



GROUSER®
PRODUCTS

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4100 OWNER'S MANUAL
&
PARTS BOOK

Date Purchased	
Purchased From	
Blade Model Number	
Blade Serial Number	
Tractor	

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TO THE OWNER

This manual contains information concerning the operation, adjustment, and maintenance of the 4100 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.

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 4100 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 dozer 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 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.

MAINTENANCE

Due to the harsh environment many of our dozer's operate in, the following tasks should be performed every 10 hours or less.

- Inspect 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 23.
- Check replaceable cutting edge for wear ensuring there is enough material to prevent permanent damage to blade.
- Make sure all non-rotating pins are secured properly.
- Check hydraulic cylinder and hoses for damage or leaks. See page 20 for replacement parts.
- 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.

SKID SHOE AND TILT PLATE ADJUSTMENT

Skid Shoe Adjustment:

1. Raise and secure blade to access skid shoe bolts and nuts.
2. Loosen nuts and set skid shoe depth by sliding the shoe back or forth in direction 'A' shown on Figure 2.
3. Once depth is set, tighten bolts to 150 ft-lbs.

Tilt Plate Adjustment:

1. Remove bolts and tilt plates.
2. Add or remove washers as needed to adjust tilt-way clearance in direction 'B' shown in Figure 2.
3. Once tilt-way clearance is set, tighten bolts to 640 ft-lbs.

continued on next page

SKID SHOE AND TILT PLATE ADJUSTMENT (CONT.)

Figure 1

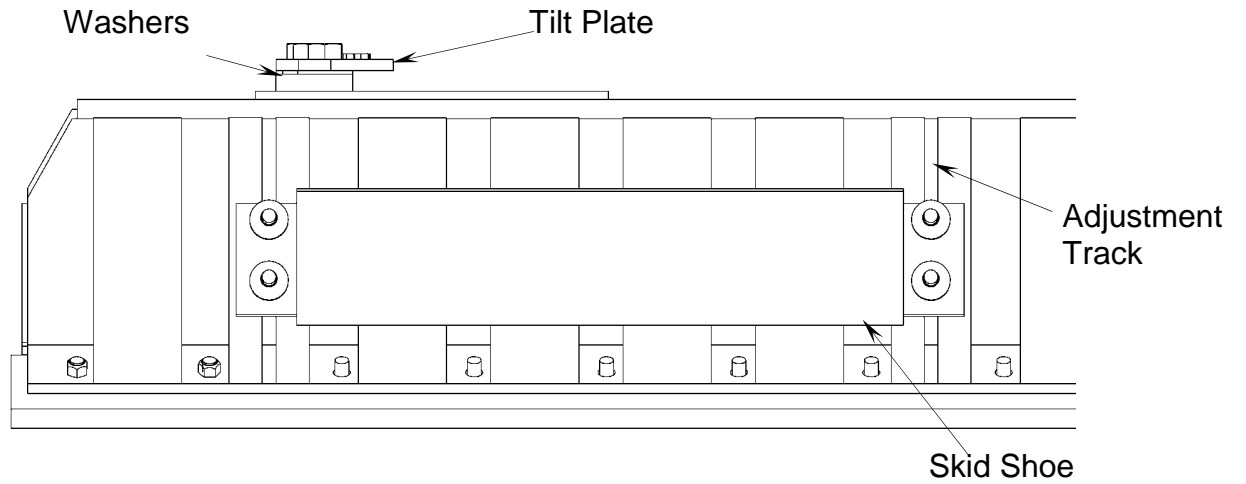
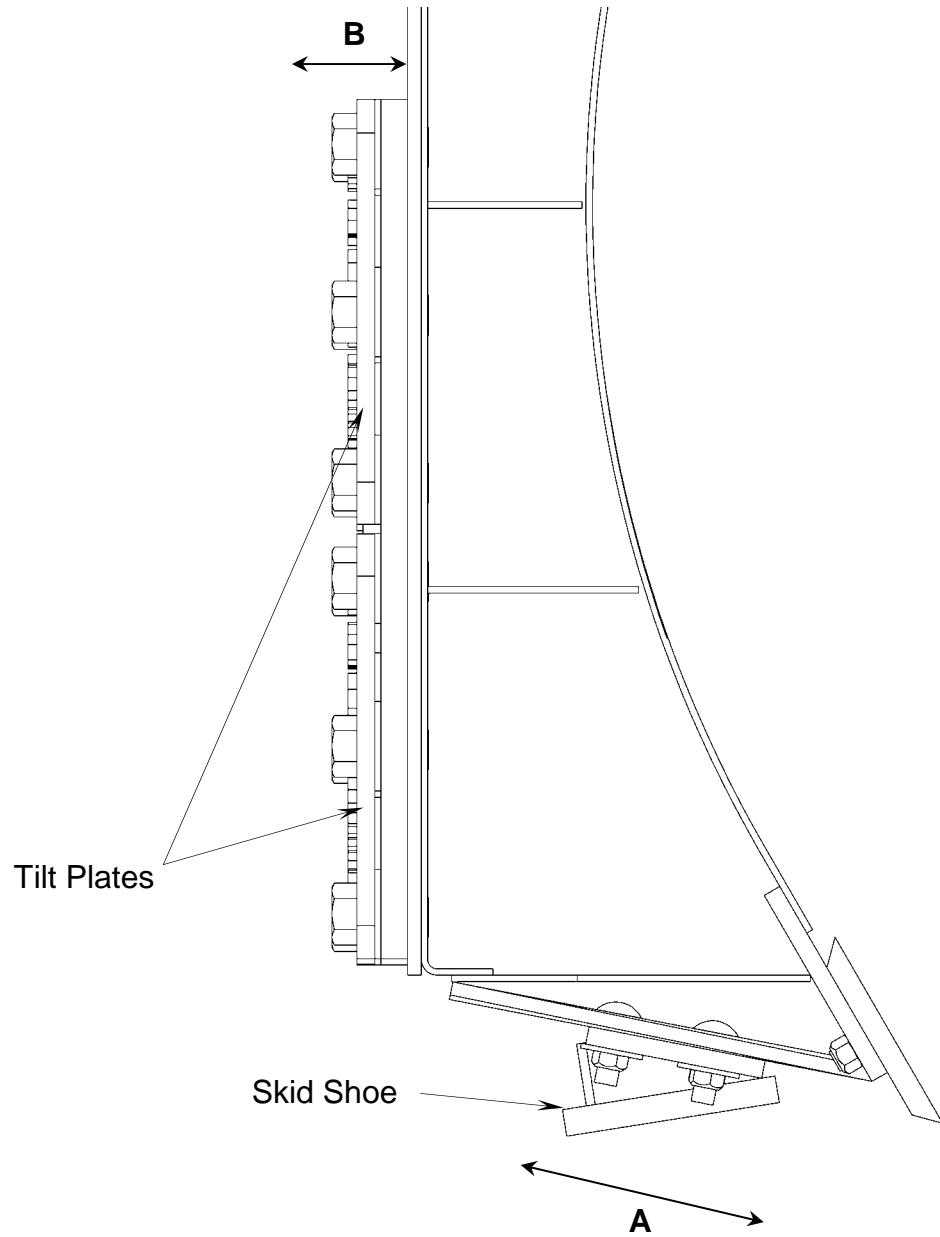


Figure 2



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.

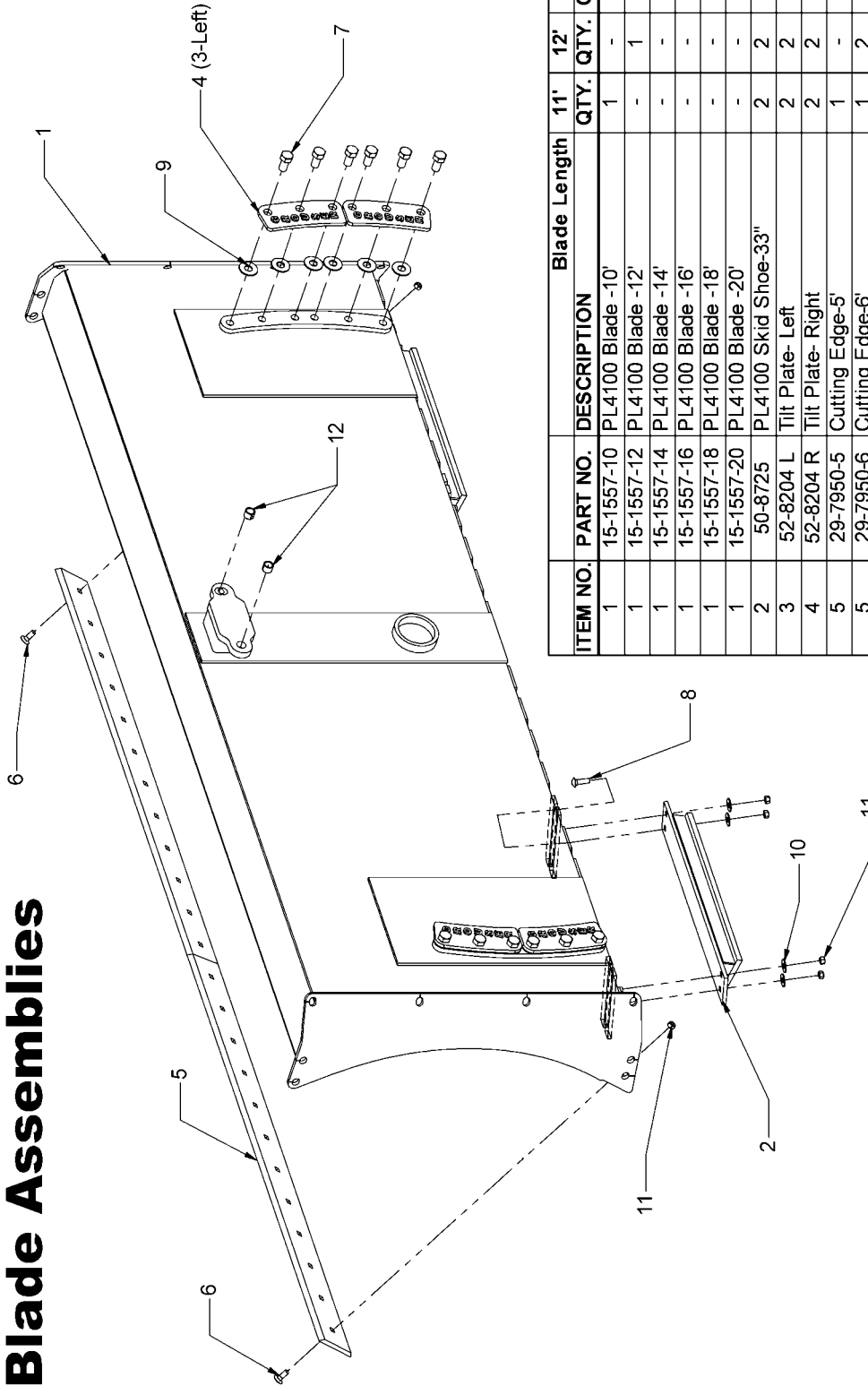
This warranty covers only defects in material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper assembly, improper adjustments, improper maintenance including lack of proper lubrication, or improper use. Therefore, Grouser Products liability under this 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.

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REVISIONS:

Blade Assemblies



ITEM NO.	PART NO.	DESCRIPTION	Blade Length	11'	12'	14'	16'	18'	20'
				QTY.	QTY.	QTY.	QTY.	QTY.	QTY.
1	15-1557-10	PL4100 Blade -10'		1	-	-	-	-	-
1	15-1557-12	PL4100 Blade -12'		-	1	-	-	-	-
1	15-1557-14	PL4100 Blade -14'		-	-	1	-	-	-
1	15-1557-16	PL4100 Blade -16'		-	-	-	1	-	-
1	15-1557-18	PL4100 Blade -18'		-	-	-	-	1	-
1	15-1557-20	PL4100 Blade -20'		-	-	-	-	-	1
2	50-8725	PL4100 Skid Shoe-33"		2	2	2	2	2	2
3	52-8204 L	Tilt Plate- Left		2	2	2	2	2	2
4	52-8204 R	Tilt Plate- Right		2	2	2	2	2	2
5	29-7950-5	Cutting Edge-5'		1	-	-	-	-	-
5	29-7950-6	Cutting Edge-6'		1	2	-	-	3	2
5	29-7950-7	Cutting Edge-7'		-	-	2	-	-	-
5	29-7950-8	Cutting Edge-8'		-	-	-	2	-	1
6	16-21666	5/8" X 1-3/4" Plow Bolt Gr. 5 NC		22	24	28	32	36	40
7	16-20268	1" X 2" Hex Bolt Gr. 5 NC		12	12	12	12	12	12
8	16-21188	5/8" X 2" Carriage Bolt Gr. 5 NC		8	8	8	8	8	8
9	57-20749	1" Flat Washer		12	12	12	12	12	12
10	57-20816	5/8" Flat Washer		8	8	8	8	8	8
11	70-20646	5/8" Hex Top Lock Nut Gr. 5 NC		30	32	36	40	44	48
12	19-7774	1" X 1" Spring Bushing		2	2	2	2	2	2

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4100 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.

The diverter valve has a built-in safety relief valve that allows the cylinder to retract if its internal pressure exceeds 2000 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. While the factory setting on the relief valve is high enough to maintain an angle setting under full load, this may be cumbersome to some operators, the following are possible adjustments to this remedy this action:

Reduce tractor valve pressure: Some newer tractors allow the service valve pressure to be adjusted below the 2000 psi point of the safety relief valve.

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 base end of right angle cylinder (see pg 20). Loosen the jam nut on the safety valve and tighten the Allen screw ½ turn. Now 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 ½ turn increments and record the pressure until a high enough relief setting is obtained. **Do not exceed the 3000-psi operating pressure of the cylinders.** Tighten jam nut and remove gauge.

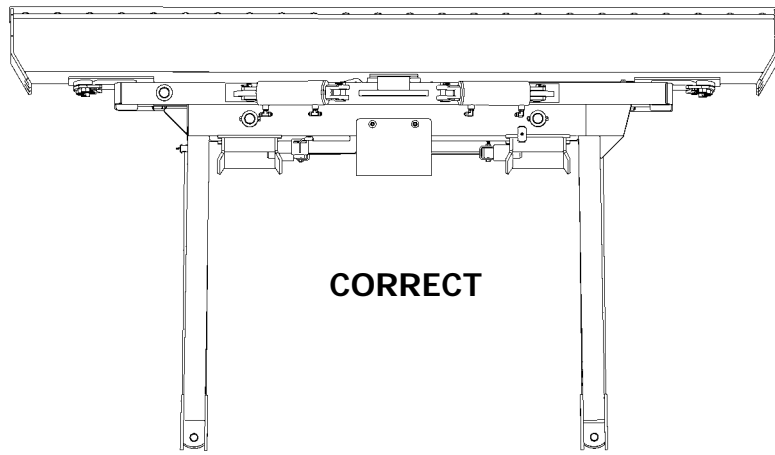
Automatic lever release: In some newer tractors the hydraulic control lever will automatically release and instantly stop oil flow once the end of the stroke is reached.

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

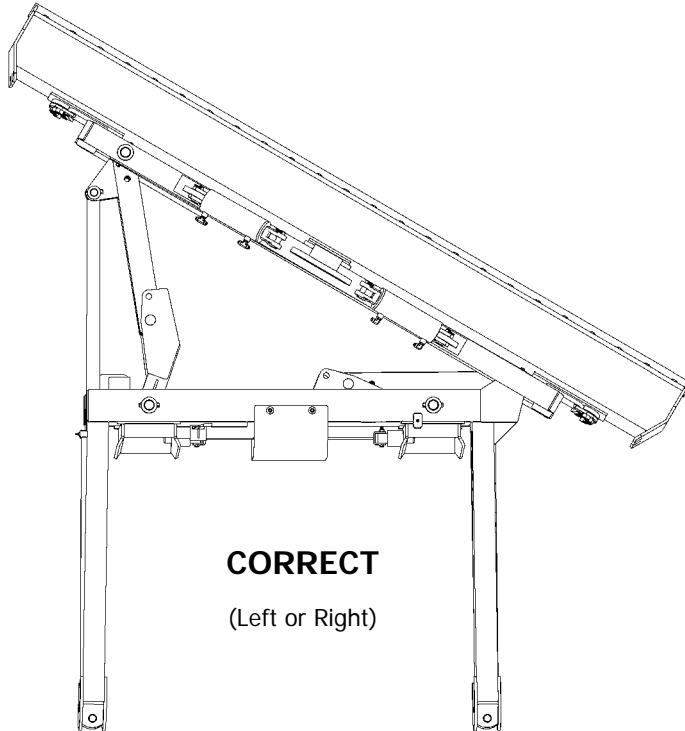
To ensure proper use and life of equipment, it is recommended to have both cylinders closed for straight ahead dozing and only one cylinder partially or fully extended for angled dozing as shown in the diagrams below. **If the angle system is not used correctly, frame damage may occur.** Some damaged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

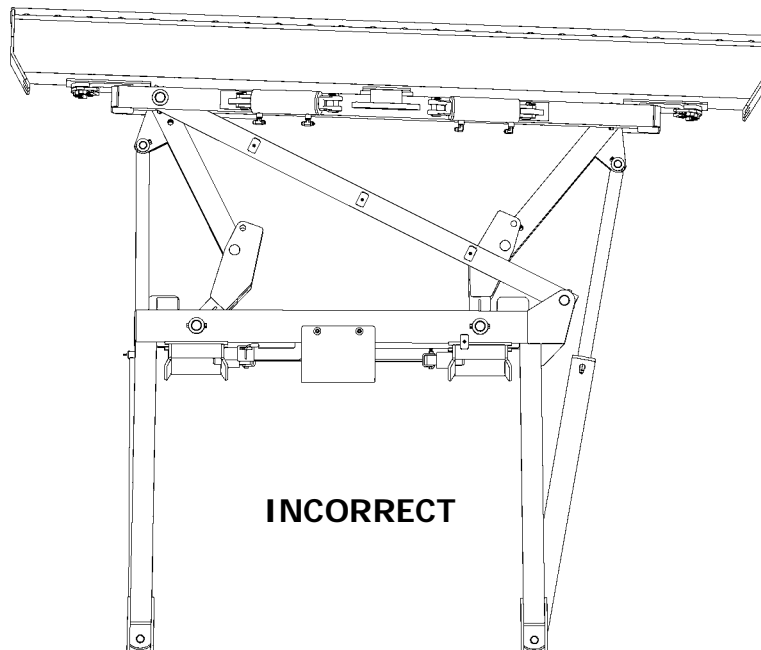


CORRECT



CORRECT

(Left or Right)



INCORRECT

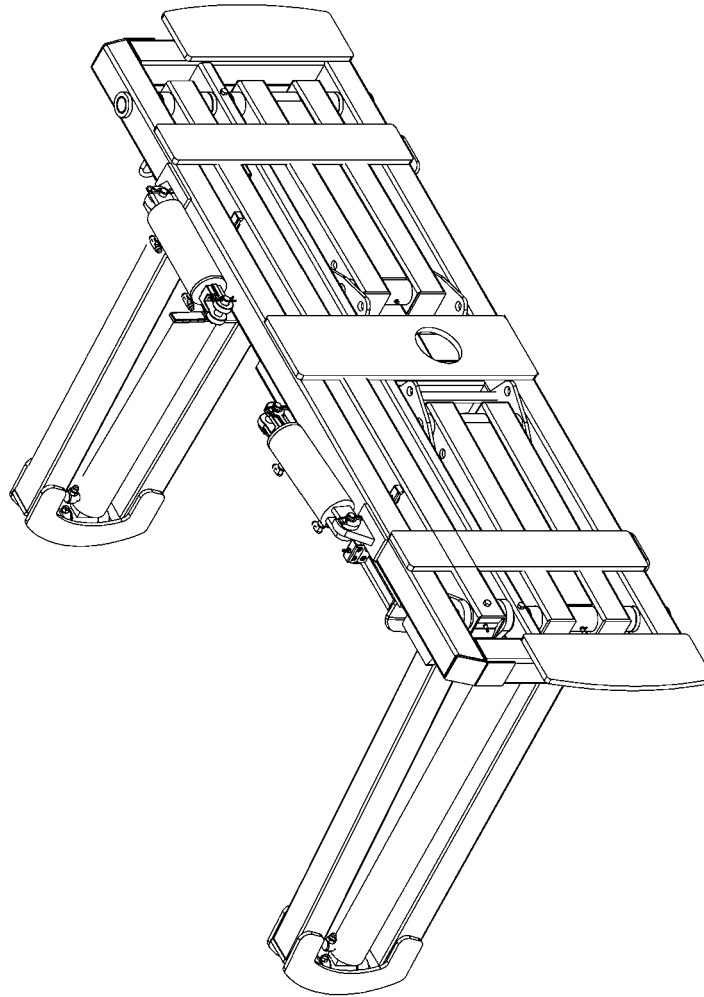
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REVISIONS:

4100 Angle System

For Hydraulic Angle and Hydraulic Tilt (HAHT)

To avoid frame damage, please read Angle System Operating Instructions before use!



QUICK COUPLERS AND HOSES NOT SHOWN
See hose routing instructions for part numbers.



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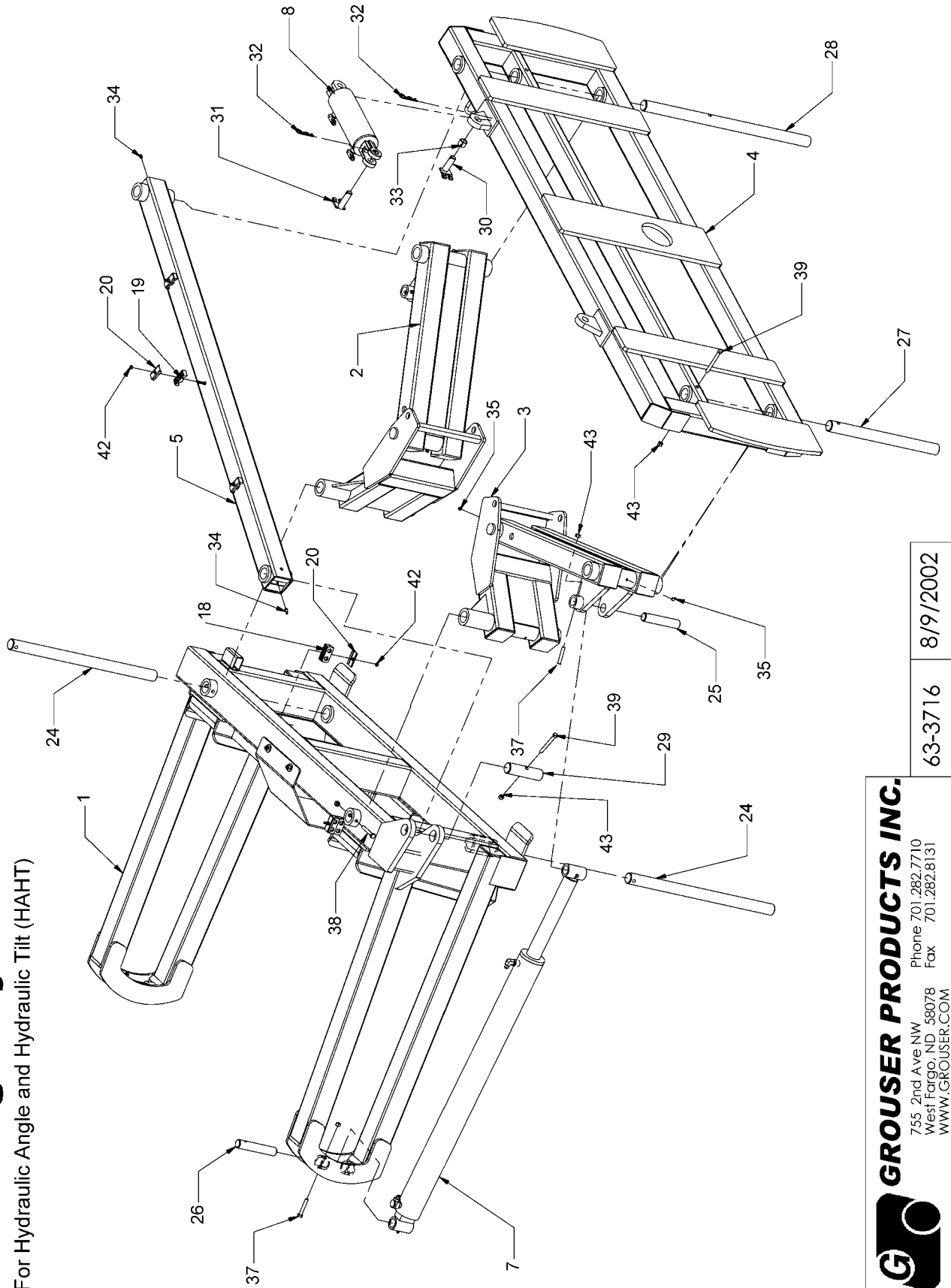
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	32-8110R8	PL-4100 Angle Frame
2	1	11-9039	PL-4100 Left Angle Arm
3	1	11-8082	PL-4100 Right Angle Arm
4	1	32-8102	PL-4100 HA Tilt Frame
5	1	11-8127	PL-4100 Stabilizer Arm
6	1	45-1874	PL-4100 QA Lever System
7	2	26-34931	4 X 43.5" Cylinder with Tube Ends
8	2	26-34710	4 X 8" Cylinder with Clevis Ends
9	1	56-1810	PL-4100 Hydraulic Valve
10	1	18-1701R2	Valve Cover
11	2	31-34041	10MB-8MJ Straight (6400-8-10)
12	14	31-34051	10MB-8MJ 90° (6801-8-10)
13	4	31-34050	8MB-8MJ 90° (6801-8-8)
14	1	31-34100	8MJ-8FJX Swivel 90° (6500-8-8)
15	1	31-34020	8MJ-8MJ-8MJ Bulkhead TEE (2703-8-8-8)
16	1	31-34040	8MB-8MJ Straight (6400-8-8)
17	2	31-34060	8MJ-8MJ-8MB Branch TEE (6803-8-8-8)
18	6	18-3074	Hose Hold Down Clamp (Whole)
19	3	18-2440	Hose Hold Down Clamp (Half)
20	8	18-3075	Hose Hold Down Clamp Plate
21	4	25-34321	Tappet Quick Coupler Female
22	8	25-34322	Tappet Quick Coupler Male
23	2	18-8973	Coupler Mounting Bracket
24	2	43-8131	1-15/16" X 3/1" NR Pin
25	2	43-9352	1-1/2" X 7-1/2" NR Pin
26	2	43-8134R1	1-1/2" X 8" NR Pin
27	1	43-8130	1-15/16" X 23-1/4" NR Pin
28	1	43-8132	1/15/16" X 35-1/2" NR Pin
29	1	43-8133	1-15/16" X 7-1/8" NR Pin
30	2	43-7994	Clevis Cylinder Base Pin
31	2	43-7995	Clevis Cylinder Rod Pin
32	4	43-7767	Cylinder Pin Clip
33	2	19-7774	1" X 1" Spring Bushing
34	2	58-9371	45 Deg 1/8" NPT Grease Fitting
35	4	58-9372	90 Deg. 1/8" NPT Grease Fitting
36	12	27-9507	Grease Decal
37	4	16-20132	1/2" X 3" Hex Bolt Gr. 5 NC
38	2	16-20424	1/2" X 3-1/2" Hex Bolt Gr. 8 NC
39	3	16-20427	1/2" X 4-1/2" Hex Bolt Gr. 8 NC
40	2	57-20761	5/16" Lock Washer
41	4	57-20744	1/2" Flat Washer
42	8	70-20581	5/16" Hex Nut
43	15	70-20604	1/2" Center Lock Hex Nut
44	1	70-20807	3/4" Hex Jam Nut NF

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REVISIONS:

4100 Angle System

For Hydraulic Angle and Hydraulic Tilt (HAHT)



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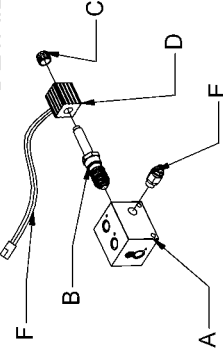
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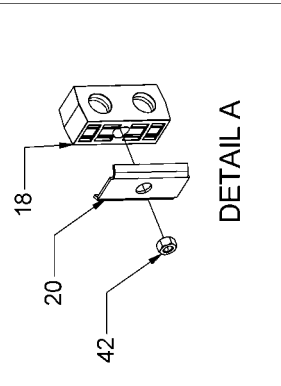
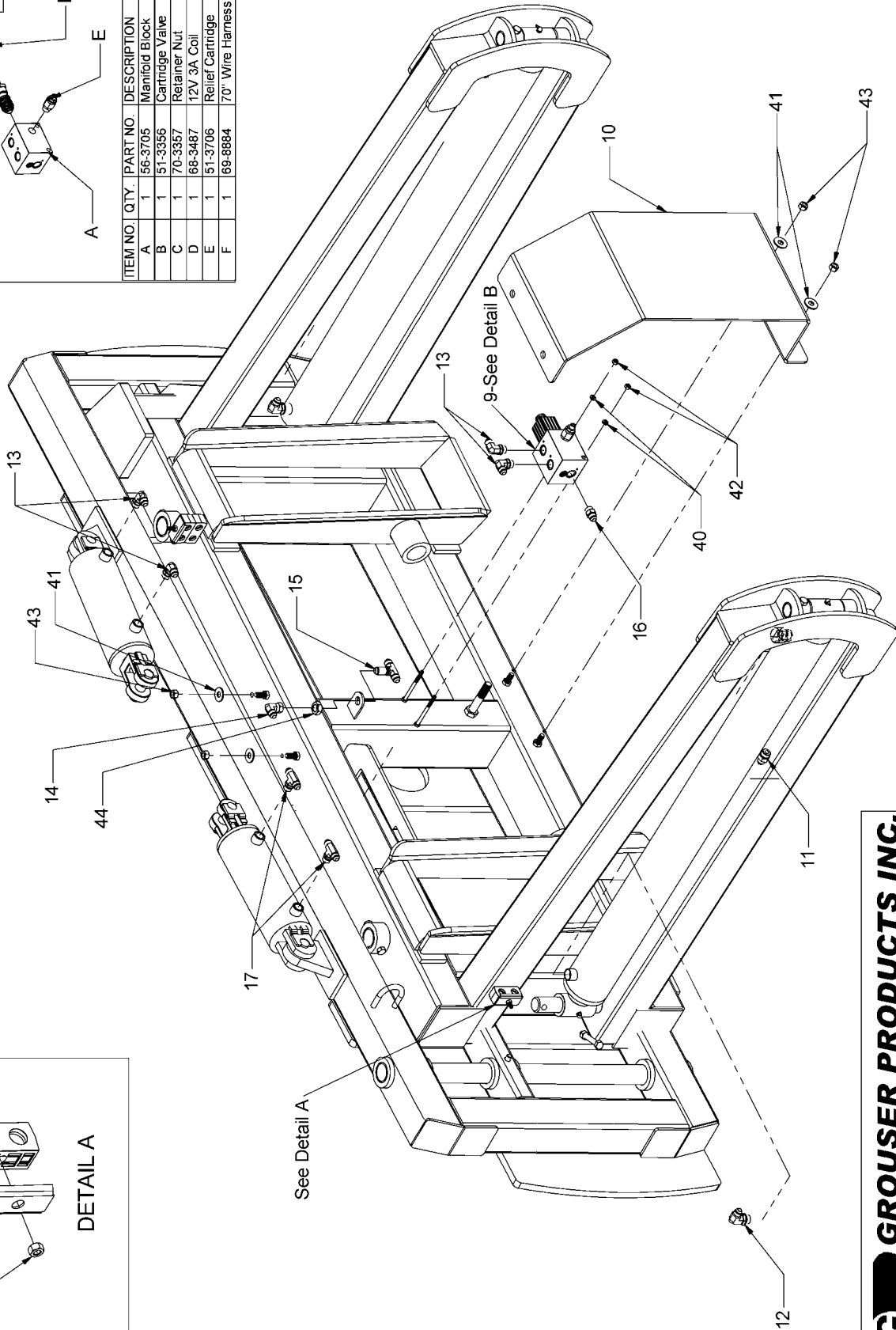
REVISIONS:

Angle System Hydraulic Components

DETAIL B



ITEM NO.	QTY.	PART NO.	DESCRIPTION
A	1	56-3705	Manifold Block
B	1	51-3356	Cartridge Valve
C	1	70-3357	Retainer Nut
D	1	68-3487	12V 3A Coil
E	1	51-3706	Relief Cartridge
F	1	69-8884	70" Wire Harness w/ Trailer End



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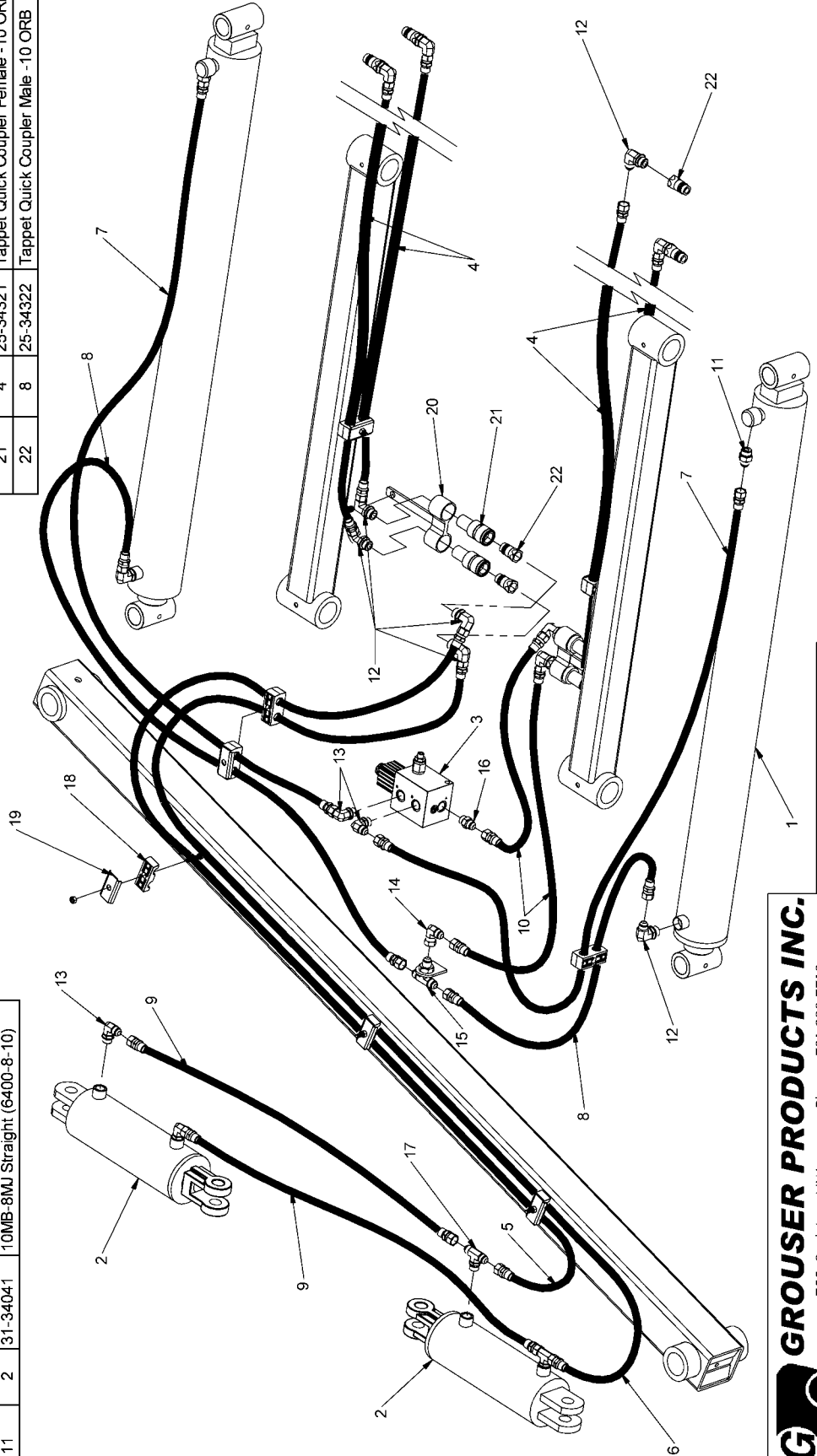
REVISIONS:

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	26-34931	4 X 43.5" Cylinder with Tube Ends
2	2	26-34710	4 X 8" Cylinder with Clevis Ends
3	1	56-1810	PL-4100 Hydraulic Valve
4	4	35-30162	390" (32-1/2') -8JIC-8JIC Hose
5	1	35-30150	160" (13-1/3') -8JIC-8JIC Hose
6	1	35-30149	156" (13') -8JIC-8JIC Hose
7	2	35-30145	108" (9') -8JIC-8JIC Hose
8	2	35-30131	66" (5-1/2') -8JIC-8JIC Hose
9	2	35-30022	39" (3-1/4') -8JIC-8JIC Hose
10	2	35-30121	35" (2-11/12') -8JIC-8JIC Hose
11	2	31-34041	10MB-8MJ Straight (6400-8-10)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
12	14	31-34051	10MB-8MJ 90° (6801-8-10)
13	4	31-34050	8MB-8MJ 90° (6801-8-8)
14	1	31-34100	8MJ-8FJX Swivel 90° (6500-8-8)
15	1	31-34020	8MJ-8MJ-8MJ Bulkhead TEE (2703-8-8-8)
16	1	31-34040	8MB-8MJ Straight (6400-8-8)
17	2	31-34060	8MJ-8MJ-8MB ORB Branch TEE (6803-8-8-8)
18	15	18-3074	Hose Hold Down Clamp
19	8	18-3075	Hose Hold Down n Clamp Plate
20	2	18-8973	Coupler Mounting Bracket
21	4	25-34321	Tappet Quick Coupler Female -10 ORB
22	8	25-34322	Tappet Quick Coupler Male -10 ORB

Angle System Hose Routing

(See page 20 for seal kits)



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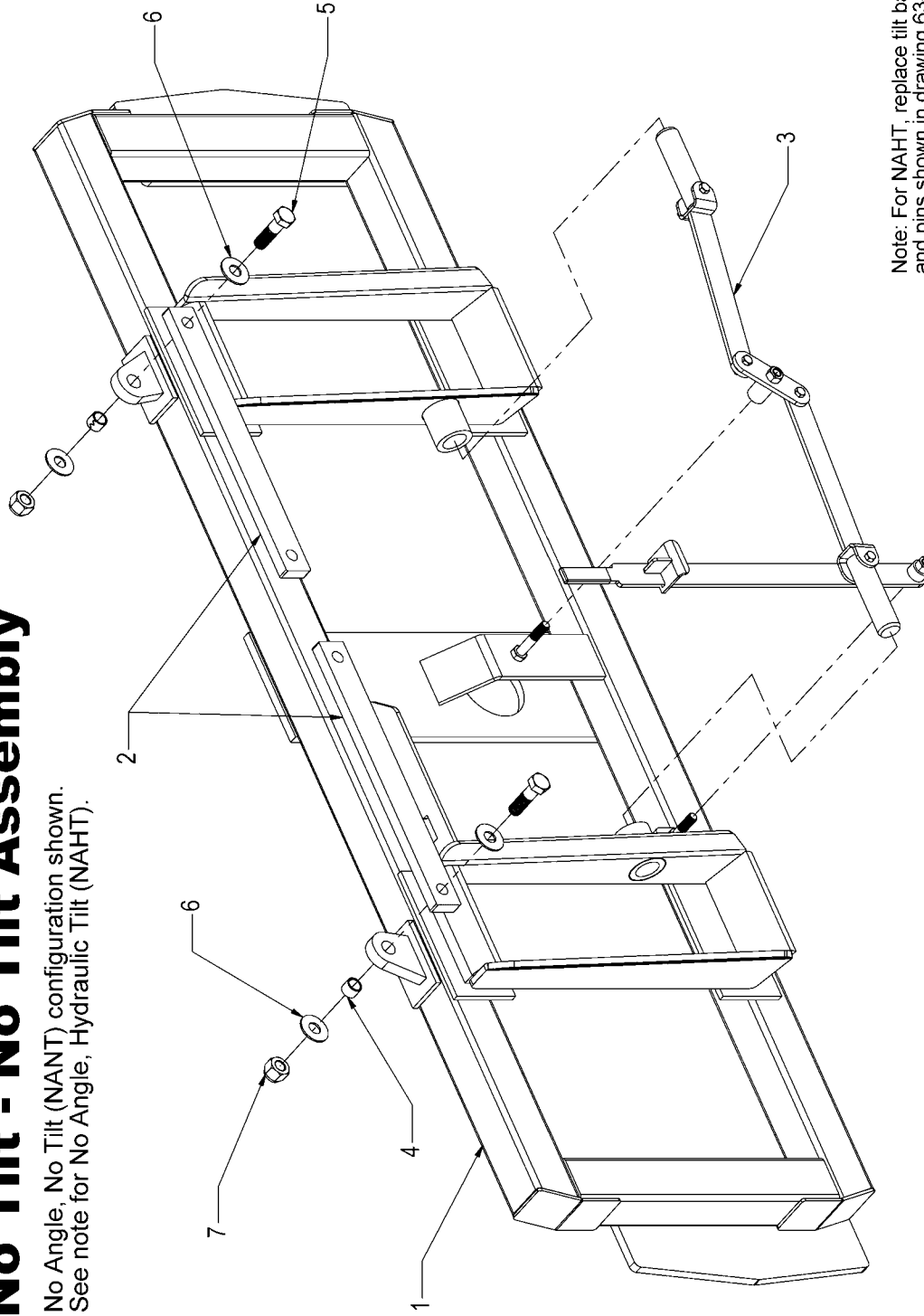
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REVISIONS:

No Tilt - No Tilt Assembly

No Angle, No Tilt (NANT) configuration shown.
See note for No Angle, Hydraulic Tilt (NAHT).



Note: For NAHT, replace tilt bar and bolts with tilt cylinders and pins shown in drawing 63-3716 (Item number 8 and 30-33).

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	11-8963R2	PL4100 NAHT Tilt Frame
2	2	14-9366	PL4100 Non Tilt Bar
3	1	45-1874	PL4100 QA Lever System
4	2	19-7774	1" X 1" Spring Bushing
5	2	16-20274	1" X 3-1/2" Hex Bolt Gr. 5 NC
6	4	57-20749	1" Flat Washer
7	2	70-20589	1"-8 NC Hex Nut



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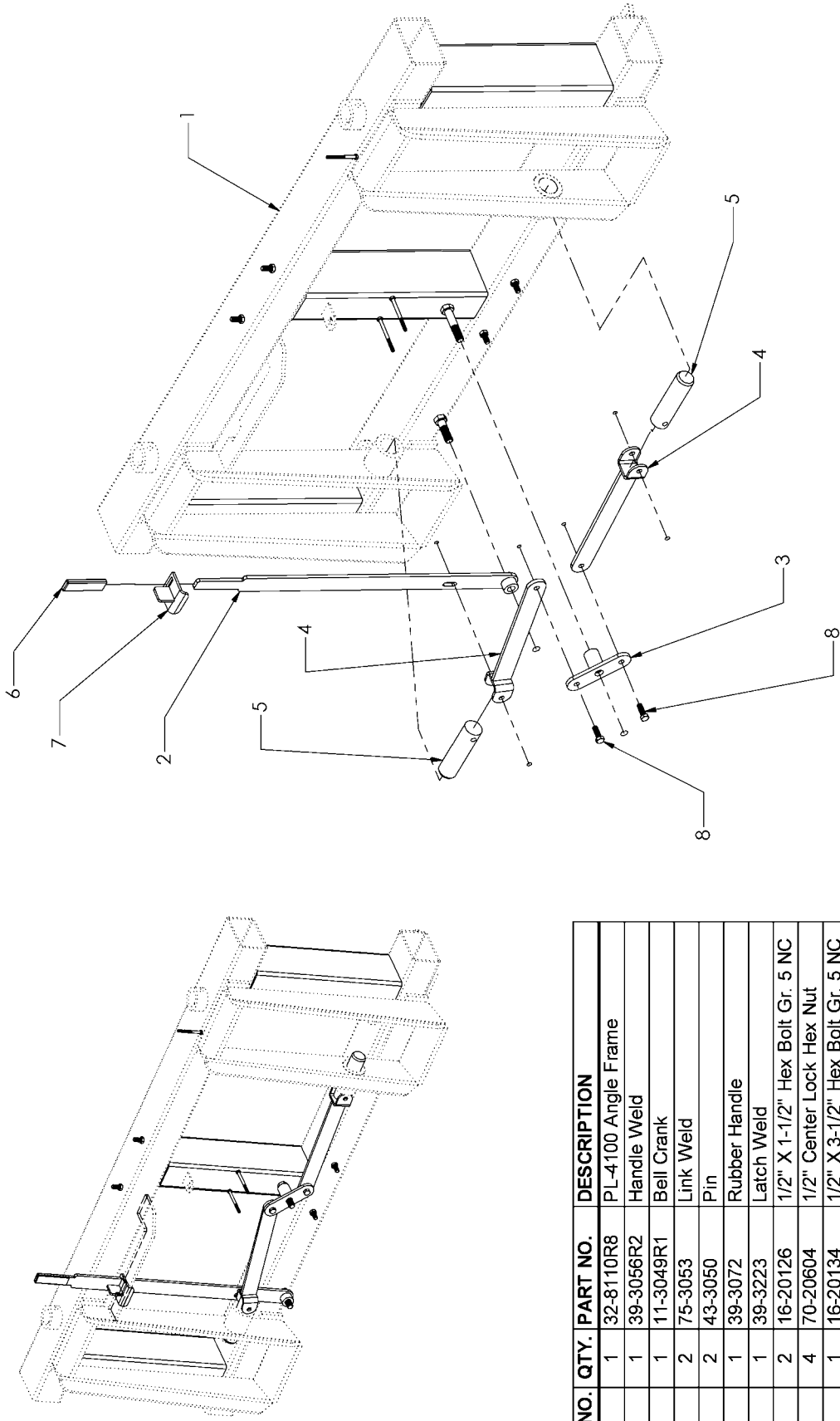
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REVISIONS:

Quick Attach Lever System



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	32-8110R8	PL-4100 Angle Frame
2	1	39-3056R2	Handle Weld
3	1	11-3049R1	Bell Crank
4	2	75-3053	Link Weld
5	2	43-3050	Pin
6	1	39-3072	Rubber Handle
7	1	39-3223	Latch Weld
8	2	16-20126	1/2" X 1-1/2" Hex Bolt Gr. 5 NC
9	4	70-20604	1/2" Center Lock Hex Nut
10	1	16-20134	1/2" X 3-1/2" Hex Bolt Gr. 5 NC
11	2	70-20607	3/4" Center Lock Hex Nut
12	1	70-20132	1/2" X 3" Hex Bolt Gr. 5 NC



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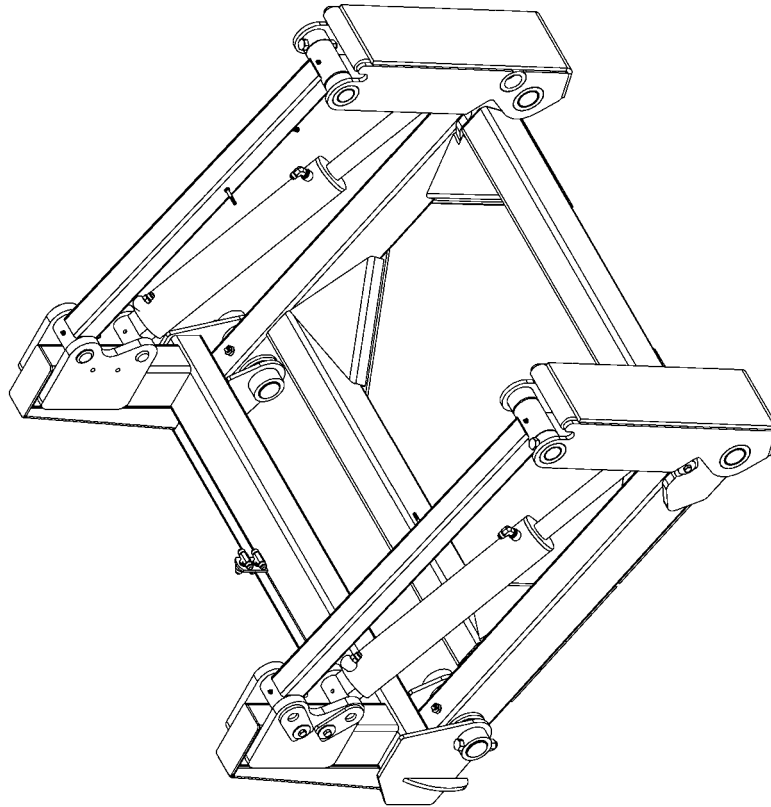
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REVISIONS:

Standard Lift System



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	32-8405R3	PL-4100 Lift Frame
2	1	11-7980R2-L	PL-4100 Std. Left Top Arm
3	1	11-7980R2-R	PL-4100 Std. Right Top Arm
4	1	45-8441R3	PL-4100 QA Right Male
5	1	45-8438R3	PL-4100 QA Left Male
6	2	26-34933	4" X 20" Cylinder w/ Tube Ends
7	2	31-34040	8MB-9MJ Straight (6400-8-8)
8	2	31-34050	8MB-8MJ 90° (6801-8-8)
9	2	31-34051	10MB-8MJ 90° (6801-8-10)
10	2	31-34020	8MJ-8MJ-8MJ Bulkhead TEE (2703-8-8-8)
11	2	25-34322	Tappet Quick Coupler Male -10 ORB
12	2	43-8465	1-15/16" X 6-1/4" NR Pin
13	4	43-8466	1-1/2" X 6-1/4" NR Pin
14	2	43-8493	2-7/16" X 10-1/2" NR Pin
15	2	43-8492	1-15/16" X 9" NR Pin
16	2	43-8896R1	2-7/16" X 9" NR Pin
17	6	16-20126	1/2" X 1-1/2" Hex Bolt Gr. 5 NC
18	2	16-20226	3/4" X 4" Hex Bolt Gr. 5 NC
19	4	16-20227	3/4" X 4-1/2" Hex Bolt Gr. 5 NC
20	6	70-20607	3/4" Hex Center Lock Nut NC
21	2	70-20807	3/4" Hex Jam Nut NF
22	6	57-20794	1/2" Fender Washer
23	6	44-8490	Non-Rotating Pin Spacer
24	4	19-1794	Replaceable Bushing
25	4	16-1795	Grease Bolt
26	12	58-9369	Straight 1/8" NPT Grease Fitting

QUICK COUPLERS AND HOSES NOT SHOWN
See hose routing instructions for part numbers.

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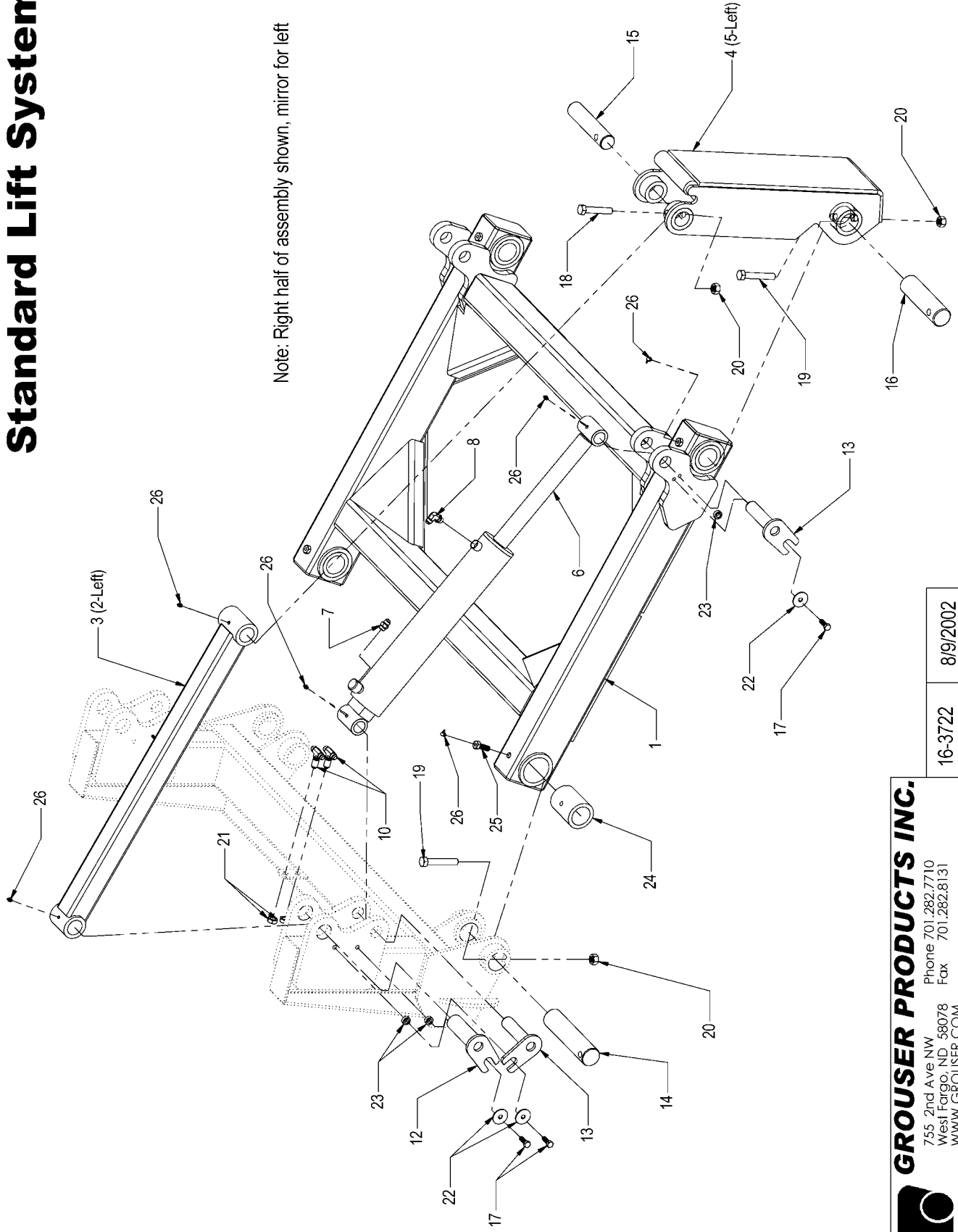


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Standard Lift System

REVISIONS:

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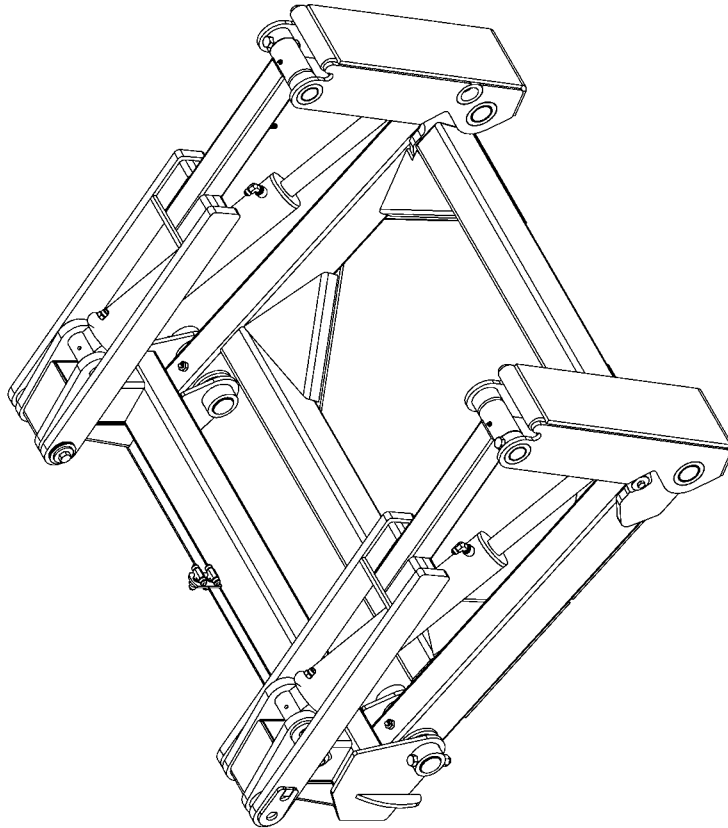
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REVISIONS:

Low Profile Lift System

Used on tractors requiring extra clearance for side panels.



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	32-8405R3	PL-4100 Lift Frame
2	1	11-8461R1-L	PL-4100 JD Top Left Arm
3	1	11-8461R1-R	PL-4100 JD Top Right Arm
4	1	45-8441R3	PL-4100 QA Right Male
5	1	45-8438R3	PL-4100 QA Left Male
6	2	26-34933	4" X 20" Cylinder w/ Tube Ends
7	2	31-34040	8MB-8MJ Straight (6400-8-8)
8	2	31-34050	8MB-8MJ 90° (6801-8-8)
9	2	31-34051	10MB-8MJ 90° (6801-8-10)
10	2	31-34020	8MJ-8MJ-8MJ Bulkhead TEE (2703-8-8-8)
11	2	25-34322	Tappet Quick Coupler Male -10 ORB
12	2	43-8466	1-1/2" X 6-1/4" NR Pin
13	2	43-8493	2-7/16" X 10-1/2" NR Pin
14	2	43-8492	1-15/16" X 9" NR Pin
15	2	43-8896R1	2-7/16" X 9" NR Pin
16	2	43-8471	JD 1-1/2" X 6-1/4" NR Pin
17	2	43-8469	JD 1-15/16" X 9-5/8" NR Pin
18	4	16-20126	1/2" X 1-1/2" Hex Bolt Gr. 5 NC
19	2	16-20216	3/4" X 1/1/2" Hex Bolt Gr.5 NC
20	2	16-20226	3/4" X 4" Hex Bolt Gr. 5 NC
21	4	16-20227	3/4" X 4-1/2" Hex Bolt Gr. 5 NC
22	6	70-20607	3/4" Hex Center Lock Nut NC
23	2	70-20807	3/4" Hex Jam Nut NF
24	4	57-20794	1/2" Fender Washer
25	2	57-1530	3/4" Heavy Duty Washer
26	8	57-1811	2" X 14 Gauge Machine Washer
27	4	44-8490	Non-Rotating Pin Spacer
28	4	19-1794	Replaceable Bushing
29	4	16-1795	Grease Bolt
30	12	58-9369	Straight 1/8" NPT Grease Fitting



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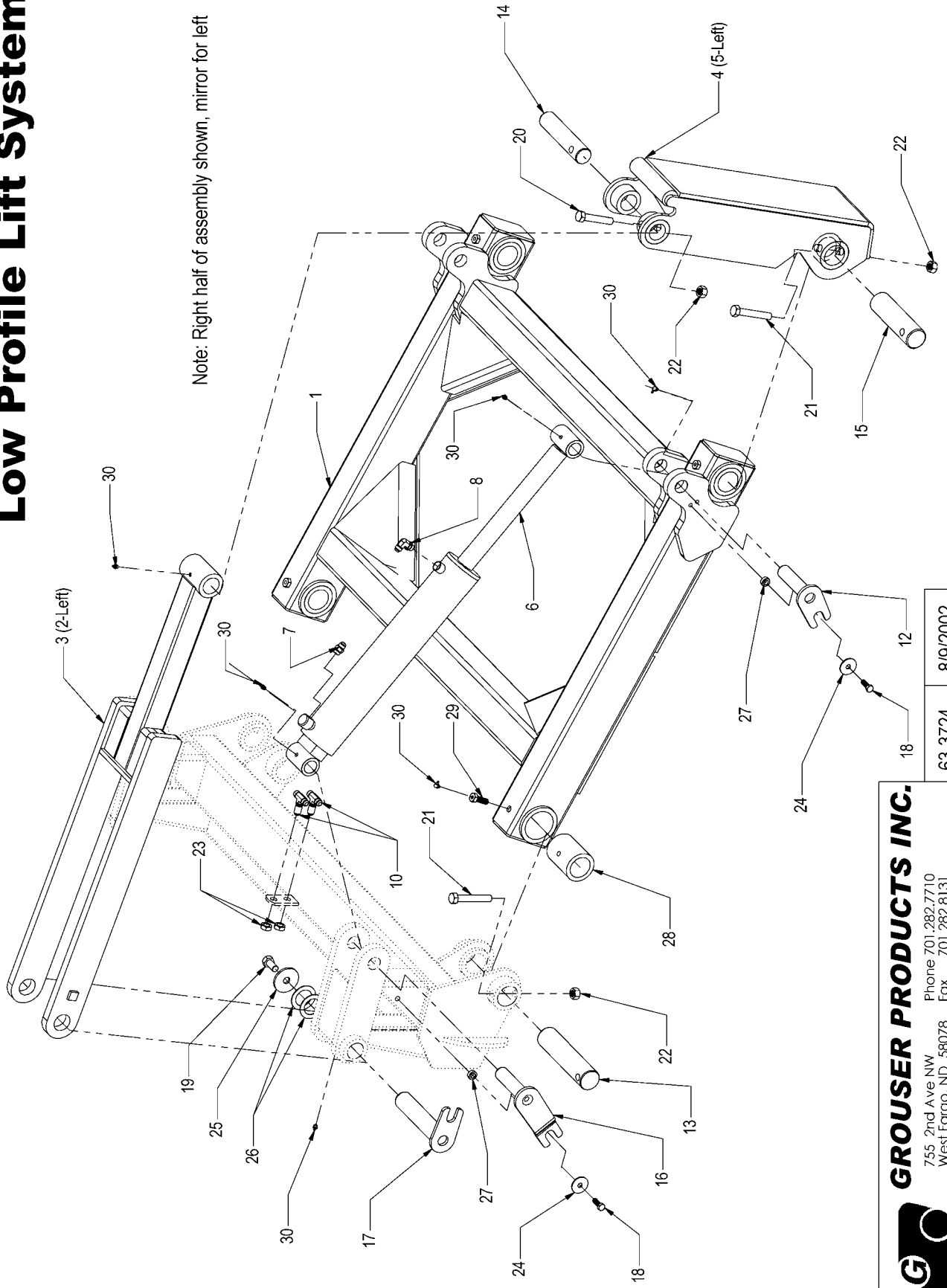
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QUICK COUPLERS AND HOSES NOT SHOWN
 See hose routing instructions for part numbers.

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REVISIONS:

Low Profile Lift System



Note: Right half of assembly shown, mirror for left



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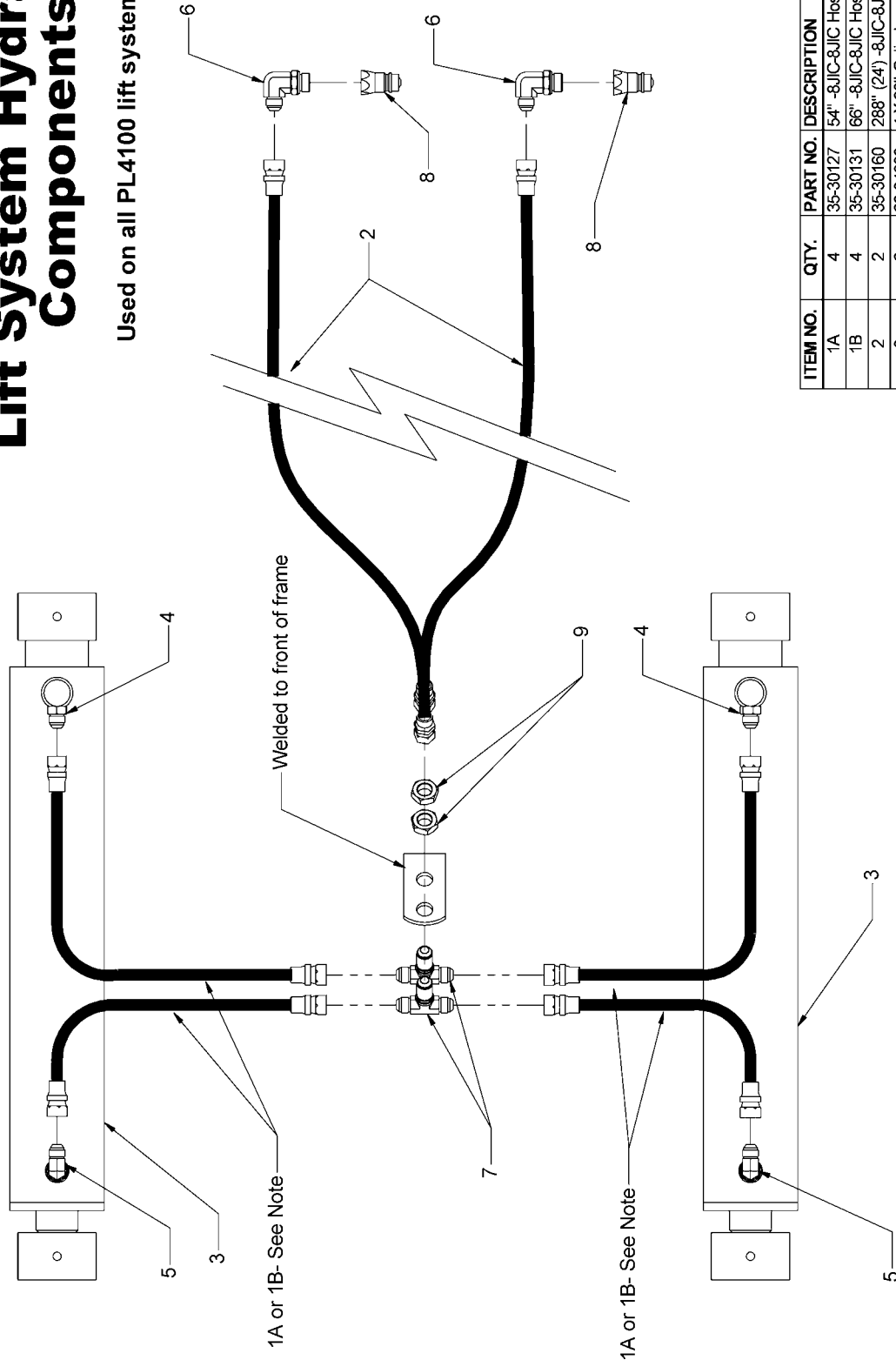
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REVISIONS:

Lift System Hydraulic Components

Used on all PL4100 lift systems.



NOTE: STANDARD HOSE LENGTH FROM TEE TO CYLINDERS IS 54" HOWEVER, ALL CASE STX MODELS REQUIRE 66" HOSES.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1A	4	35-30127	54" -8JIC-8JIC Hose
1B	4	35-30131	66" -8JIC-8JIC Hose (STX Only)
2	2	35-30160	288" (24') -8JIC-8JIC Hose
3	2	26-34933	4 X 20" Cylinder w/ Tube Ends
4	2	31-34040	8MB-8MJ Straight (6400-8-8)
5	2	31-34050	8MB-8MJ 90° (6801-8-8)
6	2	31-34051	10MB-8MJ 90° (6801-8-10)
7	2	31-34020	8MJ-8MJ-8MJ Bulkhead Tee (2703-8-8-8)
8	2	25-34322	Tapet Quick Coupler Male -10 ORB
9	2	70-20807	3/4" Hex Jam Nut NF
SEAL KITS	CYL. SIZE	PART NO.	DESCRIPTION
Tilt	4" x 8"	49-1534	Seal Kit for 4" X 8" Cylinder w/ Clevis Ends
Lift	4" x 20"	49-1535	Seal Kit for 4" X 20" Cylinder w/ Tube Ends
Angle	4" x 43.5"	49-1536	Seal Kit for 4" X 43.5" Cylinder w/ Tube Ends



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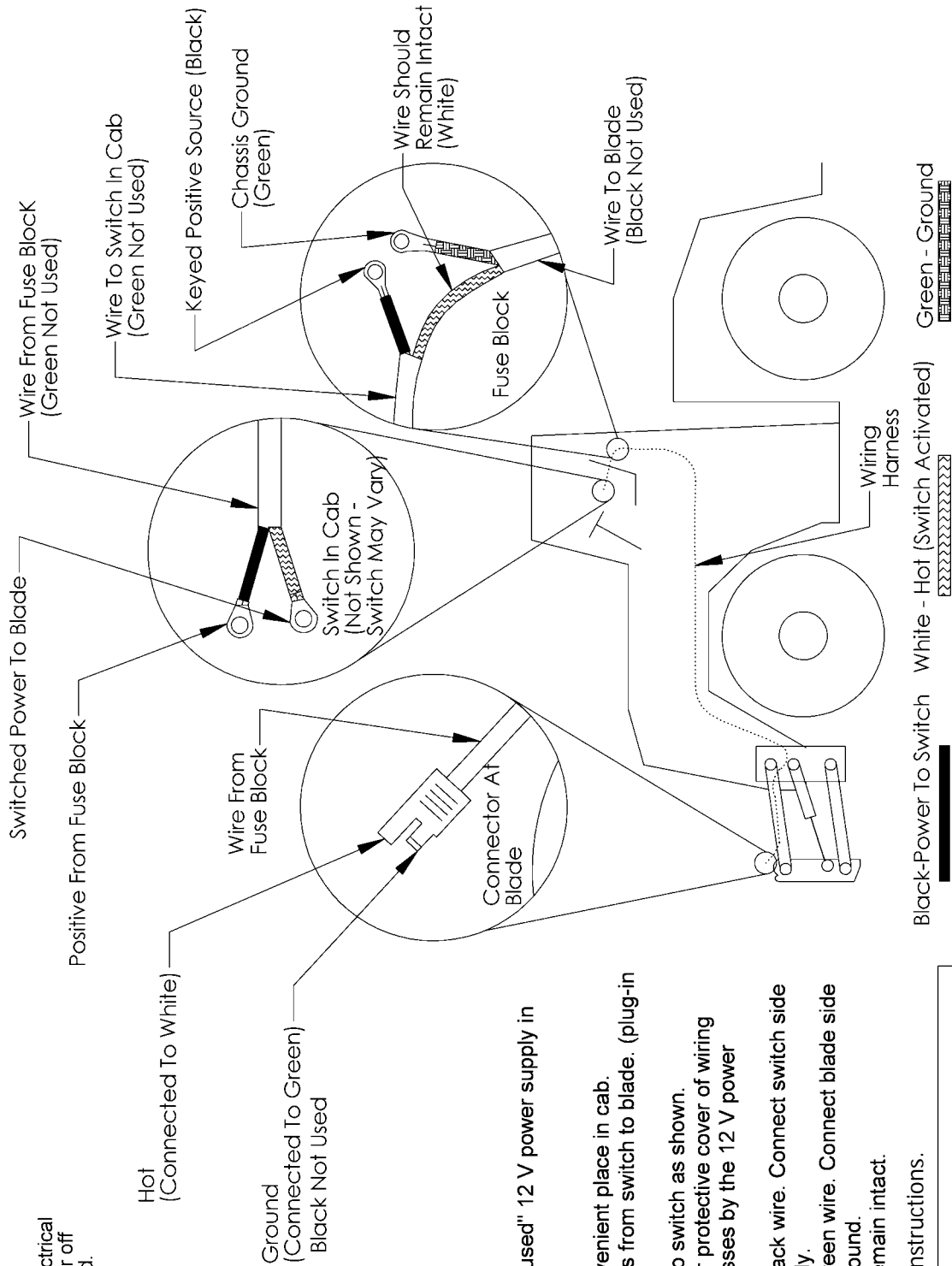
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REVISIONS:

Wiring Harness and Electrical System

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

See page 8 for operating instructions.



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

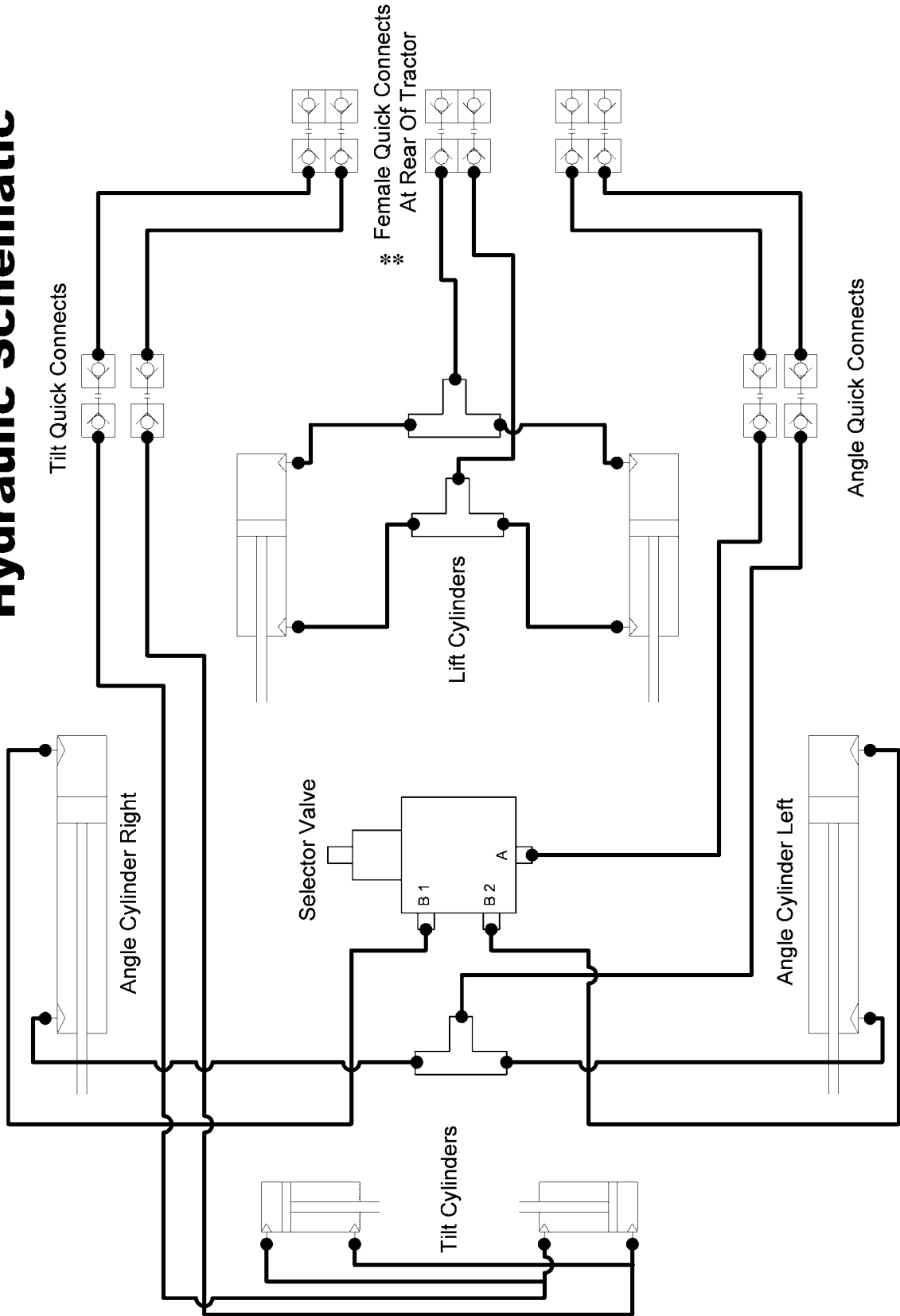
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REVISIONS:

Hydraulic Schematic



** Denotes location of gauge for adjustment of relief valve



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63-3761 3/17/03

TORQUE SPECIFICATIONS

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

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

Size	Torque (ft-lbs)
M18x2.50	210
M20x2.50	293
M22x2.50	398

CONTACT US

As always, if you have any questions about your 4100 dozer or other products made by Grouser, feel free to contact us.

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