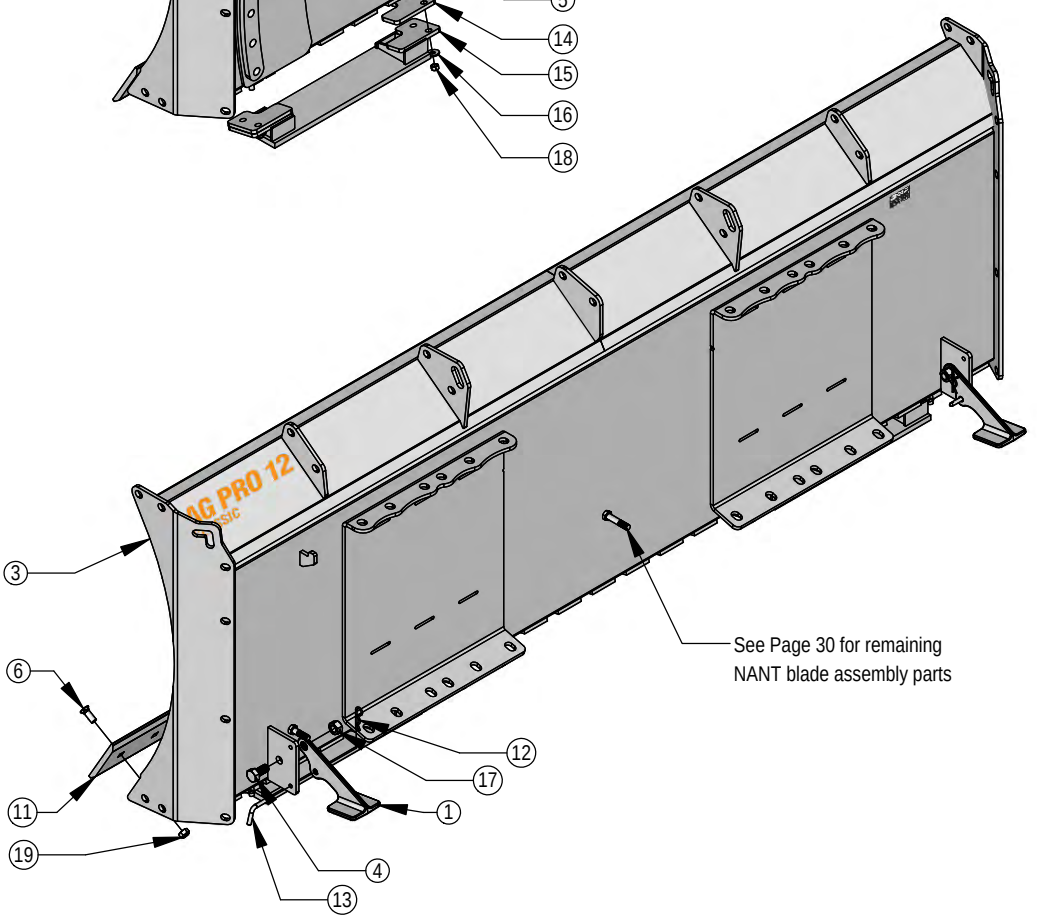


ITEM NO.	PART NO.	XAXT QTY.	NANT QTY.	DESCRIPTION
1	11-11316	-	2	Arm, Blade Stand
2	15-13970-12	1	-	Blade Weld
3	15-14690-12	-	1	Blade Weld
4	16-20558	-	2	1" x 2" Hex Bolt Gr. 8 NC
5	16-21190	8	8	5/8" x 2-1/2" Carriage Bolt
6	16-21748	24	24	3/4" X 2" Plow Bolt Gr 8 NC
7	NA	1	1	Grouser Dozer Metal Serial Tag
8	27-14842-12	1	1	12' Decal
9	27-14845	1	1	Ag Pro Blade Decal
10	27-40951	1	1	Classic Decal
11	29-11118-6	2	2	6' - 3/4"x 8" Cutting Edge
12	43-7767	-	2	Cylinder Pin Clip
13	43-9582	-	2	Pin
14	44-40487	4	4	HD Skid Shoe Plate
15	50-16710	2	2	HD Skid Shoe
16	57-20816	8	8	5/8" Flat Washer Grade 8 (USS) Plated
17	70-20609	-	2	1" Hex Center Lock Nut Gr.2 NC
18	70-20646	8	8	5/8" Hex Top Lock Nut Gr 5 NC
19	70-20647	24	24	3/4" Hex Top Lock Nut Gr 5 NC

Note: Ag Pro Classic 12' Blades are not equipped with mushroom skid shoes and can only use the skid shoe mounted underneath the blade.

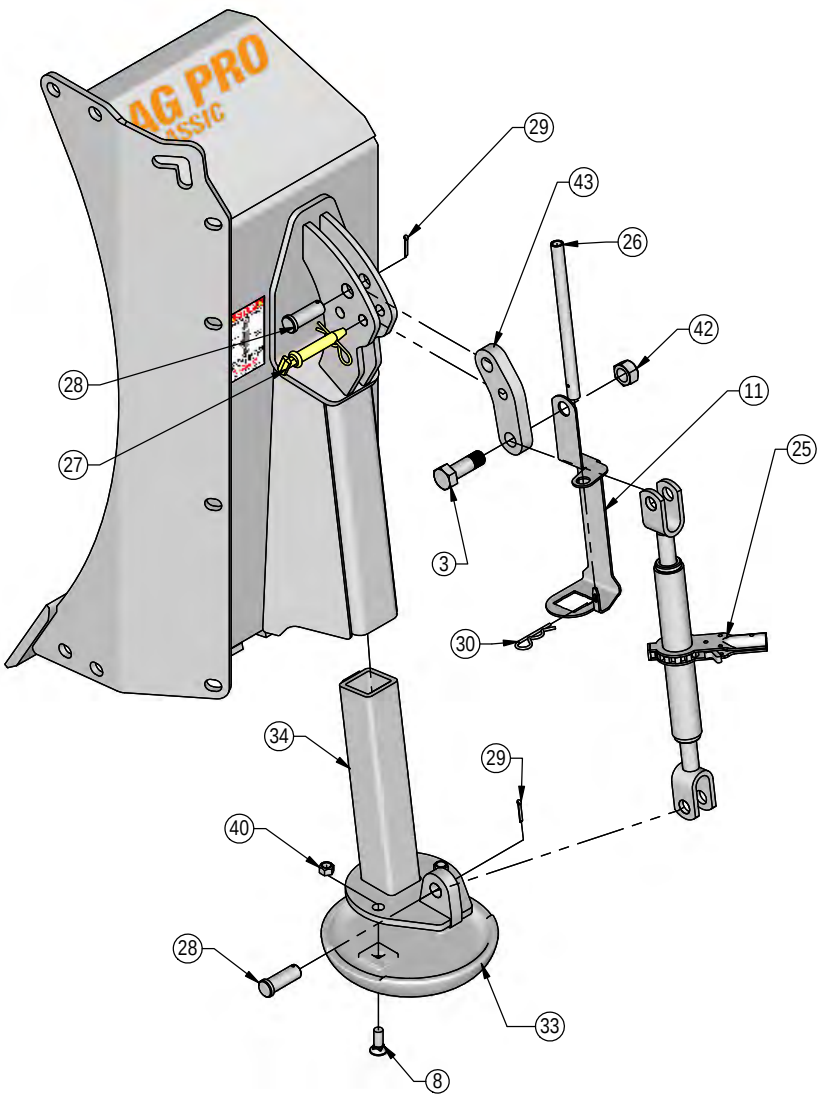


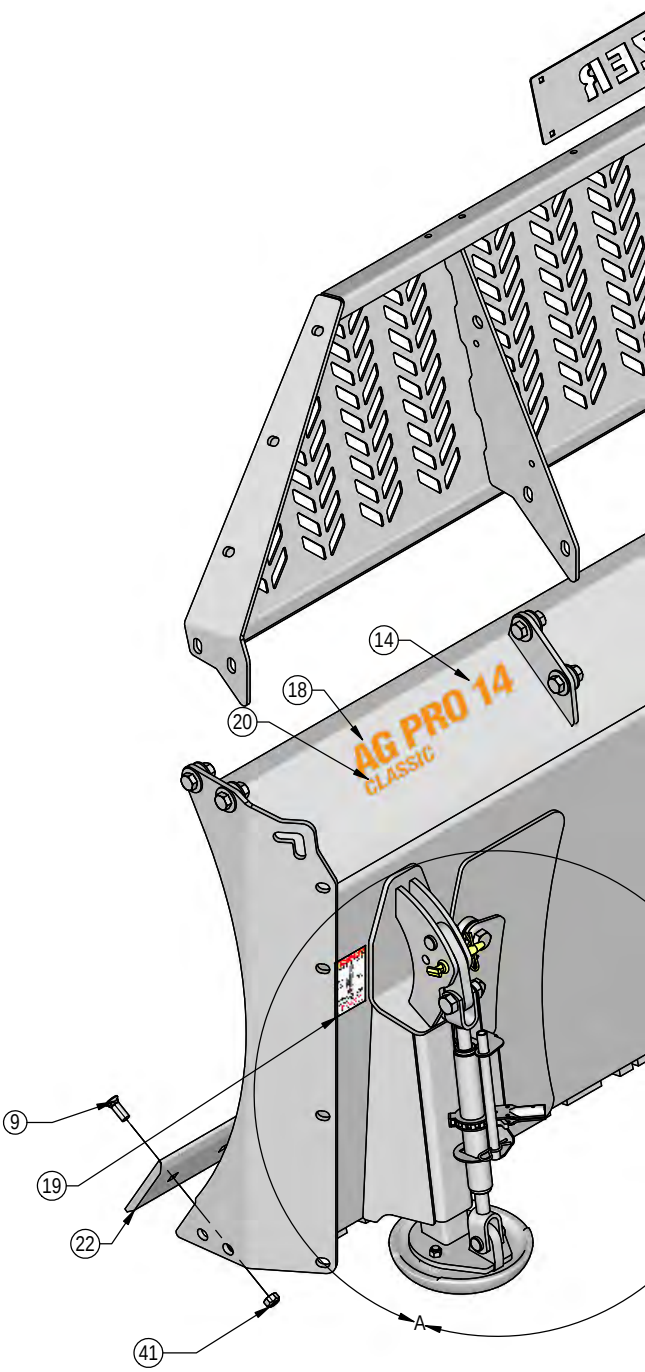
See Pages 16-17 for remaining blade assembly parts

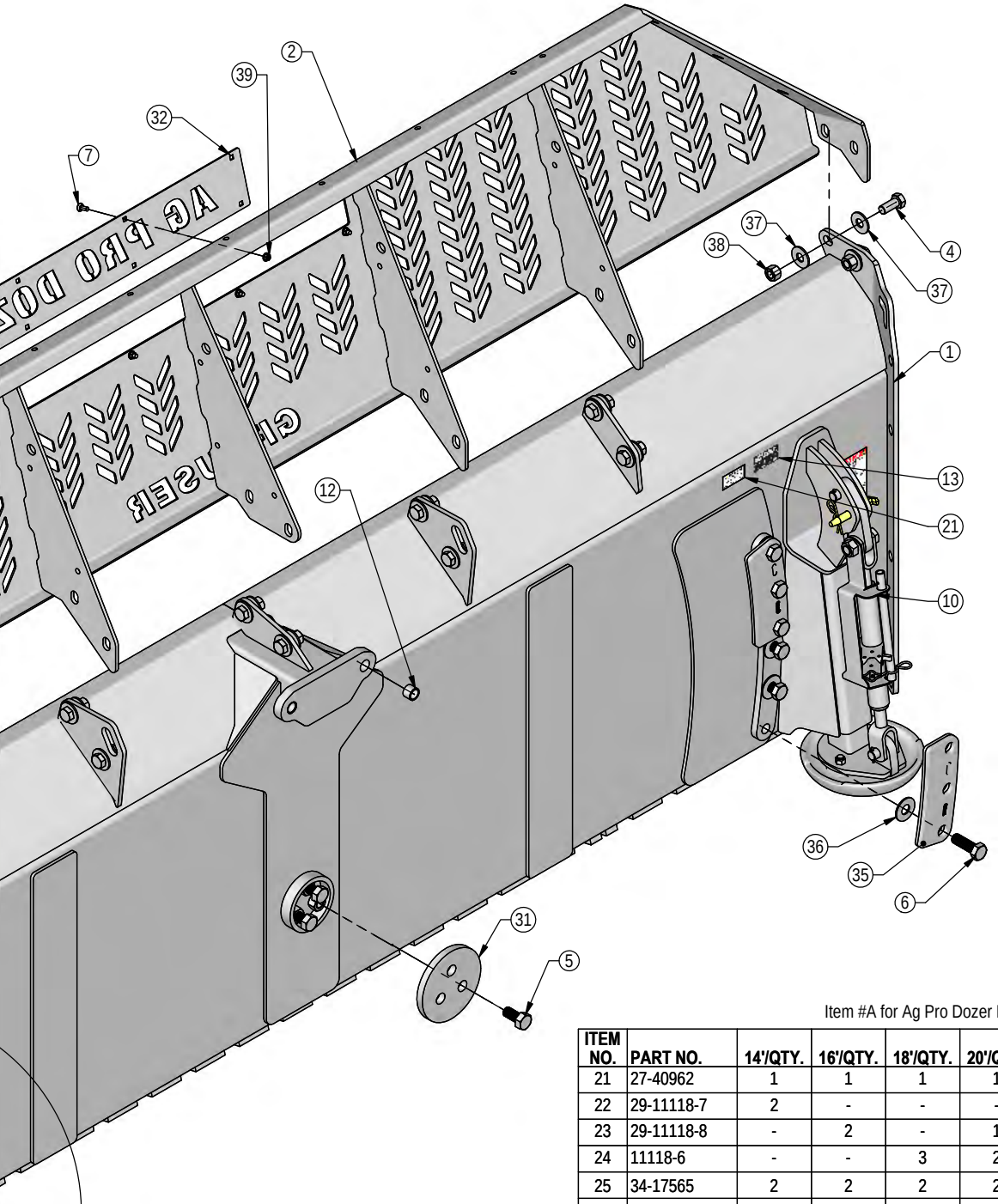


See Page 30 for remaining NANT blade assembly parts

ITEM NO.	PART NO.	14'/QTY.	16'/QTY.	18'/QTY.	20'/QTY.	DESCRIPTION
1	15-18465-14	1	-	-	-	Blade Weld
1	15-18465-16	-	1	-	-	Blade Weld
1	15-18465-18	-	-	1	-	Blade Weld
1	15-18465-20	-	-	-	1	Blade Weld
2	15-18520-14	1	-	-	-	Top Extension Weld
2	15-18520-16	-	1	-	-	Top Extension Weld
2	15-18520-18	-	-	1	-	Top Extension Weld
2	15-18520-20	-	-	-	1	Top Extension Weld
3	16-18945	2	2	2	2	1" x 3" Hex Bolt Gr 5 NC - Short Thread
4	16-20538	14	18	18	22	7/8" x 2" Hex Bolt Gr 8 NC
5	16-20558	3	3	3	3	1" x 2" Hex Bolt Gr 8 NC
6	16-20562	12	12	12	12	1" x 3" Hex Bolt Gr 8 NC
7	16-21064	8	8	8	8	3/8" x 1" Carriage Bolt Gr 5 NC
8	16-21666	4	4	4	4	5/8" x 1-3/4" Plow Bolt Gr 5 NC
9	16-21748	28	32	34	36	3/4" x 2" Plow Bolt Gr 8 NC
10	18-18498-R	1	1	-	1	Ratchet Keeper - Right
11	18-18498-L	1	1	1	1	Ratchet Keeper - Left
12	19-7774	2	2	2	2	1" x 1" Spring Bushing
13	NA	1	1	1	1	Grouser Dozer Metal Serial Tag
14	27-14842-14	1	-	-	-	14' Decal
15	27-14842-16	-	1	-	-	16' Decal
16	27-14842-18	-	-	1	-	18' Decal
17	27-14842-20	-	-	-	1	20' Decal
18	27-14845	1	1	1	1	Ag Pro Blade Decal
19	27-40917	2	2	2	2	Ratchet Holder Storage Decal
20	27-40951	1	1	1	1	Classic Decal



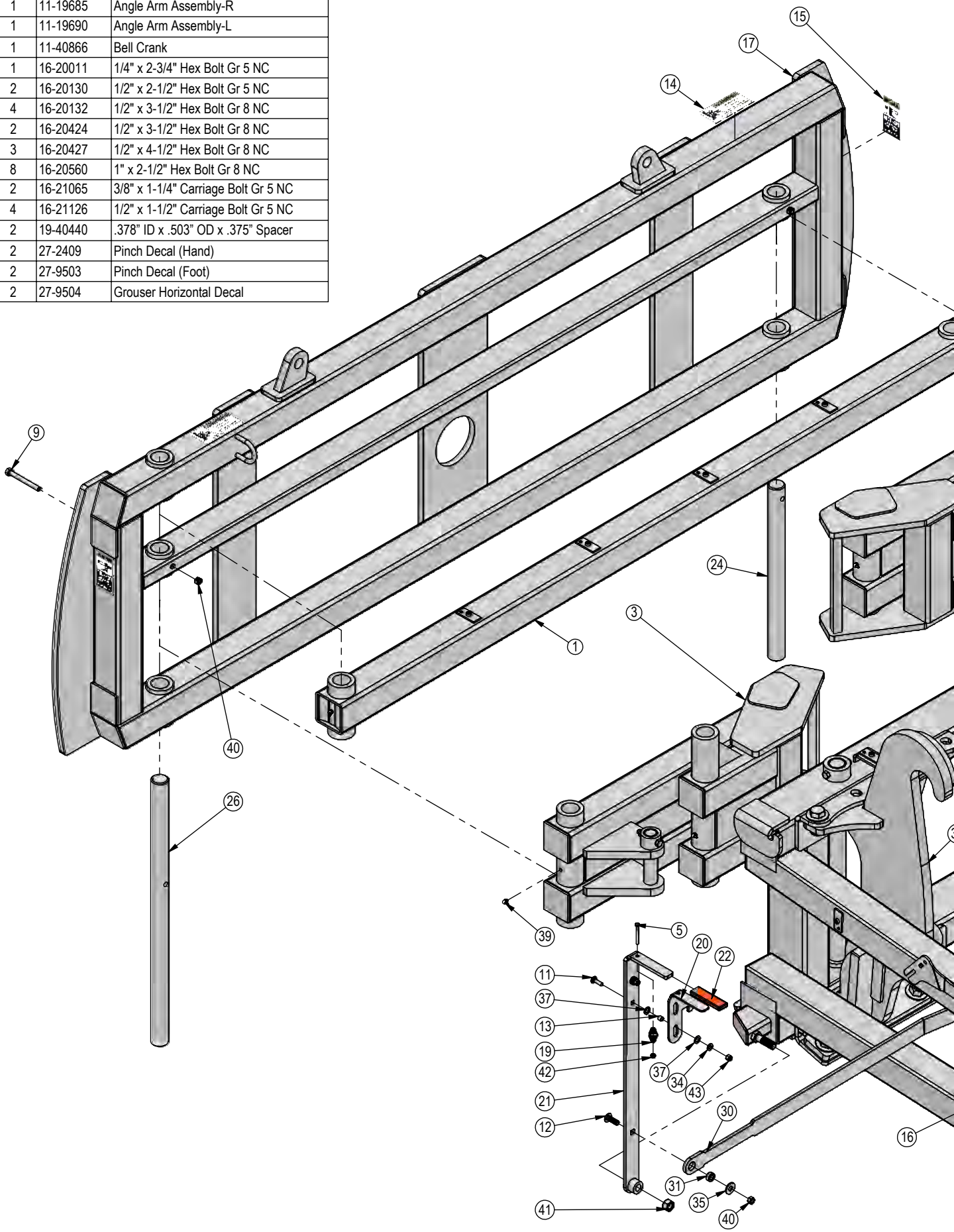


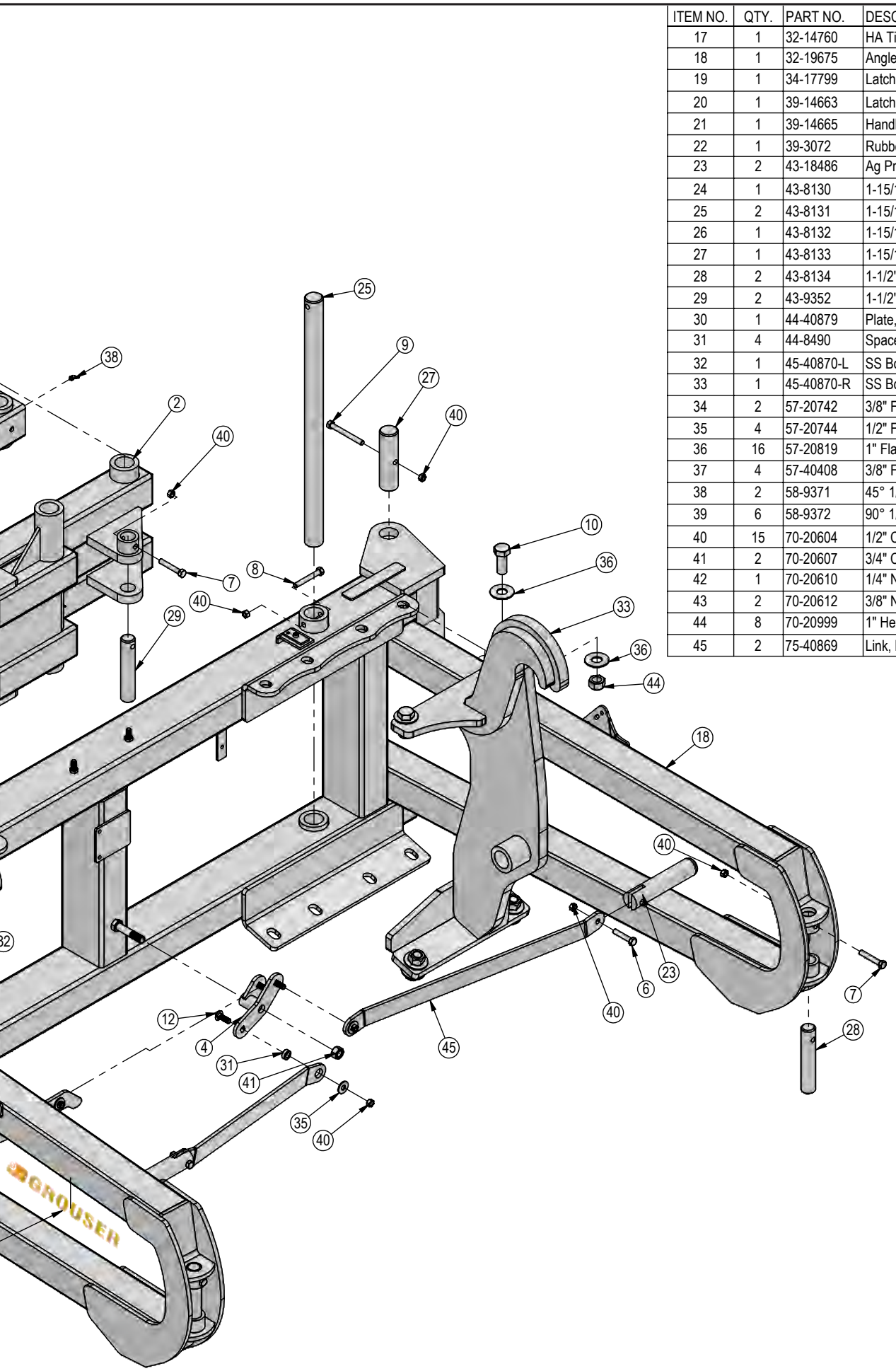


Item #A for Ag Pro Dozer Name Plate and Item #B for Custom Name Plate

ITEM NO.	PART NO.	14'/QTY.	16'/QTY.	18'/QTY.	20'/QTY.	DESCRIPTION
21	27-40962	1	1	1	1	Warning Prop 65 Decal
22	29-11118-7	2	-	-	-	7' - 3/4"x 8" Cutting Edge
23	29-11118-8	-	2	-	1	8' - 3/4"x 8" Cutting Edge
24	11118-6	-	-	3	2	6' - 3/4"x 8" Cutting Edge
25	34-17565	2	2	2	2	Skid Shoe Ratchet Jack
26	34-17567	2	2	2	2	Handle, Ratchet Jack
27	43-15712	2	2	2	2	3/4" x 3-1/4" Pin with Hitch Pin Clip
28	43-18463	4	4	4	4	1" x 2.75" Pin
29	43-18943	4	4	4	4	3/16" x 1-1/2" Cotter Pin
30	43-7767	2	2	2	2	Cylinder Pin Clip
31	44-3749	1	1	1	1	Backdrag Brace Plate
32A	44-15150	1	1	1	1	Ag Pro Dozer Name Plate
32B	44-14830	1	1	1	1	Custom Name Plate
33	50-15458	2	2	2	2	12" Round Mushroom Skid Shoe
34	50-18470	2	2	2	2	Mushroom Skid Shoe Mount
35	52-8204	4	4	4	4	Tilt Plate
36	57-20749	12	12	12	12	1" Flat Washer
37	57-20818	28	36	36	44	7/8" Flat Washer Heavy Duty Gr 8 (USS)
38	70-20598	14	18	18	22	7/8" Hex Nut Gr 8 NC
39	70-20622	8	8	8	8	3/8" Flange Hex Nut Gr 5 NC
40	70-20646	4	4	4	4	5/8" Hex Top Lock Nut Gr 5 NC
41	70-20647	28	32	34	36	3/4" Hex Top Lock Nut Gr 5 NC
42	70-20999	2	2	2	2	1" Hex Top Lock Nut Gr 8 NC
43	75-18479	2	2	2	2	Skid Shoe Link

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-19670	Ag Pro Plus - Stabilizer Arm
2	1	11-19685	Angle Arm Assembly-R
3	1	11-19690	Angle Arm Assembly-L
4	1	11-40866	Bell Crank
5	1	16-20011	1/4" x 2-3/4" Hex Bolt Gr 5 NC
6	2	16-20130	1/2" x 2-1/2" Hex Bolt Gr 5 NC
7	4	16-20132	1/2" x 3-1/2" Hex Bolt Gr 8 NC
8	2	16-20424	1/2" x 3-1/2" Hex Bolt Gr 8 NC
9	3	16-20427	1/2" x 4-1/2" Hex Bolt Gr 8 NC
10	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
11	2	16-21065	3/8" x 1-1/4" Carriage Bolt Gr 5 NC
12	4	16-21126	1/2" x 1-1/2" Carriage Bolt Gr 5 NC
13	2	19-40440	.378" ID x .503" OD x .375" Spacer
14	2	27-2409	Pinch Decal (Hand)
15	2	27-9503	Pinch Decal (Foot)
16	2	27-9504	Grouser Horizontal Decal



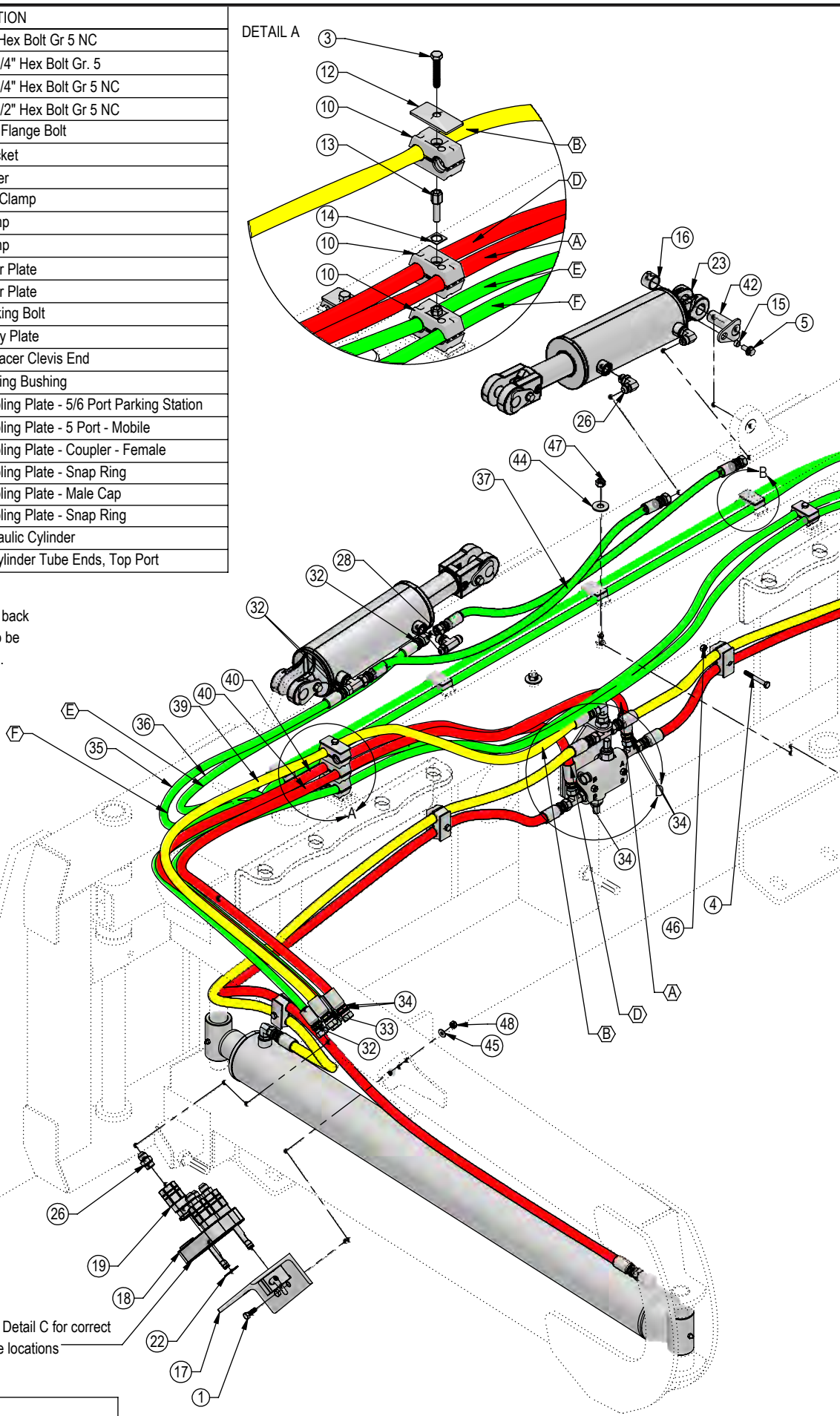


ITEM NO.	QTY.	PART NO.	DESCRIPTION
17	1	32-14760	HA Tilt Frame
18	1	32-19675	Angle Frame
19	1	34-17799	Latch Spring
20	1	39-14663	Latch
21	1	39-14665	Handle Weld
22	1	39-3072	Rubber Handle
23	2	43-18486	Ag Pro SS QA Lock Pin
24	1	43-8130	1-15/16" X 23-1/4" NR Pin
25	2	43-8131	1-15/16" X 31" NR Pin
26	1	43-8132	1-15/16" X 35-1/2" NR Pin
27	1	43-8133	1-15/16" X 7-1/8" NR Pin
28	2	43-8134	1-1/2" x 8" NR Pin
29	2	43-9352	1-1/2" X 7-1/2" NR Pin
30	1	44-40879	Plate, Link
31	4	44-8490	Spacer
32	1	45-40870-L	SS Bolt in Quick Attach - Left
33	1	45-40870-R	SS Bolt in Quick Attach - Right
34	2	57-20742	3/8" Flat Washer
35	4	57-20744	1/2" Flat Washer
36	16	57-20819	1" Flat Washer Heavy Duty Gr 8
37	4	57-40408	3/8" Flat Nylon Washer
38	2	58-9371	45° 1/8" NPT Grease Fitting
39	6	58-9372	90° 1/8" NPT Grease Fitting
40	15	70-20604	1/2" Center Lock Hex Nut
41	2	70-20607	3/4" Center Lock Hex Nut
42	1	70-20610	1/4" Nyloc Hex Nut Gr 5 NC
43	2	70-20612	3/8" Nyloc Hex Nut Gr 5 NC
44	8	70-20999	1" Hex Top Lock Nut Gr 8 NC
45	2	75-40869	Link, Bell Crank To Pin

DWG. NO.: 42479

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	16-20034	5/16" x 1" Hex Bolt Gr 5 NC
2	6	16-20035	5/16" x 1-1/4" Hex Bolt Gr. 5
3	4	16-20037	5/16" x 1-3/4" Hex Bolt Gr 5 NC
4	4	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
5	4	16-35C612	3/8" x 3/4" Flange Bolt
6	1	18-14695	Valve Bracket
7	1	18-1701	Valve Cover
8	4	18-19311-02-P-062	Half Hose Clamp
9	1	18-19311-02-P-062	Hose Clamp
10	7	18-19311-03-P-087	Hose Clamp
11	5	18-19312-02	Twin Cover Plate
12	5	18-19312-03	Twin Cover Plate
13	2	18-19313-03	Twin Stacking Bolt
14	2	18-19314-02	Twin Safety Plate
15	4	19-13577	NR Pin Spacer Clevis End
16	2	19-7774	1" x 1" Spring Bushing
17	1	25-18961	Multi-Coupling Plate - 5/6 Port Parking Station
18	1	25-19862	Multi-Coupling Plate - 5 Port - Mobile
19	5	25-19865	Multi-Coupling Plate - Coupler - Female
20	6	25-40407	Multi-Coupling Plate - Snap Ring
21	1	25-40413	Multi-Coupling Plate - Male Cap
22	5	25-43459	Multi-Coupling Plate - Snap Ring
23	2	26-34711	4 x 8 Hydraulic Cylinder
24	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port

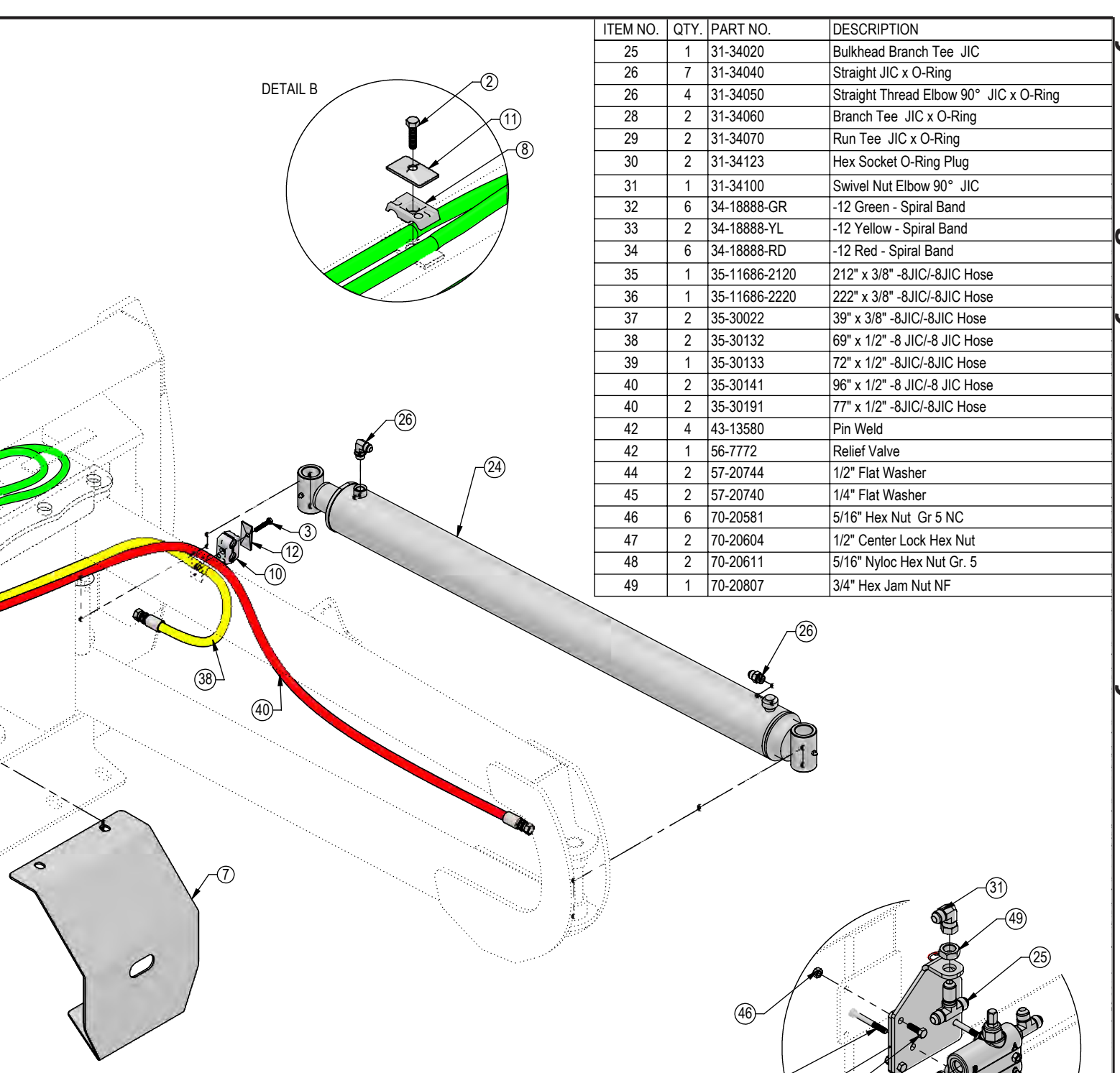
Note: Every hydraulic function from the front to the back of the system is designated by a letter and can also be referenced on the Hydraulic Schematic on Page 38.



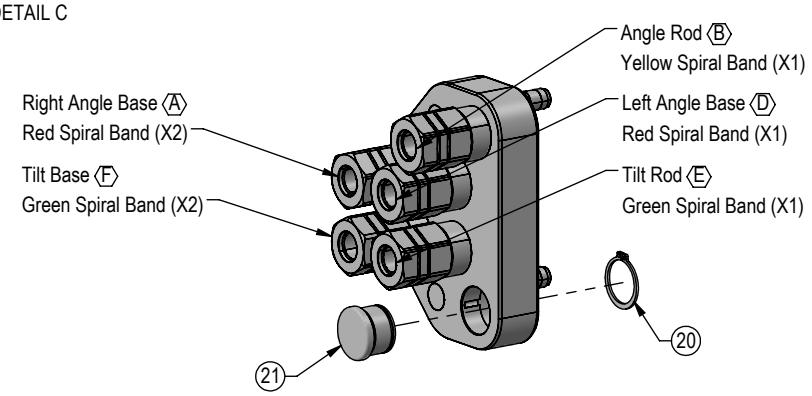
Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

No. On Cylinder	Part No.	Description
26-34711	49-12271	Seal Kit 4" (647135) Nitrided Rod - Clevis Ends
26-34725	49-12274	Seal Kit 4" (647210) Nitrided Rod - Tube Ends

ITEM NO.	QTY.	PART NO.	DESCRIPTION
25	1	31-34020	Bulkhead Branch Tee JIC
26	7	31-34040	Straight JIC x O-Ring
26	4	31-34050	Straight Thread Elbow 90° JIC x O-Ring
28	2	31-34060	Branch Tee JIC x O-Ring
29	2	31-34070	Run Tee JIC x O-Ring
30	2	31-34123	Hex Socket O-Ring Plug
31	1	31-34100	Swivel Nut Elbow 90° JIC
32	6	34-18888-GR	-12 Green - Spiral Band
33	2	34-18888-YL	-12 Yellow - Spiral Band
34	6	34-18888-RD	-12 Red - Spiral Band
35	1	35-11686-2120	212" x 3/8" -8JIC/-8JIC Hose
36	1	35-11686-2220	222" x 3/8" -8JIC/-8JIC Hose
37	2	35-30022	39" x 3/8" -8JIC/-8JIC Hose
38	2	35-30132	69" x 1/2" -8 JIC/-8 JIC Hose
39	1	35-30133	72" x 1/2" -8JIC/-8JIC Hose
40	2	35-30141	96" x 1/2" -8 JIC/-8 JIC Hose
40	2	35-30191	77" x 1/2" -8JIC/-8JIC Hose
42	4	43-13580	Pin Weld
42	1	56-7772	Relief Valve
44	2	57-20744	1/2" Flat Washer
45	2	57-20740	1/4" Flat Washer
46	6	70-20581	5/16" Hex Nut Gr 5 NC
47	2	70-20604	1/2" Center Lock Hex Nut
48	2	70-20611	5/16" Nyloc Hex Nut Gr. 5
49	1	70-20807	3/4" Hex Jam Nut NF



DETAIL C

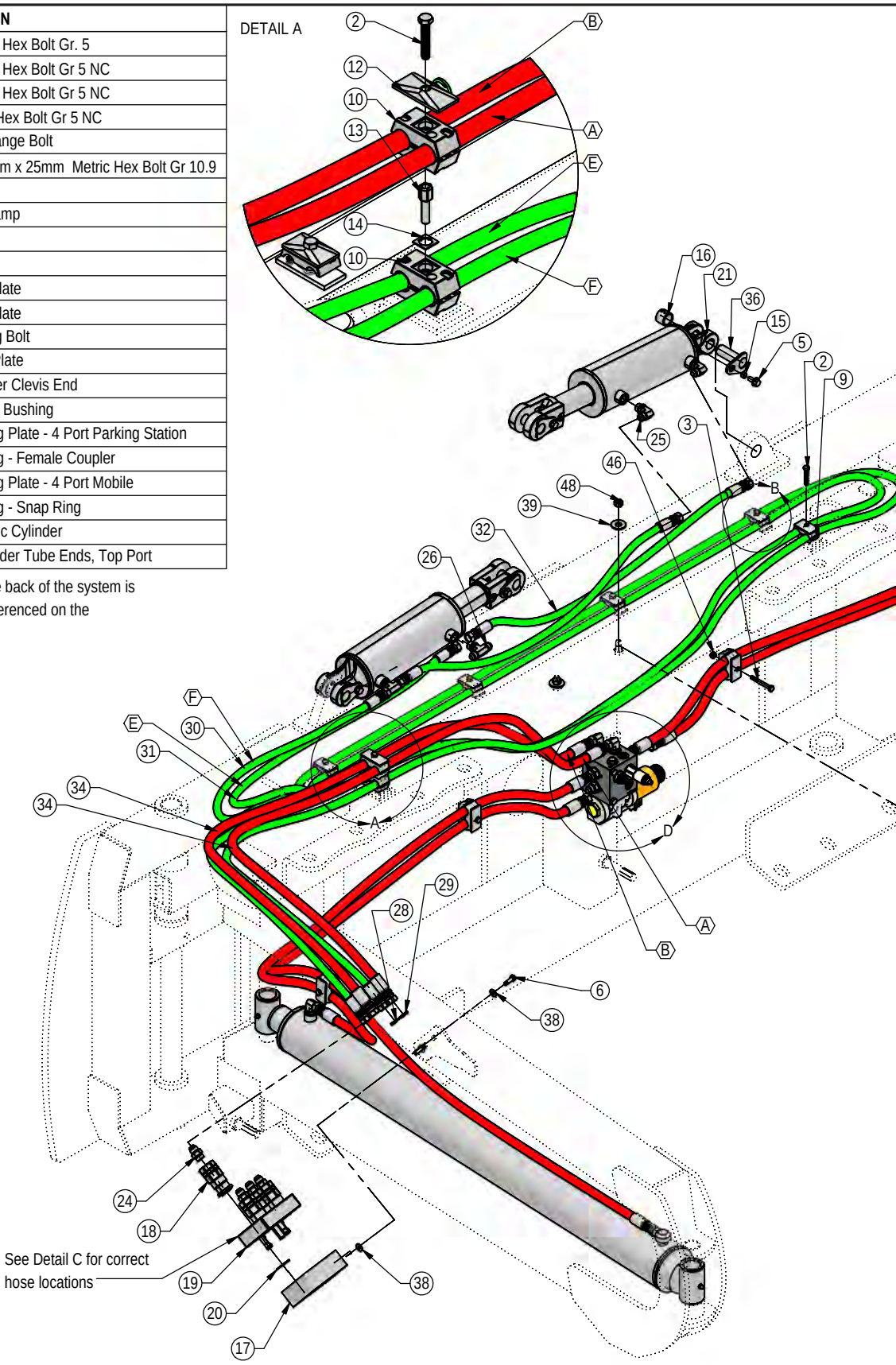


Note: View is from Mult-Coupler Installed on Top Arm.
All hoses are marked with colored spiral bands and should be attached to designated ports on the Multi-Coupler.

DWG. NO.: 42479

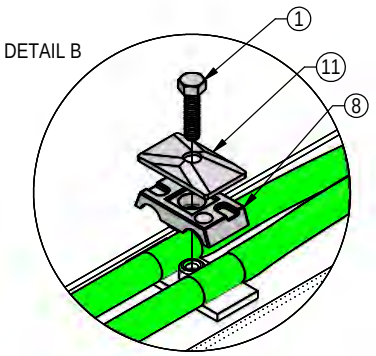
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	4	16-20035	5/16" x 1-1/4" Hex Bolt Gr. 5
2	4	16-20037	5/16" x 1-3/4" Hex Bolt Gr 5 NC
3	2	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
4	2	16-20077	3/8" x 4-1/2" Hex Bolt Gr 5 NC
5	4	16-35C612	3/8" x 3/4" Flange Bolt
6	2	16-812525	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
7	1	18-1701	Valve Cover
8	4	18-19311-02-P-062	Half Hose Clamp
9	1	18-19311-02-P-062	Hose Clamp
10	6	18-19311-03-P-087	Hose Clamp
11	5	18-19312-02	Twin Cover Plate
12	5	18-19312-03	Twin Cover Plate
13	1	18-19313-03	Twin Stacking Bolt
14	1	18-19314-02	Twin Safety Plate
15	4	19-13577	NR Pin Spacer Clevis End
16	2	19-7774	1" x 1" Spring Bushing
17	1	25-18956	Multi-Coupling Plate - 4 Port Parking Station
18	4	25-19865	Multi-Coupling - Female Coupler
19	1	25-19866	Multi-Coupling Plate - 4 Port Mobile
20	4	25-43459	Multi-Coupling - Snap Ring
21	2	26-34711	4 x 8 Hydraulic Cylinder
22	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port

Note: Every hydraulic function from the front to the back of the system is designated by a ○ and a letter and can also be referenced on the Hydraulic Schematic on Page 39.

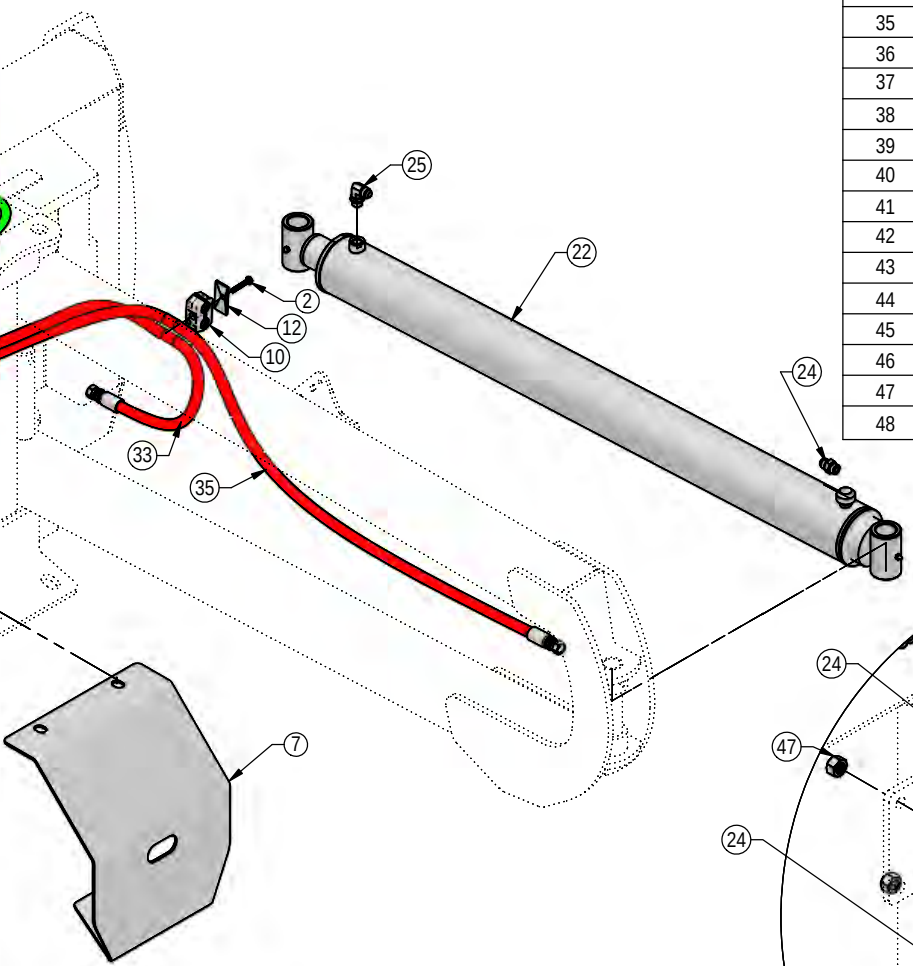


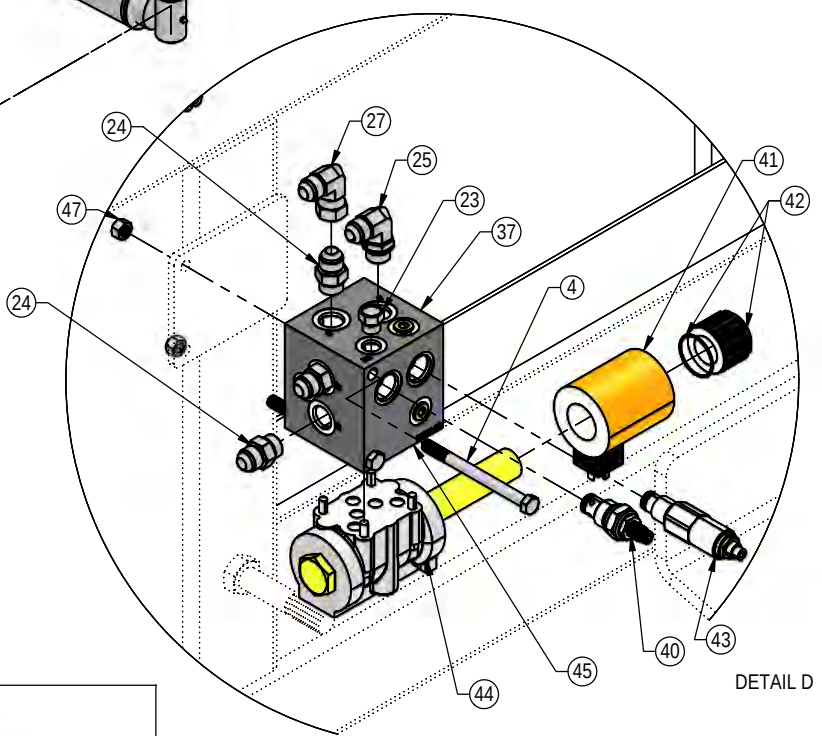
Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

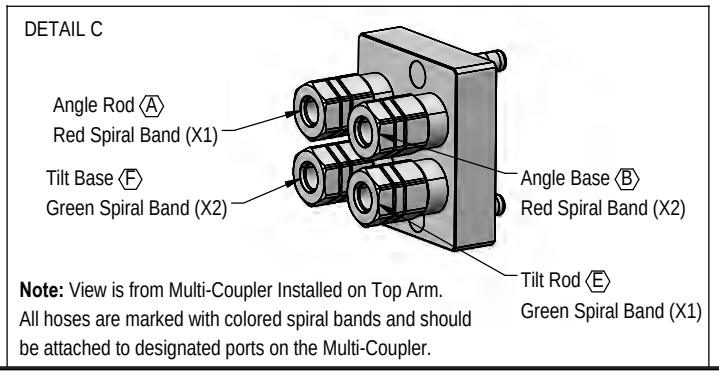
No. On Cylinder	Part No.	Description
26-34711	49-12271	Seal Kit 4" (647135) Nitrided Rod - Clevis Ends
26-34725	49-12274	Seal Kit 4" (647210) Nitrided Rod - Tube Ends



ITEM NO.	QTY.	PART NO.	DESCRIPTION
23	1	31-13332	-6 SAE Breather Fitting
24	11	31-34040	Straight JIC x O-Ring
25	5	31-34050	Straight Thread Elbow 90° JIC x O-Ring
26	2	31-34060	Branch Tee JIC x O-Ring
27	1	31-34100	Swivel Nut Elbow 90° JIC
28	6	34-18888-GR	-12 Green - Spiral Band
29	6	34-18888-RD	-12 Red - Spiral Band
30	1	35-11686-2120	212" x 3/8" -8JIC/-8JIC Hose
31	1	35-11686-2220	222" x 3/8" -8JIC/-8JIC Hose
32	2	35-30022	39" x 3/8" -8JIC/-8JIC Hose
33	2	35-30132	69" x 1/2" -8 JIC/-8 JIC Hose
34	2	35-30133	77" x 1/2" -8JIC/-8JIC Hose
35	2	35-30141	96" x 1/2" -8 JIC/-8 JIC Hose
36	4	43-13580	Pin Weld
37	1	56-13305	Hydraulic Valve
38	4	57-20740	1/4" Flat Washer
39	2	57-20744	1/2" Flat Washer
40	1	68-18871	Valve Thermal Relief Cartidge
41	1	68-18873	Valve Solenoid Coil
42	1	68-18874	Valve Coil Nut and O-ring
43	1	68-40443	Valve System Relief Cartridge
44	1	68-40466	Valve Control Center
45	1	68-40469	Valve Block
46	2	70-20581	5/16" Hex Nut Gr 5 NC
47	2	70-20582	3/8" Hex Nut Gr 5 NC
48	2	70-20604	1/2" Center Lock Hex Nut





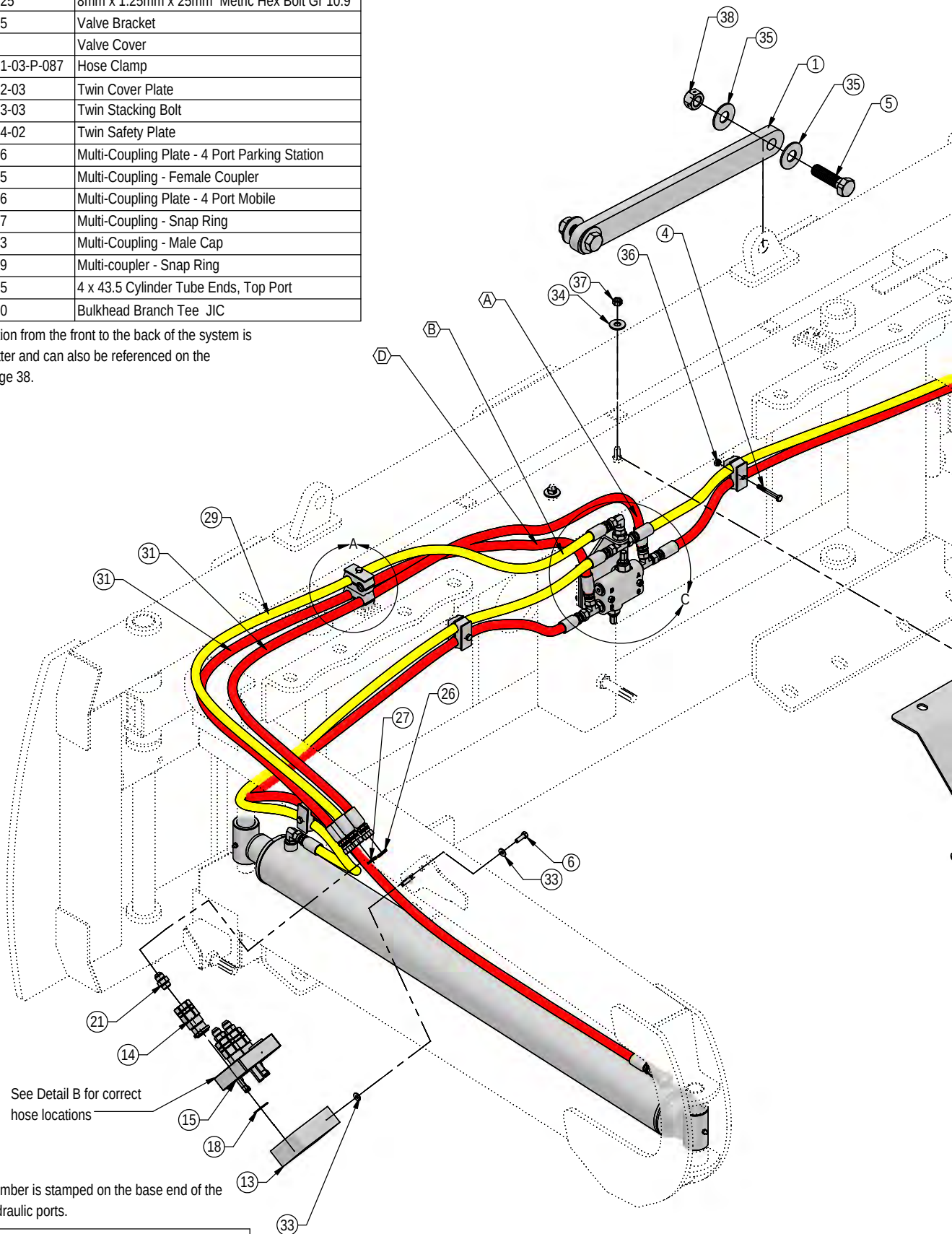


Note: View is from Multi-Coupler Installed on Top Arm. All hoses are marked with colored spiral bands and should be attached to designated ports on the Multi-Coupler.

DWG. NO.: 42443

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	14-9366	Ag Pro Non Tilt Bar
2	2	16-20035	5/16" x 1-1/4" Hex Bolt Gr. 5
3	3	16-20037	5/16" x 1-3/4" Hex Bolt Gr 5 NC
4	4	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
5	2	16-20564	1" x 3-1/2" Hex Bolt Gr.8 NC
6	2	16-812525	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
7	1	18-14695	Valve Bracket
8	1	18-1701	Valve Cover
9	6	18-19311-03-P-087	Hose Clamp
10	5	18-19312-03	Twin Cover Plate
11	1	18-19313-03	Twin Stacking Bolt
12	1	18-19314-02	Twin Safety Plate
13	1	25-18956	Multi-Coupling Plate - 4 Port Parking Station
14	3	25-19865	Multi-Coupling - Female Coupler
15	1	25-19866	Multi-Coupling Plate - 4 Port Mobile
16	1	25-40407	Multi-Coupling - Snap Ring
17	1	25-40413	Multi-Coupling - Male Cap
18	3	25-43459	Multi-coupler - Snap Ring
19	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
20	1	31-34020	Bulkhead Branch Tee JIC

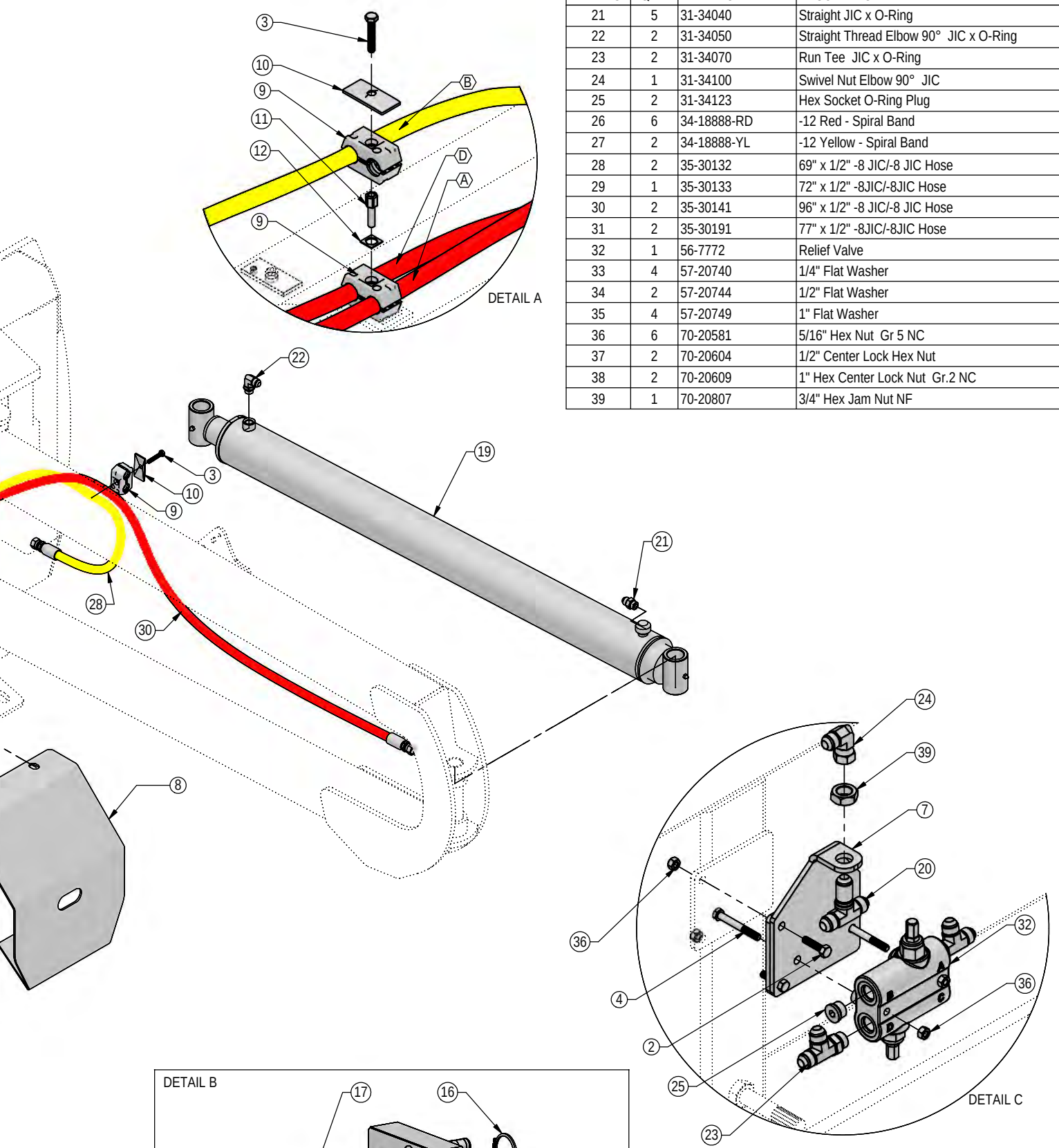
Note: Every hydraulic function from the front to the back of the system is designated by a ○ and a letter and can also be referenced on the Hydraulic Schematic on Page 38.



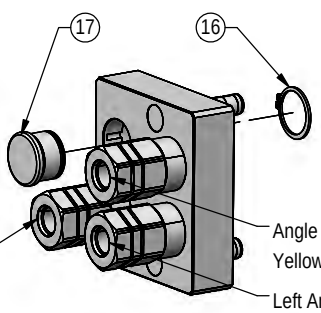
Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

No. On Cylinder	Part No.	Description
26-34725	49-12274	Seal Kit 4" (647210) Nitrided Rod - Tube Ends

ITEM NO.	QTY.	PART NO.	DESCRIPTION
21	5	31-34040	Straight JIC x O-Ring
22	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring
23	2	31-34070	Run Tee JIC x O-Ring
24	1	31-34100	Swivel Nut Elbow 90° JIC
25	2	31-34123	Hex Socket O-Ring Plug
26	6	34-18888-RD	-12 Red - Spiral Band
27	2	34-18888-YL	-12 Yellow - Spiral Band
28	2	35-30132	69" x 1/2" -8 JIC/-8 JIC Hose
29	1	35-30133	72" x 1/2" -8JIC/-8JIC Hose
30	2	35-30141	96" x 1/2" -8 JIC/-8 JIC Hose
31	2	35-30191	77" x 1/2" -8JIC/-8JIC Hose
32	1	56-7772	Relief Valve
33	4	57-20740	1/4" Flat Washer
34	2	57-20744	1/2" Flat Washer
35	4	57-20749	1" Flat Washer
36	6	70-20581	5/16" Hex Nut Gr 5 NC
37	2	70-20604	1/2" Center Lock Hex Nut
38	2	70-20609	1" Hex Center Lock Nut Gr.2 NC
39	1	70-20807	3/4" Hex Jam Nut NF



DETAIL B



Right Angle Base Ⓐ
Red Spiral Band (X2)

Angle Rod Ⓑ
Yellow Spiral Band (X1)

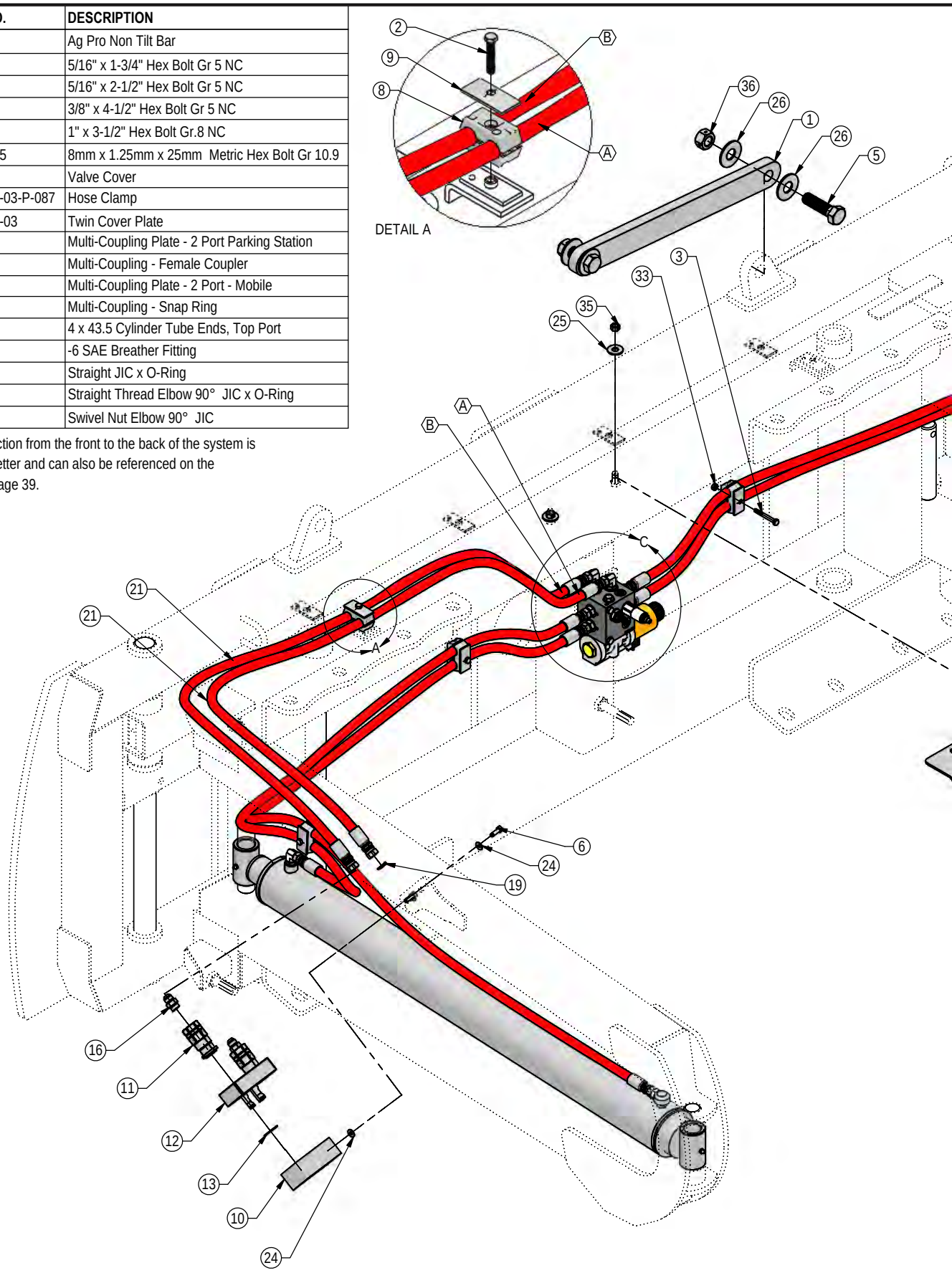
Left Angle Base Ⓓ
Red Spiral Band (X1)

Note: View is from Multi-Coupler Installed on Top Arm
All hoses are marked with colored spiral bands and should be attached to designated port on the Multi-Coupler.

DWG. NO.: 42478

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	14-9366	Ag Pro Non Tilt Bar
2	3	16-20037	5/16" x 1-3/4" Hex Bolt Gr 5 NC
3	2	16-20040	5/16" x 2-1/2" Hex Bolt Gr 5 NC
4	2	16-20077	3/8" x 4-1/2" Hex Bolt Gr 5 NC
5	2	16-20564	1" x 3-1/2" Hex Bolt Gr.8 NC
6	2	16-812525	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
7	1	18-1701	Valve Cover
8	5	18-19311-03-P-087	Hose Clamp
9	5	18-19312-03	Twin Cover Plate
10	1	25-19657	Multi-Coupling Plate - 2 Port Parking Station
11	2	25-19865	Multi-Coupling - Female Coupler
12	1	25-19869	Multi-Coupling Plate - 2 Port - Mobile
13	2	25-43459	Multi-Coupling - Snap Ring
14	2	26-34725	4 x 43.5 Cylinder Tube Ends, Top Port
15	1	31-13332	-6 SAE Breather Fitting
16	9	31-34040	Straight JIC x O-Ring
17	3	31-34050	Straight Thread Elbow 90° JIC x O-Ring
18	1	31-34100	Swivel Nut Elbow 90° JIC

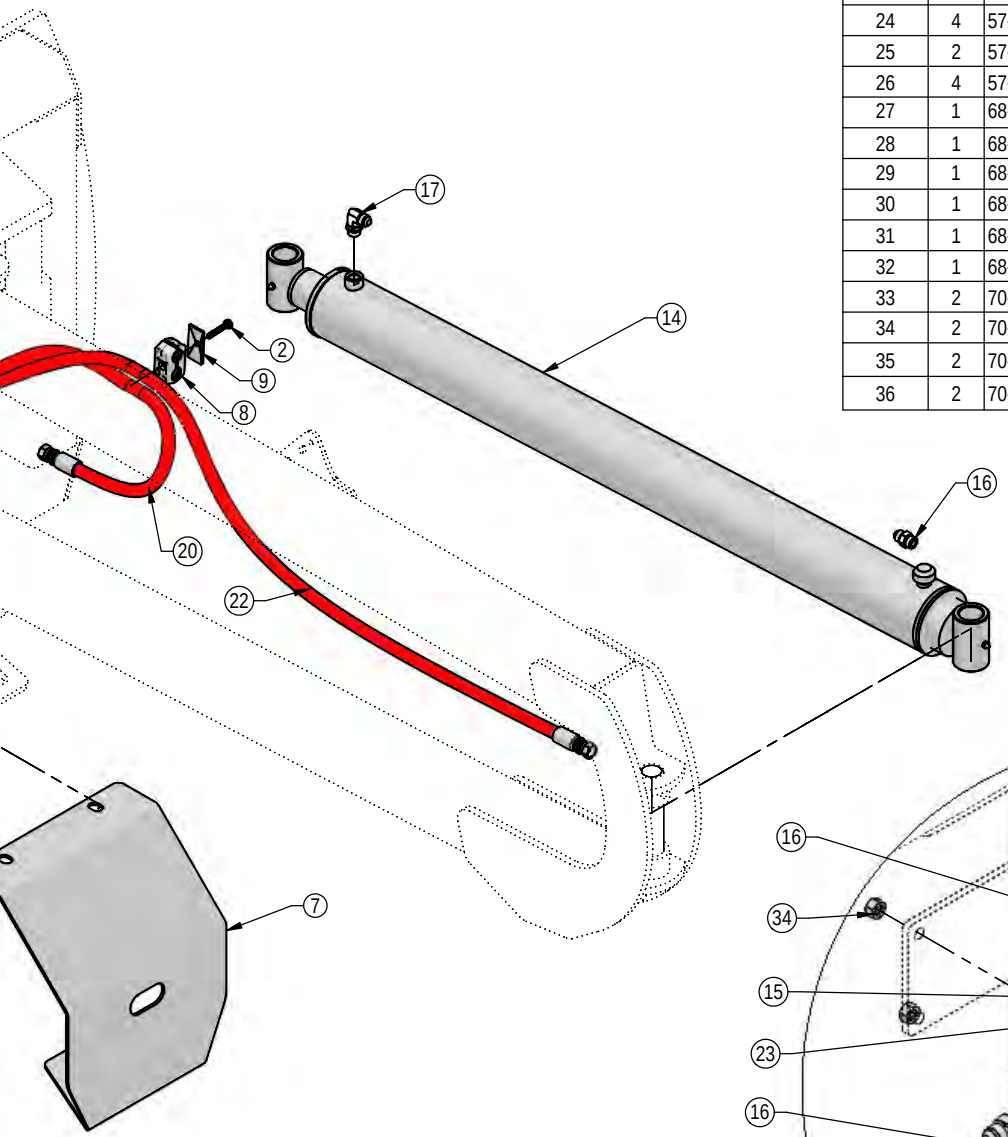
Note: Every hydraulic function from the front to the back of the system is designated by a ○ and a letter and can also be referenced on the Hydraulic Schematic on Page 39.

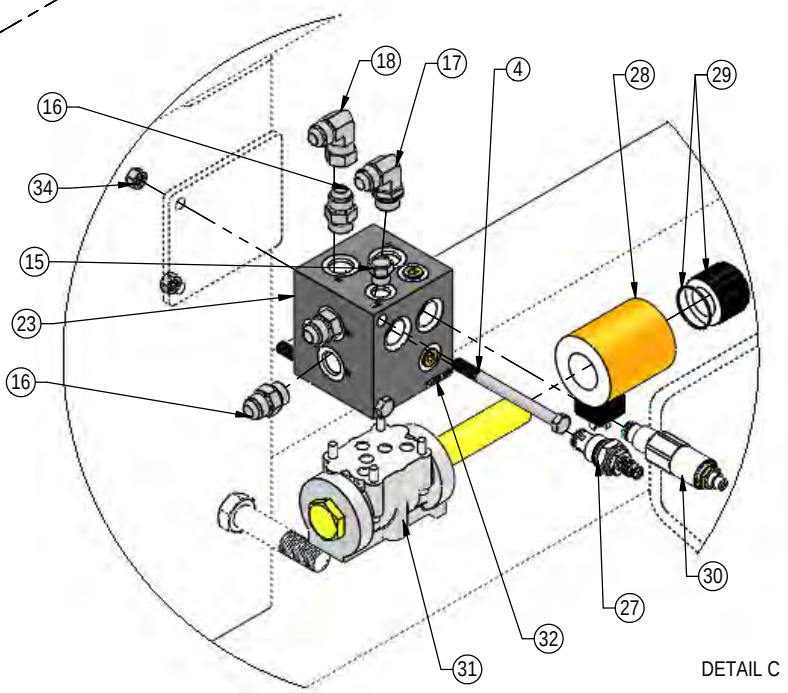


Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

No. On Cylinder	Part No.	Description
26-34725	49-12274	Seal Kit 4" (647210) Nitrided Rod - Tube Ends

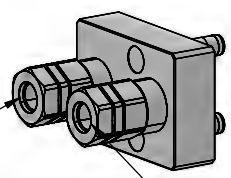
ITEM NO.	QTY.	PART NO.	DESCRIPTION
19	6	34-18888-RD	-12 Red - Spiral Band
20	2	35-30132	69" x 1/2" -8 JIC/-8 JIC Hose
21	2	35-30133	77" x 1/2" -8JIC/-8JIC Hose
22	2	35-30141	96" x 1/2" -8 JIC/-8 JIC Hose
23	1	56-13305	Hydraulic Valve
24	4	57-20740	1/4" Flat Washer
25	2	57-20744	1/2" Flat Washer
26	4	57-20749	1" Flat Washer
27	1	68-18871	Valve Thermal Relief Cartidge
28	1	68-18873	Valve Solenoid Coil
29	1	68-18874	Valve Coil Nut and O-ring
30	1	68-40443	Valve System Relief Cartridge
31	1	68-40466	Valve Control Center
32	1	68-40469	Valve Block
33	2	70-20581	5/16" Hex Nut Gr 5 NC
34	2	70-20582	3/8" Hex Nut Gr 5 NC
35	2	70-20604	1/2" Center Lock Hex Nut
36	2	70-20609	1" Hex Center Lock Nut Gr.2 NC





DETAIL C

DETAIL B



Angle Rod Ⓐ
Red Spiral Band (X1)

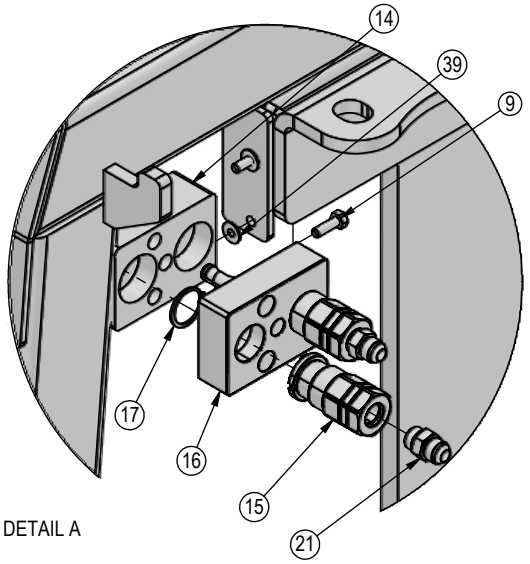
Angle Base Ⓑ
Red Spiral Band (X2)

Note: View is from Multi-Coupler Installed on Top Arm.
All hoses are marked with colored spiral bands and should be attached to designated ports on the Multi-Coupler.

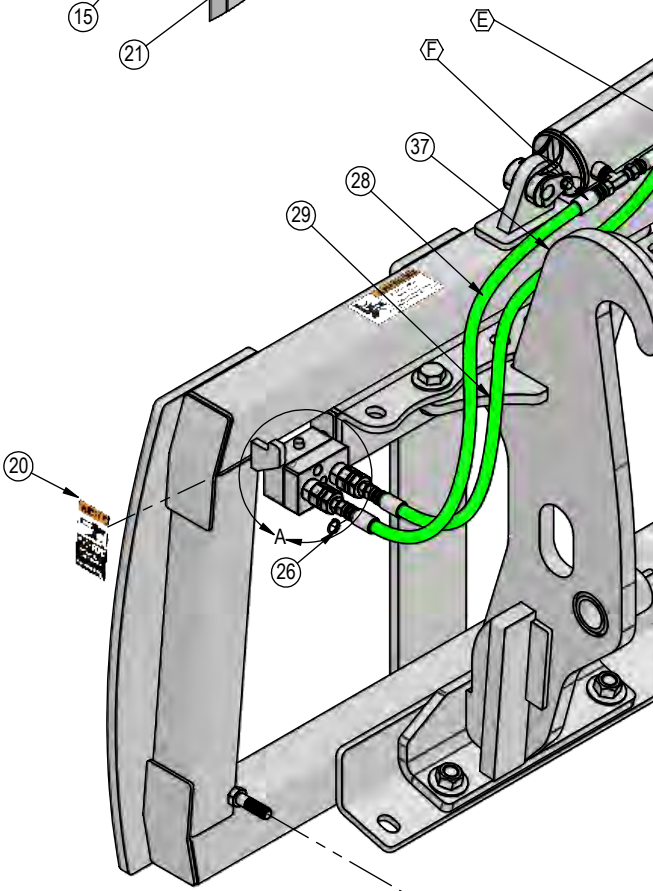
DWG. NO.: 42477

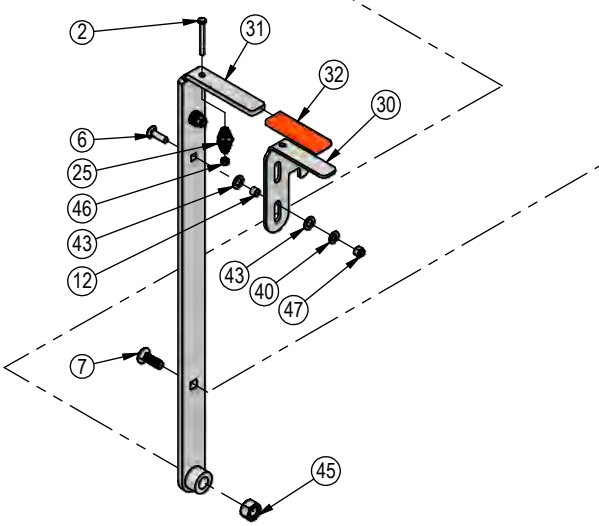
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-40866	Bell Crank
2	1	16-20011	1/4" x 2-3/4" Hex Bolt Gr 5 NC
3	4	16-20128	1/2" x 2" NC Hex Bolt Gr. 5"
4	2	16-20130	1/2" x 2-1/2" Hex Bolt Gr 5 NC
5	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
6	2	16-21065	3/8" x 1-1/4" Carriage Bolt Gr 5 NC
7	4	16-21126	1/2" x 1-1/2" Carriage Bolt Gr 5 NC
8	4	16-35C612	3/8" x 3/4" Flange Bolt
9	2	16-812525	8mm x 1.25mm x 25mm Metric Hex Bolt Gr 10.9
10	1	18-14658	Bracket, Center
11	4	19-13577	NR Pin Spacer Clevis End
12	2	19-40440	.378" ID x .503" OD x .375" Spacer
13	2	19-7774	1" x 1" Spring Bushing
14	1	25-19657	Multi-Coupling Plate - 2 Port Parking Station
15	2	25-19865	Multi-Coupling - Female Coupler
16	1	25-19869	Multi-Coupling Plate - 2 Port - Mobile
17	2	25-43459	Multi-Coupling - Snap Ring
18	2	26-34711	4 x 8 Hydraulic Cylinder
19	2	27-2409	Pinch Decal (Hand)
20	2	27-9503	Pinch Decal (Foot)
21	2	31-34040	Straight JIC x O-Ring
22	2	31-34050	Straight Thread Elbow 90° JIC x O-Ring
23	2	31-34060	Branch Tee JIC x O-Ring
24	1	32-14560	Tilt Frame Weld
25	1	34-17799	Latch Spring
26	6	34-18888-GR	-12 Green - Spiral Band
27	2	35-30022	39" x 3/8" -8JIC/-8JIC Hose
28	1	35-31184	37" x 1/2" -8 JIC/-8 JIC Hose W/ Cordura
29	1	35-31185	47" x 1/2" -8 JIC/-8 JIC Hose W/ Cordura
30	1	39-14663	Latch
31	1	39-14665	Handle Weld
32	1	39-3072	Rubber Handle
33	4	43-13580	Pin Weld
34	2	43-18486	Ag Pro SS QA Lock Pin
35	1	44-41874	Plate, Link
36	4	44-8490	Spacer
37	1	45-40870-L	SS Bolt in Quick Attach - Left
38	1	45-40870-R	SS Bolt in Quick Attach - Right
39	2	57-20740	1/4" Flat Washer
40	2	57-20742	3/8" Flat Washer
41	12	57-20744	1/2" Flat Washer
42	16	57-20819	1" Flat Washer Heavy Duty Gr 8
43	4	57-40408	3/8" Flat Nylon Washer
44	10	70-20604	1/2" Center Lock Hex Nut
45	2	70-20607	3/4" Center Lock Hex Nut
46	1	70-20610	1/4" Nyloc Hex Nut Gr 5 NC
47	2	70-20612	3/8" Nyloc Hex Nut Gr 5 NC
48	8	70-20999	1" Hex Top Lock Nut Gr 8 NC
49	2	75-40869	Link, Bell Crank To Pin

Note: Every hydraulic function from the front to the back of the system is designated by a ⬡ and a letter and can also be referenced on the Hydraulic Schematic on Page 38.



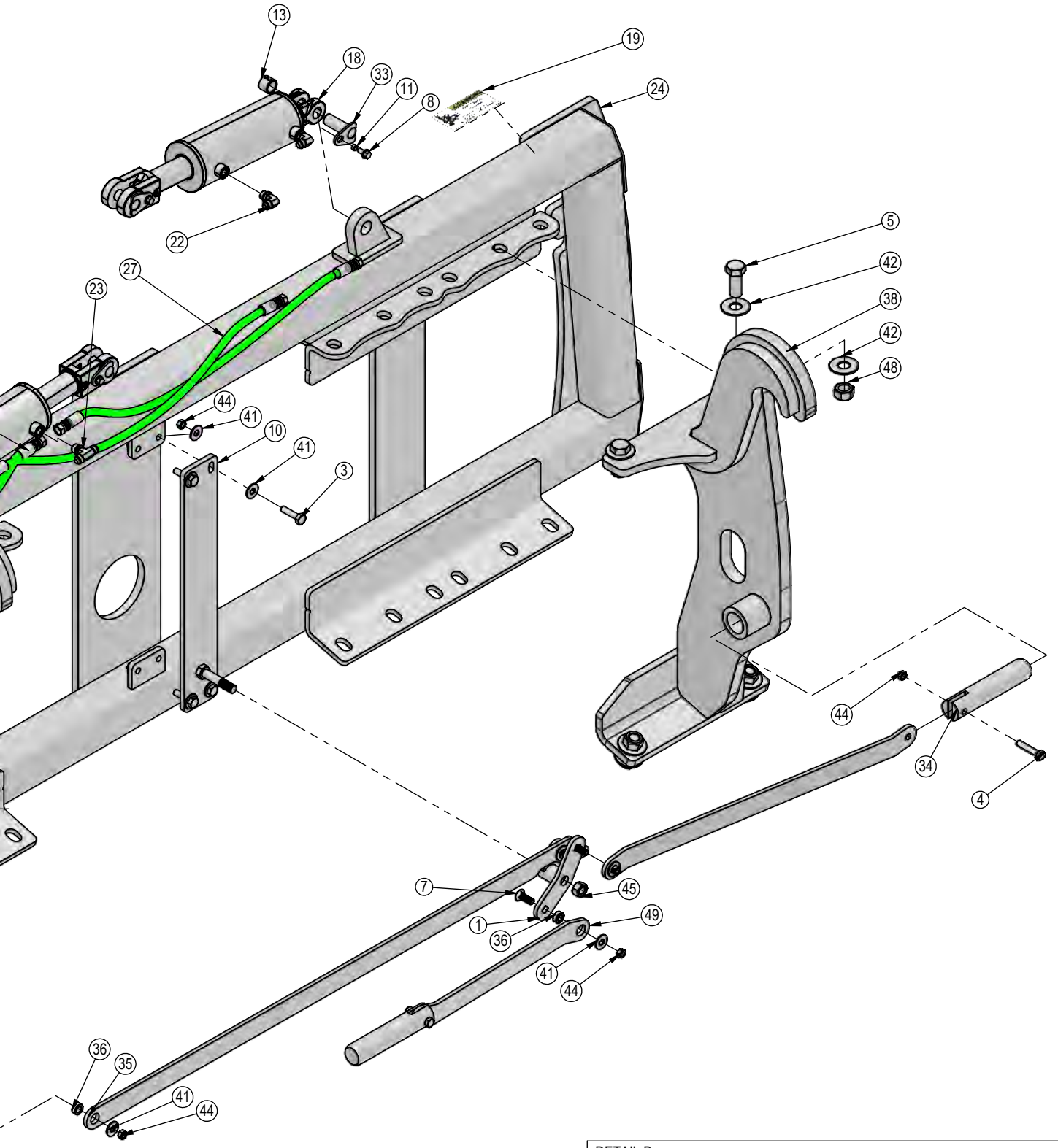
DETAIL A



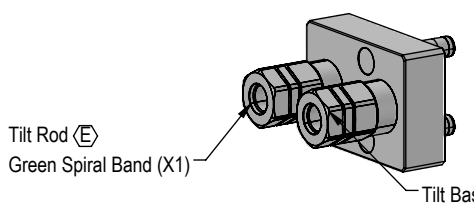


Note: The cylinder part number is stamped on the base end of the cylinder opposite of the hydraulic ports.

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



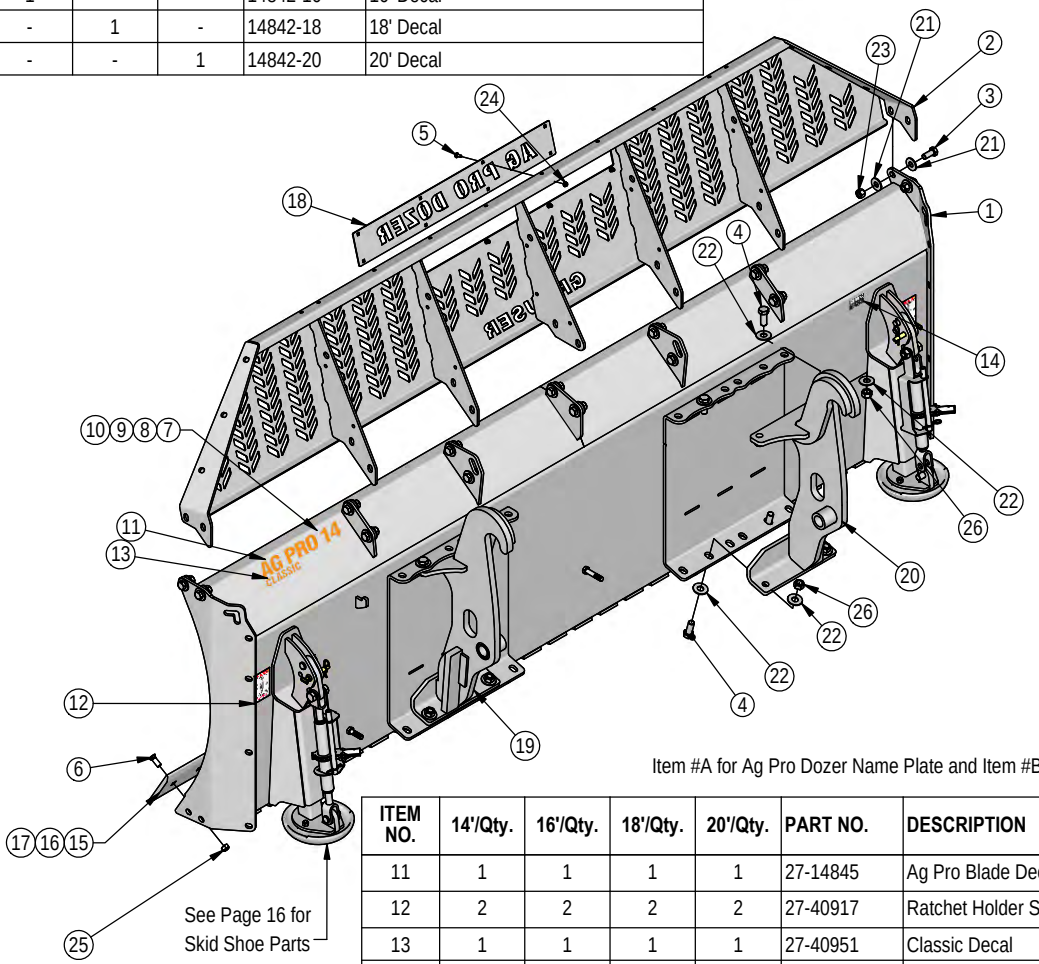
DETAIL B



Note: View is from Multi-Coupler Installed on Top Arm.
All hoses are marked with colored spiral bands and should be attached to designated ports on the Multi-Coupler.

DWG. NO.: 42476

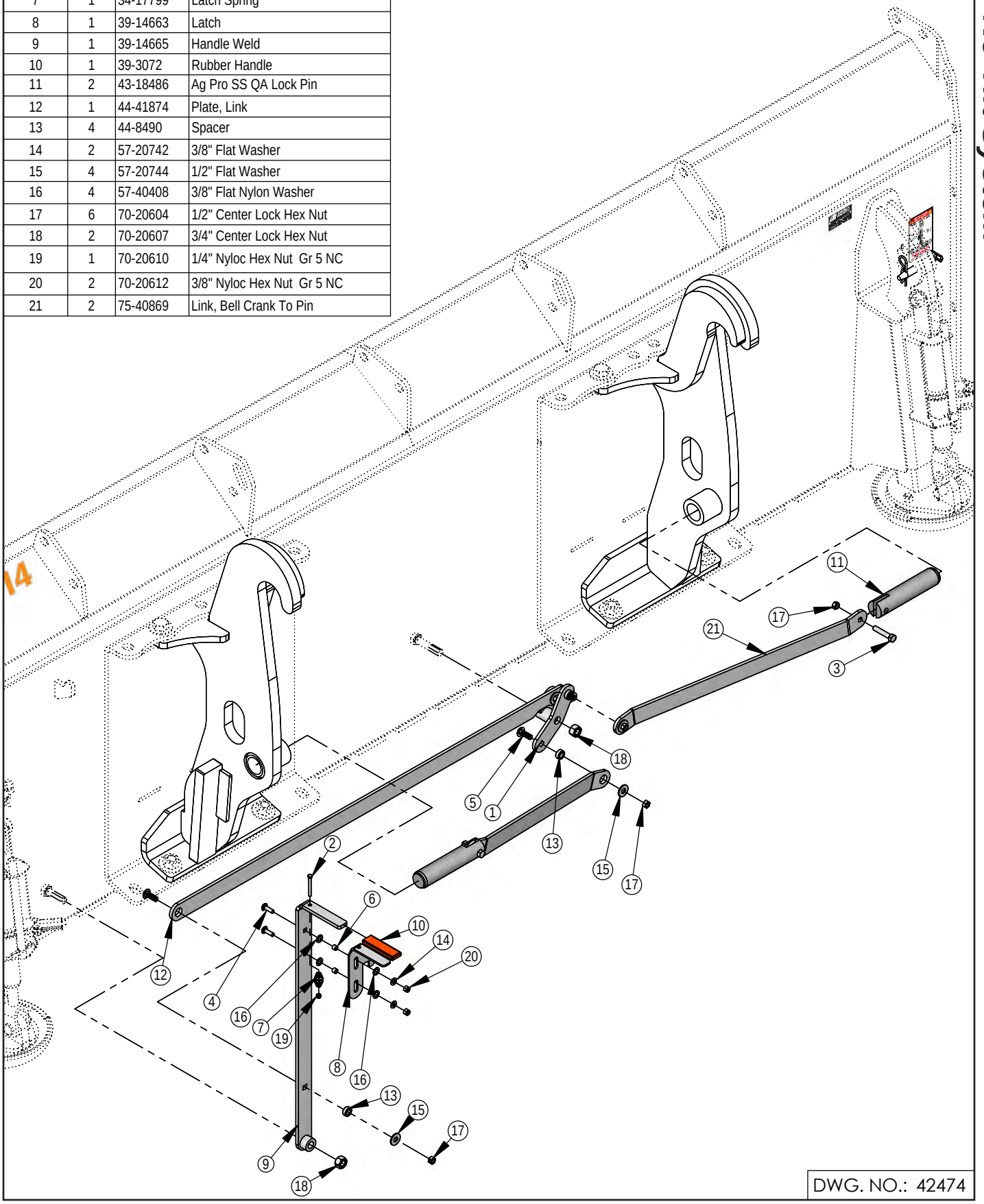
ITEM NO.	14'/Qty.	16'/Qty.	18'/Qty.	20'/Qty.	PART NO.	DESCRIPTION
1	1	-	-	-	15-18475-14	Blade Weld
1	-	1	-	-	15-18475-16	Blade Weld
1	-	-	1	-	15-18475-18	Blade Weld
1	-	-	-	1	15-18475-20	Blade Weld
2	1	-	-	-	15-18520-14	Top Extension Weld
2	-	1	-	-	15-18520-16	Top Extension Weld
2	-	-	1	-	15-18520-18	Top Extension Weld
2	-	-	-	1	15-18520-20	Top Extension Weld
3	14	18	18	22	16-20538	7/8" x 2" Hex Bolt Gr 8 NC
4	8	8	8	8	16-20560	1" x 2-1/2" Hex Bolt Gr 8 NC
5	8	8	8	8	16-21064	3/8" x 1" Carriage Bolt Gr 5 NC
6	28	32	34	36	16-21748	3/4" x 2" Plow Bolt Gr 8 NC
7	1	-	-	-	27-14842-14	14' Decal
8	-	1	-	-	14842-16	16' Decal
9	-	-	1	-	14842-18	18' Decal
10	-	-	-	1	14842-20	20' Decal



Item #A for Ag Pro Dozer Name Plate and Item #B for Custom Name Plate

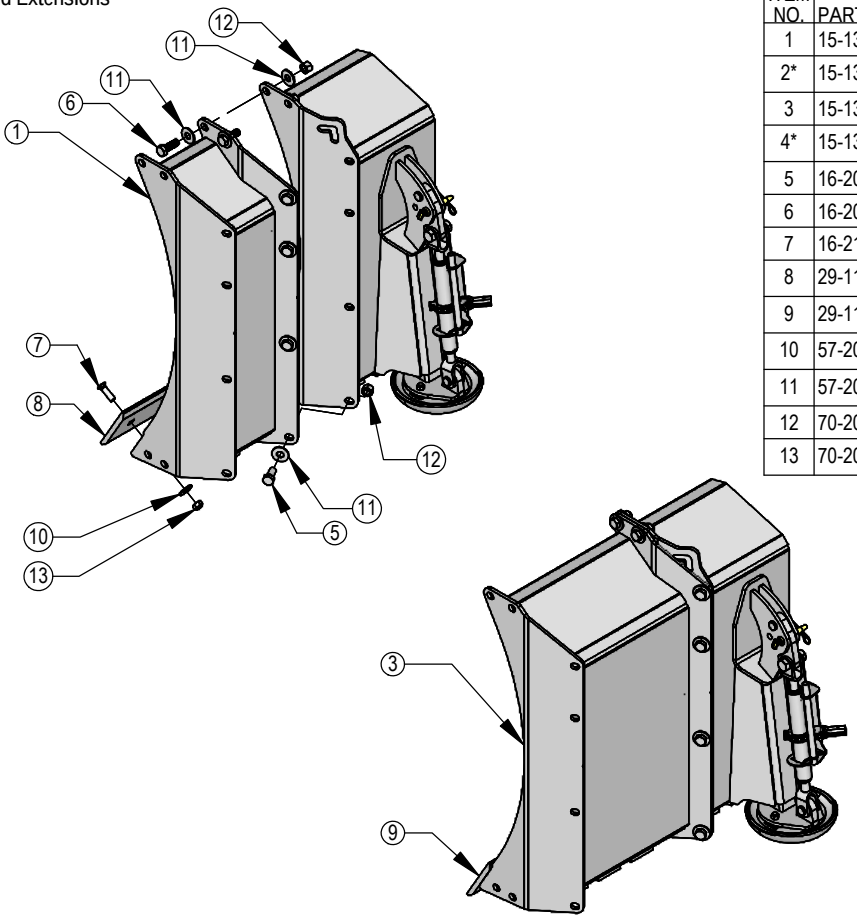
ITEM NO.	14'/Qty.	16'/Qty.	18'/Qty.	20'/Qty.	PART NO.	DESCRIPTION
11	1	1	1	1	27-14845	Ag Pro Blade Decal
12	2	2	2	2	27-40917	Ratchet Holder Storage Decal
13	1	1	1	1	27-40951	Classic Decal
14	1	1	1	1	NA	Grouser Dozer Metal Serial Tag
15	-	-	3	2	11118-6	6' - 3/4"x 8" Cutting Edge
16	2	-	-	-	29-11118-7	7' - 3/4"x 8" Cutting Edge
17	-	2	-	1	29-11118-8	8' - 3/4"x 8" Cutting Edge
18A	1	1	1	1	44-15150	Ag Pro Dozer Name Plate
18B	1	1	1	1	44-14830	Custom Name Plate
19	1	1	1	2	45-40870-L	SS Bolt in Quick Attach - Left
20	1	1	1	-	45-40870-R	SS Bolt in Quick Attach - Right
21	28	36	36	44	57-20818	7/8" Flat Washer Heavy Duty Gr 8 (USS)
22	16	16	16	16	57-20819	1" Flat Washer Heavy Duty Gr 8
23	14	18	18	22	70-20598	7/8" Hex Nut Gr 8 NC
24	8	8	8	8	70-20622	3/8" Flange Hex Nut Gr 5 NC
25	28	32	34	36	70-20647	3/4" Hex Top Lock Nut Gr 5 NC
26	8	8	8	8	70-20999	1" Hex Top Lock Nut Gr 8 NC

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-40866	Bell Crank
2	1	16-20011	1/4" x 2-3/4" Hex Bolt Gr 5 NC
3	2	16-20130	1/2" x 2-1/2" Hex Bolt Gr 5 NC
4	2	16-21065	3/8" x 1-1/4" Carriage Bolt Gr 5 NC
5	4	16-21126	1/2" x 1-1/2" Carriage Bolt Gr 5 NC
6	2	19-40440	.378" ID x .503" OD x .375" Spacer
7	1	34-17799	Latch Spring
8	1	39-14663	Latch
9	1	39-14665	Handle Weld
10	1	39-3072	Rubber Handle
11	2	43-18486	Ag Pro SS QA Lock Pin
12	1	44-41874	Plate, Link
13	4	44-8490	Spacer
14	2	57-20742	3/8" Flat Washer
15	4	57-20744	1/2" Flat Washer
16	4	57-40408	3/8" Flat Nylon Washer
17	6	70-20604	1/2" Center Lock Hex Nut
18	2	70-20607	3/4" Center Lock Hex Nut
19	1	70-20610	1/4" Nyloc Hex Nut Gr 5 NC
20	2	70-20612	3/8" Nyloc Hex Nut Gr 5 NC
21	2	75-40869	Link, Bell Crank To Pin



DWG. NO.: 42474

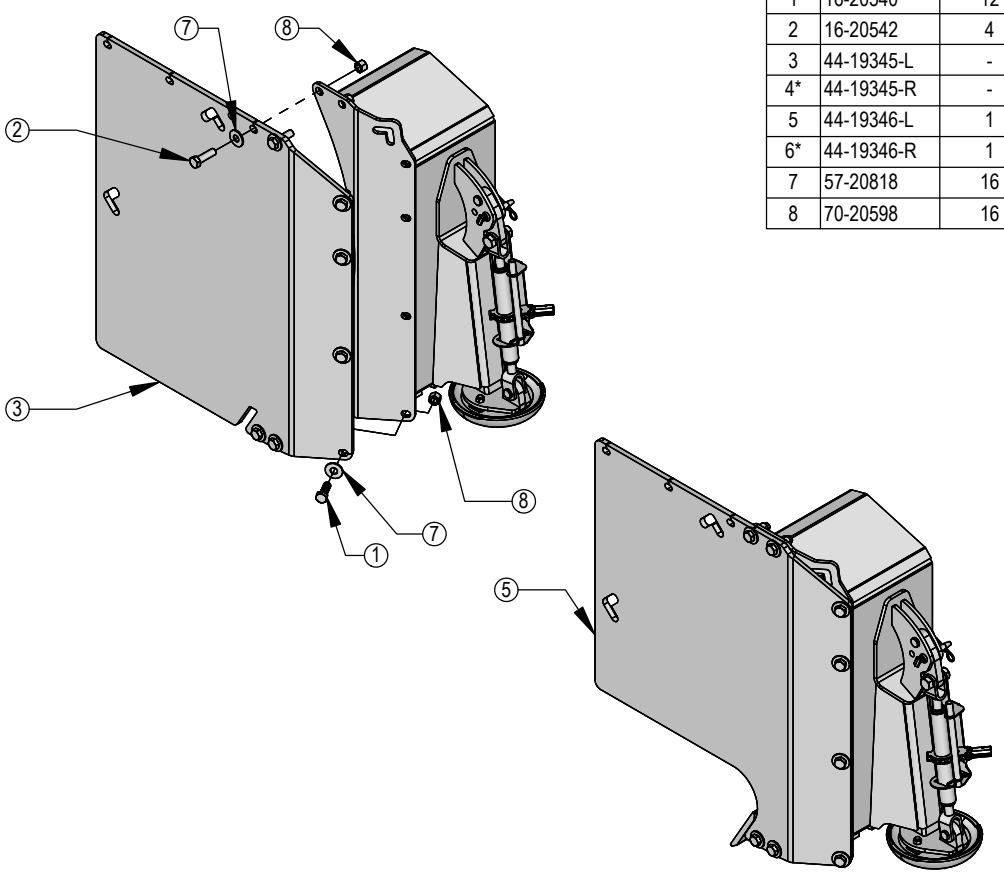
End Extensions



ITEM NO.	PART NO.	40920-1-A QTY.	40920-2-A QTY.	DESCRIPTION
1	15-13990-1-L	1	-	1' End Extension - Left
2*	15-13990-1-R	1	-	1' End Extension - Right
3	15-13990-2-L	-	1	2' End Extension - Left
4*	15-13990-2-R	-	1	2' End Extension - Right
5	16-20538	12	12	7/8" x 2" Hex Bolt Gr 8 NC
6	16-20540	4	4	7/8" x 2-1/2" Hex Bolt Gr 8 NC
7	16-21748	4	8	3/4" X 2" Plow Bolt Gr 8 NC
8	29-11118-1	2	-	1' - 3/4" x 8" Cutting Edge
9	29-11118-2	-	2	2' - 3/4" x 8" Cutting Edge
10	57-20817	4	8	3/4" Flat Washer Heavy Duty Gr 8 (USS)
11	57-20818	20	20	7/8" Flat Washer Heavy Duty Gr 8 (USS)
12	70-20598	16	16	7/8" Hex Nut Gr 8 NC
13	70-20647	4	8	3/4" Hex Top Lock Nut Gr 5 NC

* Parts Not Shown

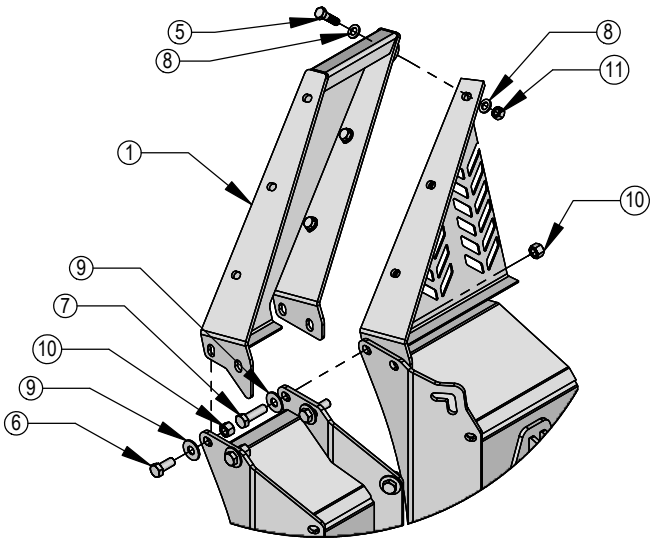
End Plates

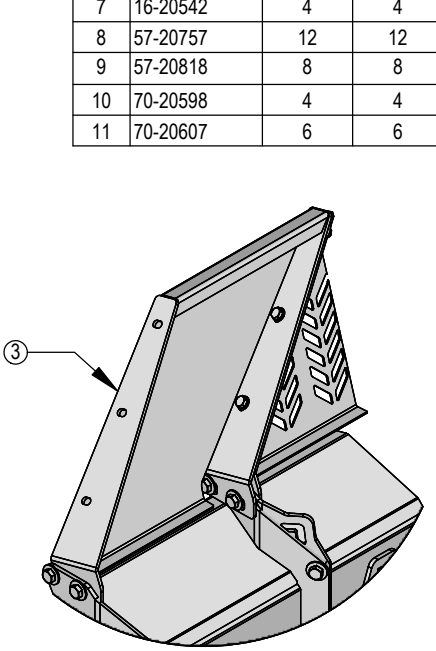


ITEM NO.	PART NO.	19346-K QTY.	19345-K QTY.	DESCRIPTION
1	16-20540	12	12	7/8" x 2-1/2" Hex Bolt Gr 8 NC
2	16-20542	4	4	7/8" x 3" Hex Bolt Gr 8 NC
3	44-19345-L	-	1	3/4" Box End Plate - Left
4*	44-19345-R	-	1	3/4" Box End Plate - Right
5	44-19346-L	1	-	3/4" Silage Box End Plate - Left
6*	44-19346-R	1	-	3/4" Silage Box End Plate - Right
7	57-20818	16	16	7/8" Flat Washer Heavy Duty Gr 8 (USS)
8	70-20598	16	16	7/8" Hex Nut Gr 8 NC

* Parts Not Shown

Top Extensions For End Extensions

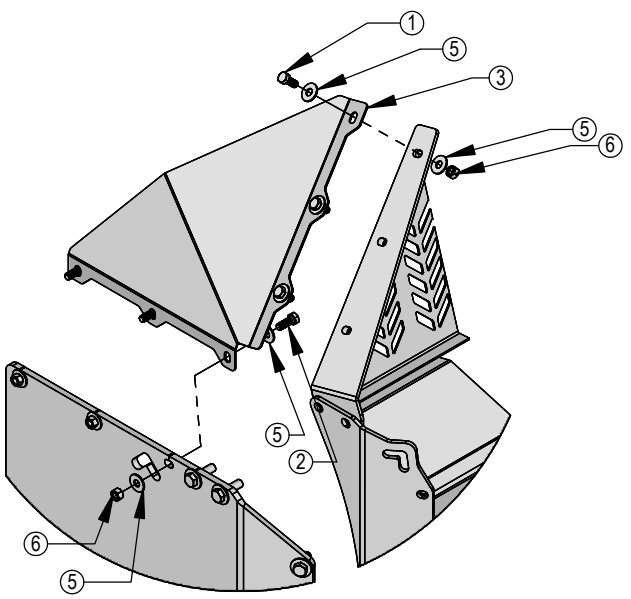




ITEM NO.	PART NO.	19985-1-A QTY.	19985-2-A QTY.	DESCRIPTION
1	15-19985-1-L	1	-	End Extension, Top Extension
2*	15-19985-1-R	1	-	End Extension, Top Extension
3	15-19985-2-L	-	1	End Extension, Top Extension
4*	15-19985-2-R	-	1	End Extension, Top Extension
5	16-20220	6	6	3/4" x 2-1/2" Hex Bolt Gr 5 NC
6	16-20538	4	4	7/8" x 2" Hex Bolt Gr 8 NC
7	16-20542	4	4	7/8" x 3" Hex Bolt Gr 8 NC
8	57-20757	12	12	3/4" Flat Washer - 1-1/2" OD
9	57-20818	8	8	7/8" Flat Washer Heavy Duty Gr 8 (USS)
10	70-20598	4	4	7/8" Hex Nut Gr 8 NC
11	70-20607	6	6	3/4" Center Lock Hex Nut Gr 2 NC

* Parts Not Shown

Top Extensions For End Plates

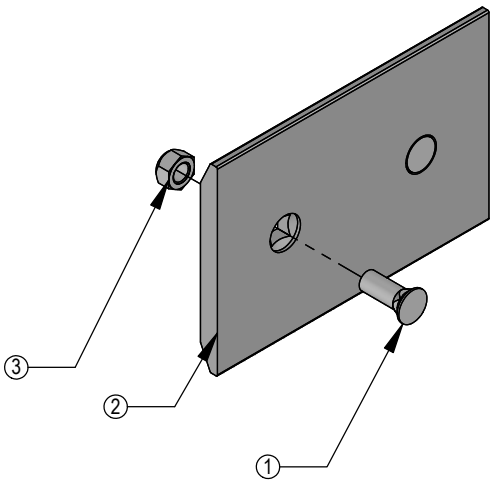


ITEM NO.	PART NO.	19347-K QTY.	DESCRIPTION
1	16-20217	3	3/4" x 1-3/4" Hex Bolt Gr 5 NC
2	16-20218	3	3/4" x 2" Hex Bolt Gr.5 NC
3	44-19347-L	1	End Plate Top Ext.
4*	44-19347-R	1	End Plate Top Ext.
5	57-20747	12	3/4" Flat Washer
6	70-20607	6	3/4" Center Lock Hex Nut Gr 2 NC

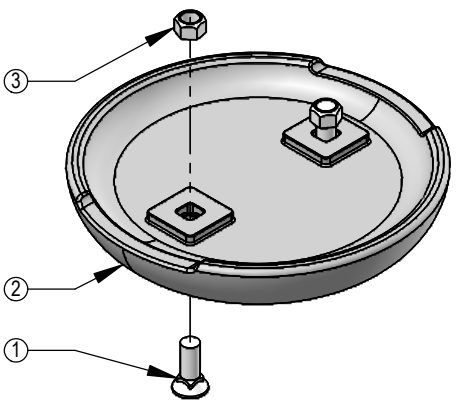
* Parts Not Shown

ITEM NO.	PART NO.	DESCRIPTION	11118-1K QTY.	11118-2K QTY.	11118-3K QTY.	11118-4K QTY.	11118-5K QTY.	11118-6K QTY.	11118-7K QTY.	11118-8K QTY.
1	16-21748	3/4" X 2" Plow Bolt Gr 8 NC	2	4	6	8	10	12	14	16
2	29-11118-1	1' - 3/4" x 8" Cutting Edge	1	-	-	-	-	-	-	-
2	29-11118-2	2' - 3/4" x 8" Cutting Edge	-	1	-	-	-	-	-	-
2	29-11118-3	3' - 3/4" x 8" Cutting Edge	-	-	1	-	-	-	-	-
2	29-11118-4	4' - 3/4"x 8" Cutting Edge	-	-	-	1	-	-	-	-
2	29-11118-5	5' - 3/4"x 8" Cutting Edge	-	-	-	-	1	-	-	-
2	29-11118-6	6' - 3/4"x 8" Cutting Edge	-	-	-	-	-	1	-	-
2	29-11118-7	7' - 3/4"x 8" Cutting Edge	-	-	-	-	-	-	1	-
2	29-11118-8	8' - 3/4"x 8" Cutting Edge	-	-	-	-	-	-	-	1
3	70-20647	3/4" Hex Top Lock Nut Gr 5 NC	2	4	6	8	10	12	14	16

ITEM NO.	PART NO.	DESCRIPTION	11118-12K QTY.	11118-14K QTY.	11118-16K QTY.	11118-18K QTY.	11118-20K QTY.
1	16-21748	3/4" X 2" Plow Bolt Gr 8 NC	24	28	32	36	40
2	29-11118-4	4' - 3/4"x 8" Cutting Edge	3	2	4	3	5
2	29-11118-3	3' - 3/4" x 8" Cutting Edge	-	2	-	2	-
3	70-20647	3/4" Hex Top Lock Nut Gr 5 NC	24	28	32	36	40

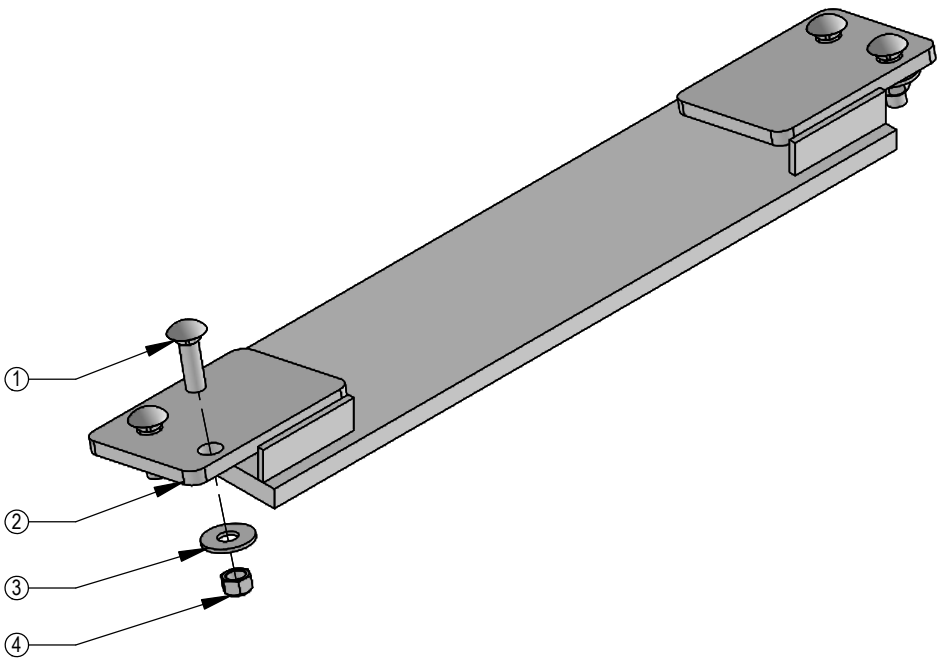


ITEM NO.	PART NO.	DESCRIPTION	15458-1K QTY.	15458-K QTY.
1	16-21666	5/8" x 1-3/4" Plow Bolt Gr 5 NC	2	4
2	50-15458	12" Round Mushroom Skid Shoe	1	2
3	70-20646	5/8" Hex Top Lock Nut Gr 5 NC	2	4



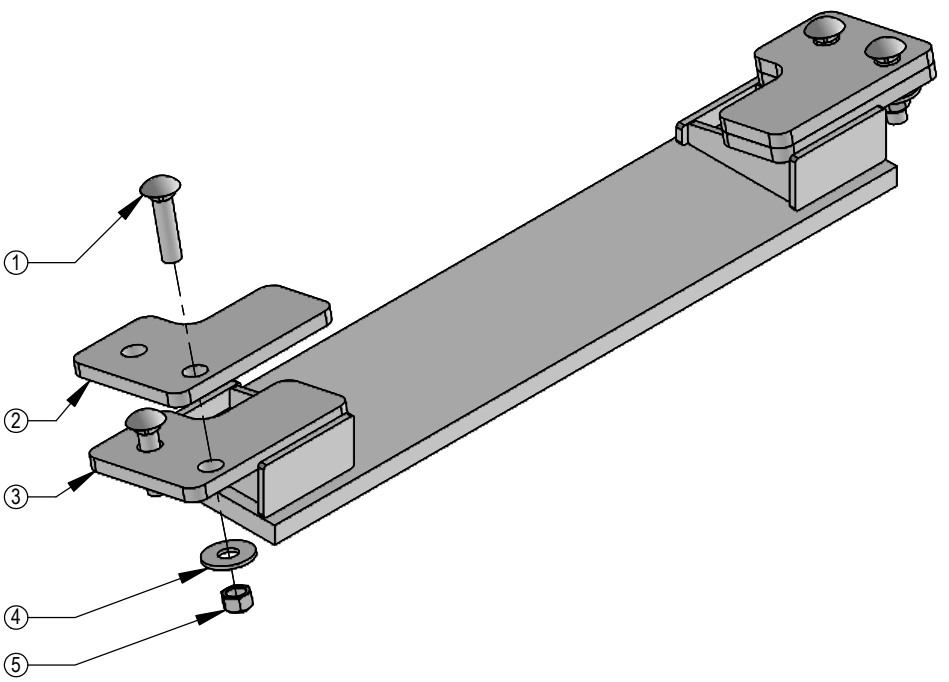
ITEM NO.	PART NO.	DESCRIPTION	8725-1K QTY.	8725-K QTY.
1	16-21188	5/8" x 2" Carriage Bolt Gr 5 NC	4	8
2	50-8725R2	Skid Shoe	1	2
3	57-20816	5/8" Flat Washer Grade 8 (USS) Plated	4	8
4	70-20646	5/8" Hex Top Lock Nut Gr 5 NC	4	8

Note: Only used on blades with 6" cutting edges.



ITEM NO.	PART NO.	DESCRIPTION	40980-1K QTY.	40980-2K QTY.	16710-1K QTY.	16710-2K QTY.
1	16-21190	5/8" x 2-1/2" Carriage Bolt	4	8	4	8
2	44-40487	HD Skid Shoe Plate	2	4	-	-
3	50-16710	HD Skid Shoe	1	2	1	2
4	57-20816	5/8" Flat Washer Grade 8 (USS) Plated	4	8	4	8
5	70-20646	5/8" Hex Top Lock Nut Gr 5 NC	4	8	4	8

Note: Only used on blades with 8" cutting edges.



Before Each Use:

1. Disconnect the mobile half from the parking station and the cap from the fixed half.
2. Check that there is no contamination (salt, sand, dirt, etc.):
   - A. On the pins.
   - B. Inside the cam.
   - C. In the locking mechanism area.
   - D. On the face of the plates and couplings.
3. In case of contamination, remove it with a cloth and/or compressed air.
4. Check that there is still a lubricant/anti-corrosion (grease or silicone - see Note 1):
   - A. On the pins.
   - B. Inside the cam.
   - C. In the locking mechanism area.
5. Connect the mobile and fixed halves together.

After Each Use:

1. Disconnect the mobile half from the fixed half.
2. Clean all contamination (salt, sand, dirt, etc.) from the following areas:
   - A. On the pins.
   - B. Inside the cam.
   - C. In the locking mechanism area.
   - D. On the face of the plates and couplings.

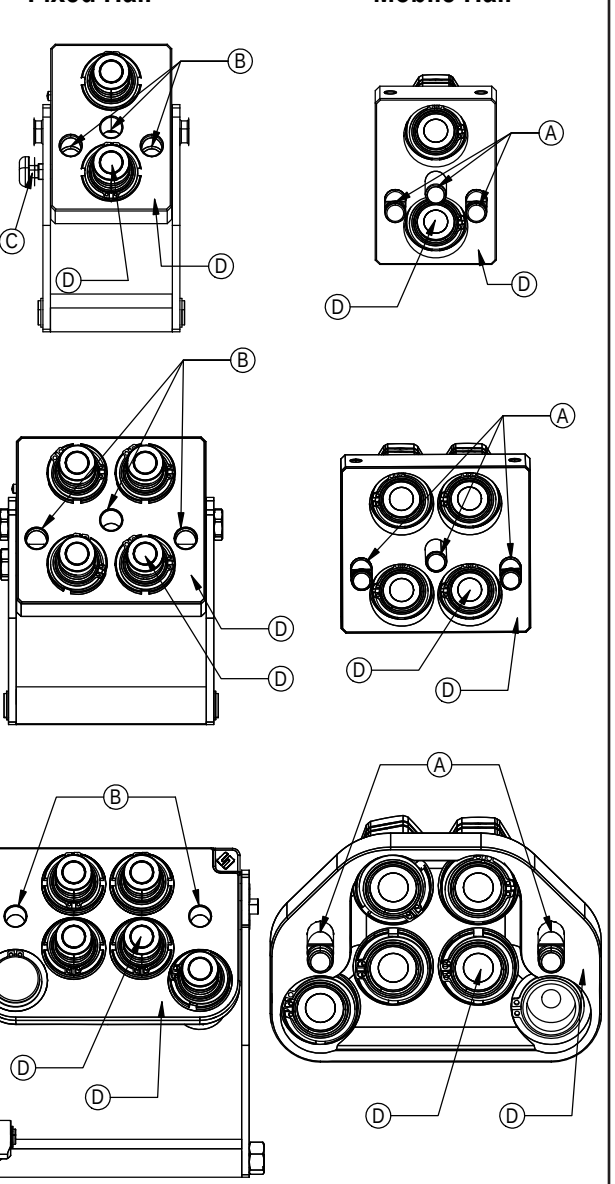
   *Use a cloth or compressed air. It is advised to not use water to clean these surfaces
3. Apply a lubricant/anti-corrosion (grease or silicone - see Note 1):
   - A. On the pins.
   - B. Inside the cam.
   - C. In the locking mechanism area.
4. Connect the cap to the fixed half and the mobile half to the parking station.

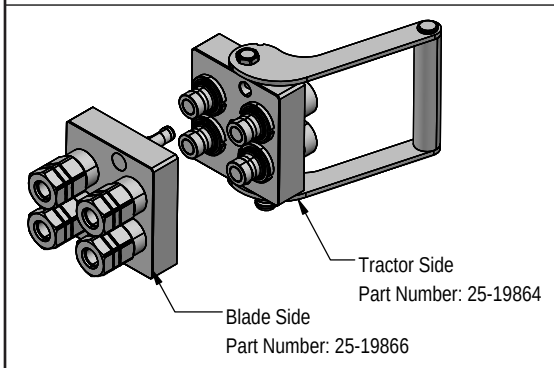
Note 1:

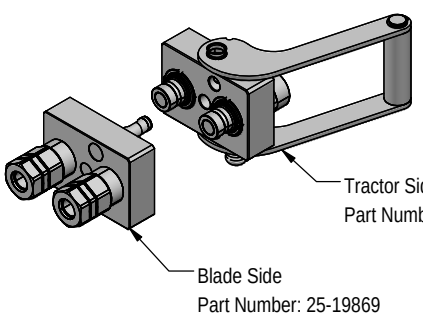
When sand and salt are present, or the plates under go a washdown, a heavy duty silicone spray lubricant should be used to replace grease from the factory. The lubricant should help protect from corrosion without collecting dust and contaminants, and will resist washing off when exposed to water.

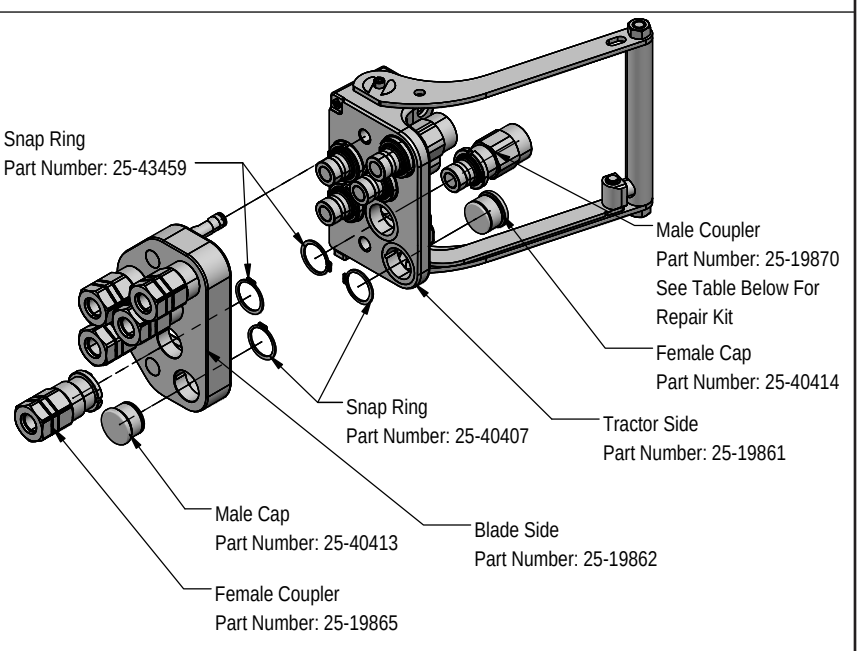
Recommended Lubricant Brands:

Fluid Film (Aerosol or Non-Aerosol), LPS-2 Heavy Duty Lubricant, or CRC 3-36.









PN	Description
25-43425	Male Coupler O-Ring Repair Kit

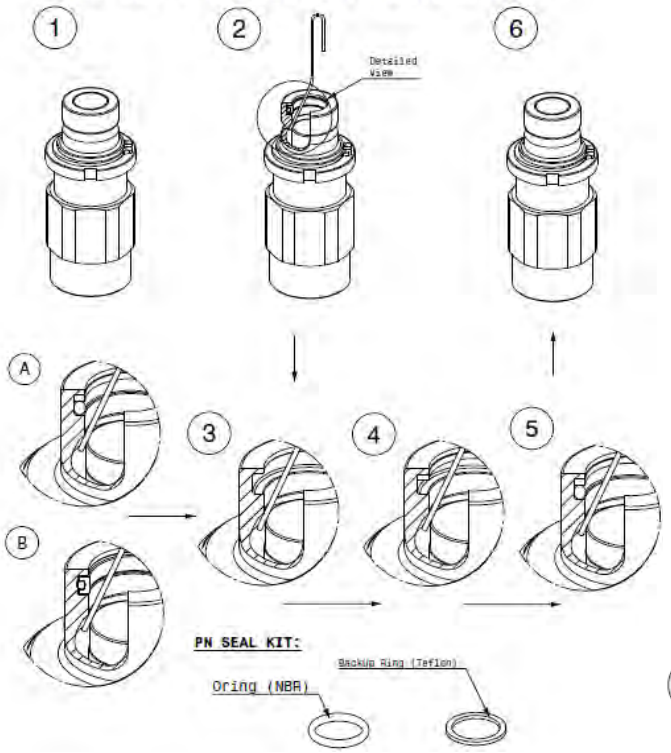
Cleaning The Male Interface Seal:

1. Make sure the coupling is securely fastened into the plate or place in a vice.
2. Using a blunt, non-marring tool, depress the valve face until the seal is exposed. Insert a bent metal wire between the valve face and the body of the coupling. Use caution not to damage or scratch the seal when inserting the wire.
3. Inspect the seal and interior surfaces for contamination.
4. In case of contamination, carefully wipe surfaces with a soft cloth, or use compressed air to blow the contamination out. Do Not press hard on the seal as contamination can scratch the seal surface.
5. Using a non-marring tool, depress the valve face and remove the metal wire. Release the valve to the flush position.

Cleaning The Female Bushing:

1. Make sure the coupling is securely fastened into the plate or place in a vice.
2. Using a non-marring tool, depress the outer ring to expose the bushing. There is no need to expose the valve seal, so stop pressing before the valve is opened.
3. Inspect the interior body and bushing surfaces for contamination.
4. In case of contamination, carefully wipe surfaces with a soft cloth, or use compressed air to blow the contamination out.
5. Release the outer ring so that it returns to the flush position.

MALE FAP - REPAIR KIT INSTRUCTIONS



DISASSEMBLING STEPS (see figures)

1. Place the coupling in a vice.
2. Bend positioning clip as shown.
   Using a blunt, non marring object, depress valve face until seals are exposed.
   Insert the positioning clip between valve face and body, captivating the valve face
3. Using an O-ring pick or similar device, remove the seal from retaining groove.
   Clean properly the retaining groove with a clean cloth.

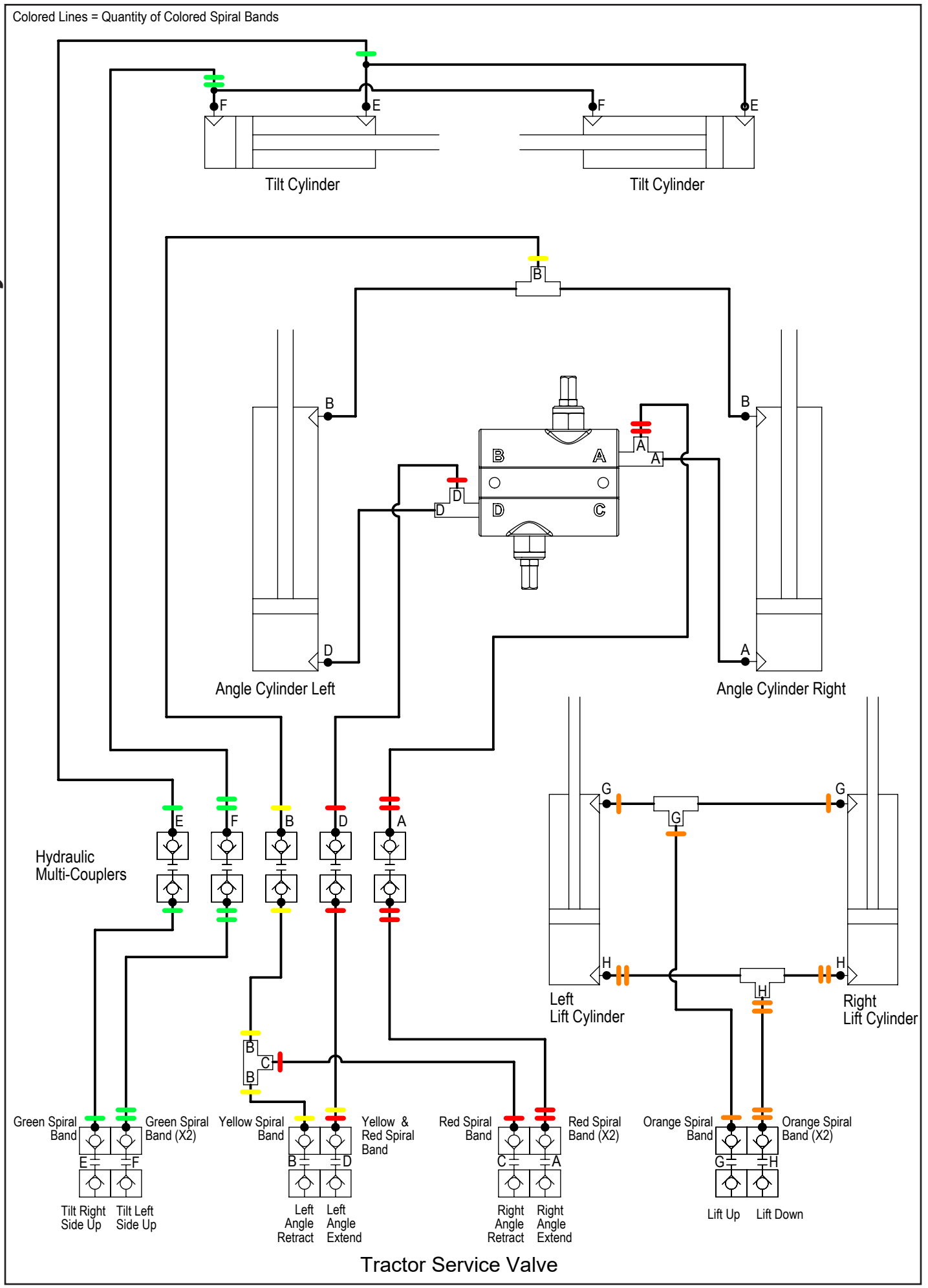
Note: Some M FAP are originaly assembled with different seal technologies (see figures A and B) but both used O-ring and backUp ring as repalcement kit.

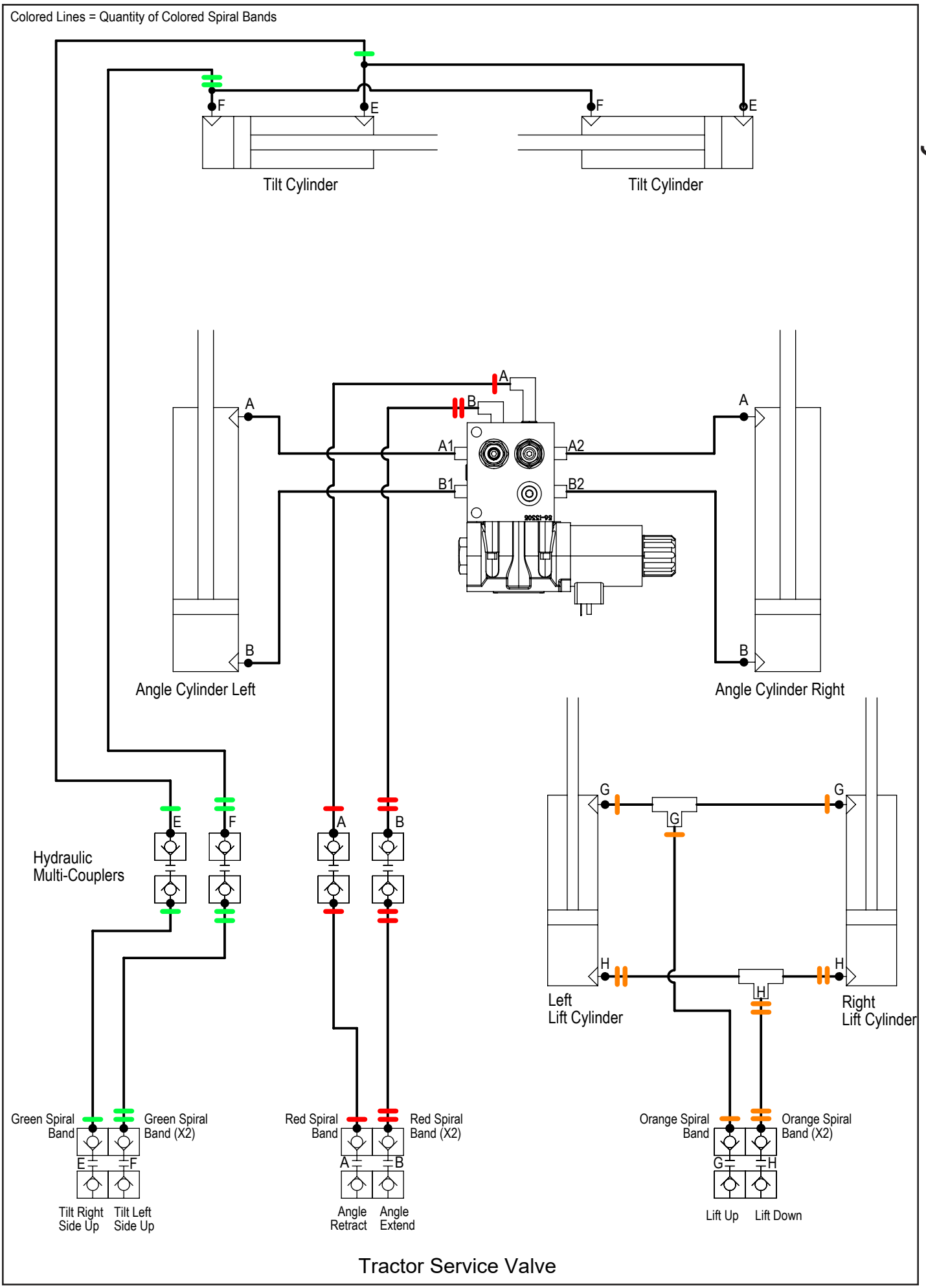
ASSEMBLING STEPS (see figures)

4. Insert the backup ring (4) in the seat and even with the use of a non sharpen tool.
   Place the BackUp ring on the superior shoulder of the seat in order to leave space for the O-ring (see figure 4).
5. Lubricate the O-ring with a fluid compatible with the seals compound.
   Warning: using non compatible fluid would compromise the efficency of the coupling.
6. Push the piston with a blunt, non marring tool and take the metal clip out.
   Release the piston.

FUNCTIONING CHECK
Assemble the male coupling with the female in order to check the functioning and check for leaks.

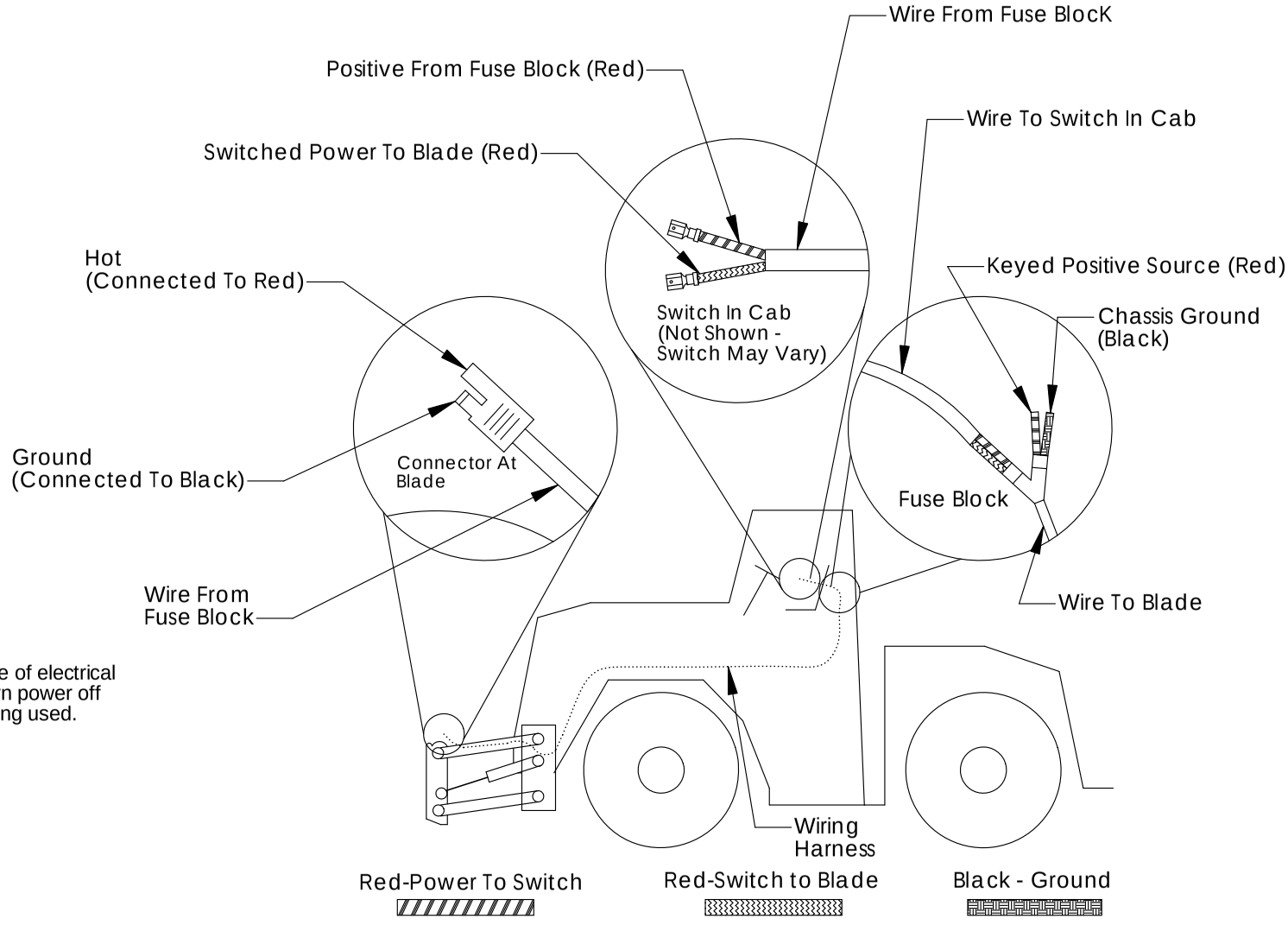
BY REPLACING THE SEALS, YOU REMOVE THE WARRANTY AND BECOME RESPONSIBLE FOR THE SAFETY AND THE EFFICIENCY OF THE COUPLING!


Colored Lines = Quantity of Colored Spiral Bands
F
E
F
E
Tilt Cylinder
Tilt Cylinder
B
B
B
A
A
A
B
A
D
D
D
C
D
D
A
Angle Cylinder Left
Angle Cylinder Right
Hydraulic
Multi-Couplers
E
F
B
D
A
G
G
G
H
H
H
Left
Lift Cylinder
Right
Lift Cylinder
B
C
B
Green Spiral
Band
Green Spiral
Band (X2)
Yellow Spiral
Band
Yellow &
Red Spiral
Band
Red Spiral
Band
Red Spiral
Band (X2)
Orange Spiral
Band
Orange Spiral
Band (X2)
E
F
B
D
C
A
G
H
Tilt Right
Side Up
Tilt Left
Side Up
Left
Angle
Retract
Left
Angle
Extend
Right
Angle
Retract
Right
Angle
Extend
Lift Up
Lift Down
Tractor Service Valve



Tractor Service Valve

Wire Harness



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.

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Contact Us

As always, if you have any questions about your Ag Pro Classic 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 two years. If such equipment is found to be defective within two years, 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.

GROUSER® PRODUCTS