

# Amity

TECHNOLOGY



## OWNERS OPERATING & PARTS MANUAL



**40-45'**

# Air Double Disc Drill

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[www.amitytech.com](http://www.amitytech.com)

## **AMITY TECHNOLOGY, LLC LIMITED WARRANTY FOR NEW PRODUCTS**

1. **General Provisions.** This Warranty shall apply to the original purchaser of (1) any new and unused machine manufactured by Amity Technology, LLC ("Amity"), and (2) any new and unused part which is manufactured by Amity for use in an Amity machine, jointly referred to as "Products," whether such Product is purchased through a dealer or directly from Amity. Under this Warranty, Amity will repair or replace, as it chooses in its sole discretion, any covered Product, or any component thereof, which Amity determines to be defective. This Warranty shall be in effect for a period of twelve (12) months ("the Warranty Period"), beginning on the date of delivery of the covered machine or part by the dealer or Amity to the purchaser ("the Warranty Start Date"). The purchaser must pay the cost of transportation of a Product to be repaired or replaced to and from an authorized Amity dealer. This Warranty may not be transferred from the original purchaser of a Product to any other person. This Warranty does not give a purchaser the right to any relief other than repair or replacement of the Product, and it specifically does not allow for consequential or incidental damages, exemplary or punitive damages, or costs and fees.
2. **Scope and Limitations of Warranty.** With respect to machines, this Warranty is void if any part not supplied by Amity is used in assembly or repair of the machine, or if the machine has been altered, abused or neglected, as determined by Amity. With respect to parts, this Warranty is void if the part is used in any manner other than that for which it is intended. This Warranty does not extend in any way to tires and any other component of a Product warranted by another manufacturer, a copy of which warranty is provided herewith ("Third-Party Warranties"). In the event Amity determines that a Product is not defective, or that any other provision of this Paragraph 2 operates to limit the Warranty, this Warranty shall not apply and the purchaser shall be responsible for transporting the Product from the authorized Amity dealer's location within 10 days of notice by Amity.
3. **Procedures for Obtaining Service.** To secure Warranty service, a purchaser must (1) report the defect to an authorized dealer and request repair within 45 days of the failure and within the Warranty Period; (2) present evidence that this Warranty applies to the Product; (3) present evidence of the Warranty Start Date; and (4) bring the Product to an authorized Amity dealer within a reasonable period of time after reporting the defect.
4. **LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES.** To the extent allowed by law, neither Amity, its dealers, nor any company affiliated with Amity makes any warranties, representations, or promises as to the quality, performance, or freedom from defect of any Product covered by this Warranty.

**AMITY HEREBY WAIVES, TO THE EXTENT APPLICABLE, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. A PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THIS WARRANTY ARE THOSE SET FORTH ON THIS PAGE. IN NO EVENT WILL AMITY, ITS DEALERS, OR ANY COMPANY AFFILIATED WITH AMITY BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.**

Some states do not allow waivers of certain warranties, so the above waivers may not apply to you. You may also have other rights which vary from state to state.

5. **No Dealer Warranty.** This is the exclusive warranty applicable to Amity Products. No dealer has any authority to make any other warranty, modify, limit, or expand the terms of this Warranty in any fashion, or make any representation or promise on behalf of Amity.
6. **Dispute Resolution.** Any controversy or claim arising out of or relating to this Warranty must be settled by arbitration in Fargo, North Dakota, at a time and location designated by the arbitrator, but not exceeding 30 days after a demand for arbitration has been made, and may be conducted by electronic, video, or other technical means. Arbitration will be conducted by the American Arbitration Association in accordance with its Rules of Commercial Arbitration, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The arbitrator will have the authority to order Amity to undertake a repair or replace any Product, at its election, if the arbitrator finds that this Warranty requires Amity to do so. The arbitrator will not have the authority to impose any other remedy against Amity, including without limitation consequential or incidental damages, exemplary or punitive damages, or costs and fees.

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# PRECAUTIONS

## SAFETY FIRST

The purpose of this manual is to assist you in safely operating and maintaining your Amity Technology equipment. It is the responsibility of the owner to ensure that any operator takes the time to thoroughly read and understand the information given.

It is not possible to overstate the importance of safety. Serious injury or death can result from improper operation of any farm equipment. We have taken great care to point out potential hazards that require special consideration.

Give all precautions and warnings the attention they deserve. The following symbol is used throughout the manual to alert you to them.



### WARNING

**ALWAYS** know your equipment, **Read owners manual** before operating.

**DO NOT** allow anyone to ride on drill.

**ALWAYS** install wing locks and transport stops when transporting drill.

**ALWAYS** use adequate tow vehicle. Drill tongue weight and tongue lift can exceed 1,500 pounds.

**ALWAYS** remember to properly secure safety chain.

**DO NOT** Transport over 20 MPH (32 KmPH).

**DO NOT** disconnect from tractor or other towing vehicle when the toolbar is tilted forward and the openers are off the ground and the wings have been lowered. There will be a tongue lift force in that condition. The toolbar should be tilted back so that openers are on the ground to help offset the tongue lift force. If disconnecting from the tractor or other towing vehicle with the machine in the transport position, be aware of the high tongue loads.

**DO NOT** modify or alter this equipment without first contacting Amity Technology, LLC.



### CAUTION

**DO NOT** work under drill without blocking hydraulic cylinders.

**ALWAYS** keep decals free of dirt and replace if they become damaged. See parts section for proper placement.

**ALWAYS** avoid high-pressure fluids. Use a piece of cardboard to search for suspected hydraulic leaks.

# FIELD PREPARATIONS

## REPHASING HYDRAULIC CYLINDERS

The depth control cylinders on the Air Double Disc Drill are built with rephasing ports in the fully extended position. These ports allow the cylinders to bypass oil when the tractor hydraulic control is held in the raised position. This will completely fill/extend cylinders in the system to insure they are at the same level. To properly rephase the depth control cylinders, use the following procedure.

1. Raise drill until cylinders are fully extended. Continue holding lever for several seconds to allow cylinders that are out of phase to fully extend. (Figure 1)
2. Return hydraulic lever to neutral for several seconds to allow the cylinders to settle past rephasing ports. (Figure 2)
3. Install desired amount of depth control stops on every cylinder. (Figure 3)

**Note: All cylinders must have an equal amount of depth control stops. Leveling can not be accomplished by using different amounts of stops on different cylinders. See Leveling Section.**

4. Retract cylinders until they rest on depth control stops. With the same amount of stops on each cylinder, the cylinders should be resting on the stops. If not, rephase the cylinders again. If they still do not rest on stops, see Adjusting Depth Control Cylinders Section.

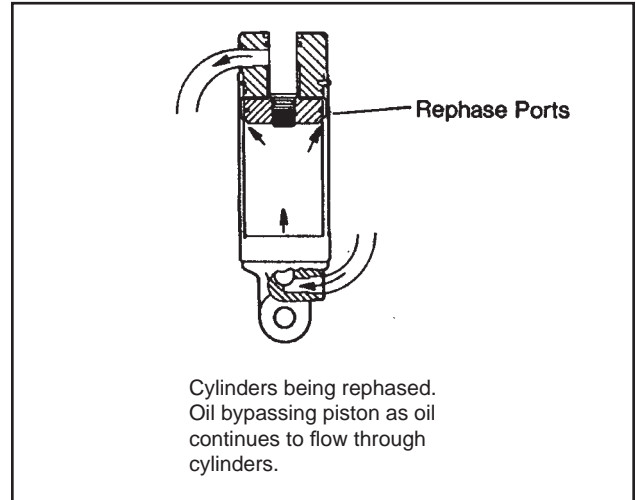


Figure 1

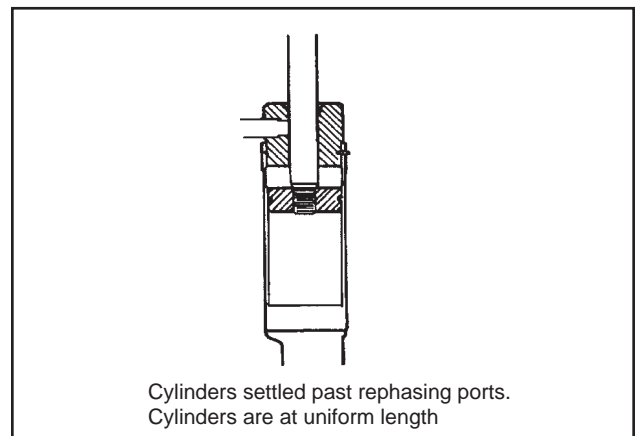


Figure 2

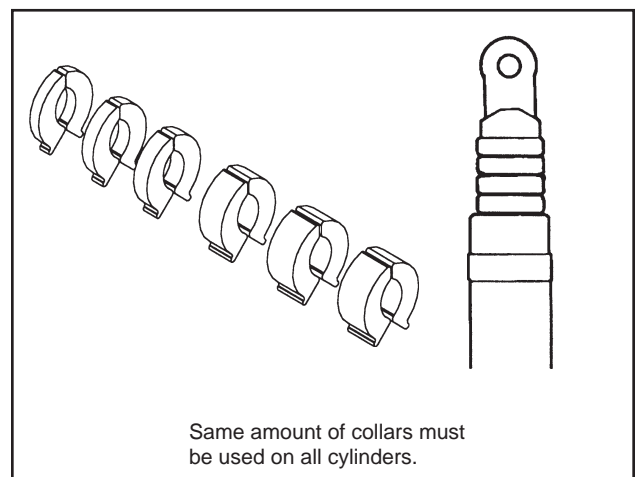
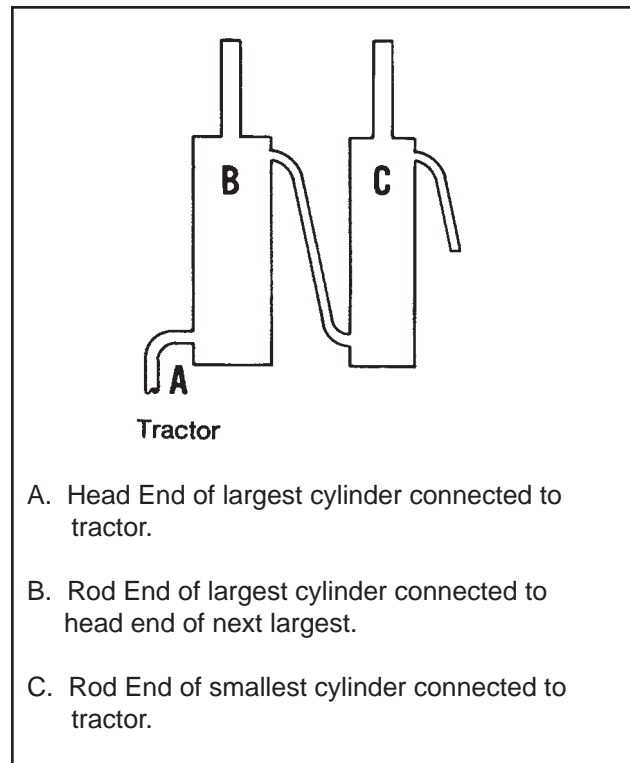


Figure 3

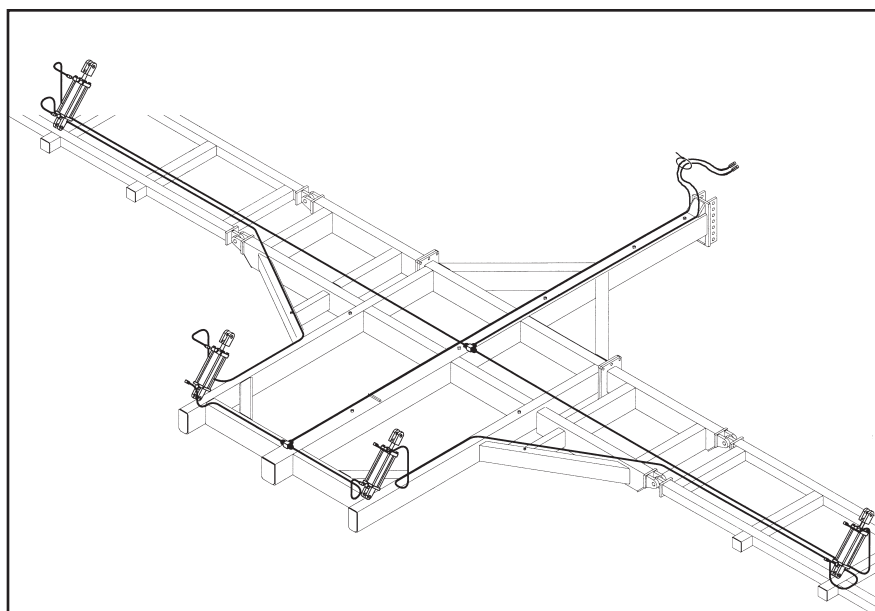
## ADJUSTING DEPTH CONTROL CYLINDERS

The depth control cylinders, with the same stops in each cylinder, should rest on the stops when retracted. If the cylinders do not rest on the stops, use the following procedure.

1. Check for proper cylinder size, location and sequence. (Figure 4)
2. Check tractor hydraulic fluid level. If rephasing process is performed with a low tractor reservoir, there is a chance of drawing air into the system.
3. Check that the cylinders are free of air by performing the rephase cycle. If air is trapped in any cylinder, the affected cylinder will have a spongy erratic movement. Move the control lever to raise position and hold for 60 to 90 seconds after the cylinders are fully extended. Repeat rephasing cycle until cylinder is free of air.
4. If cylinder is air free and a  $1/16$ " to  $1/8$ " gap is present between stops and cylinder clevis, remove pin holding cylinder rod end, loosen set screw on clevis and adjust clevis down on cylinder rod until the clevis clamps the cylinder stops. Retighten setscrew on clevis and reattach cylinder.
5. If a gap of  $1/4$ " to  $1/2$ " exists, look for a cylinder in the wrong location, a cylinder that may be mislabeled, or a leaking cylinder in the system.



**Figure 4**



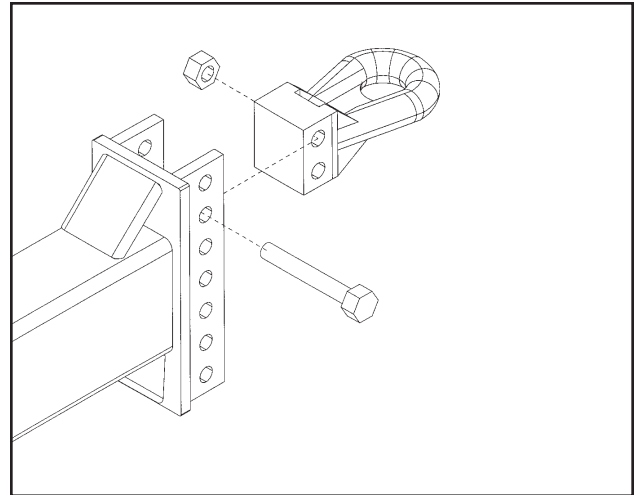
**Figure 5**

## LEVELING

The leveling of the Air Double Disk Drill is a two step process.

### Step 1:

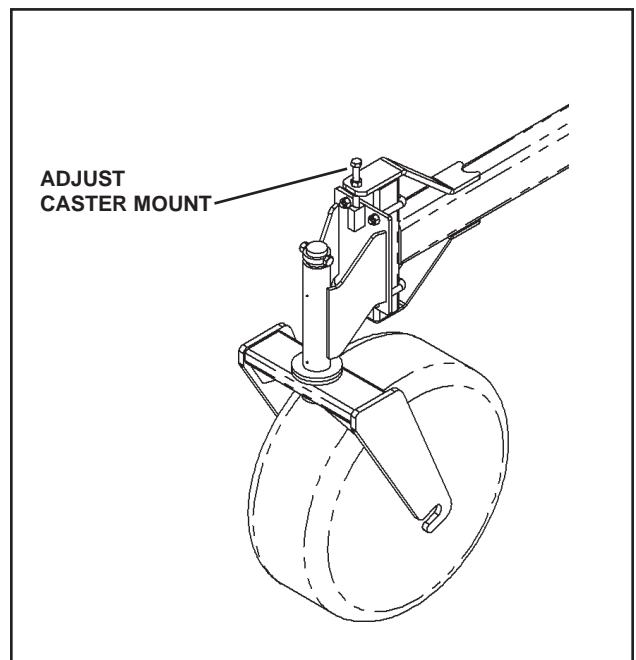
The main frame leveling is accomplished by adjusting the location of the hitch on the front of the drill. Adjust the hitch up or down, using the different holes provided for front to rear leveling. It is required that the hitch be placed in the holes that will allow pulling from the tractor drawbar as level as possible. (Figure 6)



**Figure 6**

### Step 2:

Level the wing frame by adjusting the front caster on the wing. Measure the wings at the outer end of the wing. The measurement should match the main frame measurement taken at the center of the main frame. The caster mounting bracket may need to be adjusted up or down slightly to allow wing to run level in field operating conditions. (Figure 7)



**Figure 7**

## TIRES AND RIMS

1. Inflate main frame tires to 36 PSI. Torque lug nuts to 130 foot pounds.

**Check** lug bolt tightness after first 10 hours of operation.

2. Inflate wing caster tires to 36 PSI. Torque lug nuts to 110 foot pounds.

**Check** lug bolt tightness after first 10 hours of operation.

## WING LIFT

**NOTE: ALWAYS STAY CLEAR OF WING AREA WHEN RAISING OR LOWERING WINGS.**

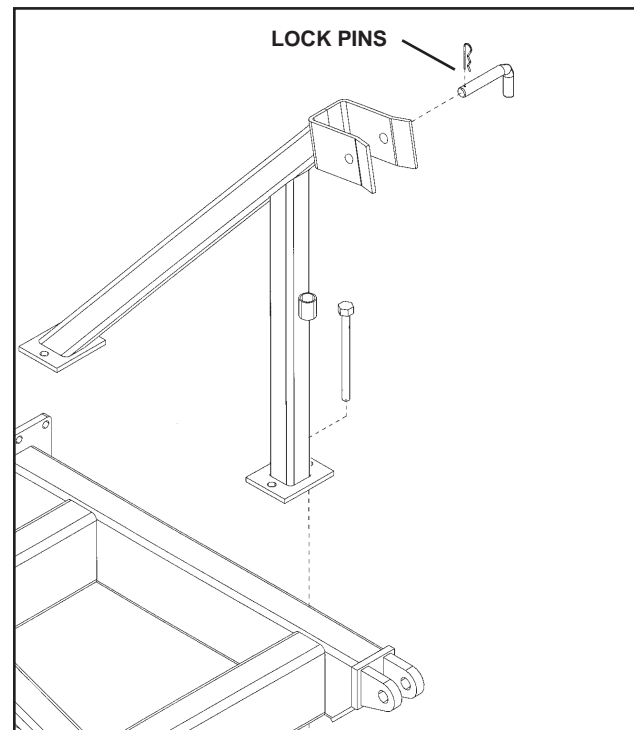
**BEWARE OF OVERHEAD ELECTRICAL WIRES WHILE TRANSPORTING AIR DOUBLE DISC DRILL OR RAISING WINGS.**

1. Always use wing locks when folding wings for transporting drill. Always unlock wings prior to unfolding wings. Failure to unlock wings can cause serious damage to drill frame. (Figure 8)
2. The tool bars should be tilted forward to lift the row units off the ground before lifting or lowering the wings. This eliminates any sliding and side loading of row units near wing hinges.
3. When lowering wings, hold control lever until wing lift cylinders have fully extended to allow wings to follow ground contour.

## TRANSPORTING



**WARNING! DO NOT  
TRANSPORT OVER 20 MPH  
(32 KmPH)**



**Figure 8**



# OPENERS

## DOWN PRESSURE

Down pressure on each individual row unit can be adjusted by moving the quick attach cotter pin to a different hole location in the down pressure spring rod. For average operating conditions, the suggested initial location for the quick pin is in the second hole from the bottom of the spring rod. Openers operating in wheel tracks, particularly tractor wheel tracks, should normally be set with the quick pin in the third hole from the bottom. If field conditions require less down pressure, the quick pin can be moved to an adjustment hole closer to the bottom of the spring rod. Conversely, if more down pressure is required, the quick pin can be moved to a higher adjustment hole. (Figure 9)

The rotating tool bar should normally be operated at a position approximately parallel or level with the ground. However, it is possible to change the down pressure on all of the openers by tilting the tool bar forward or back.

Tilting the bar forward reduces the down pressure, while tilting the bar back increases the down pressure.

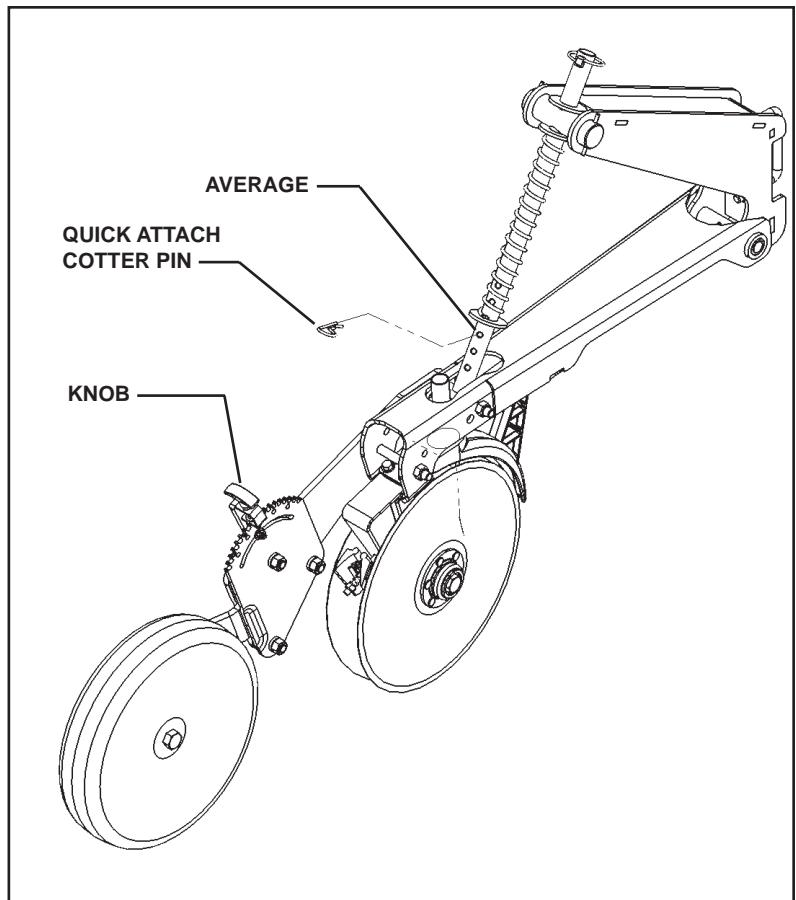


Figure 9

## SEED DEPTH

Setting the seeding depth of the openers is accomplished by moving the "Knob" located near the press wheel. A suggested starting point for setting the "Knob" is in the middle notch on the adjustment quadrant.

Moving knob forward, increases seeding depth.

Moving knob to the rear, decreases seeding depth.

1 notch = 1/4 inch change in depth.

If the tool bar is tilted forward or back after the original depth setting, the seeding depth may change. Tilting the bar forward reduces down pressure and thus may result in shallower seeding depth. For example, this feature is useful when desiring to plant at a shallow depth with low down pressure.

Tilting the bar back increases down pressure which may result in an increased seeding depth.

## REPLACING DISC OPENERS

(Figure 10)

To replace worn or damaged discs do the following:

**NOTE:** *The 14 inch (356 mm) disc should be replaced after wear use of disc reaches 13-1/2 inch (343 mm) diameter.*

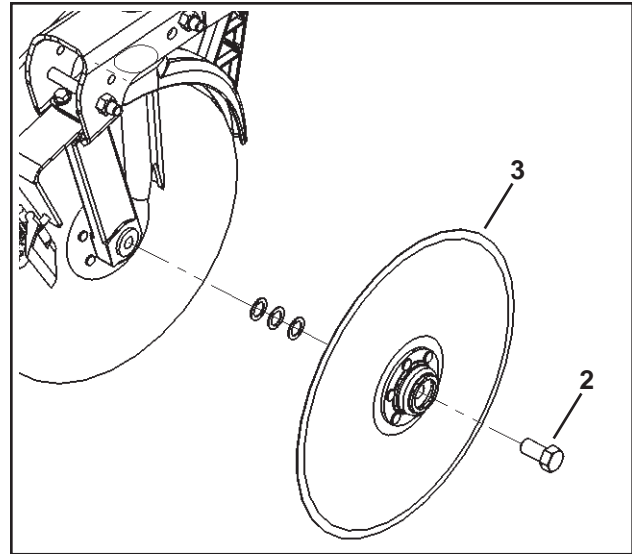
1. Remove the dust cap from the disc assembly.
2. Remove the disc bolt (the left disc bolt has LH threads).
3. Remove the disc assembly and install the new disc assembly.
4. Tighten the disc bolts to a torque of 40 to 50 lb ft (54 to 68 Nm).
5. Clean the dust cap and apply Loctite 277 to the entire circumference of the dust cap. **DO NOT** allow the Loctite into the bearing area.
6. Install the dust cap and turn 90 degrees to ensure complete adhesion.

**IMPORTANT:** *DO NOT exceed the bolt torque specification.*

## DISC & SCRAPER ADJUSTMENT

The scraper nut should be tightened just until scrapers contact disc blades.

Special Note: Shim washers are needed behind discs for proper spacing. You should be able to spin one disc while holding the other disc stationary with scrapers properly adjusted.



**Figure 10**

# MAINTENANCE

## LUBRICATION

Lubricate grease fittings with SAE multi-purpose grease at intervals shown. (Figure 11)

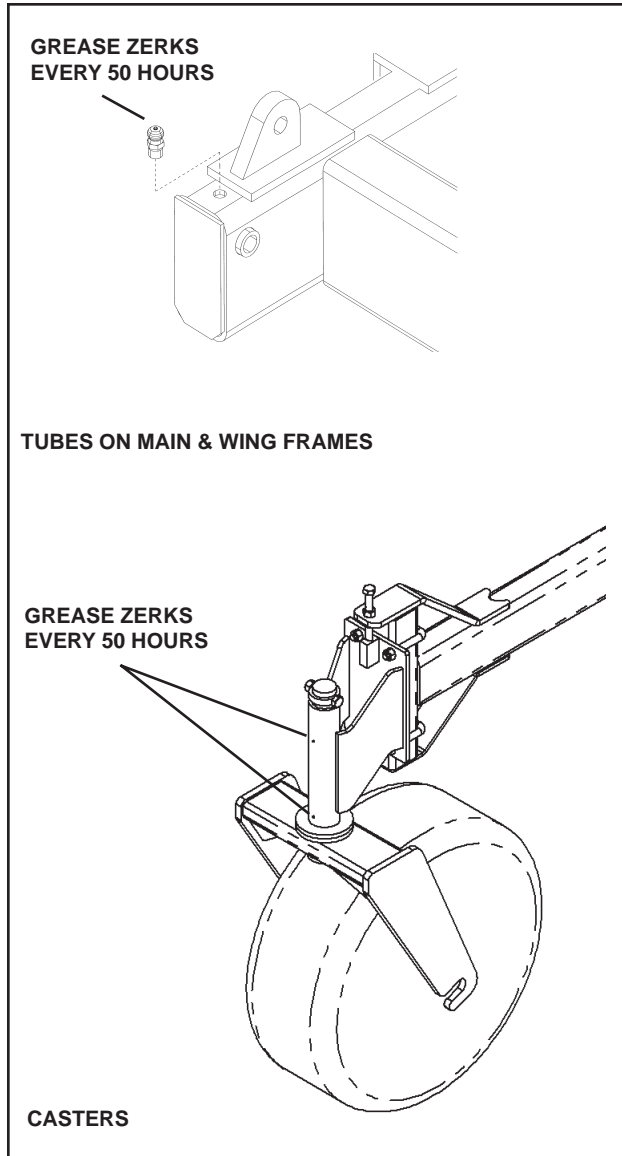


Figure 11

## GENERAL

Check tightness of all bolts periodically. When replacing bolts, be sure they are replaced with bolts of equal strength.

## HYDRAULIC LINKAGE

Inspect all wing lift and depth control linkage every 50 hours. Replace lost or worn pins and keepers. (Figure 12)

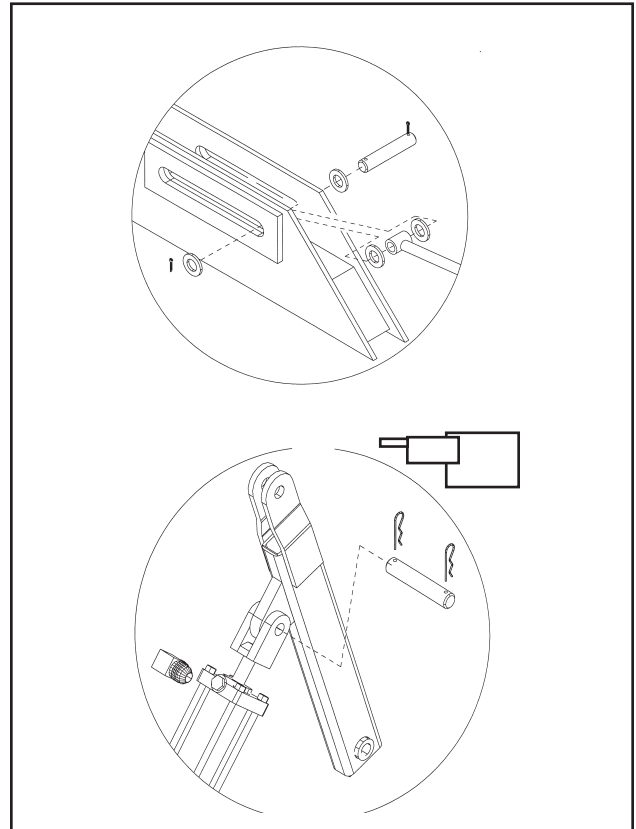


Figure 12

## STORAGE

Brush SAE multi-purpose grease on all exposed cylinder rods. Clean accumulated grease and dirt from shaft seal and fittings.

Clean entire drill thoroughly to remove dirt and trash, which would hold moisture and cause rusting.

Clean ground openers thoroughly to remove any fertilizer residue.

Check air pressure of all tires. Inflation pressure should be 36 psi for the main frame and wing tires.

Check for any worn or broken parts and order replacements.

## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Wings will not lift.	Inadequate tractor pressure.	Adjust tractor pressure to minimum of 2500 PSI (Consult qualified service personnel for your make of tractor.)
Hydraulic cylinders not coming down to stops.	Different amount of stops on cylinders.	Install equal amounts of depth stops on each cylinder.
	Cylinder out of phase.	Rephase cylinders. See instructions for rephasing procedure.
	Tractor hydraulic level is low.	Fill tractor reservoir.
	Air in hydraulic system.	Rephase cylinders.
Depth cylinders all settling together.	Tractor valve leaking.	Repair tractor valve.
One cylinder settling out of sequence.	Cylinder leaking internally.	Repair cylinder.
Discs not rotating.	The disc scrapers may be too tight.	Adjust scrapers.
	Discs running too tight together.	Add shim to one or both discs as needed. You should be able to turn one disc by hand while holding the other disc stationary.
Plugging of grain tubes and openers.	Allow the drill to rock back when stopping or backing the drill with furrow openers in the ground.	Raise the drill before stopping or backing the drill.
Bunching or skipping of grain.	Inside disc scrapers on furrow openers too tight, retarding disc rotation.	Adjust scrapers.
	Discs not rotating in very dry, loose soil.	Correct this action by adjusting inside scrapers.
	Discs may be warped or have excessive wobble.	If edge of disc moves in and out by more than 1/8 inch (3 mm) in 180 degrees rotation, replace that disc.

## SPECIFICATIONS

### TIRES:

Main Frame .....	21.5L - 16.1	14PLY
Wing Frame Front Casters.....	12.5L - 15	8PLY
Wing Frame Rear Casters .....	12.5L - 15	8PLY

### HYDRAULICS:

Depth Control ..... 4.00" X 8" REPHASING  
3.75" X 8" REPHASING

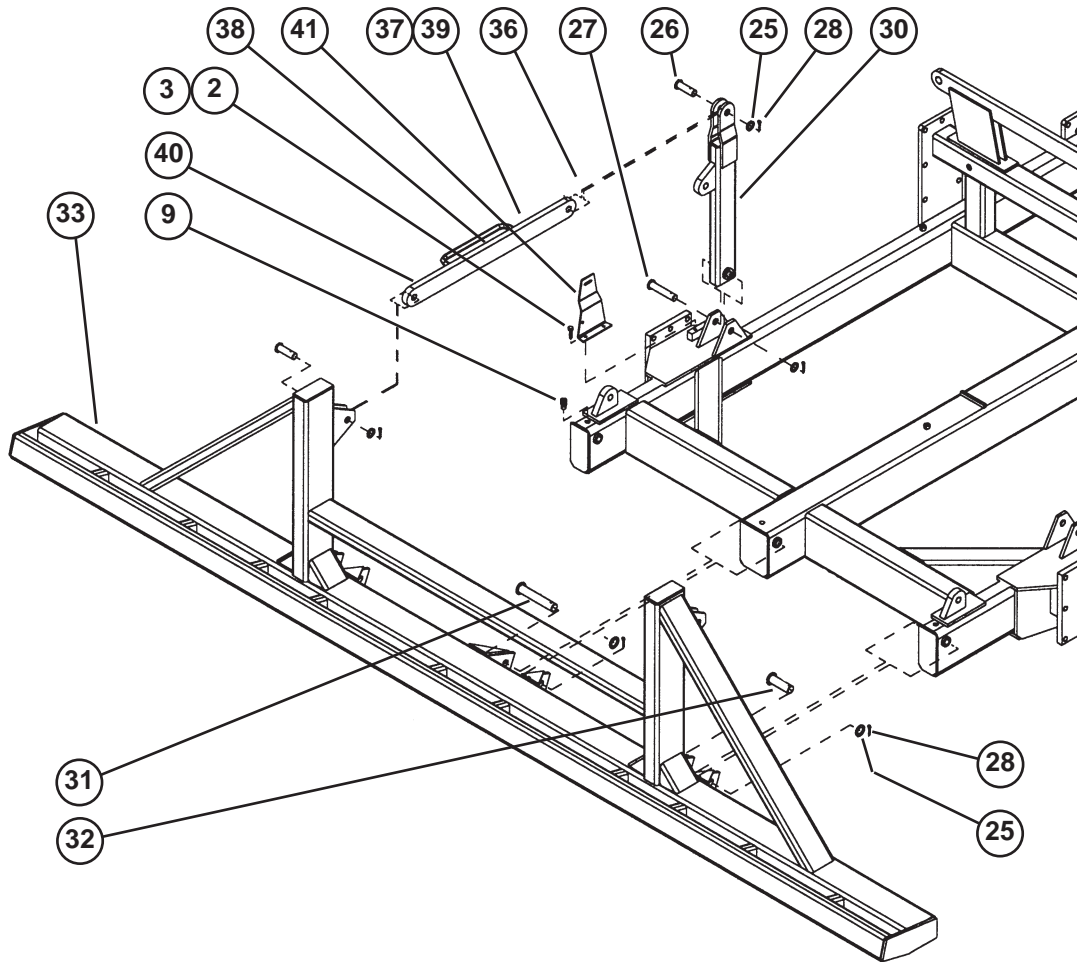
Wing Cylinders ..... 5.00" X 30"

### DIMENSIONS:

Working Width .....40' (12.19 m) .....45' (13.72 m)  
Transport Width.....16' 2" (4.93 m)  
Transport Height .....13' 10" (4.22 m) .....16' 4" (49.78 m)  
Length .....24' 2" (7.37 m)



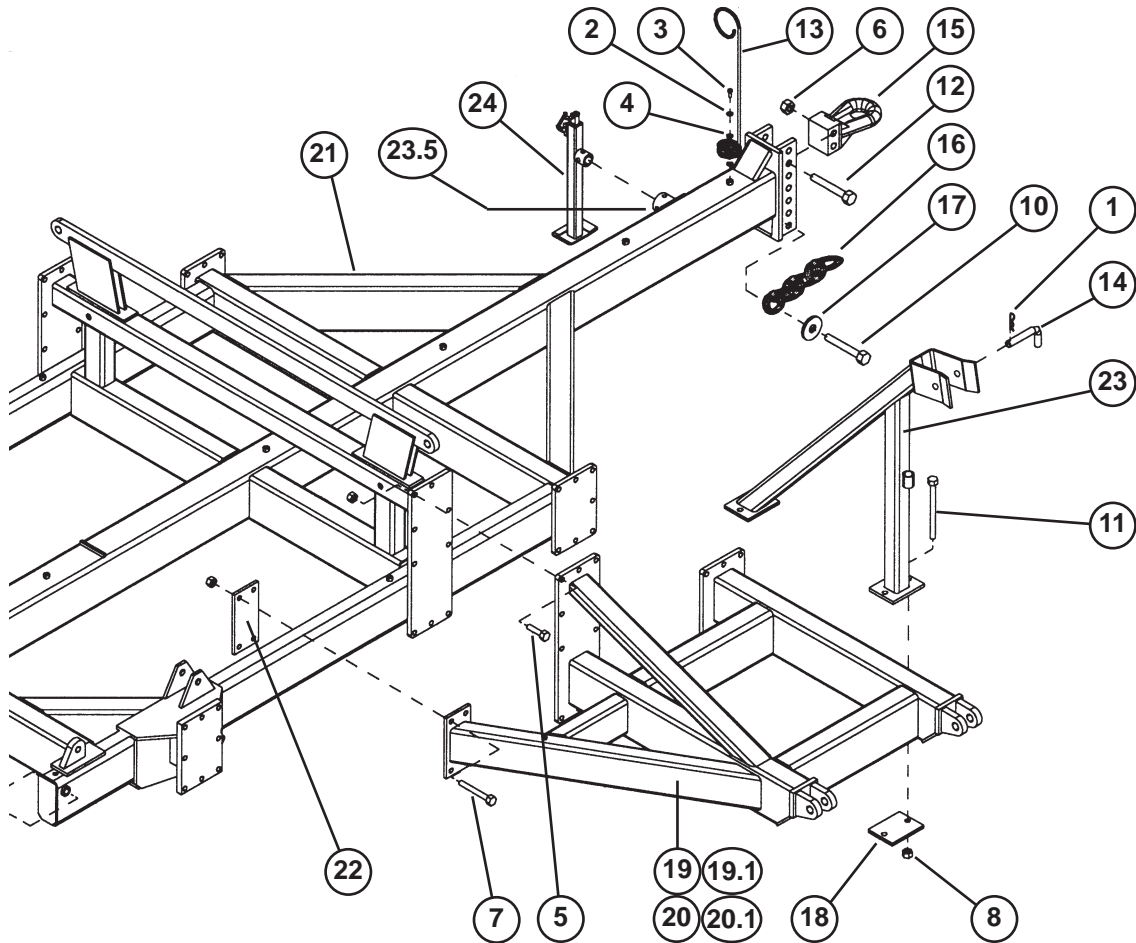
# **AIR DOUBLE DISC DRILL ASSEMBLY PARTS**



### MAIN FRAME 40-45'

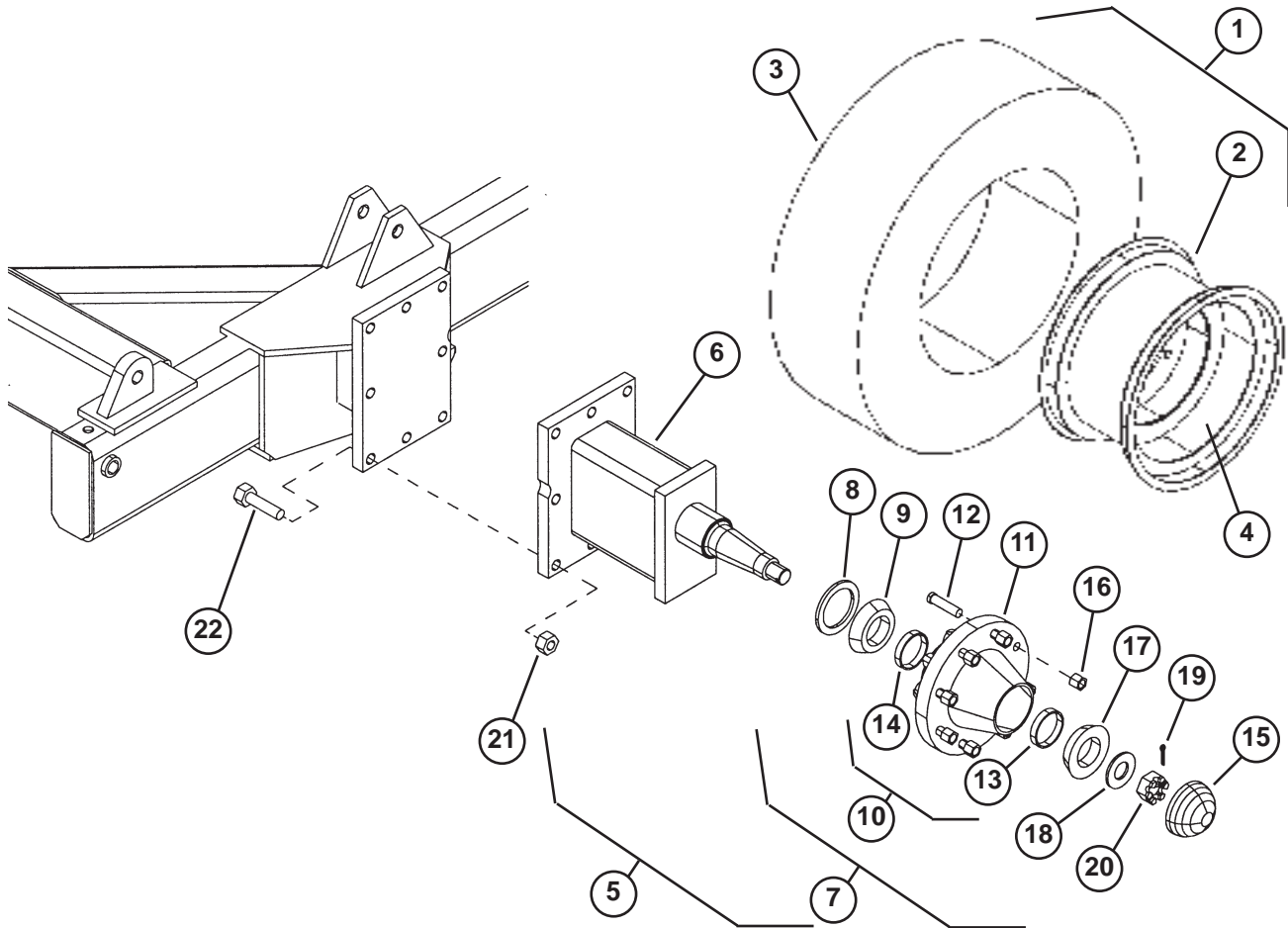
Ref.	Part No.	Description	Qty.
1	0100435	PIN-HAIR: .15 X 2.69 ZP	2
2	1011586	WASHER-LOCK: .38 ZP	3
3	1011600	BOLT-HEX: .38 X 1.00 NC GR5 ZP	3
4	1011828	WASHER-FLAT: .38 ZP	2
5	1012059	BOLT-HEX: .75 X 3.00 NC GR5 ZP	34
6	65684	NUT-NYLOCK: 1.00 NC GR2 ZP	3
7	1016718	BOLT-HEX: .75 X 6.50 NC GR5 ZP	8
8	1013834	NUT-NYLOCK: .75 NC G56 ZP	50
9	1032490	ZERK-GREASE: LONG	6
10	1011626	BOLT-HEX: 1.00 X 3.50 NC GR5 ZP	1
11	1025016	BOLT HEX: .75 X 10.00 NC GR5 ZP	8
12	1018839	BOLT-HEX: 1.00 X 7.00 NC GR8 ZP	2
13	65176	HOSE-HOLDER	1
14	65260	PIN-WING LOCK ZP	2
15	66053	HITCH-PERFECT: CAT. 4 PAINTED	1
16	58090	CHAIN-SAFETY 20200#	1
17	65317	WASHER-1.125 X 3.50 X .375 ZP	1
18	65170	PLATE-BOLTING	4
19	65050	WLDMT-FRAME EXTENSION LH (40')	1
19.1	66204	WLDMT-FRAME EXTENSION LH (45')	1
20	65051	WLDMT-FRAME EXTENSION RH (40')	1
20.1	66205	WLDMT-FRAME EXTENSION RH (45')	1
21	65066	WLDMT-MAIN FRAME 40FT	1
22	65171	PLATE-BOLTING	2





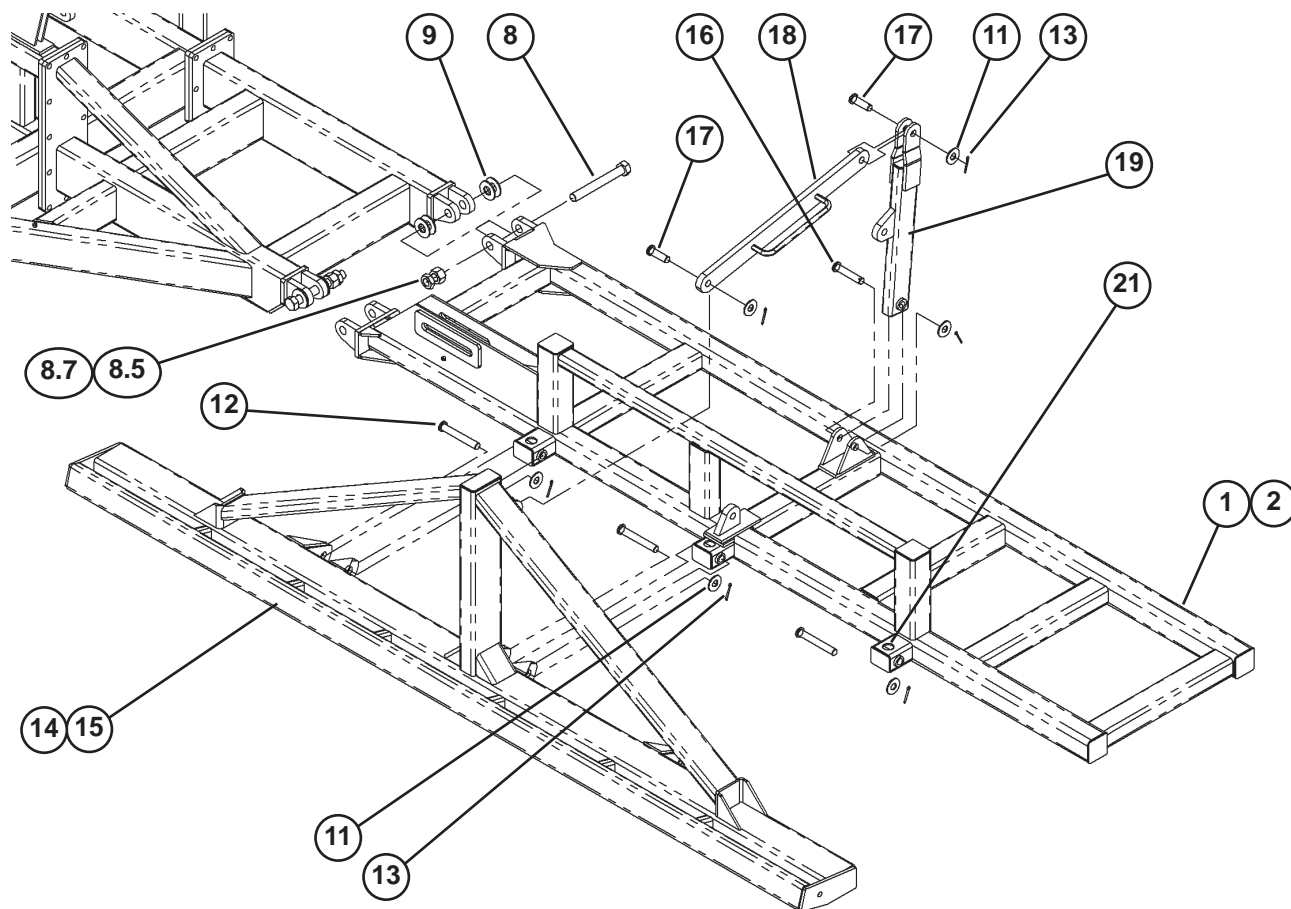
### MAIN FRAME 40-45' (continued)

Ref.	Part No.	Description	Qty.
23	65096	WLDMT-LOCK TOWER	2
23.5	62321	PIN-BENT .625 X 3.00 W/COTTER	1
24	65350	WLDMT-JACK	1
25	1016663	WASHER-FLAT: SAE 1.00 ZP	9
26	65172	WLDMT-PIN, 1" X 3 1/4" ZP	4
27	65173	WLDMT-PIN, 1" X 5" ZP	2
28	1016944	PIN-COTTER: .25 X 2.00 ZP	9
30	65128	WLDMT-CYLINDER ARM	2
31	65174	WLDMT-PIN, 1" X 9" ZP	1
32	65175	WLDMT-PIN, 1" X 7" ZP	2
33	65126	WLDMT-CENTER TOOLBAR 40FT	1
	66203	WLDMT-CENTER TOOLBAR 45 FT	1
36	65151	WLDMT-LINK ZP (Ref. #29)	2
37	1014849	NUT-JAM: 1.50 NC GR2 ZP R	2
38	65223	BAR-TURNBUCKLE ZP	2
39	1014848	NUT-JAM: 1.50 NC GR2 ZP L	2
40	65148	WLDMT-LUG LH ZP	2
41	65357	MOUNT-WORK SWITCH	1
42	66273	HOSE CRADLE (2") (NOT SHOWN)	1
43	65657	U-BOLT: .500 X 3.00 X 4.063 X 3.00	1
44	65313	NUT-HYLOCK: .50 NC GR2 ZP	2
45	66118	CLY MT. EXTENSION (45') (NOT SHOWN)	2
45.1	60547	U-BOLT: 5.25 X 4.00 X 5.25 X .625 (NOT SHOWN)	4
45.2	1011813	.625 LOCK WASHER (NOT SHOWN)	8
45.3	1011578	.625 HEX NUT (NOT SHOWN)	8



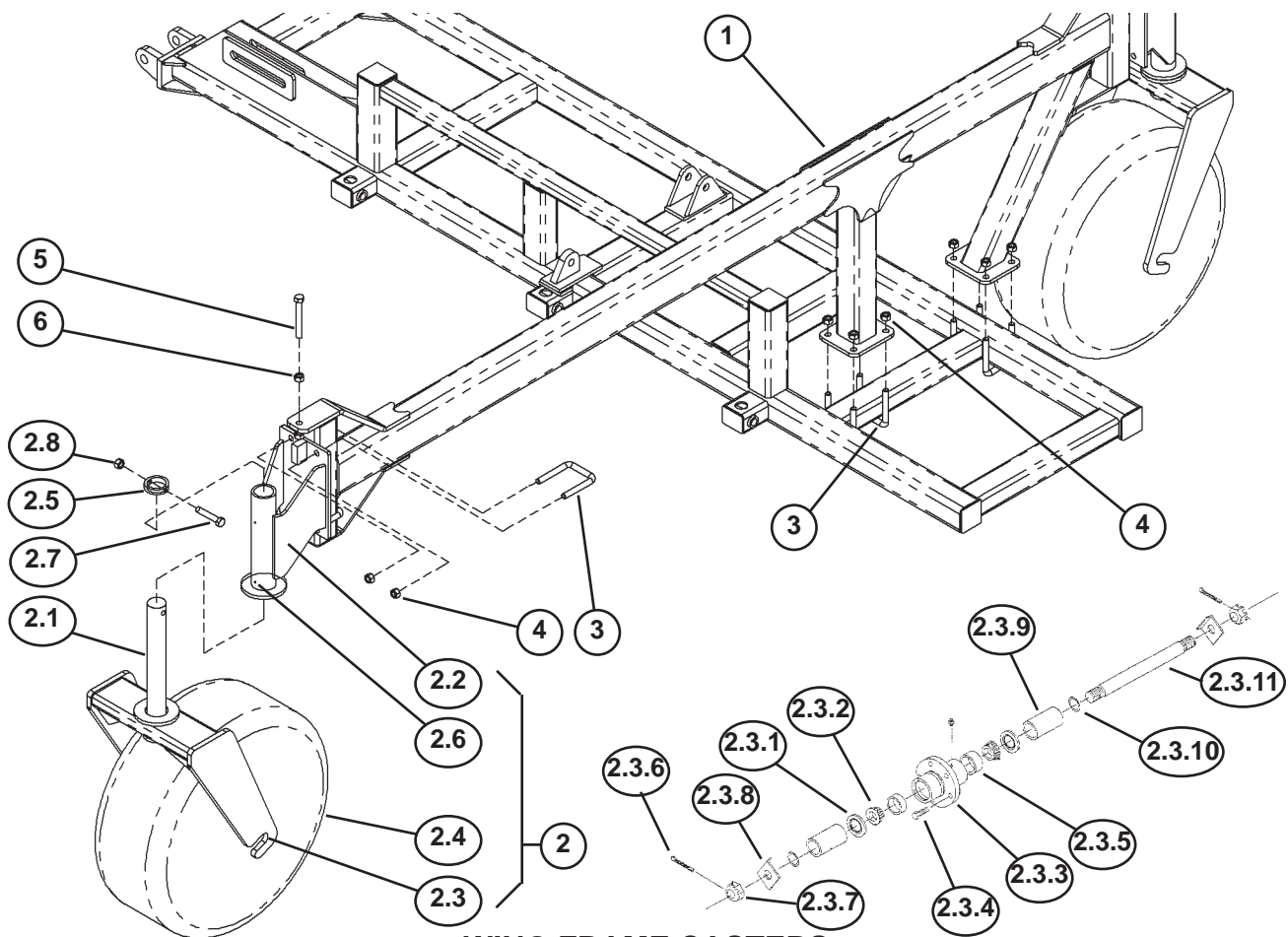
### MAIN FRAME WHEEL ASSEMBLY

Ref.	Part No.	Description	Qty.
1	1033896	TIRE-MNTD:21.5LX16.1 14 PLY I-1	1
2	1033895	WHEEL-16.1W18C 8 HOLE:SILVER	1
3	1033894	TIRE 21.5L-16.1 14 PLY I-1	1
4	1012383	VALVE-STEM	1
5	65186	ASSY-HUB & SPINDLE (Incl. 6-20)	1
6	65177	WLDMT-SPINDLE	1
7	1017759	ASSY-HUB: CT&D # HA 817	1
8	1017764	SEAL: (HUB CT&D # HA 817)	1
9	65987	BEARING-CONE, INNER (HUB # HA 817)	1
10	1017760	ASSY-HUB W/ CUPS & STUDS (incl. 11-14)	1
11	1033323	HUB-CASTING	1
12	65944	STUD-LUG BOLT: 5/8-18 UNF X 2.5"	8
13	1012359	CUP-BEARING: LM 501310	1
14	65948	CUP-INNER: (HUB # HA 817)	1
15	53624	1D88691 CAP-HUB	1
16	1013470	NUT-BEV: CT&D # WB 18	8
17	1012354	CONE-BEARING	1
18	1030728	WASHER-SPINDLE: 1.06 ID X 2.13 OD	1
19	1030797	PIN-COTTER: .19 X 1.75 NP	1
20	1030726	NUT-SPINDLE: 1.00 NF NP	1
21	1013834	NUT-NYLOCK: .75 NC GR6 ZP	8
22	58369	BOLT-HEX: .75 X 3.50 NC GR5 ZP	8



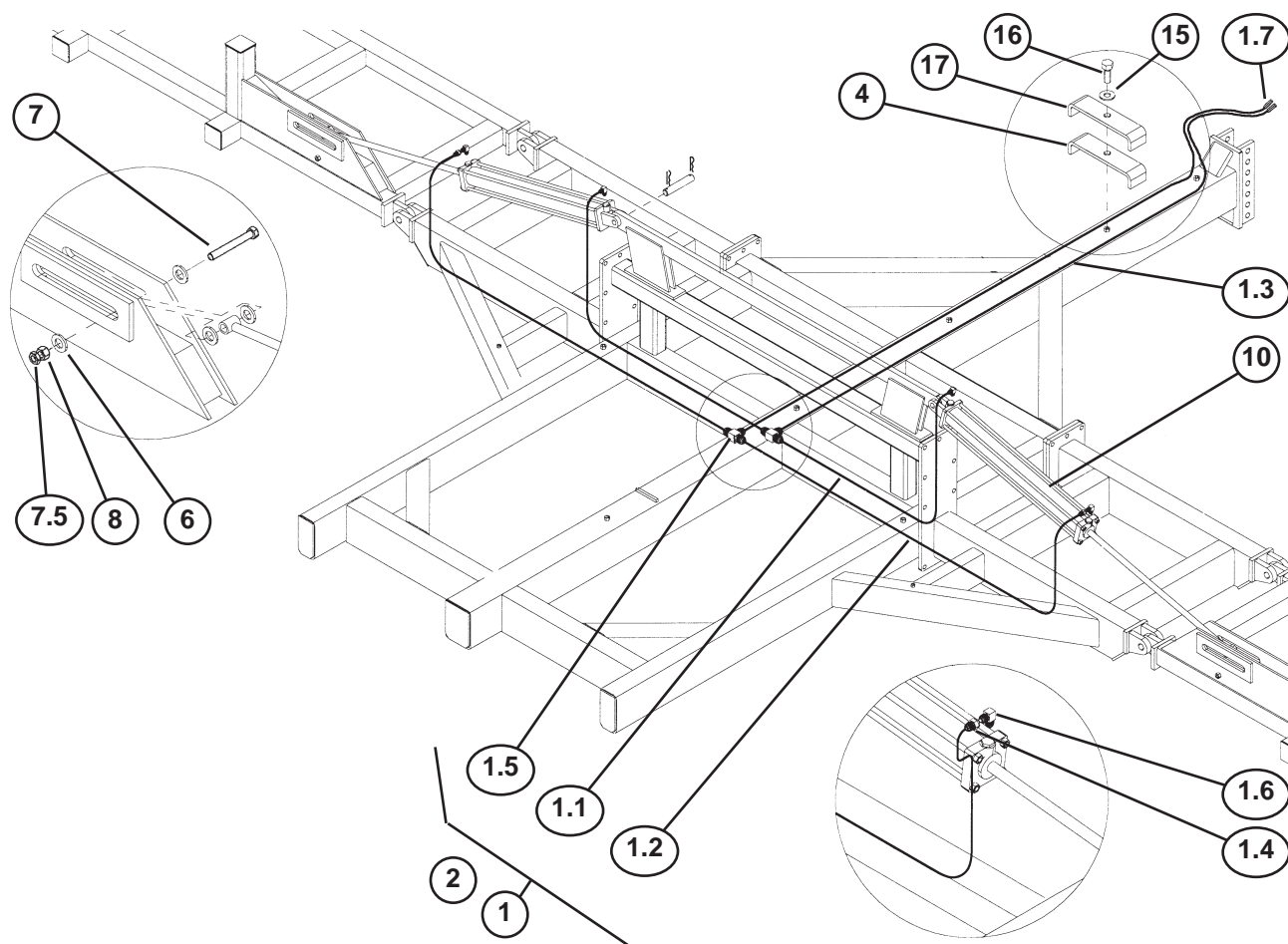
### WING FRAMES 40'

Ref.	Part No.	Description	Qty.
1	65138	WLDMT-WING 40FT LH	1
2	65139	WLDMT-WING 40FT RH (SHOWN)	1
8.5	1011621	NUT-HEX: 1.25 NC GR2 ZP	4
8.7	62511	NUT-JAM: 1.25 NC GR2 ZP	4
8	66073	BOLT-HEX: 1.25 X 10 NC GR5 ZP	4
9	1016950	WASHER-FLAT: SAE 1.25 ZP	20
11	1016663	WASHER-FLAT: SAE 1.00 ZP	12
12	65175	WLDMT-PIN: 1" X 7" ZP	6
13	1016944	PIN-COTTER: .25 X 2.00 ZP	12
14	65134	WLDMT-TOOLBAR LH	1
15	65135	WLDMT-TOOLBAR RH (SHOWN)	1
16	65173	WLDMT-PIN, 1" X 5" ZP	2
17	65172	WLDMT-PIN, 1" X 3-1/4" ZP	4
18	65140	WLDMT-LINK	2
19	65128	WLDMT-CYLINDER ARM	2
21	1032490	ZERK-GREASE: .13 NPT LONG	6



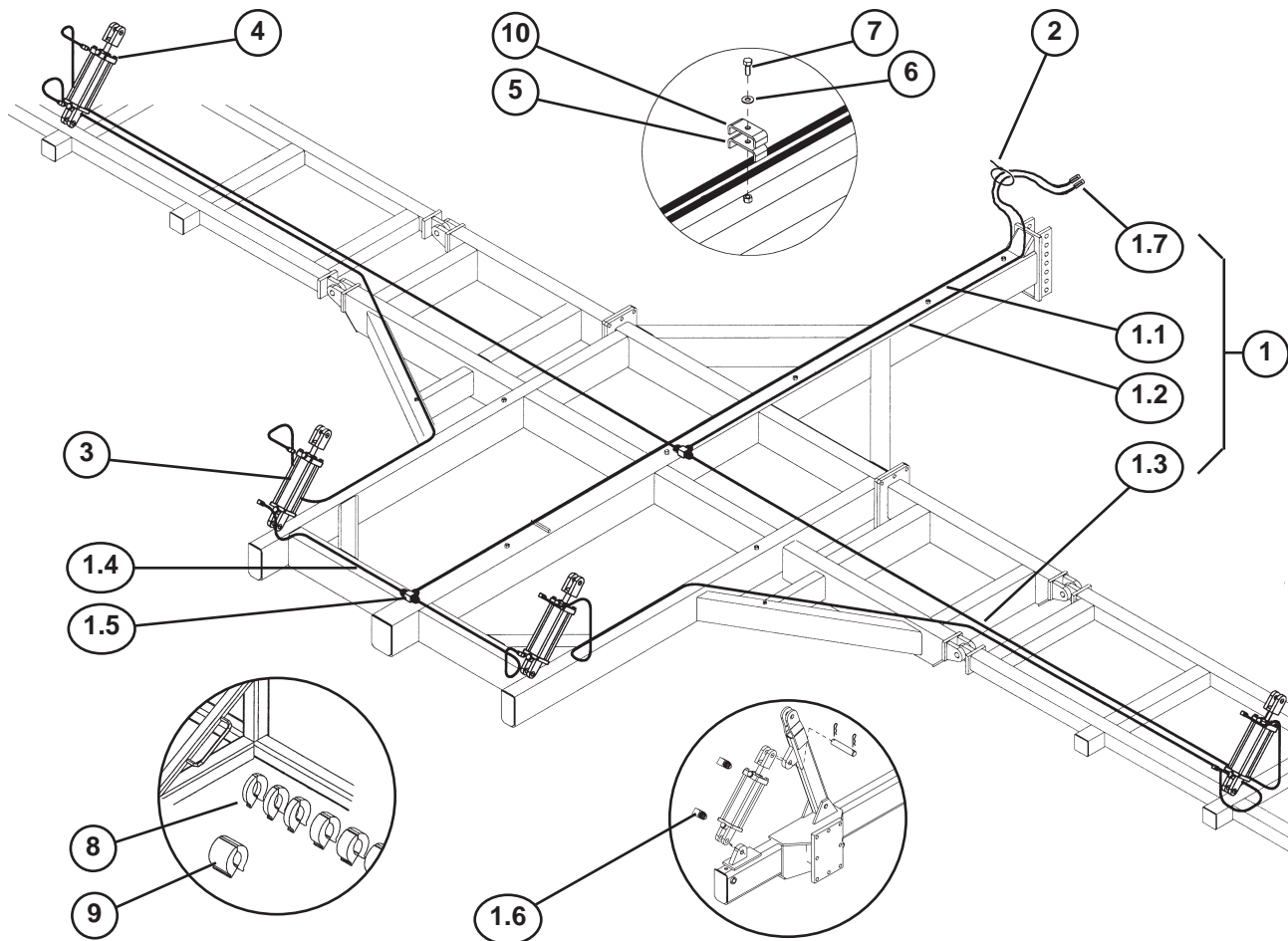
### WING FRAME CASTERS

Ref.	Part No.	Description	Qty.
1	65264	WLDMT-CARRIER WHEEL MOUNT	2
2	65160	ASSY-CASTER	4
2.1	65263	WLDMT-CASTER FORK	1
2.2	65265	WLDMT-CASTER MOUNT	1
2.3	65266	ASSY-HUB & AXLE	1
2.3.1	66012	2" INTERNAL TRIPLE LIP SEAL	2
2.3.2	66013	BEARING CONE 1-1/2 ID (2788)	2
2.3.3	66014	6BLT PRSD HUB (4.62 PILOT 6BC)	1
2.3.4	66015	9/16NF X 1-1/18 WHEEL BOLT	6
2.3.5	66016	CUP BEARING (RACE)	2
2.3.6	1013473	COTTER PIN	2
2.3.7	66279	CASTLE NUT	2
2.3.8	66280	AXLE RETAINER	2
2.3.9	66312	SPACER	2
2.3.10	66311	O-RING	2
2.3.11	66278	AXLE SHAFT	1
2.4	65267	TIRE-MNTD: 12.5L-15 8PLY	1
2.4.1	53920	TIRE: 12.5L-15 I-3 8PLY	1
2.4.2	65304	WHEEL: 15 X 10 - 6 BOLT BLACK	1
2.5	65296	TUBE-CASTER RETAINING	1
2.6	1011748	ZERK-GREASE: .25 UNF STRAIGHT	2
2.7	1011625	BOLT-HEX: .75 X 4.00 NC GR5 ZP	1
2.8	1017000	NUT-TOPLOCK: .75 NC GR5 ZP	1
3	65274	U-BOLT: .75 X 5.50 X 4.06 X 5.50 NC GR5 ZP	16
4	1011620	NUT-HEX: .75 NC GR2 ZP	32
5	65297	BOLT-HEX: .75 ZP	4
6	1011827	NUT-JAM: .75 NC GR2 ZP	8



### WING LIFT HYDRAULICS

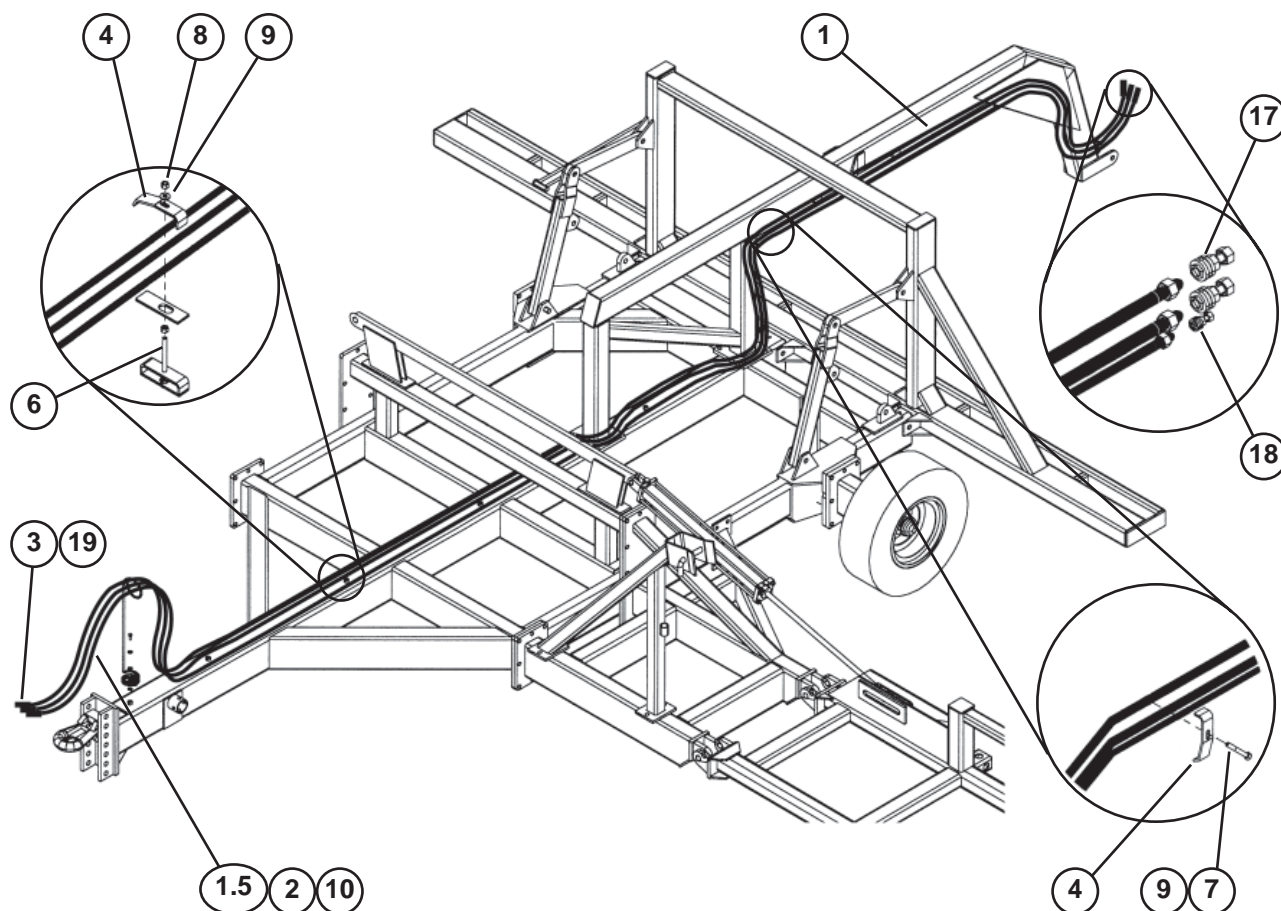
Ref.	Part No.	Description	Qty.
1	65184	HOSE KIT: WING LIFT 40' ADDD	1
1.1	1024421	HOSE .50 X 060 8FJX-8FJX	2
1.2	1018744	HOSE .50 X 100 8FJX-8FJX	2
1.3	1018372	HOSE .50 X 180 8FJX-8FJX	2
1.4	1019844	FTG-RESTRICTOR: 8FJ-8MJ .90	2
1.5	1015219	FTG-TEE: 8MJ-8MJ-8MJ	2
1.6	58560	FTG-ELBOW: 8MB-8MJ-90	4
1.7	53631	PIONEER TIP 8010-4	2
2	65378	TIE-NYLON: .125 X 11.75	12
4	50714	1023147 CLAMP 1/2" ZP	6
6	1016950	WASHER-FLAT: SAE 1.25 ZP	8
7	66084	BOLT: 1.25 X 8.00 NC GR5 ZP	2
7.5	1011621	NUT-HEX: 1.25 NC GR2 ZP	2
8	62511	NUT-JAM: 1.25 NC GR2 ZP	4
10	1028469	CYL-HYD: 5.00 X 30.00	2
15	1011828	WASHER-FLAT: .38 ZP	6
16	1011600	BOLT-HEX: .38 X 1.00 NC GR5 ZP	6
17	65814	CLAMP-HOSE: 4.375 ZP	3



### DEPTH CONTROL HYDRAULICS

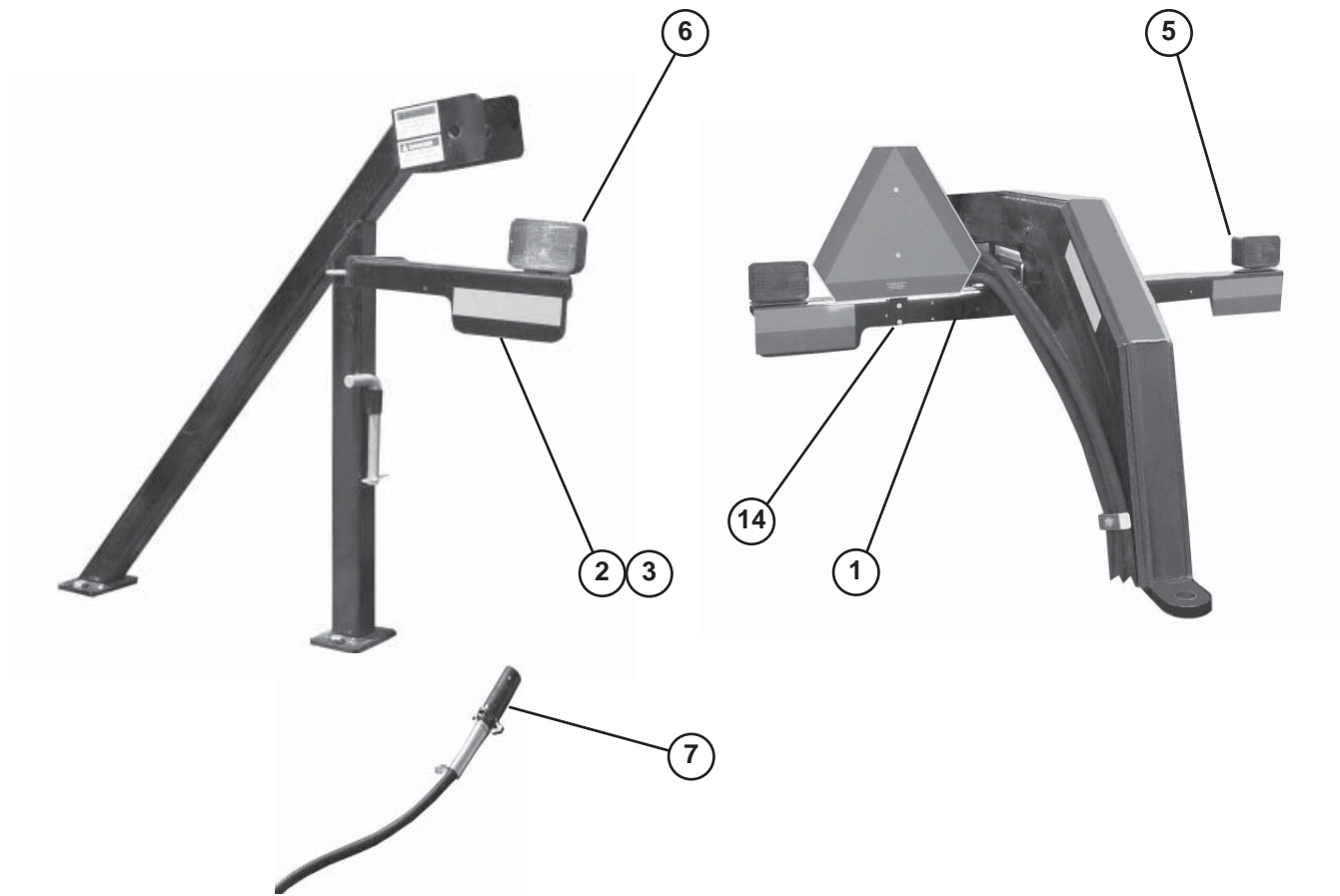
Ref.	Part No.	Description	Qty.
1	65185	HOSE KIT: DEPTH CONTROL 40' ADDD	1
1.1	1015804	HOSE .50 X 240-8JICFSW/-8NPTM	1
1.2	1018372	HOSE .50 X 180-8JICFSW/-8NPTM	1
1.3	1017750	HOSE .50 X 198-8JICFSW BOTH	4
1.4	1015221	HOSE .50 X 040-8JICFSW BOTH	2
1.5	1015219	FTG-TEE: 8MJ-8MJ-8MJ	2
1.6	58560	FTG-ELBOW: 8MB-8MJ-90	8
1.7	53631	PIONEER TIP 8010-4	2
2	65378	TIE-NYLON: .125 X 11.75	20
3	59836	CYLINDER 4.00 X 8.00 REPHASING	2
4	59835	CYLINDER 3.75 X 8.00 REPHASING	2
5	50714	1023147 CLAMP 1/2" ZP	9
6	1011828	WASHER-FLAT: .38 ZP	9
7	1011600	BOLT-HEX: .38 X 1.00 NC GR5 ZP	9
8	65325	KIT-CYL. STOP: 3.0, 1.5, .75, 2-(.50), .25	4
9	65326	STOP-CYLINDER 4" (SILVER)	2
10	65814	CLAMP-HOSE: 4.375 ZP	6





### TANK TO TRACTOR HYDRAULICS

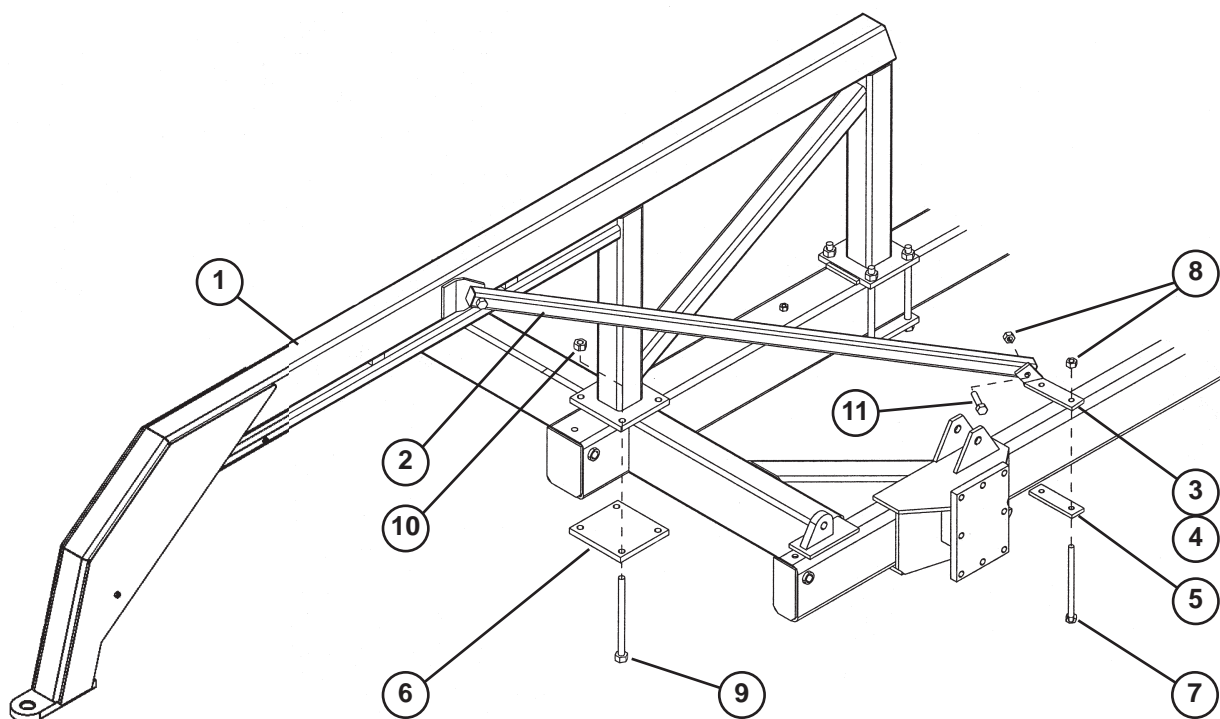
Ref.	Part No.	Description	Qty.
1	66065	HOSE: .75 X 186 12MP-12MJ	2
1.5	66066	HOSE: .75 X 168 12FJX-8MP	2
2	65382	HOSE: .50 X 354 8MP-8MP	1
3	53631	PIONEER TIP 8010-4	2
4	65814	CLAMP-HOSE: 4.375 ZP	4
6	65379	STUD: .375 X 3.00 UNC ZP	3
7	1011602	BOLT-HEX: .38 X 1.50 NC GR5 ZP	5
8	1011576	NUT-HEX: .38 NC GR2 ZP	6
9	1013043	WASHER-FLAT: SAE .38 ZP	11
10	1013122	TIE-CABLE, NYLON: 14.00"	8
17	65318	QUICK COUPLING - FEMALE: -12-12	2
18	65319	QUICK COUPLING - FEMALE: -8-10	1
19	66106	COUPLER - FEMALE PIONEER	1
20	65982	PLATE-HOSE MT	2
20.1	65657	U-BOLT: .50 X 3.00 X 4.0625 X 3.00	2
20.2	65313	NUT-HYLOCK .50 NC	4
20.3	1015174	BOLT: .625 X 2.50 NC	2
20.4	1016999	NUT: .625 TOPLOCK	2



### SAFETY LIGHT KIT

Ref.	Part No.	Description	Qty.
1	65874	BRACKET-LIGHT REAR	1
2	65875	BRACKET LIGHT - RH	1
3	66019	BRACKET LIGHT - LH	1
4	65341	MODULE-INTERFACE	1
5	65333	LAMP-RED TAIL	2
6	65334	LAMP-AMBER FLASHING	2
7	65340	HARNESS-SAFETY LIGHT S279.11	1
8	65354	HARNESS-LIGHT EXTENSION	2
9	65873	U-BOLT: .500 X 4.12 X 3.06 X 4.12	2
10	65657	U-BOLT: .500 X 3.00 X 4.063 X 3.00	1
11	65313	NUT-NYLOCK: .50 NC GR2 ZP	6
12	0100615	BOLT-HEX: .19 X .75 NC GR5 ZP	4
13	1011588	NUT-HEX: .19 NC GR2 ZP	4
14	1013122	TIE-CABLE, NYLON: 14.00"	20
15	65992	MOUNT-SMV SIGN	1
16	1011595	BOLT-HEX: .25 X .75 NC GR5 ZP	4
17	1011587	NUT-HEX: .25 NC GR2 ZP	4
	1013242	WASHER-LOCK: .25 ZP	4

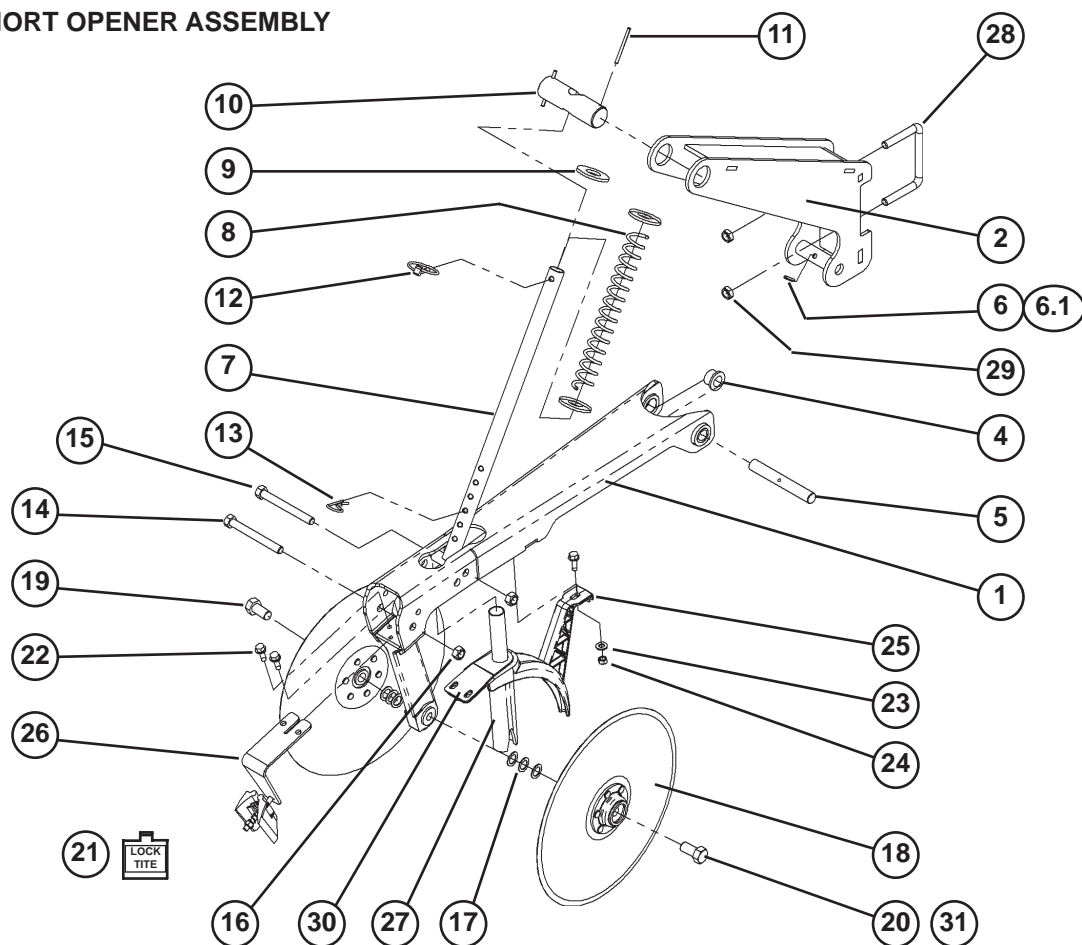




### REAR DRAW BAR

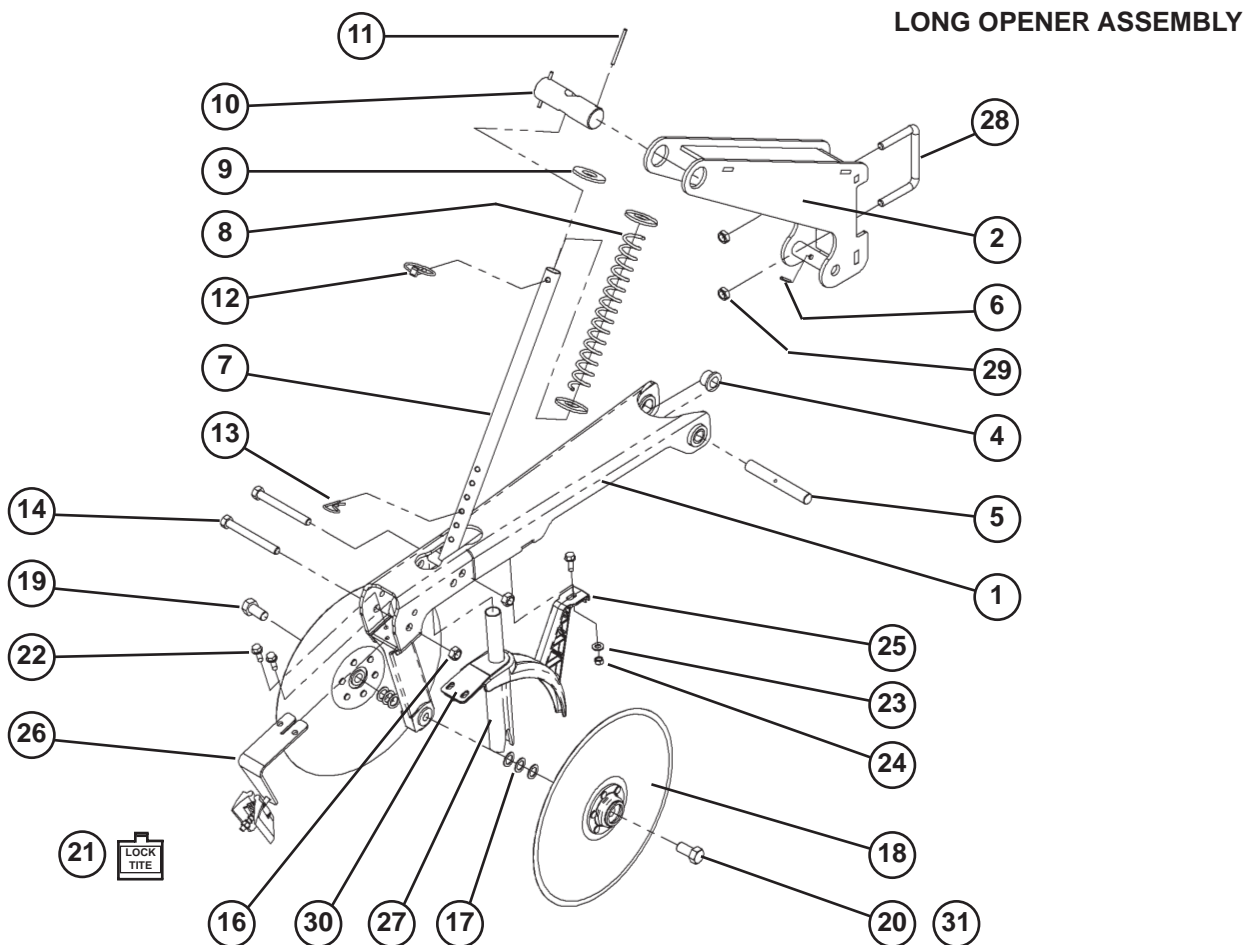
Ref.	Part No.	Description	Qty.
1	65073	WLDMT-DRAWBAR	1
2	65179	WLDMT-BRACE REAR DRAW BAR	2
3	65180	PLATE-BOLTING RH	1
4	65181	PLATE-BOLTING LH	1
5	65182	PLATE-BOLTING	2
6	65183	PLATE-BOLTING PAINTED	2
7	1029444	BOLT-HEX: .63 X 10.00 NC GR5 ZP	4
8	1013302	NUT-NYLOCK: .63 NC GR6 ZP	8
9	1014531	BOLT-HEX: .75 X 11.00 NC GR5 ZP	8
10	1013834	NUT-NYLOCK: .75 NC GR2 ZP	8
11	1014000	BOLT-HEX: .63 X 3.50 NC GR5 ZP	4

## SHORT OPENER ASSEMBLY



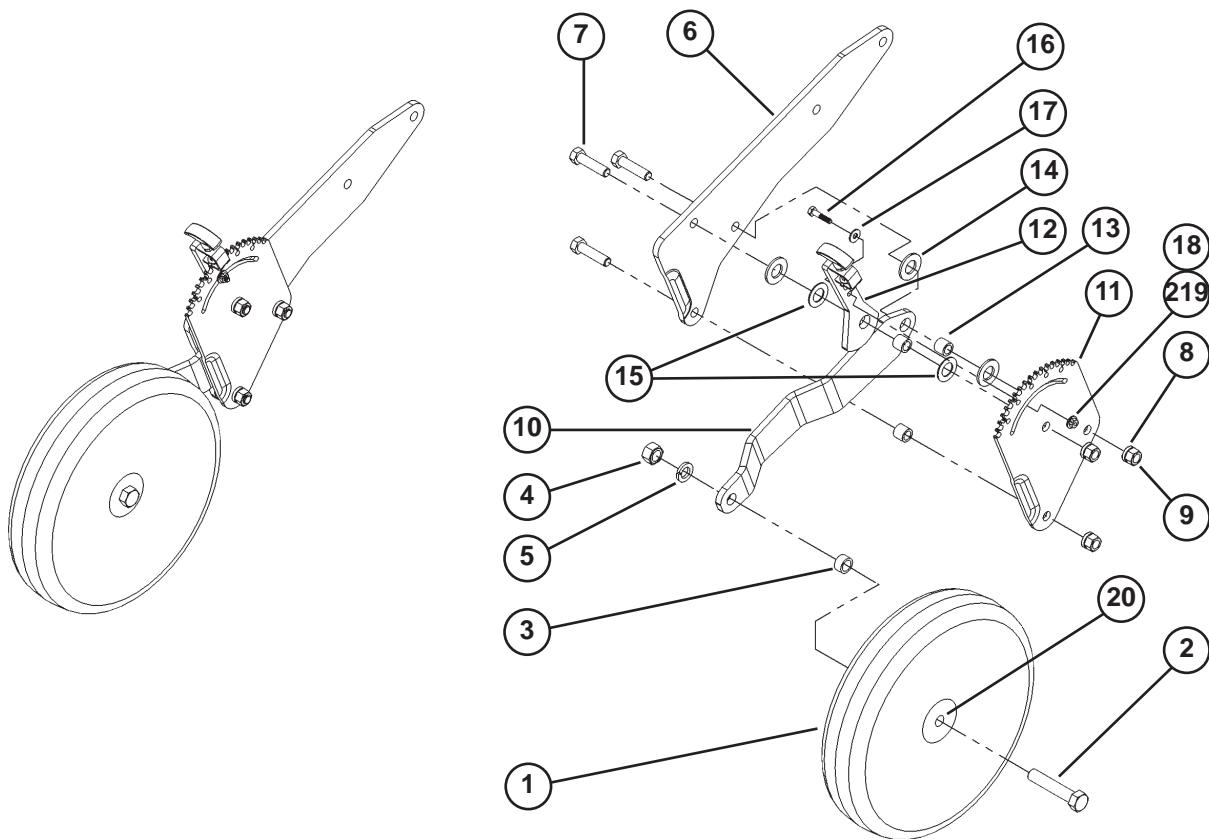
## OPENERS

Ref.	Part No.	Description	Qty.
1	65206	WLDMT-DRAWBAR SHORT PC	1
	65207	WLDMT-DRAWBAR LONG PC	1
2	65192	WLDMT-MOUNT SHORT PC	1
	65193	WLDMT-MOUNT LONG PC	1
4	65238	BUSHING-FLANGE	2
5	65203	PIN-PIVOT CHROME PLATED	1
6	1013940	BOLT-HEX: .25 X 1.25 NC GR5 ZP	1
6.1	1030946	NUT-TOPLOCK: .25 NC GR5 ZP	1
7	65200	WLDMT-SHAFT ZP	1
8	65233	SPRING-OPENER	1
9	1020685	WASHER-FLAT: 1.00 ZP	3
10	66087	SHAFT-PIVOT PLASTIC: 1.50 DIA. (BEFORE 2004)	1
	66252	SHAFT-PIVOT PLASTIC: 1.75"	1
11	63979	PIN-COTTER: .19 X 2.5 ZP	2
12	65311	PIN-LYNCH: .250 X 1.563	1
13	1016115	PIN-HAIR: .19 X 3.25 ZP	1
14	1013682	BOLT-HEX: .50 X 4.50 NC GR5 ZP	1
15	1011606	BOLT-HEX: .50 X 1.25 NC GR5 ZP	1
16	1027461	NUT-TOPLOCK: .50 NC GR5 ZP	1
17	65312	WASHER-SHIM	6
18	65225	ASSY-DISC	2



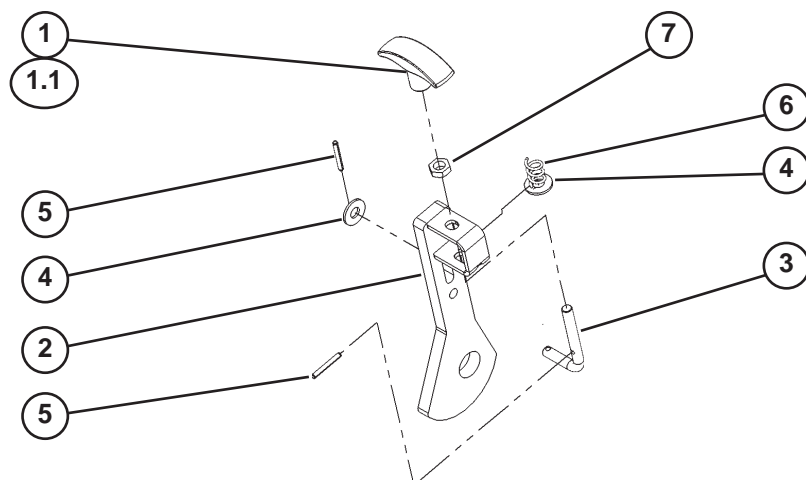
### OPENERS (continued)

Ref.	Part No.	Description	Qty.
19	65240	BOLT: .625 X 1.25 LH	1
20	1032509	BOLT-HEX: .63 X 1.25 NC GR5 ZP	1
21	65393	LOCKTITE-DEVCON 22425 1.69 OZ.	A/R
22	66046	BOLT-FLG: .31 X 1.00 NC G5 ZP LO	3
23	1011582	WASHER-FLAT: SAE .31 ZP	1
24	1018693	NUT-NYLOCK: .31 NC GR2 ZP	1
25	65234	BOOT-OPENER	1
26	65397	ASSY-SCRAPER	1
27	65235	TUBE-SEED LOWER	1
28	66074	1040281 U-BOLT	80
	65657	U-BOLT: .500 X 3.00 X 4.063 X 3.00 (2002 & 2003 BUILD)	1
29	1013302	NUT-NYLOCK: .625 NC GR2 ZP	160
	65313	NUT NYLOCK: .50 NC GR2 ZP (2002 & 2003 BUILD)	2
30	64500	WLDMT-SEED TUBE 1.25" OD ZP	1
	65232	WLDMT-SEED TUBE ZP (1") (BEFORE 2007)	1
31	66057	DUST CAP	2



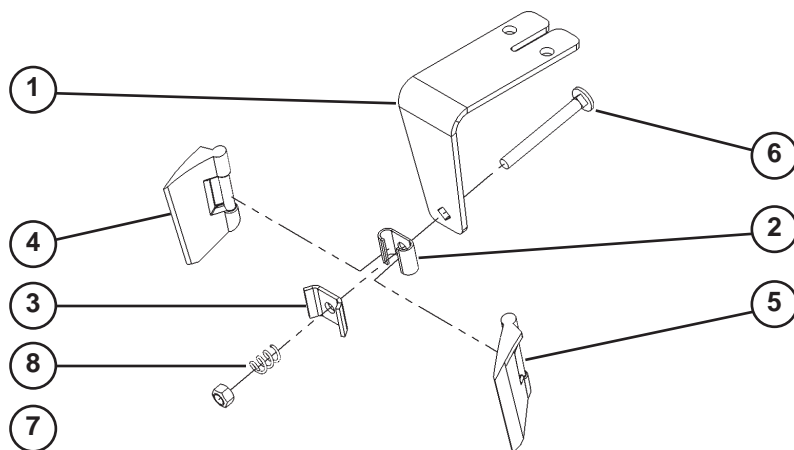
### DEPTH PRESS WHEEL

Ref.	Part No.	Description	Qty.
1	65242	ASSY-PRESS WHEEL 3 X 13	1
2	65825	BOLT-HEX: .63 X 3.25 NC GR5 ZP	1
3	65309	TUBE-SPACER ZP	1
4	1011578	NUT-HEX: .63 NC GR2 ZP	1
5	1011813	WASHER-LOCK: .63 ZP	1
6	65226	PLATE-SUPPORT PC	1
7	1011609	BOLT-HEX: .50 X 2.00 NC GR5 ZP	3
8	1011581	WASHER-LOCK: .50 ZP	3
9	1011577	NUT-HEX: .50 NC GR2 ZP	3
10	65229	PLATE-DRAWBAR PC	1
11	65230	BRACKET-INDEX ZP	1
12	65300	ASSY-ADJUSTER HANDLE	1
13	65254	TUBE-SPACER ZP	3
14	65307	BUSHING-MACH: .781 X 1.50 X .120 ZP	3
15	65305	WASHER-FLAT NYLON: .781 X 1.375 X .063	2
16	1013940	BOLT-HEX: .25 X 1.25 NC GR5 ZP	1
17	65306	WASHER-FLAT NYLON: .281 X .625 X .063	2
18	1020416	WASHER-FLAT: .25 ZP	1
19	1013427	NUT-CENTERLOCK: .25 NC GR2 ZP	1
20	66261	BEARING-PRESS WHEEL (NOT SHOWN)	1



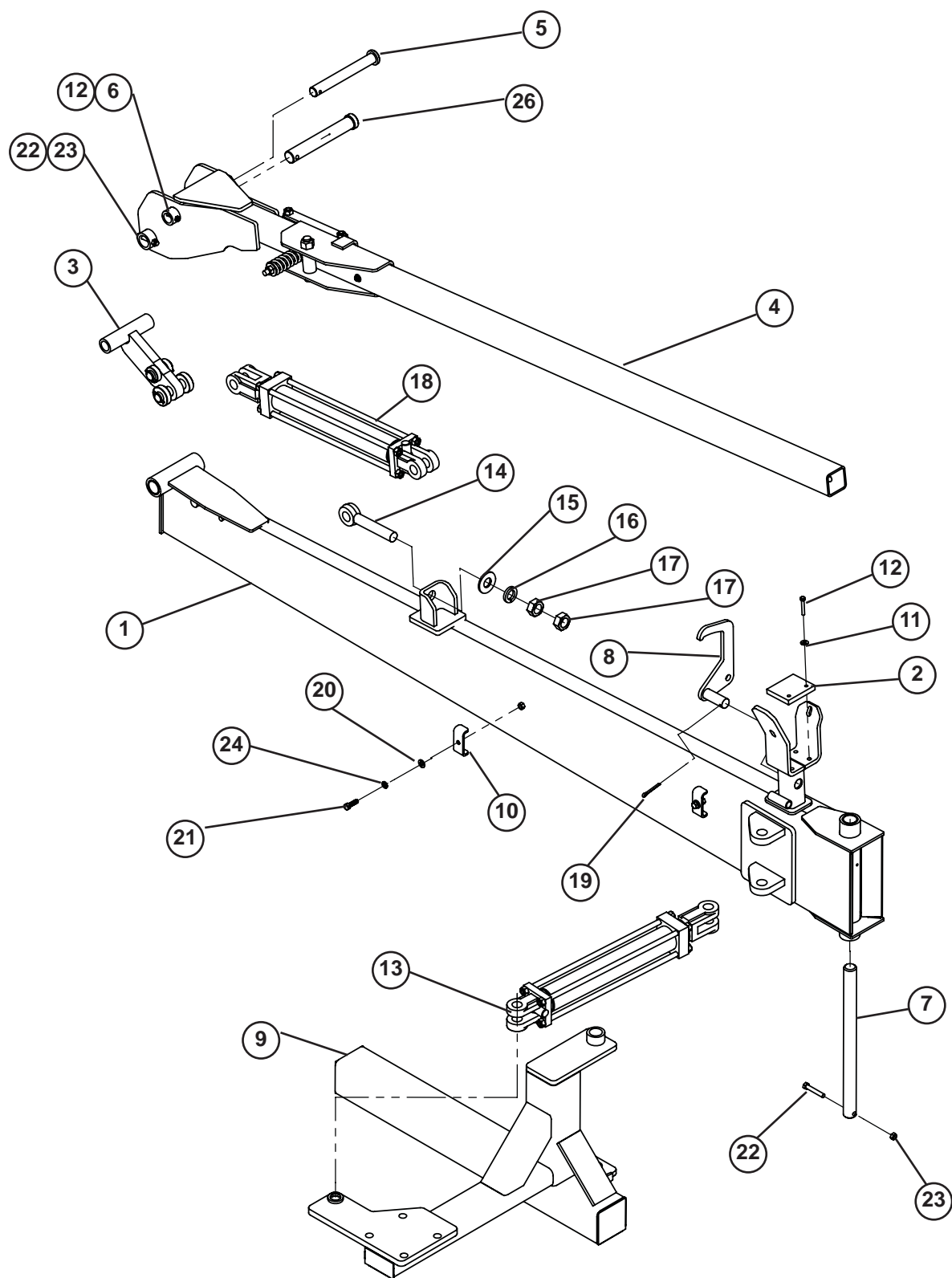
### ADJUSTER HANDLE

Ref.	Part No.	Description	Qty.
1	65983	GRIP-ADJUSTER (2004+ BUILD)	1
	65241	GRIP-ADJUSTER (2002 & 2003 BUILD)	1
1.1	65293	LOCKTITE-DEVCON 22425 1.69 OZ	A/R
2	65227	WLDMT-ADJUSTER HANDLE ZP	1
3	65298	BOLT-INDEX "L"	1
4	1020416	WASHER-FLAT: .25 ZP	2
5	65380	PIN-HAIR: .09 X 1.00 ZP	2
6	65278	SPRING-SCRAPER	1
7	1020506	NUT-JAM	1



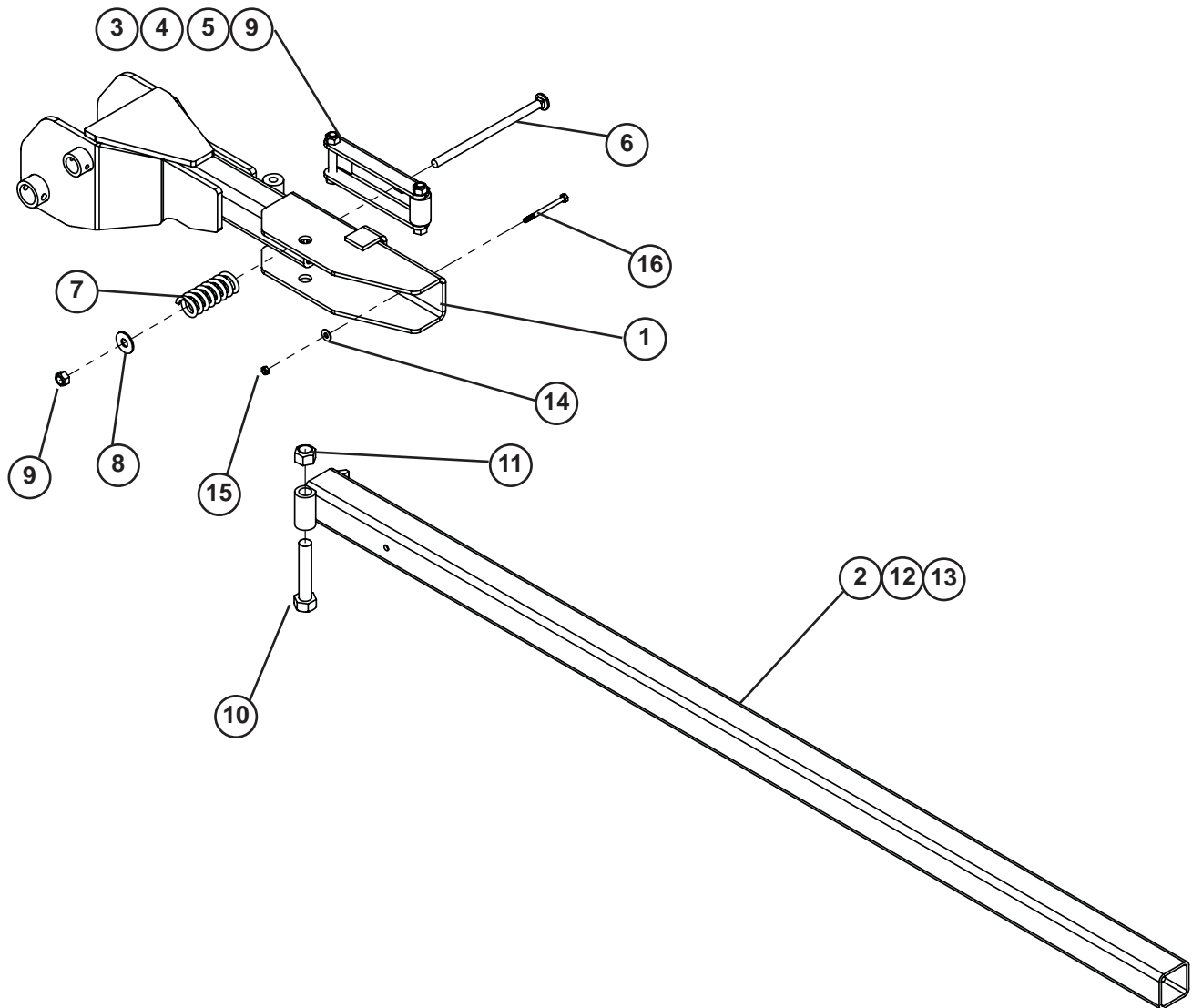
### SCRAPER ASSEMBLY

Ref.	Part No.	Description	Qty.
1	65210	PLATE-SCRAPER MOUNT	1
2	65271	CLIP-18GA (DRILL/FORMED)	1
3	65272	CLIP-16GA (DRILL/FORMED)	1
4	65236	SCRAPER-LH ZP	1
5	65237	SCRAPER-RH ZP	1
6	65273	BOLT-CRG: .31 X 2.75 NC GR5 ZP	1
7	1030700	NUT-TOPLOCK: .31 NC GR5 ZP	1
8	65278	SPRING-SCRAPER	1
	65397	SCRAPER ASSY (INCLUDES REF. 1-8)	REF



## MARKER ASSEMBLY

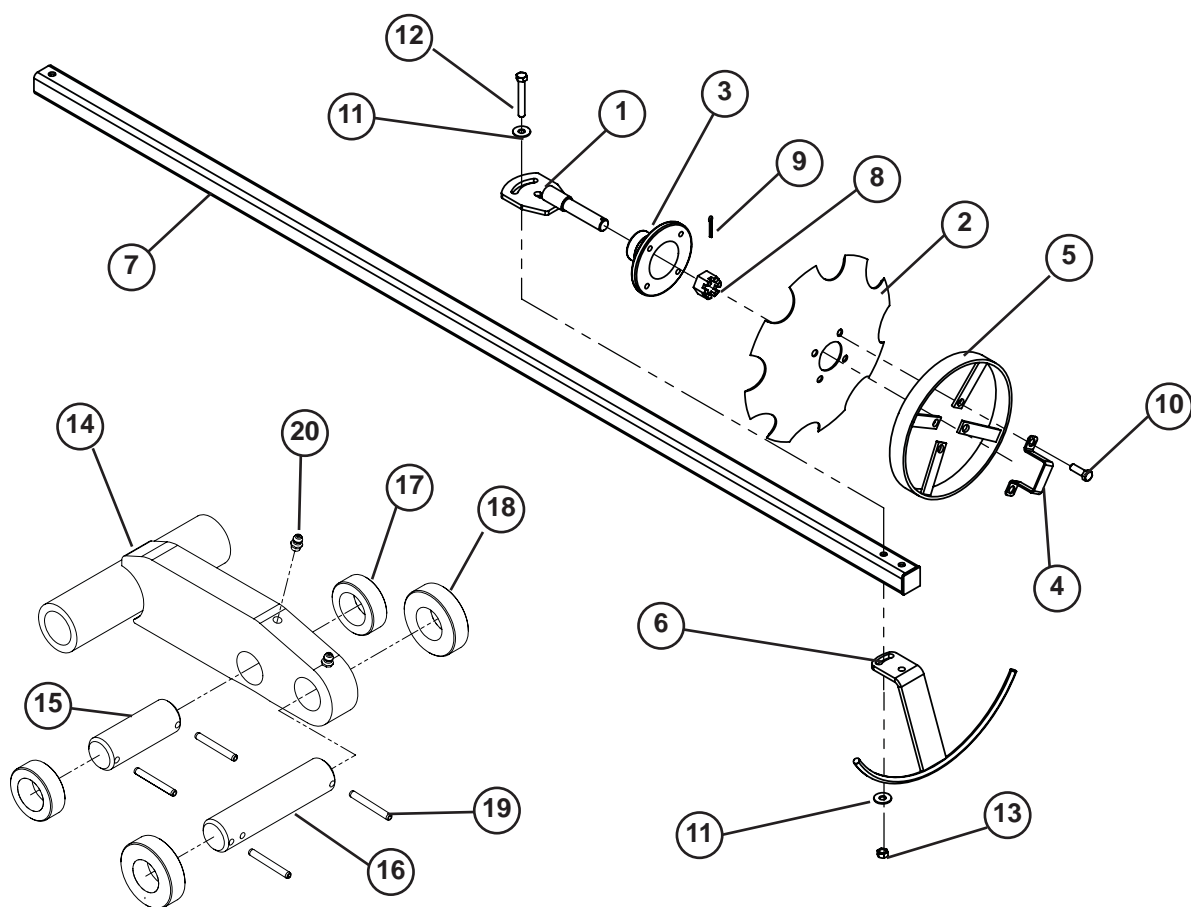
Ref.	Part No.	Description	Qty.
1	60578	WLDMT-CHANNEL F-LH 8'	1
	60609	WLDMT-CHANNEL F-RH 8'	1
	60674	WLDMT-CHANNEL LH-10'	
	60673	WLDMT-CHANNEL RH 10'	
2	60612	SPACER-RUBBER	1
3	60954	ASSY-MARKER LINKAGE	1
4	60639	ASSY-BREAKAWAY ARM LH 8'	1
	60641	ASSY-BREAKAWAY ARM RH 8'	1
5	60584	WLDMT-SHAFT	1
6	1030946	NUT-TOPLOCK: .25 NC GR5 ZP	1
7	60527	SHAFT	1
8	60553	WLDMT-SUPPORT HOOK LH	1
	60604	WLDMT-SUPPORT HOOK RH	1
9	60557	WLDMT-ARM LH	1
	60605	WLDMT-ARM RH	1
10	50714	CLAMP .50 ZP	2
11	1020416	WASHER-FLAT: .25 ZP	2
12	1016853	BOLT-KHEX: .25 X 1.75 NC GR5 ZP	2
13	60552	CYLINDER-HYD 2.75 X 12	1
14	62081	BOLT-EYEBOLT: 1.00 X 6.00 GR8	1
15	1020685	WASHER-FLAT: 1.00	1
16	1013539	WASHER-LOCK: 1.00 ZP	1
17	1012664	NUT-HEX: 1.00 NC GR2 ZP	2
18	60551	CYLINDER-HYD 2.5 X 12	1
19	1030797	PIN-COTTER: .19 X 1.75 NP	1
20	1014608	WASHER-FLAT: SAE .38 ZP	2
21	1011601	BOLT-HEX: .38 X 1.25 NC GR5 ZP	2
22	59390	BOLT-HEX: .38 X 2.25 NC GR5 ZP	2
23	1016999	NUT-TOPLOCK: .38 NC GR5 ZP	2
24	1011586	WASHER-LOCK: .38 ZP	2
25	1014443	WASHER-FLAT: .50 ZP	1
26	60944	SHAFT	1



### MARKER ASSEMBLY

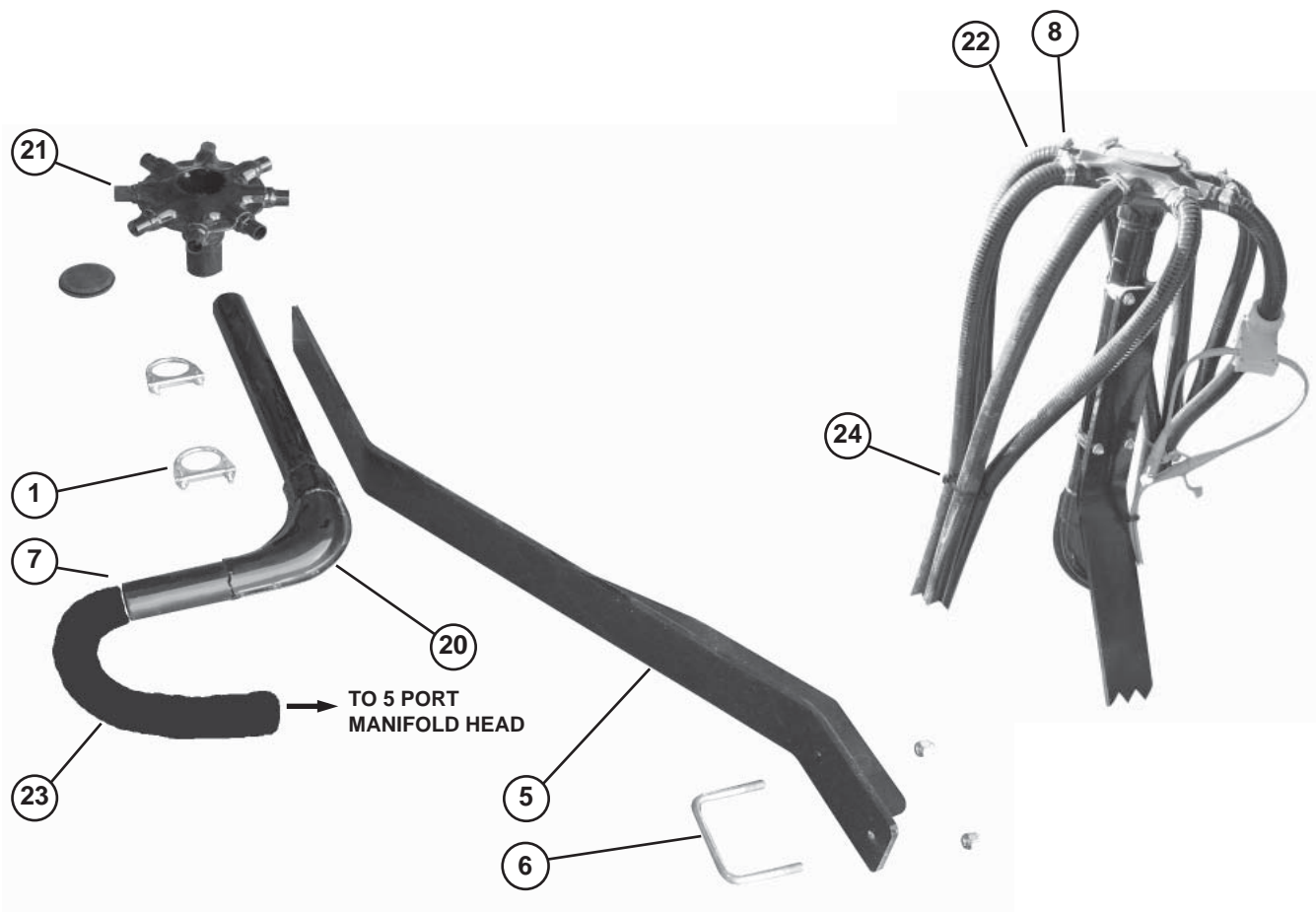
Ref.	Part No.	Description	Qty.
1	60589	WLDMT-PIVOT ARM LH	1
	60554	WLDMT-PIVOT ARM RH	1
2	60585	WLMDT-EXT ARM 8'	1
3	60577	PLATE-F.C.	1
4	60649	BUSHING ZP	1
5	1011611	BOLT-HEX: .50 X 3.00 NC GR5 ZP	2
6	58852	BOLT-CRG: .50 X 9.00 NC GR2 ZP	1
7	60545	SPRING	1
8	1014443	WASHER-FLAT: .50 ZP	1
9	1027461	NUT-TOPLOCK: .50 NC GR5 ZP	3
10	1011625	BOLT-HEX: .75 X 4.00 NC GR5 ZP	1
11	1017000	NUT-TOPLOCK: .75 NC GR5 ZP	1
12	58854	SCREW-SET: SQHD .50 X 1.50 NC	2
13	1011591	NUT-JAM: .50 NC ZP	2
14	1020416	WASHER-FLAT: .25 ZP	1
15	1030946	NUT-TOPLOCK: .25 NC GR5 ZP	1
16	1013898	BOLT-HEX: .25 X 2.00 NC GR5 ZP	1





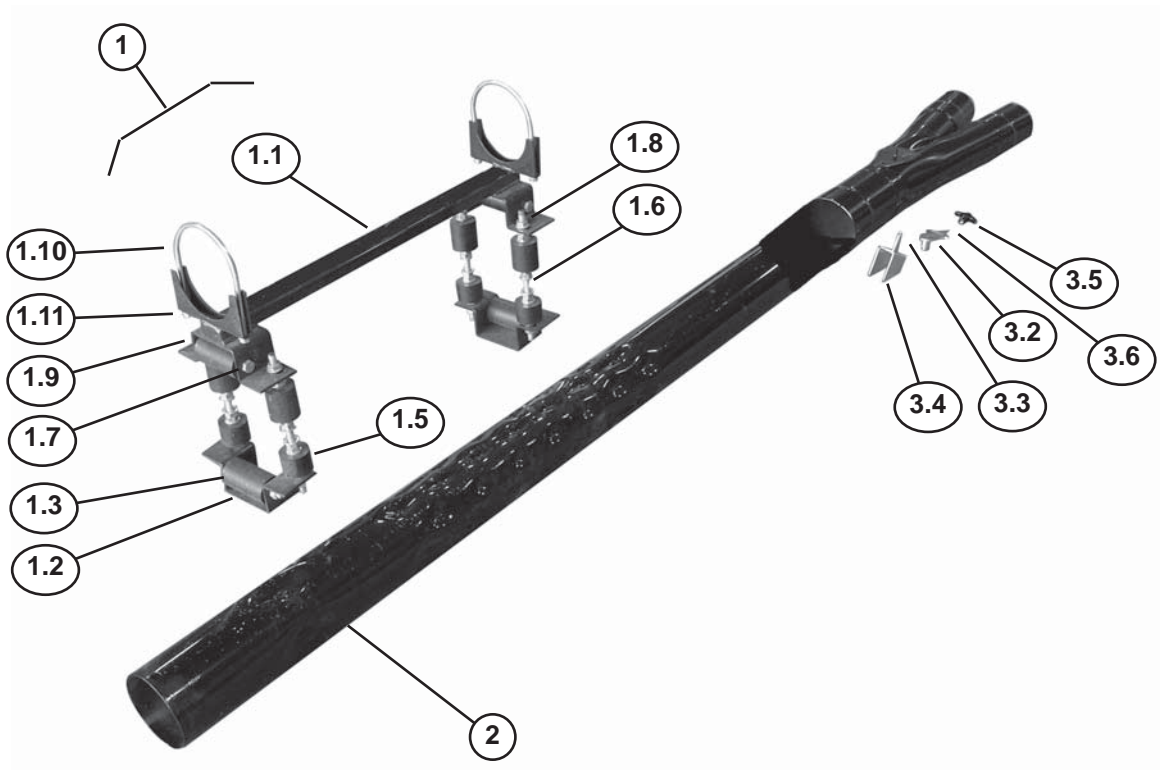
### MARKER ASSEMBLY

Ref.	Part No.	Description	Qty.
1	60622	WLDMT-SPINDLE PLATE	1
2	60543	DISK-NOTCHED	1
3	60546	ASSY-HUB 4 BOLT	1
4	60628	STRAP-HUB	1
5	60608	WLDMT-DEPTH BAND	1
6	60897	WLDMT-DISC GUARD	1
7	60580	WLSMT-OUTER EXT ARM 8'	3
8	60636	NUT-JAM SLOTTED: 1.00-14 UNF	1
9	60635	PIN-COTTER: .16 X 1.75 NP	1
10	1021927	BOLT-HEX: .50 X 1.50 NF GR5 ZP	4
11	1014443	WASHER-FLAT: .50 ZP	1
12	1011612	BOLT-HEX: .50 X 3.50 GR5 ZP	1
13	1027461	NUT-TOPLOCK: .50 NC GR5 ZP	3
14	60582	WLDMT-SUPPORT ARM	1
15	60963	PIN - 2.25"	1
16	60964	PIN - 3.75"	1
17	60943	ROLLER - 1.63"	2
18	60942	ROLLER - 2.00"	2
19	60965	ROLL PIN	4
20	1011748	ZERK-GREASE	3



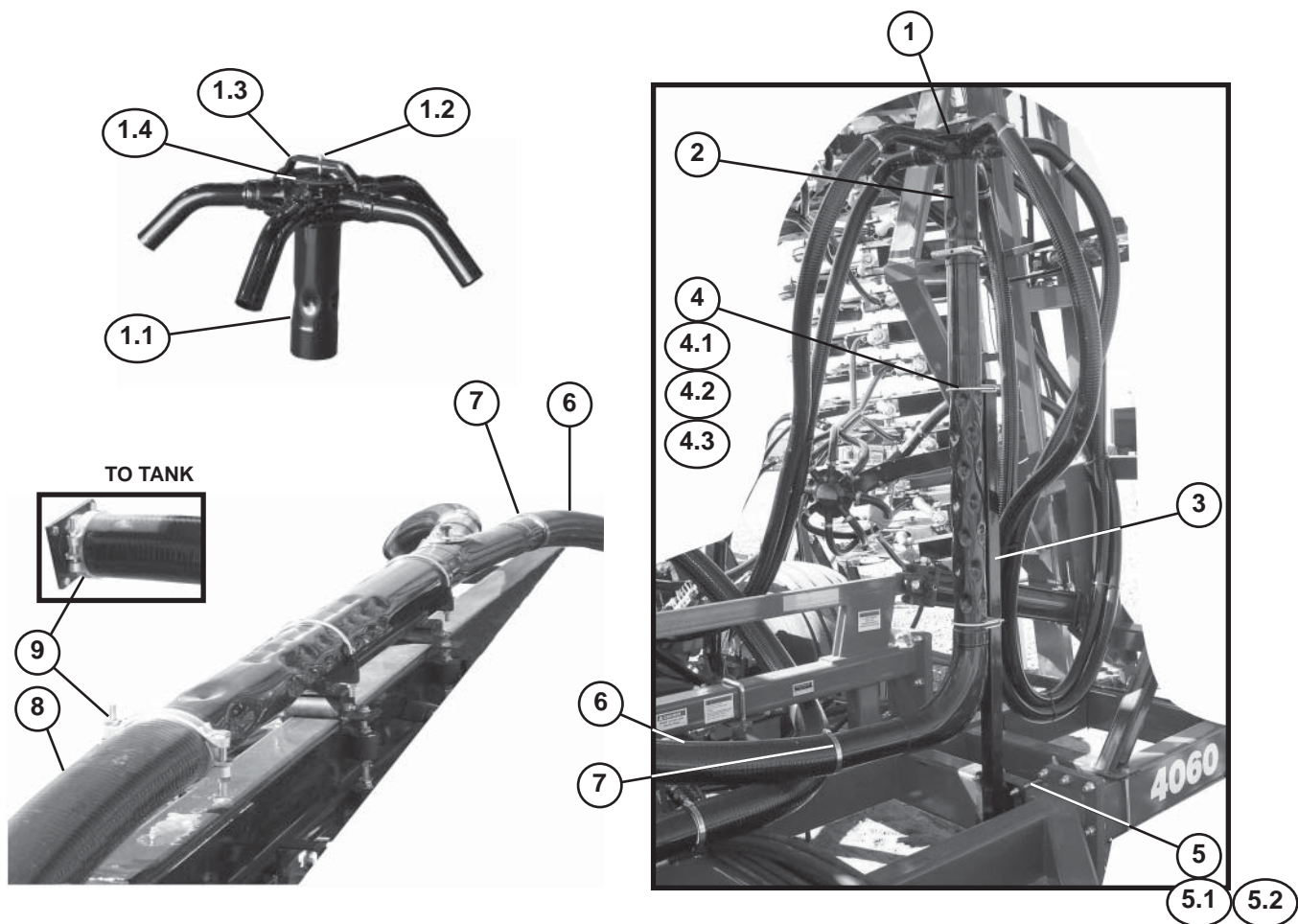
### MANIFOLD COMPONENTS

Ref.	Part No.	Description	Qty.
1	65343	ASSY-CLAMP MUFFLER: 2" ZP	30
1.1	65344	U-BOLT: MUFFLER 2" ZP	1
1.2	65346	NUT-HEX: SERRATED FLG ZP	2
1.3	65347	CLAMP-MUFFLER SADDLE: 2" ZP	1
1.4	65660	CLAMP-MUFFLER: 2"	1
5	65342	WLDMT-SEC TUBE MOUNT 2"	10
6	65657	U-BOLT: .500 X 3.00 X 4.063 X 3.00	12
6.1	1011581	WASHER-LOCK: .50	24
6.2	1011577	NUT-HEX: .50 NC GR2 ZP	24
7	1013134	CLAMP-HOSE: S.S. #28 1.32-2.25	20
8	1026358	CLAMP-HOSE: #16 0.81-1.50	160
20	65384	WLDMT-SECONDARY TUBE 2" PC	10
21	66740	ASSY-MANF SEC 7 X 2.00 X 1.25	2
	66412	ASSY-MANF SEC 8 X 2.00 X 1.25	6
	66334	ASSY-MANF SEC 9 X 2.00 X 1.25	2
	66753	ASSY-MANIFOLD-10 X 2 X 1.25	A/R
	66333	MANIFOLD-7 PORT: 1" (BEFORE 2007)	A/R
	65385	MANIFOLD-8 PORT: 1" (BEFORE 2007)	A/R
	65390	MANIFOLD-9 PORT: 1" (45FT OPTION) (BEFORE 2007)	A/R
	66335	MANIFOLD-10 PORT: 1" (BEFORE 2007)	A/R
22	65880	HOSE-KANAFLEX: 1.25 BULK	500
	65386	HOSE-KANAFLEX: 1" (BEFORE 2007)	500
23	65387	HOSE-KANAFLEX 2.00 BULK	200
24	65388	TIE-NYLON	16
	66167	PLATE-MANIFOLD EXTENSION 3" (NOT SHOWN)	2
	1011598	BOLT-HEX: .31 X 1.00 NC GR5 ZP (NOT SHOWN)	8
	1018693	NUT-NYLOCK: .31 NC GR2 ZP (NOT SHOWN)	8
	66323	CLIP-WIRE HARNESS (NOT SHOWN)	20



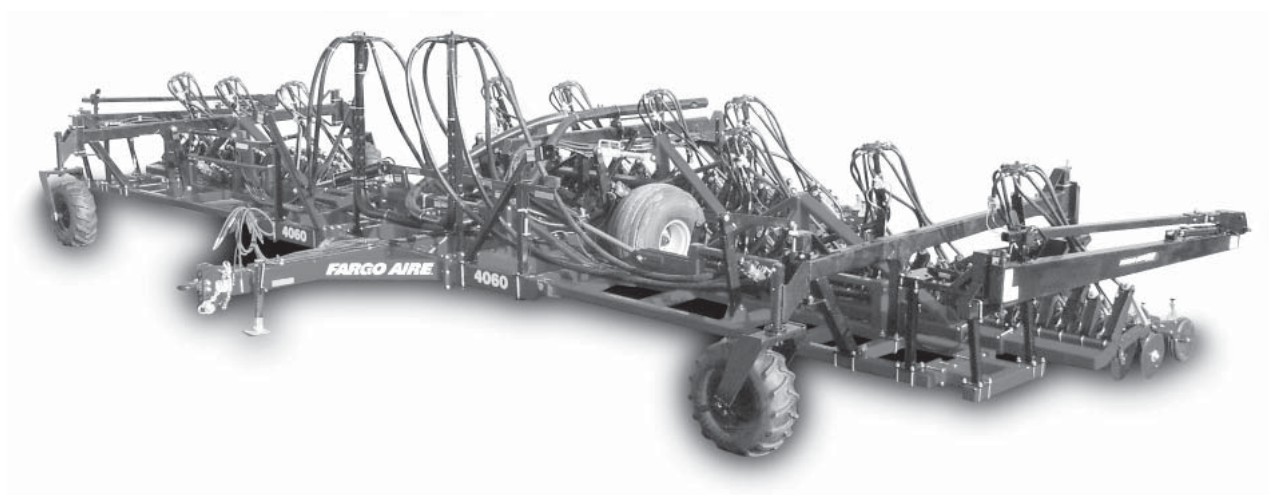
### MANIFOLD COMPONENTS

Ref.	Part No.	Description	Qty.
1	65745	ASSY-ROLLING MNT (FLOW DIVIDER)	1
1.1	66140	BRACKET-ROLLING MNT TOP PC	1
1.2	66141	BRACKET-ROLLING MNT BOTTOM PC	2
1.3	66142	ROLLER-HORIZONTAL & VERTICAL	8
1.5	66144	ROLLER-ROLLING MNT VERTICAL SHORT	4
1.6	66165	ROD-THREADED .500 X 12.00 ZP	4
1.7	1011618	BOLT-HEX: .50 X 5.00 NC GR5 ZP	4
1.8	1032506	NUT-FLANGE: .50 NC GR5 ZP	32
1.9	1027461	NUT-TOPLOCK: .50 NC GR5 ZP	4
1.10	1033298	U-BOLT: MUFFLER CLAMP 5.00	2
1.11	65720	NUT-FLANGE: .38 NC GR2 ZP	4
2	66146	WLDMT-FLOW DIVIDER PC	1
3.2	66114	WLDMT-MANIFOLD POINTER ZP	1
3.3	1025601	PIN-ROLL: .19 X 1.00 ZP	1
3.4	66166	WLDMNT-MANIFOLD DEFLECTOR ZP	1
3.5	65983	GRIP-ADJUSTER	1
3.6	1011828	WASHER-FLAT: .38 ZP	2



### MANIFOLD COMPONENTS

Ref.	Part No.	Description	Qty.
1	66147	ASSY-PRIMARY MANIFOLD HEAD (5 PORT)	2
1.1	66147-1	WLDMT-MANF PRI 5 X 4.00 X 2.00 PC	1
1.2	1011601	BOLT-HEX: .38 X 1.25 NC GR5 ZP	1
1.3	66148	COVER-MANIFOLD TOP (5 PORT) PC	1
1.4	66149	RUBBER PAD (FLAT) 5 DIA.	1
2	66150	WLDMT-PRIMARY TUBE 4" PC	2
3	66151	WLDMT-PRI TUBE MOUNT 4" PC	2
4	66157	CLAMP-MUFFLER 4" DRILLED ZP	6
4.1	1013239	BOLT-HEX: .38 X 3.00 NC GR5 ZP	4
4.2	1011586	WASHER-LOCK: .38 ZP	4
4.3	1011576	NUT-HEX: .38 NC GR2 ZP	4
5	66152	U-BOLT: .500 X 5.50 X 8 X 5.50	4
5.1	1011581	WASHER-LOCK: .50 ZP	8
5.2	1011577	NUT-HEX: .50 NC GR2 ZP	8
6	66154	HOSE-FLEX SS 4.00 X 10 FT	2
7	34139	CLAMP-TORCTITE SS 4"	4
8	34491	HOSE-KANAFLEX: 5.00 X 10 FT	1
9	65391	CLAMP-DOUBLE BOLT 5"	2



## DECALS

Ref.	Part No.	Description	Qty.
1	65303	DECAL-DANGER KEEP CLEAR WINGS	2
2	65276	DECAL-DANGER AVOID ELECTRICAL	2
3	65275	DECAL-WARNING RESTRICTORS	2
4	65302	DECAL-WARNING SECURE FOLD	2
5	65330	DECAL-RED RETROREFLECTIVE	4
6	65331	DECAL-YELLOW RETROREFLECTIVE	10
7	65332	DECAL-RED ORANGE FLUORESCENT	4
8	65301	DECAL-WARNING NON-POWER	1
9	65277	DECAL-DRAWBAR	1
10	65329	SIGN-SMV ASAE S276.5	1
11	65645	DECAL-WARNING	1
12	66512	DECAL-FARGO AIRE	2