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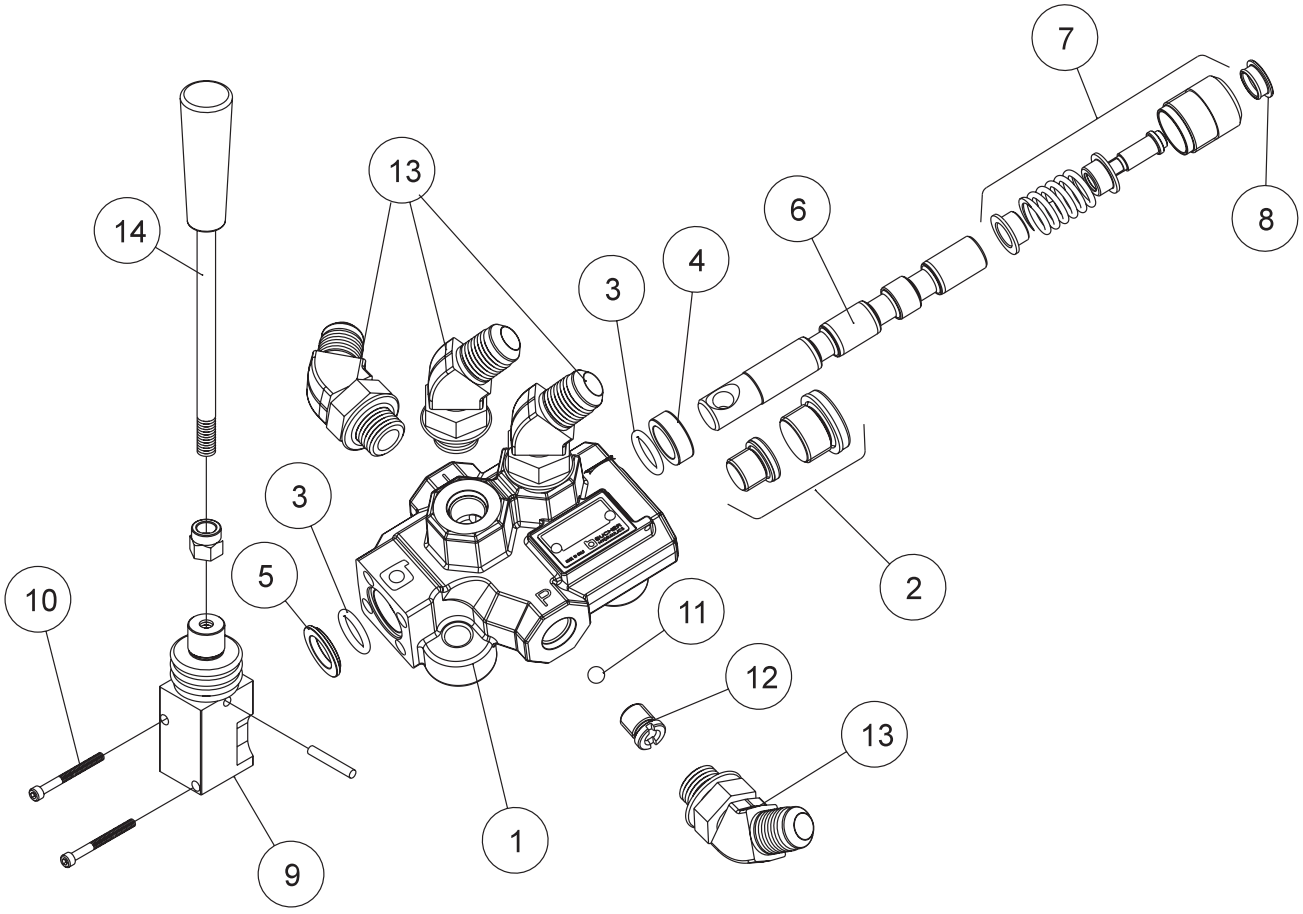
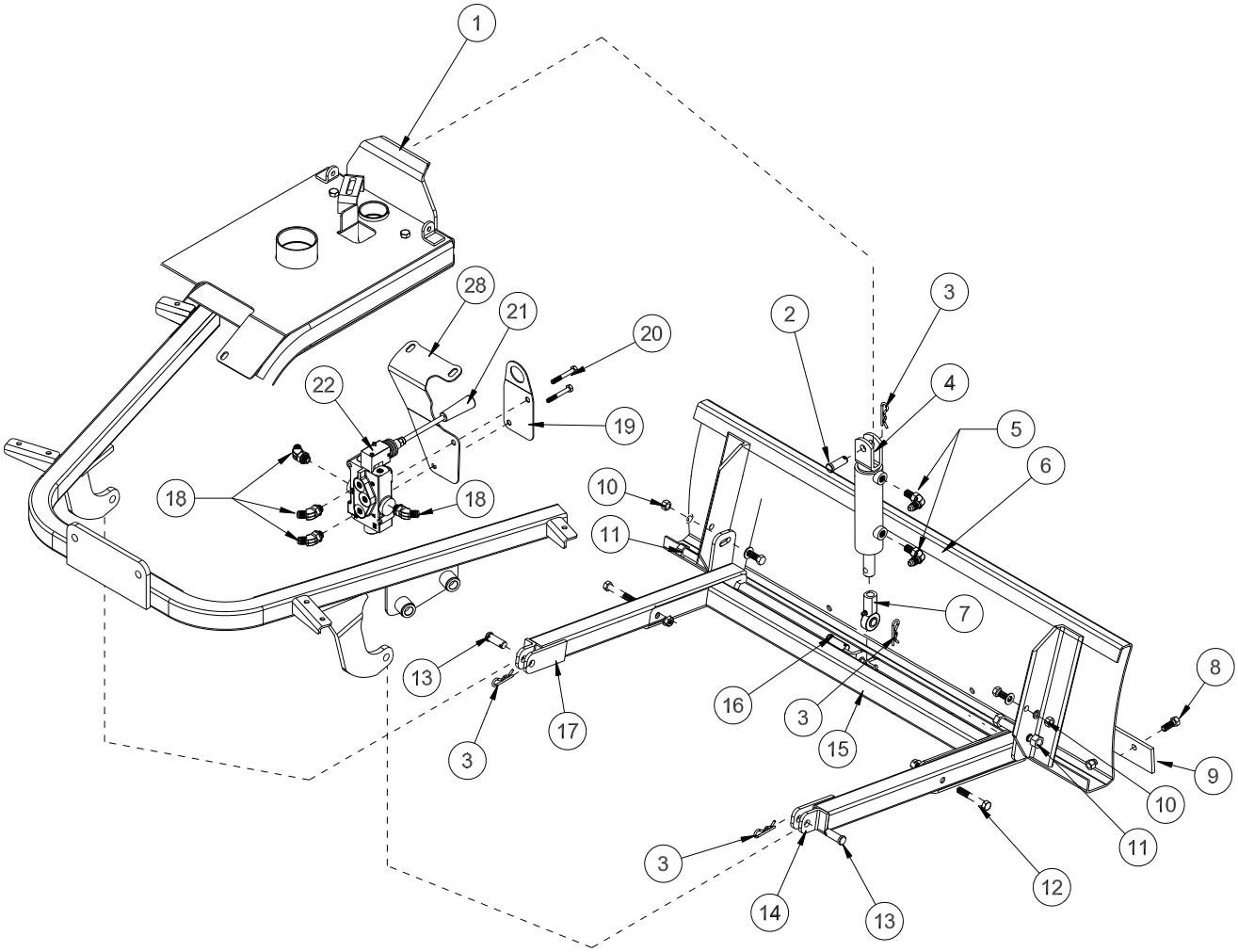
13-765 SINGLE BANK HYDRAULIC VALVE DRAWING



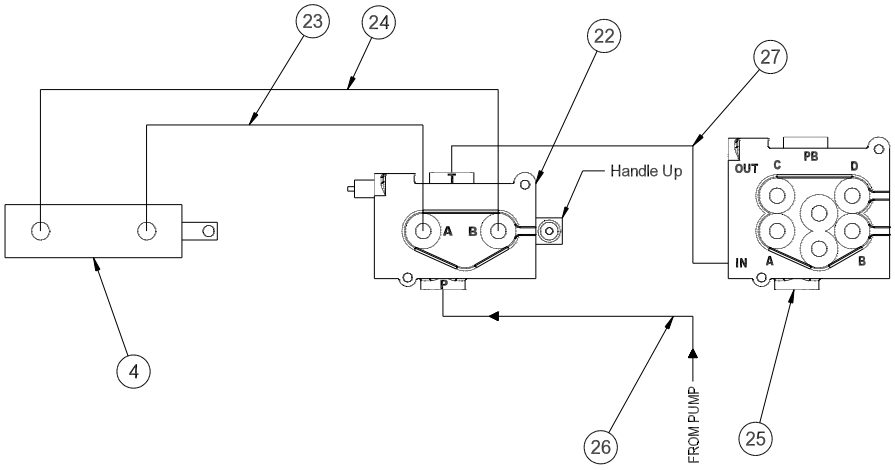
13-765 SINGLE BANK HYDRAULIC VALVE PARTS LIST

REF #	PART #	DESCRIPTION	QUANTITY
1*		Actuator Housing Assembly	1
2*	13-731-02	Valve Plug	1
3*†	78-415-03	O-Ring Seal	2
4*†	78-415-05	Spacer	3
5*	78-415-04	Flanged Washer HDM10	3
6*	13-731-03	Spool	1
7*	78-415-11	Positioner	1
8*	78-415-08	Plug	3
9*	78-415-09	Lever Group HDS11	3
10*	78-415-10	Metric Socket Screw, M5 x .8 x 45	2
11*	13-731-04	1/4" Ball	1
12*†	13-731-05	Check Valve	1
13	18-341	45° Elbow	4
14	78-417	Straight Handle	1
	78-417-01	Tapered Knob	1
*	13-765	Single Bank Hydraulic Valve (includes all * items)	

45-005 HYDRAULIC SAND PLOW DRAWING



HYDRAULIC VALVE PLUMBING DRAWING



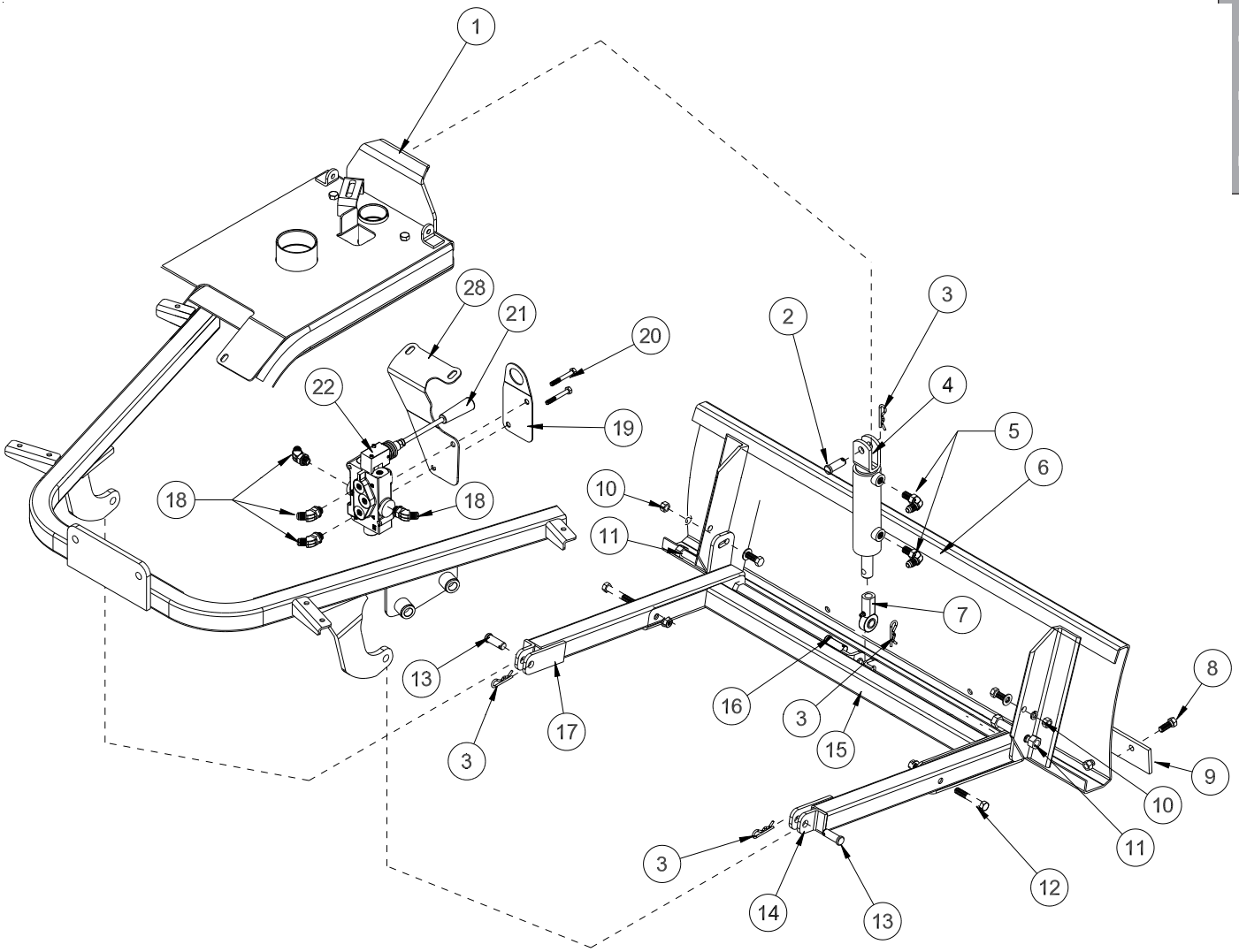
45-005 HYDRAULIC SAND PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	**45-126**	**Ram Mount**	1
2	HCP-58-150	Clevis Pin, 5/8 x 1 1/2	1
3	HHP-18	Bridge Pin, 1/8	4
4	13-406	Hydraulic Cylinder	1
5	18-168	45° Elbow	2
6	45-092	Aluminum Sand Plow Blade	1
	45-321	Steel Sand Plow Blade	1
7	18-154	Rod End	1
	HNJ-58-18	Jam Nut, 5/8 - 18	1
8	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	4
9	13-167	Wear Blade	1
10	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2
	HWL-38	Lock Washer, 3/8	2
	HN-38-16	Hex Nut, 3/8 - 16	2
11	HB-12-13-300	Hex Bolt, 1/2 - 13 x 3	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
12	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
13	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2
14	45-100	Right Pusher Bar	1
15	45-125	Plow Crossbar	1
16	HCP-58-175	Clevis Pin, 5/8 x 1 3/4	1
17	45-101	Left Pusher Bar	1
18	18-341	45° Elbow	4
19	45-127	Valve Mount	1
20	HB-14-20-200	Hex Bolt, 1/4 - 20 x 2	2
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	2
21	78-417	Straight Handle	1
22	13-765	Single Bank Hydraulic Valve	1
23	45-130	Hose, 51½"	1
24	45-129	Hose, 43"	1
25		2-Bank Valve (on machine)	
26	45-068	Hose (on machine to pump)	
27	45-128	Hose, 26"	1
28	45-364	Valve Brace	1

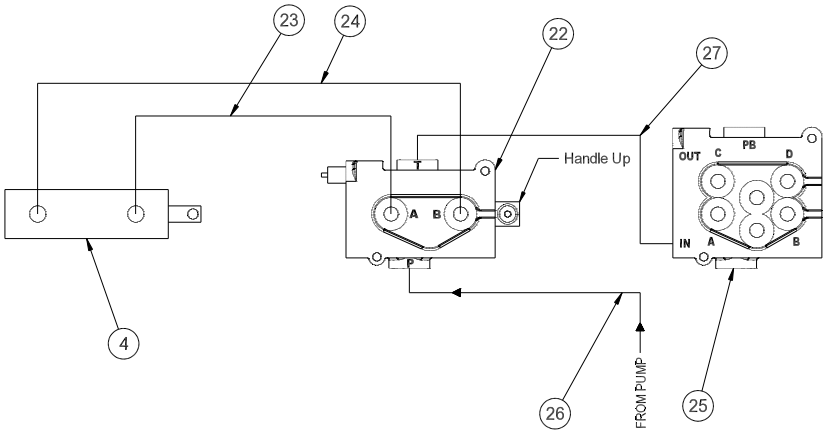
ENGINE MUST BE COOL BEFORE DISCONNECTING THE HOSES.

1. Assemble pusher bars (Ref# 14 and 17) to plow blade (Ref# 6) using one 3/8 -16 x 1 1/4 bolt (Ref# 10) and one 3/8 -16 x 3 bolt (Ref#11) per pusher bar. There are 2 holes to bolt (Ref# 10) hardware in. Using hole **closest to the blade will result in a shallow cut,** whereas using the hole **furthest from the blade will result in a deeper cut**. The slot on the pusher bar is for a more fine tuned adjustment.
2. Assemble the plow cross tube (Ref# 15) to the front pusher bars (Ref# 14 and 17) using 3/8 - 16 x 2 1/2 bolts and lock nuts (Ref# 12).
3. Assemble the ram mount (Ref# 1) to the main frame using the two studs that are welded to the frame and below the front of the console. Install rod end (Ref# 7) onto cylinder with 5/8 jam nut.
4. Using a 5/8 x 1 3/4 clevis pin (Ref# 16) and 1/8" bridge pin (Ref#3) mount the hydraulic cylinder (Ref# 4) to the plow crossbar (Ref# 15). Connect the other end of the hydraulic cylinder to the ram mount (Ref# 1) using 5/8 x 1½ Clevis Pin (Ref# 2) and 1/8" bridge pin (Ref#3).
5. Slide the plow/pusher bar assembly under machine and connect to machine. Secure using ½ x 1½ clevis pins (Ref# 13) and 1/8" bridge pins (Ref# 3).

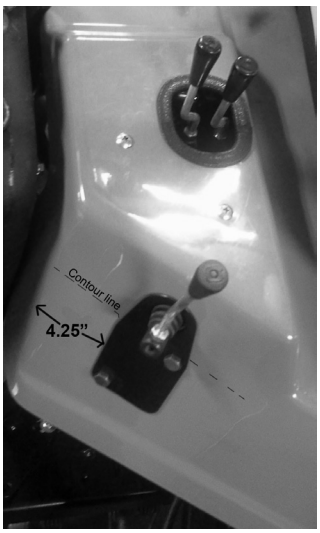
45-005 HYDRAULIC SAND PLOW DRAWING



HYDRAULIC VALVE PLUMBING DRAWING



6. Thread four, 45° elbow fittings (Ref# 18) into the single bank valve (Ref# 22), one each in the **A** port, **B** port, **IN** port and **OUT** port. Reference *Single Bank Hydraulic Valve Drawing* for a detailed view of the valve.
7. Thread two, 3/8 straight thread elbow fittings (Ref# 5) into the ports on the hydraulic cylinder (Ref# 4). Make sure the fittings on the hydraulic cylinder are pointing towards the machine.
8. Next connect the 43" hose (Ref# 24) to the fitting in the **B** port and connect the 51.5" hose (Ref# 23) to the fitting in the **A** port.
9. Fiberglas Fender: Using the valve mount as a template, Measure in approximately 4.25 inches from edge of right fender and mark. Line valve mount up with contour of the fender and the right side of the line you just marked. Trace holes onto fiberglass. CARB Canister is underneath so use caution when drilling holes out.

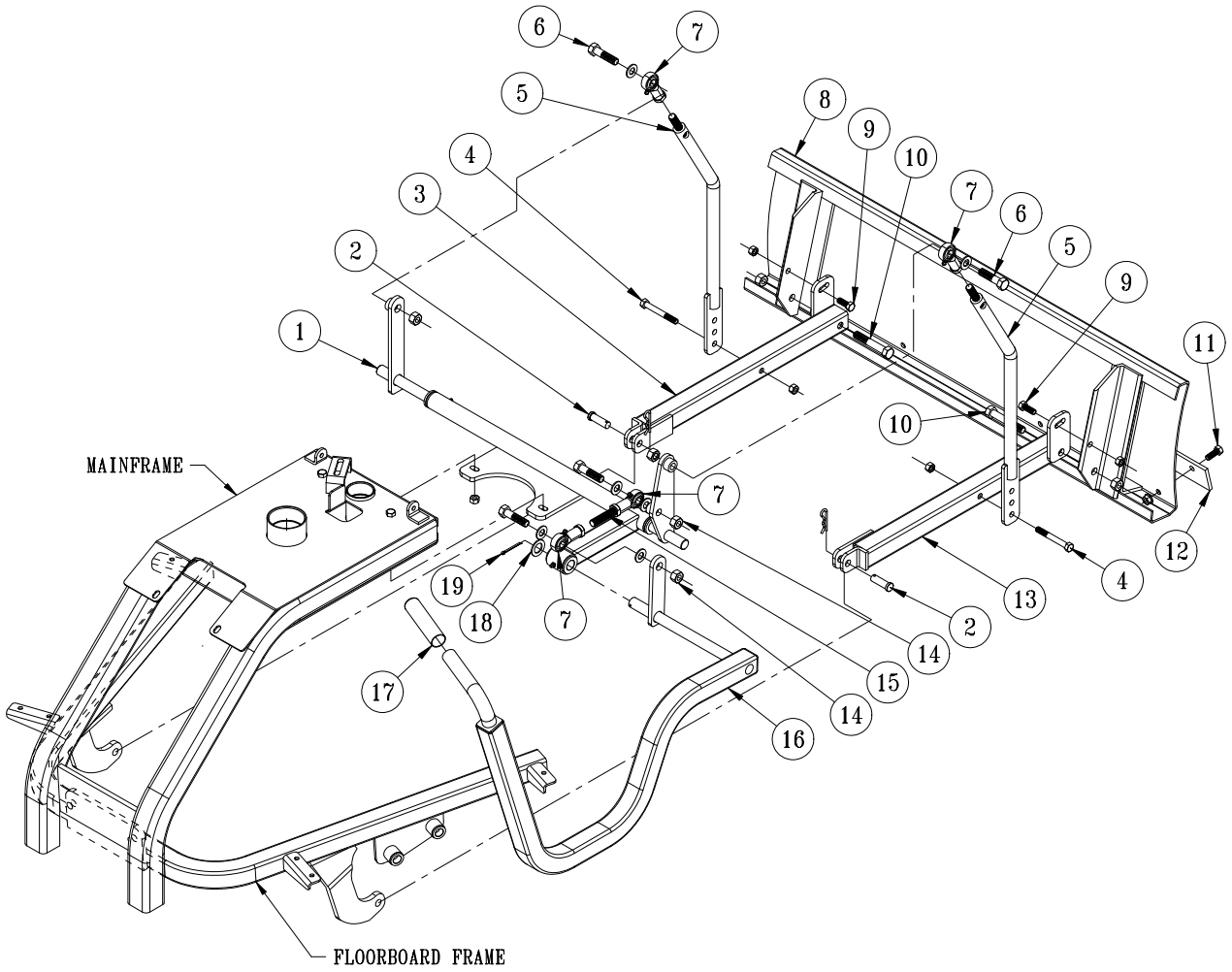


10. Fiberglass Fender: Mount the single bank hydraulic Valve (Ref# 22) to the valve mount (Ref# 19) as illustrated, using the two ¼ - 20 x 2 bolts (Ref# 20). Secure with the two ¼ - 20 flange whiz-lock nuts. Connect the straight handle (Ref# 21) to the valve. Reference *Single Bank Hydraulic Valve Drawing* for a detailed view of the valve.
11. Plastic Fender: The Valve assembly mounts on the right front fender. The Valve goes underneath the fender with the handle pointing outward. The Valve Mount Plate (Ref 19) mounts on the outside of the fender. The Valve Brace (Ref 28) mounts inside the fender.
12. Plastic Fender: Remove the 4 bolts holding the fender to the mainframe. Working on the inside of the fender, place the Valve Brace, with the slotted holes lined up with the fender holes, and the face with the offset holes against the front of the fender, as shown in the photo. Mark the location of the two offset holes. Drill a 3/8" hole at each mark. *Use a piece of scrap wood to drill into to prevent tearing the plastic fender.*
13. Position the Valve Mount (Ref 19) so the holes line up with the holes that you drilled. Mark location of the large hole then drill a 1¼" hole at that mark. *Use a piece of scrap wood to drill into to prevent tearing the plastic fender.*

14. Route the 43" hose (Ref# 24) from the **B** port on the single bank hydraulic valve to the top port on the hydraulic cylinder. Route the 51.5" hose (Ref# 23) from the **A** port on the single bank hydraulic valve to the bottom port on the cylinder.
15. Disconnect the negative (-) ground battery cable from the battery. Place a drain pan under the valve on the machine. **ENGINE MUST BE COOL BEFORE DISCONNECTING THE HOSES.**
16. Disconnect hose (Ref# 26) from the **IN** port on the two-bank hydraulic valve (Ref#25). Connect this hose (Ref# 26) to the **"P"** port of the single bank valve (Ref# 22). Connect the 26" hose (Ref# 27) from the **"T"** port on the single bank valve (Ref# 22) to the **IN** port of the two-Bank valve (Ref# 25). Fasten to the frame using the 14½" nylon ties.

17. Reconnect the negative (-) ground battery cable to battery.
18. Make sure that everything is clear of the machine. Start the machine, work the valve so that the plow will both raise and lower. Also, do this with both the attachment lift and the rake lift. Work the lift a number of times until all air works out of the plow circuit and the cylinder works smoothly. At this time look for hydraulic leaks. If there are leaks, turn engine off and repair, start up and check again.
19. Check the hydraulic oil level. The level should be 2" to 2½" below the top of the tank. If more is needed, use SAE 10W-40 API service SG motor oil.

45-009 ALUMINUM SAND PLOW DRAWING



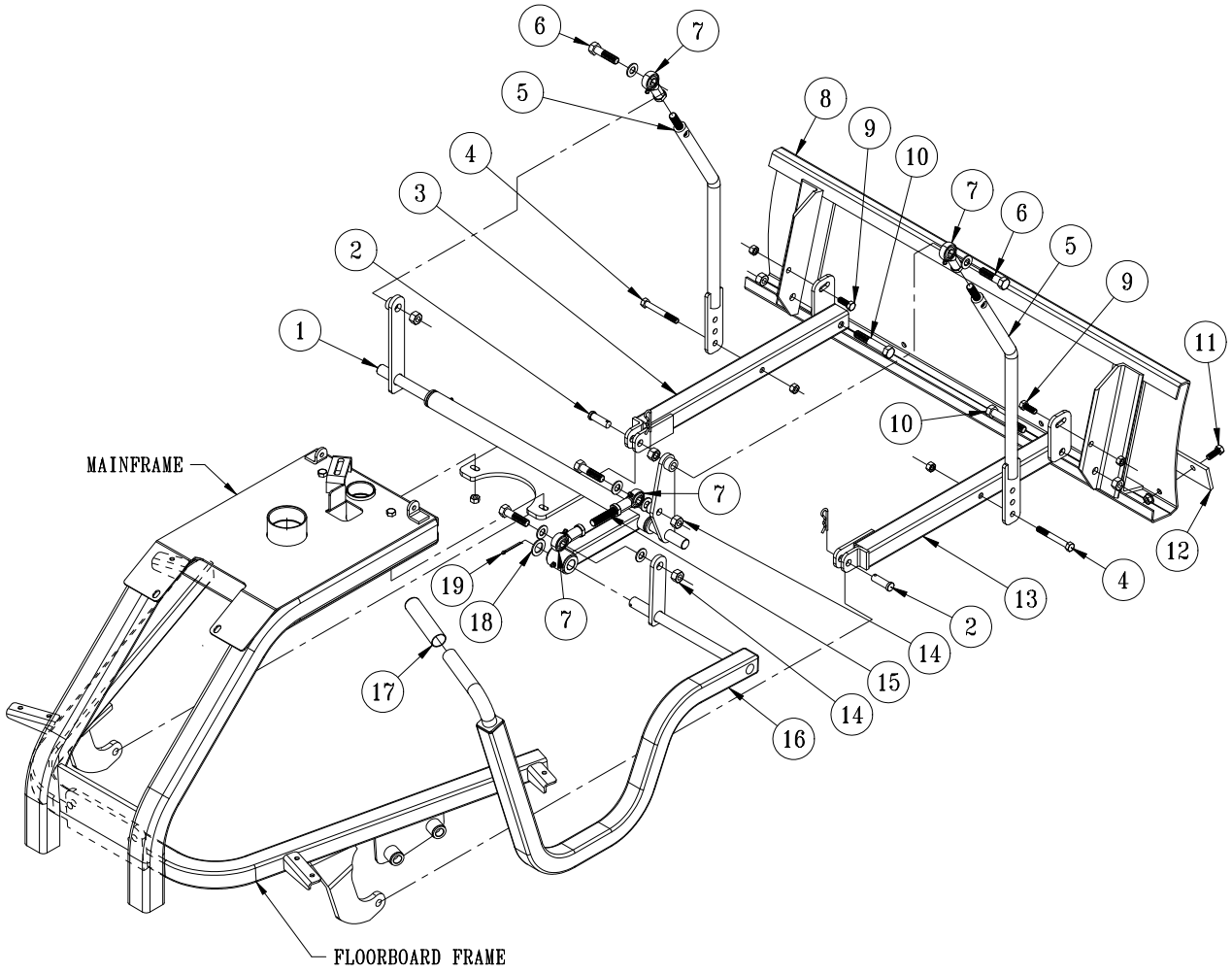
45-009 ALUMINUM SAND PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	45-106	Lift Assembly	1
	18-221	Flange Bushing	2
2	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2
	HHP-18	Bridge Pin, 1/8	2
3	45-101	Left Pusher Bar	1
4	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HW-38	Flat Washer, 3/8	4
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
5	27-073	Lift Rod	2
6	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing, 1/2 x 14GA	8
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
7	80-006	Rod End	4
	HNJ-12-20	Jam Nut, 1/2 - 20	4
8	45-092	Aluminum Sand Plow Blade	1
9	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2
	HWL-38	Lock Washer, 3/8	2
	HN-38-16	Hex Nut, 3/8 - 16	2
10	HB-12-13-300	Hex Bolt, 1/2 - 13 x 3	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
11	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	4
12	13-167	Wear Blade	1
13	45-100	Right Pusher Bar	1
14	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing, 1/2 x 14GA	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
15	27-073-02	Plow Link, 3"	1
16	45-097	Plow Handle	1
17	15-019	Grip	1
18	HMB-34-14	Machine Bushing, 3/4 - 14GA	1
19	HP-18-150	Cotter Pin, 1/8 x 1 1/2	1

SAND PLOW INSTALLATION

1. Assemble (Ref# 3 and 13) Pusher Bars to (Ref# 8) Plow using (Ref# 9 and 10) hardware. There are 2 holes to Hex Bolt (Ref# 9) hardware in. Using hole closest to the blade will result in a shallow cut, whereas using the hole furthest from the blade will result in a deeper cut. The slot on the pusher bar is for a more fine tuned adjustment.
2. Assemble the (Ref# 1) Lift Assembly to the Main Frame using the two studs that are under the frame and below the front of the console.
3. Attach the (Ref# 6) Lift Handle to the lift assembly using (Ref# 18 & 19) Cotter Pin and Machine Bushing. Using (Ref# 15 & 7) Rod and Yoke attach the handle to the lift assembly.
4. Put (Ref# 7) Rod Ends onto (Ref# 10) Lift Rods with Jam Nut first. Adjust to equal lengths. Hex Bolt Lift Rods to Lift Arms with Ball Joints to the outside. Hex Bolt from outside with the 1/2" Machine Bushing between Rod End and Lift Arm and the 1/2 - 13 nut on the inside. Use (Ref# 6) Hardware.
5. Slide Plow under machine and connect to machine. Use (Ref# 2) Clevis Pin and Bridge Pin.
6. Lift up the plow using the bottom hole in the Lift Rod as a starting point. Secure to the Pusher Bars. Use (Ref# 4) hardware. For maximum blade clearance use the second hole from the front of the pusher bar. The three holes in the lift rods are for adjusting the hand lever. The top hole moves the lever forward. Each hole down moves the lever to the rear of the machine.
7. For fine tuning of blade height off ground twist (Ref# 7) rod end on (Ref# 15) rod. Twisting the rod end out will increase down pressure. Twisting the rod end onto the rod will decrease down pressure.

45-019 ALUMINUM 60" SAND PLOW DRAWING



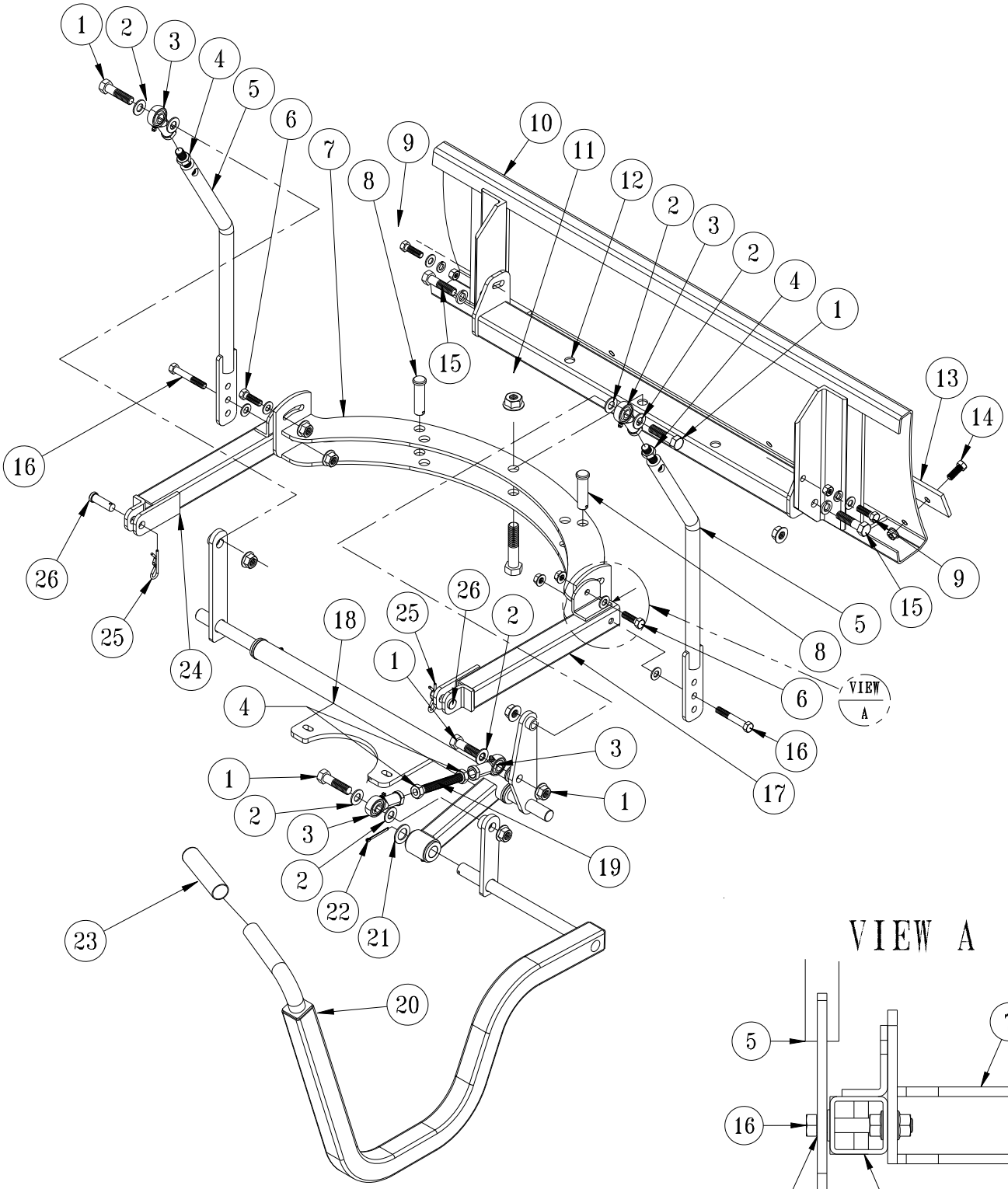
45-019 ALUMINUM 60" SAND PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	45-106	Lift Assembly	1
	18-221	Flange Bushing	2
2	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2
	HHP-18	Bridge Pin, 1/8	2
3	45-101	Left Pusher Bar	1
4	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HW-38	Flat Washer, 3/8	4
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
5	27-073	Lift Rod	2
6	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing, 1/2 x 14GA	8
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
7	80-006	Rod End	4
	HNJ-12-20	Jam Nut, 1/2 - 20	4
8	45-159	Aluminum Sand Plow Blade	1
9	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2
	HWL-38	Lock Washer, 3/8	2
	HN-38-16	Hex Nut, 3/8 - 16	2
10	HB-12-13-300	Hex Bolt, 1/2 - 13 x 3	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
11	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	4
12	35-012	Wear Blade	1
13	45-100	Right Pusher Bar	1
14	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing, 1/2 x 14GA	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
15	27-073	Plow Link. 3"	1
16	45-097	Plow Handle	1
17	15-019	Grip	1
18	HMB-34-14	Machine Bushing, 3/4 - 14GA	1
19	HP-18-150	Cotter Pin, 1/8 x 1 1/2	1

SAND PLOW INSTALLATION

1. Assemble (Ref# 3 and 13) Pusher Bars to (Ref# 8) Plow using (Ref# 9 and 10) hardware. There are 2 holes to Hex Bolt (Ref# 9) hardware in. Using hole closest to the blade will result in a shallow cut, whereas using the hole furthest from the blade will result in a deeper cut. The slot on the pusher bar is for a more fine tuned adjustment.
2. Assemble the (Ref# 1) Lift Assembly to the Main Frame using the two studs that are under the frame and below the front of the console.
3. Attach the (Ref# 6) Lift Handle to the lift assembly using (Ref# 18 & 19) Cotter Pin and Machine Bushing. Using (Ref# 15 & 7) Rod and Yoke attach the handle to the lift assembly.
4. Put (Ref# 7) Rod Ends onto (Ref# 10) Lift Rods with Jam Nut first. Adjust to equal lengths. Hex Bolt Lift Rods to Lift Arms with Ball Joints to the outside. Hex Bolt from outside with the 1/2" Machine Bushing between Rod End and Lift Arm and the 1/2 - 13 nut on the inside. Use (Ref# 6) Hardware.
5. Slide Plow under machine and connect to machine. Use (Ref# 2) Clevis Pin and Bridge Pin.
6. Lift up the plow using the bottom hole in the Lift Rod as a starting point. Secure to the Pusher Bars. Use (Ref# 4) hardware. For maximum blade clearance use the second hole from the front of the pusher bar. The three holes in the lift rods are for adjusting the hand lever. The top hole moves the lever forward. Each hole down moves the lever to the rear of the machine.
7. For fine tuning of blade height off ground twist (Ref# 7) rod end on (Ref# 15) rod. Twisting the rod end out will increase down pressure. Twisting the rod end onto the rod will decrease down pressure.

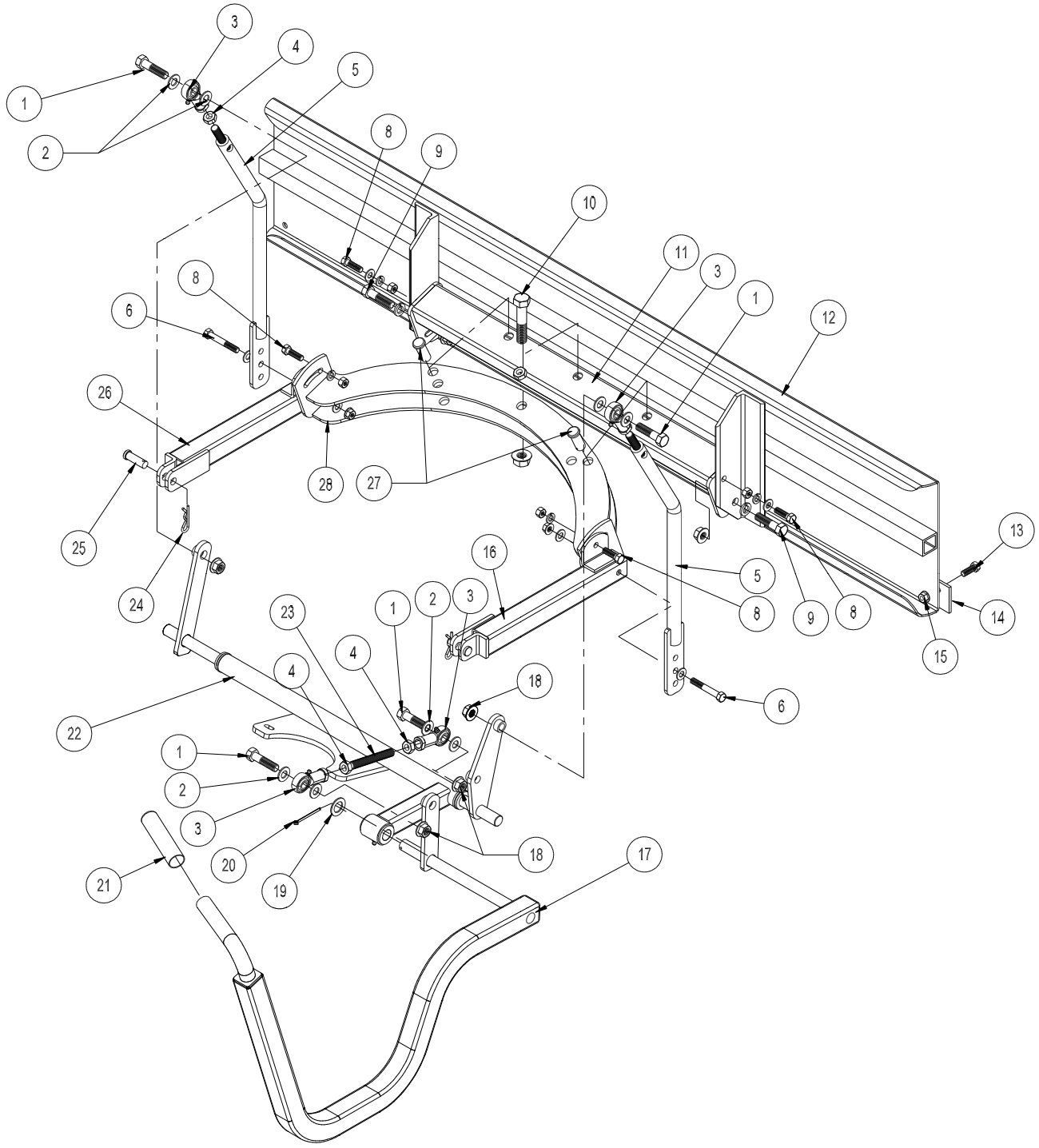
45-179 40" ANGLE PLOW



45-179 40" ANGLE PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	4
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	4
2	HMB-12-14	Machine Bushing, 1/2 x 14GA	8
3	80-006	Rod End	4
4	HNJ-12-20	Jam Nut, 1/2- 20	4
5	27-073	Lift Rod	2
6	HB-38-16-125	Hex Bolt, 5/8 - 16 x 1 1/4	2
	HNFL-38-16	Flange Whiz-Loc Nut, 5/8 - 16	2
7	45-181	Plow Mount	1
8	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	2
	HHP-18	Bridge Pin, 1/8	2
9	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2
	HWL-38	Lock Washer, 3/8	2
	HN-38-16	Hex Nut, 3/8 - 16	2
10	27-017	Aluminum Sand Plow Blade	1
11	HB-58-11-300	Hex Bolt, 5/8 - 11 x 3	1
	HNTL-58-11	Nylon Lock Nut, 5/8 - 11	1
12	42-495	Pivot Frame	1
13	13-167	Wear Blade	1
14	HB-38-16-100	Hex Bolt,3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	4
15	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HWL-12	Lock Washer, 1/2	2
16	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	4
17	45-231	Right Pusher Bar	1
18	45-106	Lift Assembly	1
	18-221	Flange Bushing	2
19	27-073-02	Plow Link, 3"	1
20	45-097	Lift Handle	1
21	HMB-34-14	Machine Bushing, 3/4 - 14GA	1
22	HP-18-150	Cotter Pin, 1/8 x 1 1/2	1
23	15-019	Grip	1
24	45-232	Left Pusher Bar	1
25	HHP-18	Bridge Pin, 1/8	2
26	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2

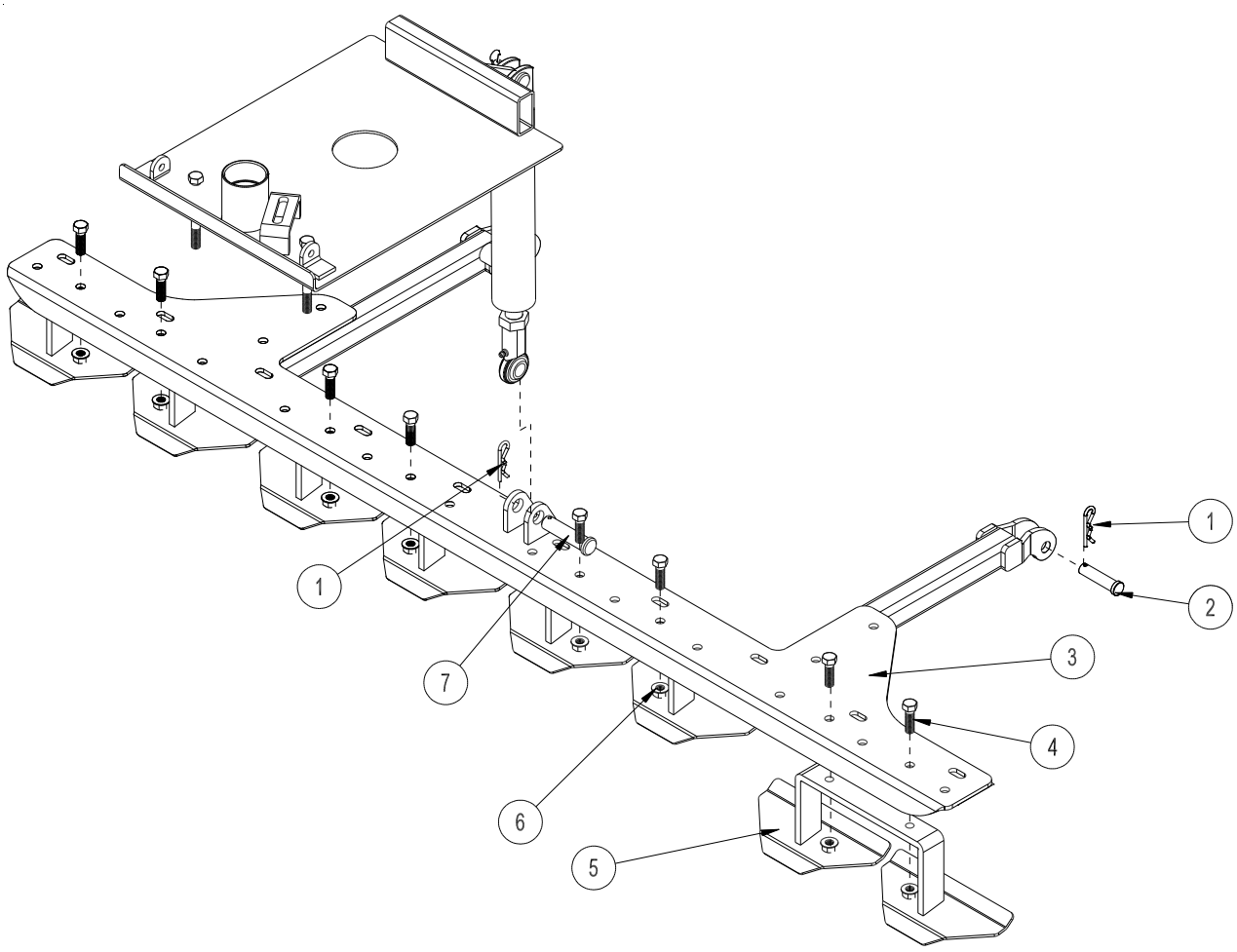
45-180 60" ANGLE PLOW



45-180 60" ANGLE PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	4
2	HMB-12-14	Machine Bushing, 1/2 x 14GA	8
3	80-006	Rod End	4
4	HNJ-12-20	Jam Nut, 1/2 - 20	4
5	27-073	Lift Rod	2
6	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HW-38	Flat Washer, 3/8	4
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
7	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
8	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	4
	HW-38	Flat Washer, 3/8	4
	HWL-38	Lock Washer, 3/8	4
	HN-38-16	Hex Nut, 3/8 - 16	4
9	HB-12-13-200	Hex Bolt, 1/2 - 13 x 2	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
10	HB-58-11-300	Hex Bolt, 5/8 -11 x 3	1
	HNTL-58-11	Nylon Lock Nut, 5/8 - 11	1
11	42-495	Pivot Frame	1
12	45-159	Aluminum 60" Sand Plow Blade	1
13	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	4
14	35-012	Wear Blade	1
15	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	4
16	45-182	Right Pusher Bar	1
17	45-097	Lift Handle	1
	18-221	Flange Bushing	2
18	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	4
19	HMB-34-14	Machine Bushing, 3/4 - 14GA	1
20	HP-18-150	Cotter Pin, 1/8 x 1 1/2	1
21	15-019	Grip	1
22	45-106	Lift Assembly	1
	18-221	Flange Bushing	2
23	27-073-02	Plow link. 3"	1
24	HHP-18	Bridge Pin, 1/8	2
25	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2
26	45-183	Left Pusher Bar	1
27	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	2
	HHP-18	Bridge Pin, 1/8	2
28	45-181	Plow Mount	1

45-014 WEED CULTIVATOR



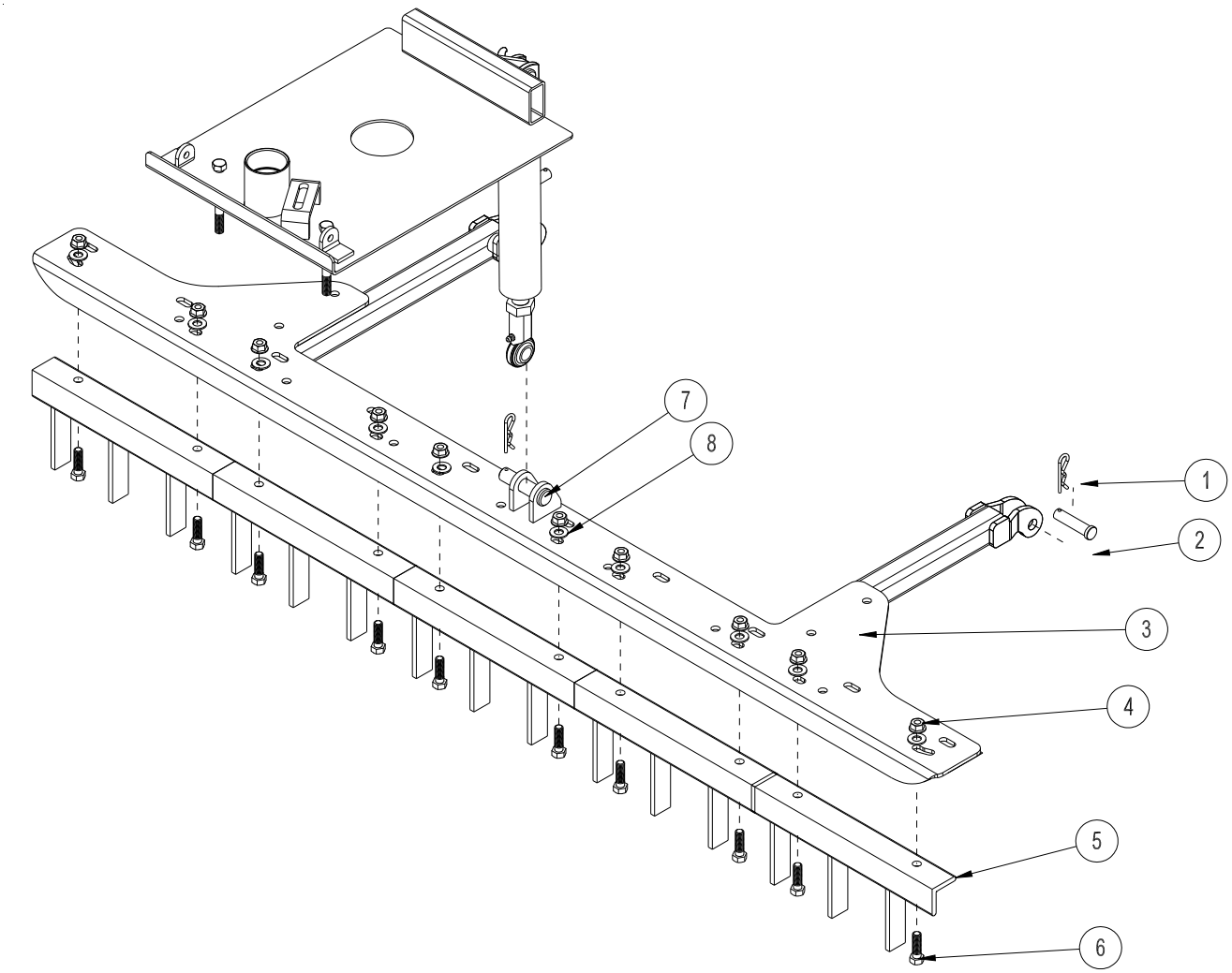
45-014 WEED CULTIVATOR

REF#	PART #	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	45-185	Center Bar Lift	1
4	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	8
5	13-096	Blade Assembly	4
6	HNFL-38-16	Flange Nut, 3/8 - 16	8
7	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1

INSTALLATION INSTRUCTIONS

1. Blade assemblies (Ref 5) should be Hex Bolted to the center lift bar (Ref 3). Use the 3/8 - 16 x 1 1/4 Hex Bolt (Ref 4) and Flange Whiz-Loc Nut (Ref 6).
2. Attach the center lift bar to main frame using (Ref 1 and 2) clevis pin and bridge pin.
3. Lift center lift bar up or extend cylinder so rod end lines up with the holes on the center of the attachment lift. Use clevis pin and bridge pin (Ref 7 and 1) to fasten cylinder to sand cultivator.
4. Turn machine on and test for proper operation.

45-006 SAND CULTIVATOR DRAWING



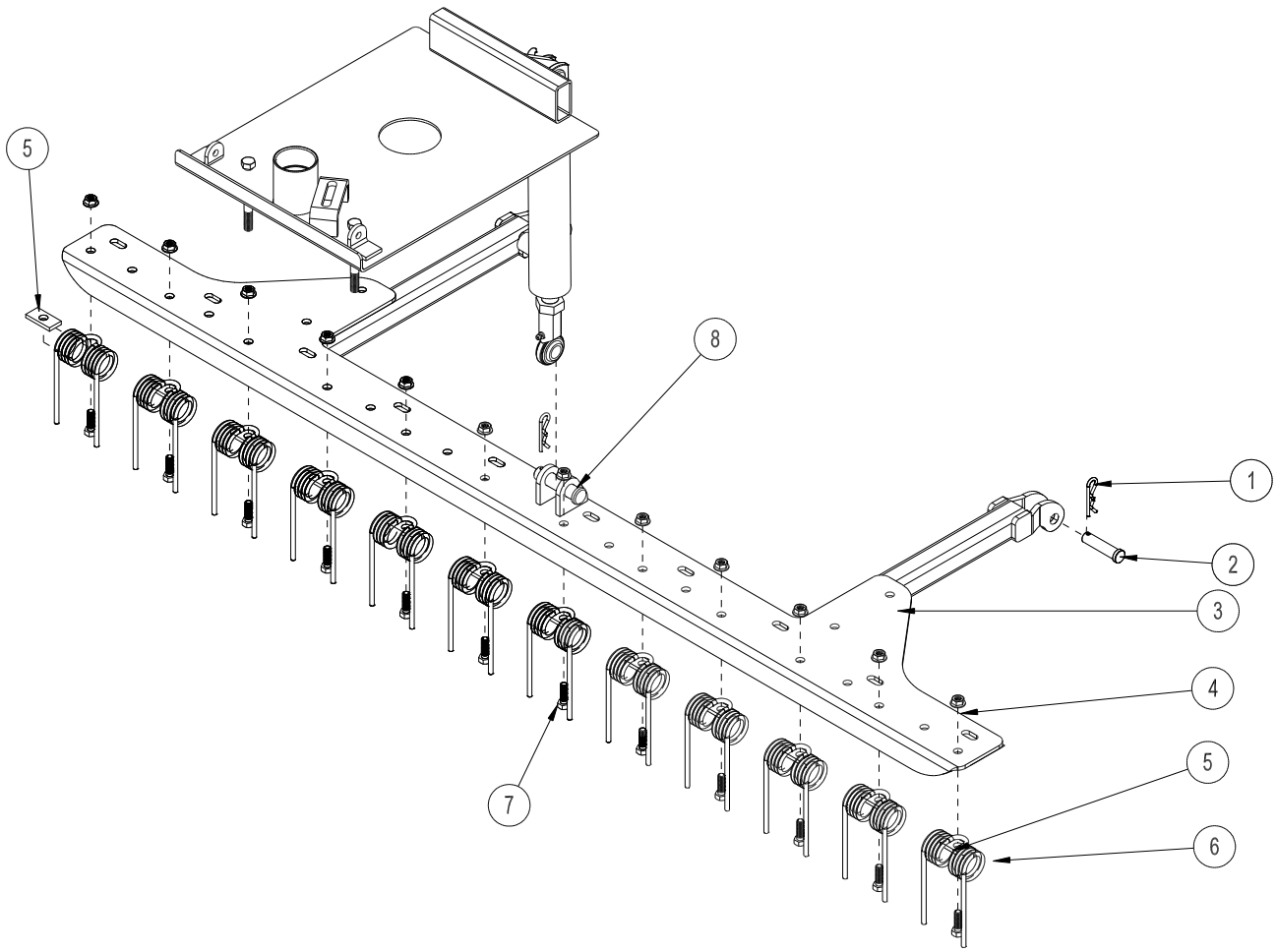
45-006 SAND CULTIVATOR PARTS LIST

REF#	PART#	DESCRIPTION	QTY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	45-184	Center Lift Bar	1
4	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	10
5	42-038	Tine Segment	5
6	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	10
7	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1

INSTALLATION INSTRUCTIONS

1. Tine segments (Ref 5) should be Hex Bolted to the center lift bar (Ref 3). Use the 3/8 - 16 x 1 Hex Bolt (Ref 6) and Nylon Lock Nut (Ref 4).
2. Attach the center lift bar to main frame using (Ref 1 and 2) clevis pin and bridge pin.
3. Lift center lift bar up or extend cylinder so rod end lines up with the holes on the center of the attachment lift. Use clevis pin and bridge pin (Ref 7 and 1) to fasten cylinder to sand cultivator.
4. Turn machine on and test for proper operation.

45-008 SAND CULTIVATOR WITH SPRING TINES DRAWING



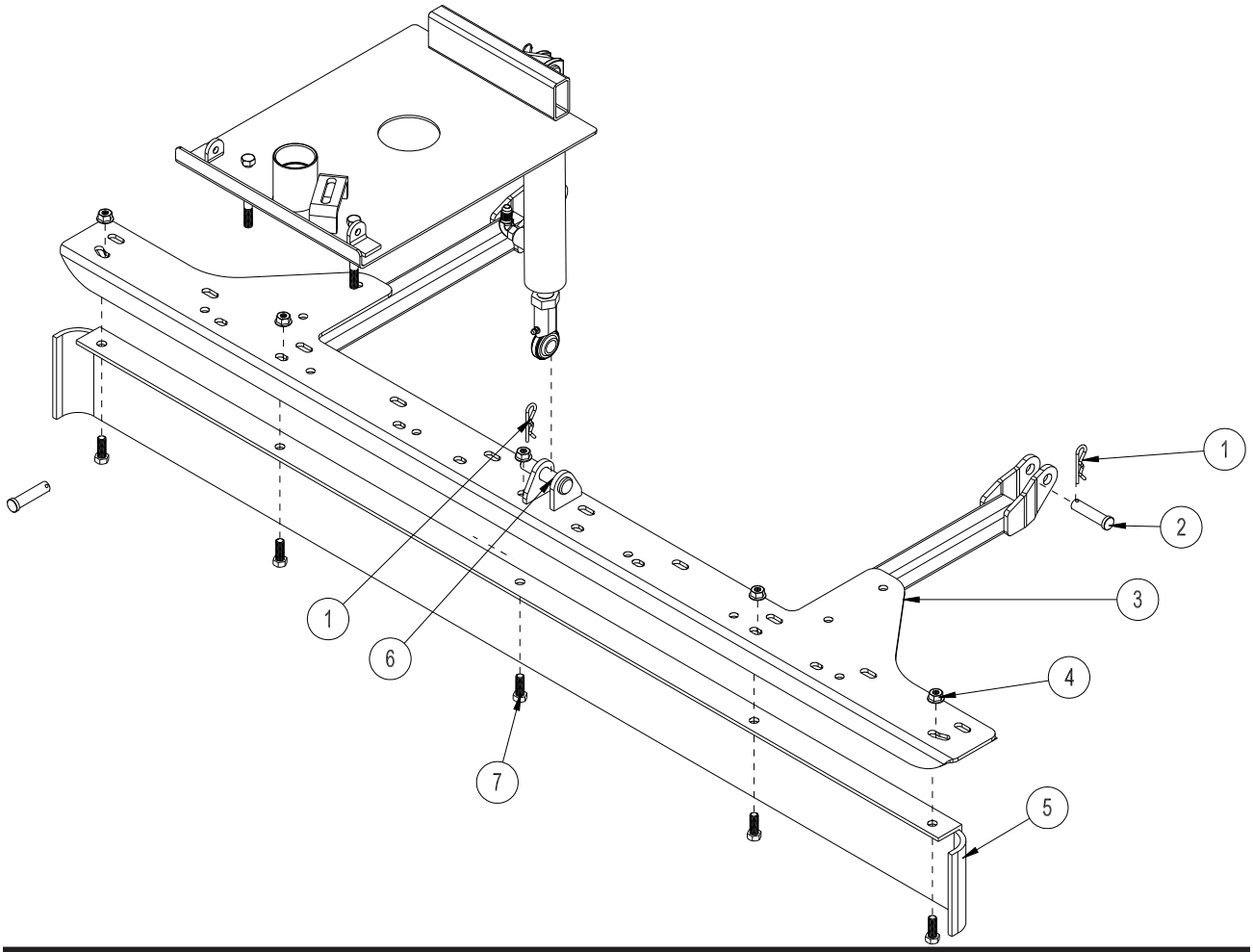
45-008 SAND CULTIVATOR WITH SPRING TINES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, $^{1}/_{8}$	3
2	HCP-12-200	Clevis Pin, ½ x 2	2
3	45-185	Center Lift Bar	1
4	HNTL-516-18	Nylon Lock Nut, $^{5}/_{16}$ - 18	12
5	42-177	Spring Holder	12
6	42-122	Rake Spring	12
7	HB-516-18-100	Hex Bolt, $^{5}/_{16}$ - 18 x 1	12
8	HCP-58-250	Clevis Pin, $^{5}/_{8}$ x 2½	1

INSTALLATION INSTRUCTIONS

1. Springs (Ref 6) should be Hex Bolted to the center lift bar (Ref 3) with the spring holder (Ref 5) between center lift bar and the spring. Hex Bolt in place with $^{5}/_{16}$ - 18 x 1 Hex Bolt (Ref 7) and Nylon Lock Nut (Ref 4).
2. Attach the center lift bar to main frame using (Ref 1 and 2) clevis pin and bridge pin.
3. Lift center lift bar up or extend cylinder so rod end lines up with the holes on the center of the attachment lift. Use clevis pin and bridge pin (Ref 8 and 1) to fasten cylinder to sand cultivator.
4. Turn machine on and test for proper operation.

45-012 CONSTRUCTION LEVELING BLADE DRAWING



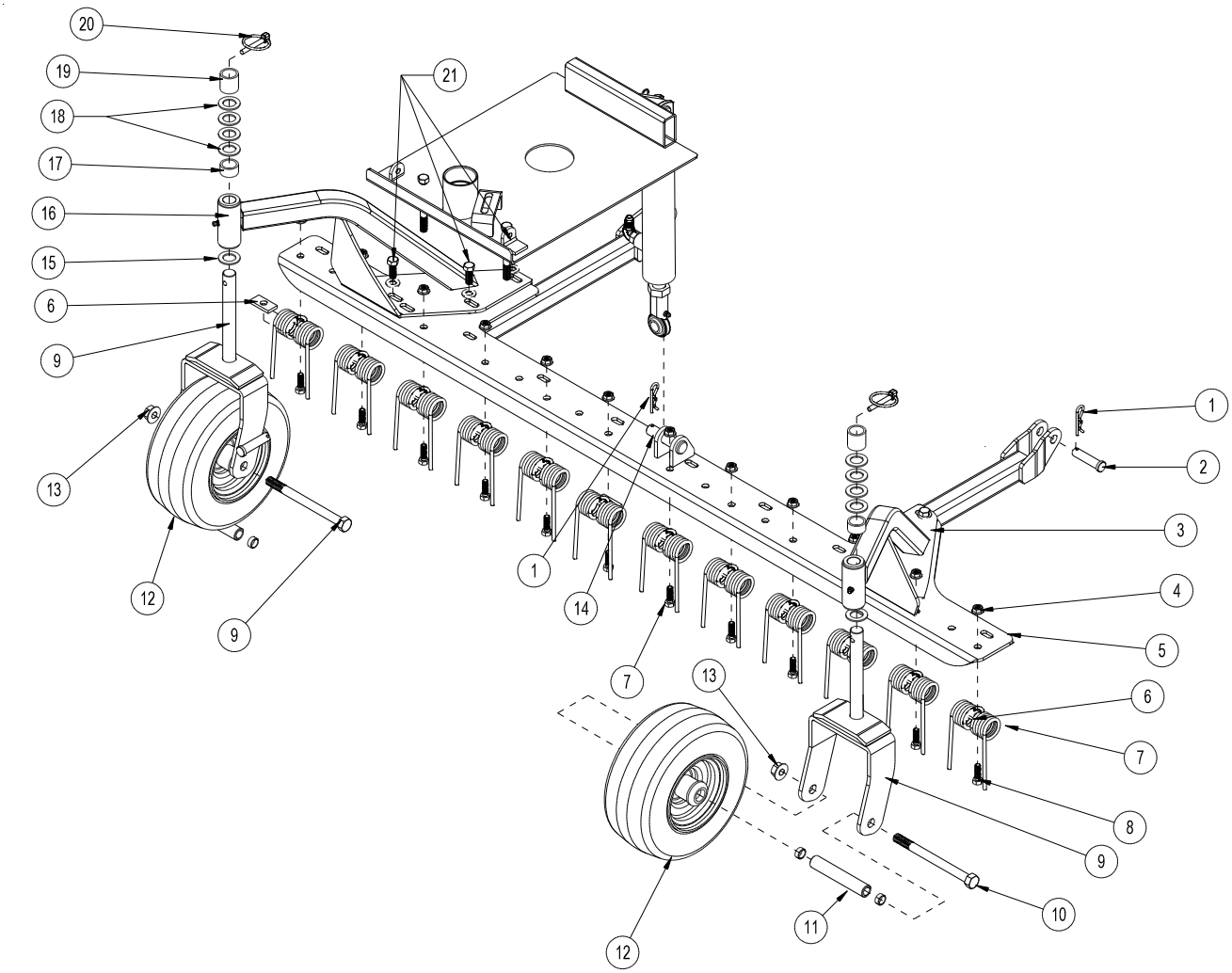
45-012 CONSTRUCTION LEVELING BLADE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	45-116	Center Lift Bar	1
4	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	5
5	42-097	Leveling Blade	1
6	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
7	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	5

INSTALLATION INSTRUCTIONS

1. Hex Bolt leveling blade (Ref 5) to center lift bar (Ref 3) using five 3/8 - 16 x 1 Hex Bolts (Ref 7) and five 3/8 - 16 Nylon Lock Nuts (Ref 4) as shown on drawing.
2. Attach the center lift bar to a main frame using clevis pin and bridge pin (Ref 1 and 2).
3. Lift center lift bar up or extend cylinder so rod end lines up with the holes on the center of the center lift bar. Use 5/8 x 2 1/2 clevis pin and bridge pin (Ref 6 & 1) to fasten cylinder to cultivator.
4. Turn machine on and test for proper operation.

45-013 FIELD SCARIFIER WITH TINES DRAWING



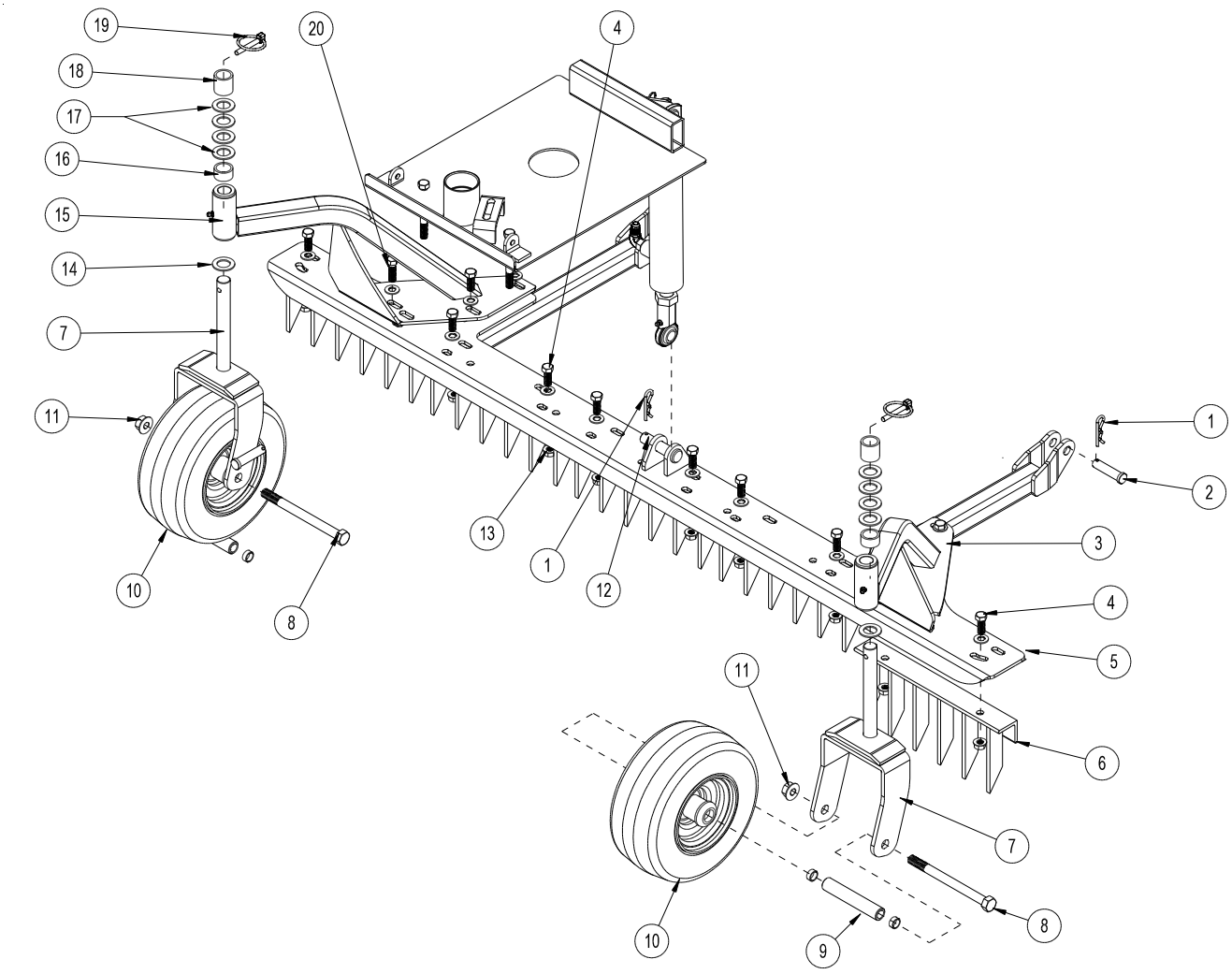
45-013 FIELD SCARIFIER WITH TINES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, ½ x 2	2
3	42-205	Left Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-288)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-288)	1
4	HNTL-516-18	Nylon Lock Nut, 5/16 - 18	12
5	45-137	Center Lift Bar	1
6	42-177	Spring Holder	12
7	42-122	Rake Spring	12
8	HB-516-18-100	Hex Bolt, 5/16 - 18 x 1	12
9	42-204	Castor Fork	2
10	HB-12-13-600	Hex Bolt, ½ - 13 x 6	2
11	33-338	Axle Bearing	2
12	42-202	Tire & Wheel	2
13	HNTL-12-13	Nylon Lock Nut, ½ - 13	2
14	HCP-58-250	Clevis Pin, 5/8 x 2½	1
15	HMB-34-14	Machine Bushing, ¾ x 14GA	2
16	42-206	Right Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-289)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-289)	1
17	42-215	Short Spacer	2
18	HMB-34-10	Machine Bushing, ¾ x 10GA	8
19	42-214	Long Spacer	2
20	42-539	Lynch Pin, ¼"	2
21	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	6
	HW-38	Flat Washer, 3/8	6
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	6

INSTALLATION INSTRUCTIONS

1. Assemble seven digger blades (Ref 6) to the center lift bar (Ref 5) using the 3/8 - 16 x 1 1/4 Hex Bolts, washers and nuts (Ref 4 & 13). Do not put the two digger blades on that mount with the caster arm hardware (Ref 20).
2. Mount the right and left caster wheel brackets (Ref 4 and 15) to the center lift bar (Ref 5) using 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 21). Mount the last two digger blades at this time using the 3/8 - 16 x 1 1/2 Hex Bolts, washers and nuts (Ref 20).
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the center lift bar.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the center lift bar and secure with a clevis pin (Ref 12) and bridge pin (Ref 1).
7. Attach the arms on the center lift bar to the main frame on the machine and secure with clevis pin (Ref 2) and bridge pin (Ref 1).
8. Turn machine on and test for proper operation.
9. Adjust castor wheels (Ref 12) by placing the short (Ref 16) or long spacer (Ref 18) on the castor wheel fork before placing the castor wheel assembly into the castor wheel brackets. Be sure both castor wheels are adjusted to the same height.

45-007 INFIELD SCARIFIER WITH VERTICAL BLADES DRAWING



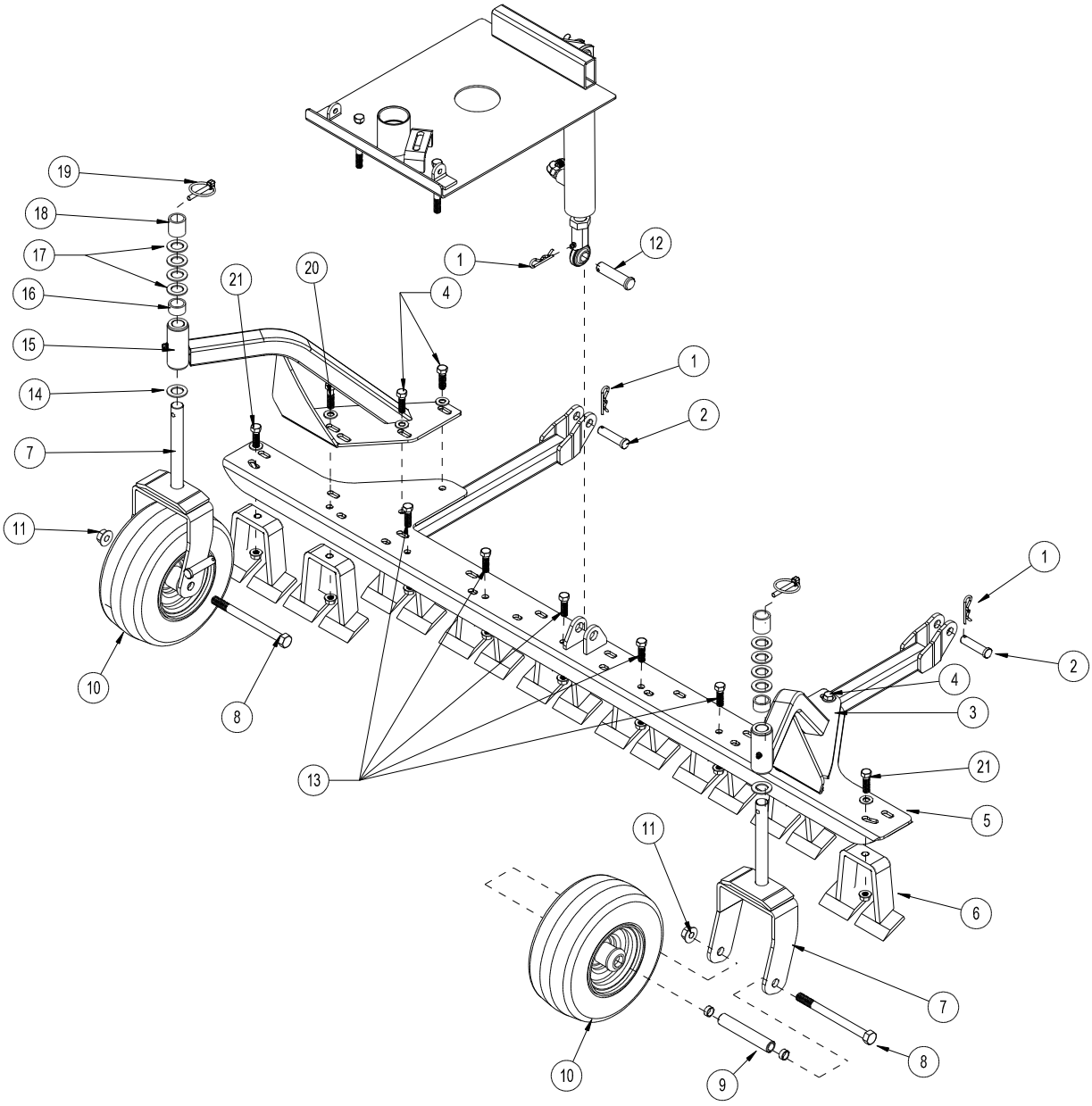
45-007 INFIELD SCARIFIER WITH VERTICAL BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	42-205	Left Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-205)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-205)	1
4	HB-38-16-100	Hex Bolt 3/8 - 16 x 1	12
	HW-38	Flat Washer, 3/8	12
5	45-116	Center Lift Bar	1
6	26-042	Tine Segment	5
7	42-204	Castor Fork	2
8	HB-12-13-600	Hex Bolt, 1/2-13 x 6	2
9	33-338	Axle Bearing	2
10	42-202	Tire and Wheel	2
11	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
12	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
13	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	14
14	HMB-34-14	Machine Bushing, 3/4 x 14GA	2
15	42-206	Right Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-206)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-206)	1
16	42-215	Short Spacer	2
17	HMB-34-10	Machine Bushing, 3/4 x 10GA	8
18	42-214	Long Spacer	2
19	42-539	Lynch Pin, 5/16	2
20	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2

INSTALLATION INSTRUCTIONS

1. Assemble the tine Segments (Ref 6) to the center lift bar (Ref 5) using the 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 4).
2. Mount the right and left caster wheel brackets (Ref 3 and 15) to the center lift bar (Ref 5) using the rest of 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 4 & 13). Mount the last two digger blades at this time using the 3/8 - 16 x 1 1/4 Hex Bolts, washers and nuts (Ref 20 & 13).
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the center lift bar.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the center lift bar and secure with a clevis pin (Ref 12) and bridge pin (Ref 1).
7. Attach the arms on the center lift bar to the main frame on the machine and secure with clevis pin (Ref 2) and bridge pin (Ref 1).
8. Turn machine on and test for proper operation.
9. Adjust castor wheels (Ref 12) by placing the short (Ref 16) or long spacer (Ref 18) on the castor wheel fork before placing the castor wheel assembly into the castor wheel brackets. Be sure both castor wheels are adjusted to the same height.

45-011 INFIELD SCARIFIER WITH CHISEL BLADES DRAWING



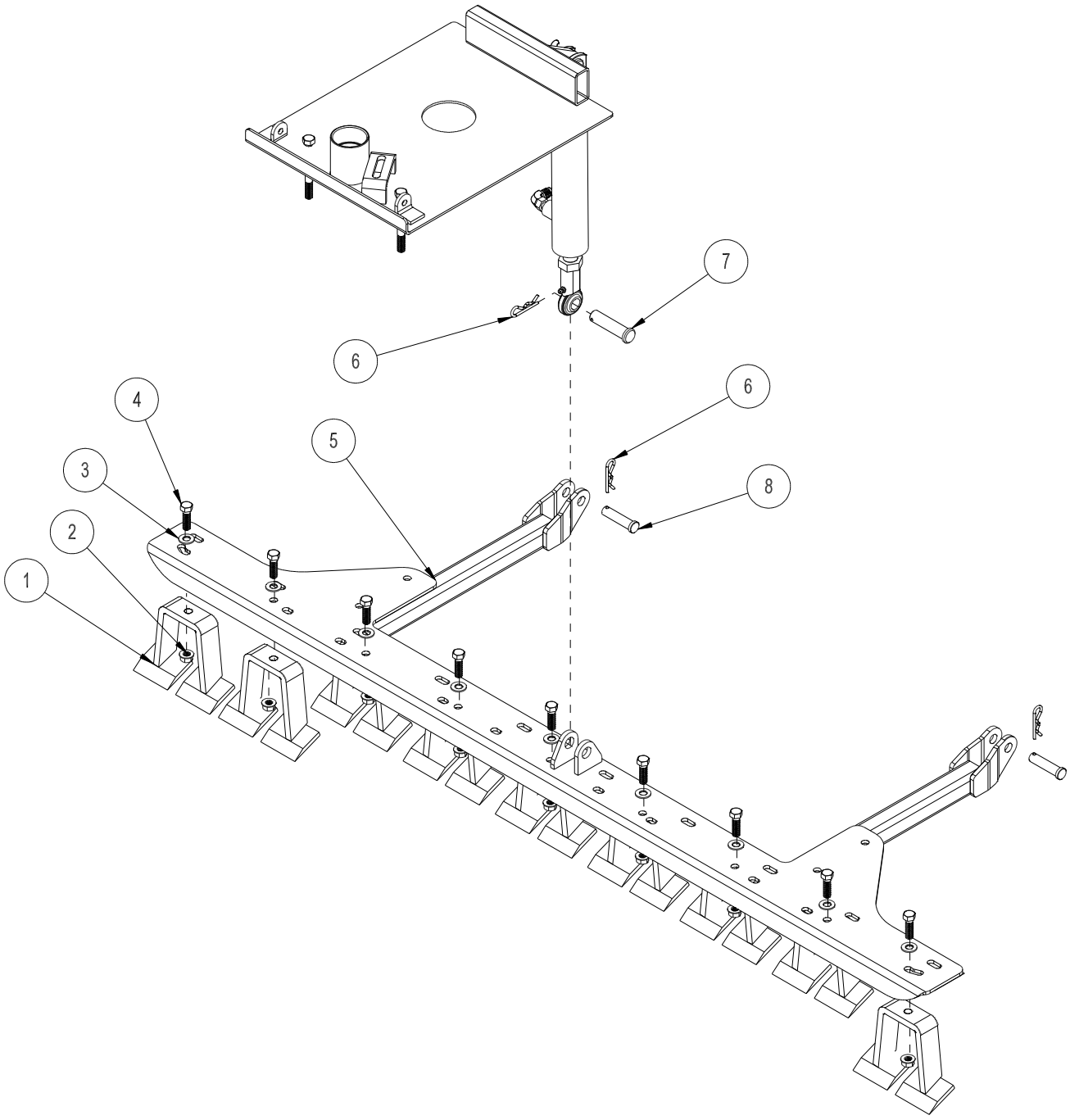
45-011 INFIELD SCARIFIER WITH CHISEL BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	42-205	Left Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-205)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-205)	1
4	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	4
	HW-38	Flat Washer, 3/8	4
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	4
5	45-116	Center Lift Bar	1
6	13-114	Digger Blades	9
7	42-204	Castor Fork	2
8	HB-12-13-600	Hex Bolt, 1/2 - 13 x 6	2
9	33-338	Axle Bearing	2
10	42-202	Tire and Wheel	2
11	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
12	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
13	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	5
	HNTL-38-16	Nylon Lock Nut,3/8 - 16	5
14	HMB-34-14	Machine Bushing, 3/4 x 14GA	2
15	42-206	Right Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-206)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-206)	1
16	42-215	Short Spacer	2
17	HMB-34-10	Machine Bushing, 3/4 x 10GA	8
18	42-214	Long Spacer	2
19	42-539	Lynch Pin, 5/16	2
20	HB-38-16-150	Hex Bolt, 3/8 - 16 x 1 1/2	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
21	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2

INSTALLATION INSTRUCTIONS

1. Assemble seven digger blades (Ref 6) to the center lift bar (Ref 5) using the 3/8 - 16 x 1 1/4 Hex Bolts, washers and nuts (Ref 21) on the outside slots and 3/8 - 16 x 1 Hex Bolts and nuts (Ref 13) on the holes. Do not put the two digger blades on that mount with the caster arm hardware (Ref 20).
2. Mount the right and left caster wheel brackets (Ref 3 and 15) to the center lift bar (Ref 5) using 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 4). Mount the last two digger blades at this time using the 3/8 - 16 x 1 1/2 Hex Bolts, washers and nuts (Ref 20).
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the center lift bar.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the center lift bar and secure with a clevis pin (Ref 12) and bridge pin (Ref 1).
7. Attach the arms on the center lift bar to the main frame on the machine and secure with clevis pin (Ref 2) and bridge pin (Ref 1).
8. Turn machine on and test for proper operation.
9. Adjust castor wheels (Ref 12) by placing the short (Ref 16) or long spacer (Ref 18) on the castor wheel fork before placing the castor wheel assembly into the castor wheel brackets. Be sure both castor wheels are adjusted to the same height.

45-173 SCARIFIER WITH CHISEL BLADES

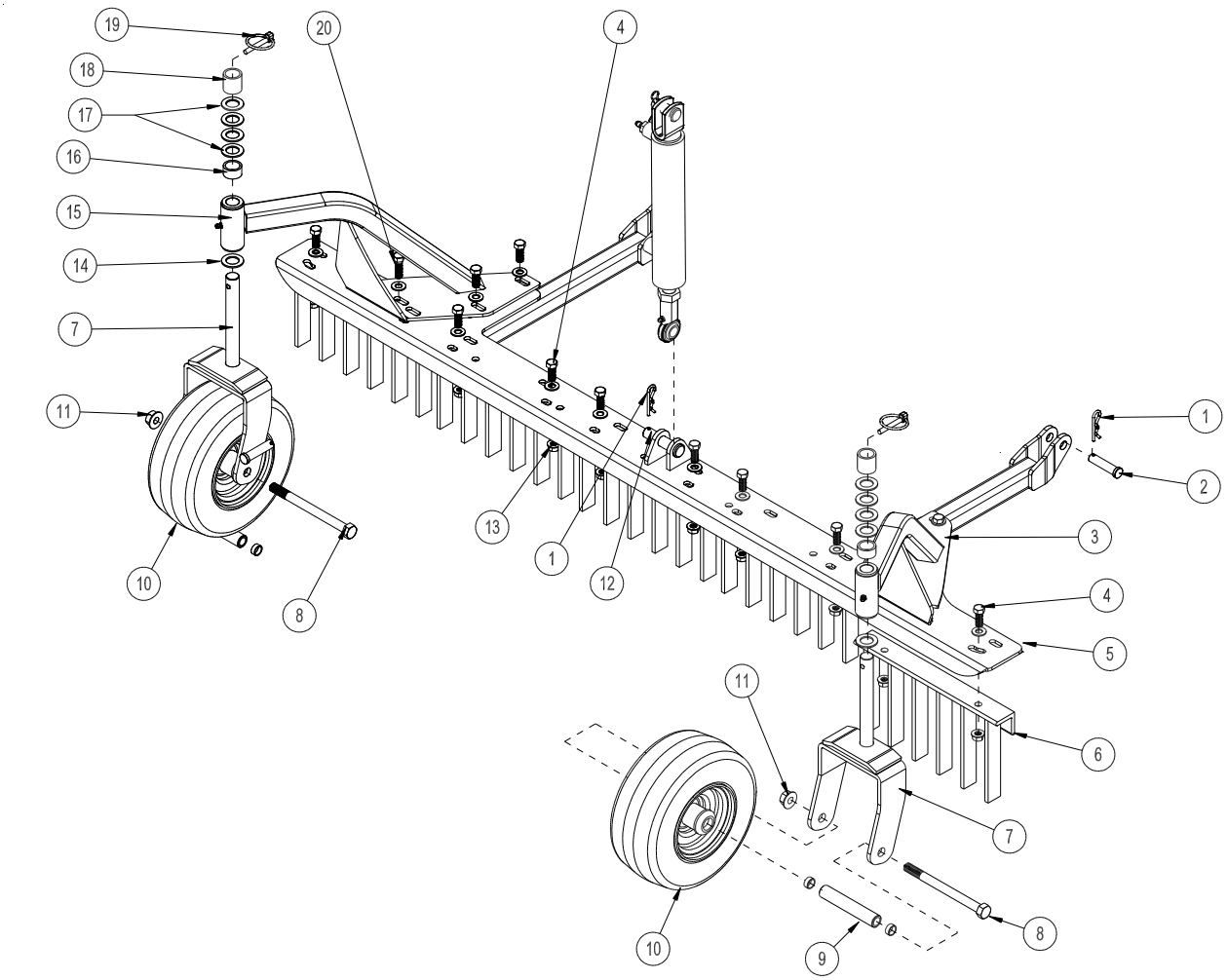


45-173 INFIELD SCARIFIER WITH CHISEL BLADES

REF#	PART#	DESCRIPTION	QUANTITY
1	13-114	Digger Blades	9
2	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	9
3	HW-38	Flat Washer, 3/8	9
4	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	9
5	45-116	Center Lift Bar	1
6	HHP-18	Bridge Pin, 1/8	3
7	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
8	HCP-12-200	Clevis Pin, 1/2 x 2	2

1. Assemble nine digger blades (Ref 1) to the center lift bar (Ref 5) using the 3/8 - 16 x 1 1/4 Hex Bolts, washers and nuts (Ref 4,5,6)
2. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the center lift bar.
3. Extend hydraulic cylinder all the way down by pushing the lever forward.
4. Mount the rod end of the cylinder onto the center lift bar and secure with a clevis pin (Ref 7) and bridge pin (Ref 6).
5. Attach the arms on the center lift bar to the main frame on the machine and secure with clevis pin (Ref 8) and bridge pin (Ref 6).
6. Turn machine on and test for proper operation.

45-360 INFIELD SCARIFIER WITH LONG VERTICAL BLADES DRAWING



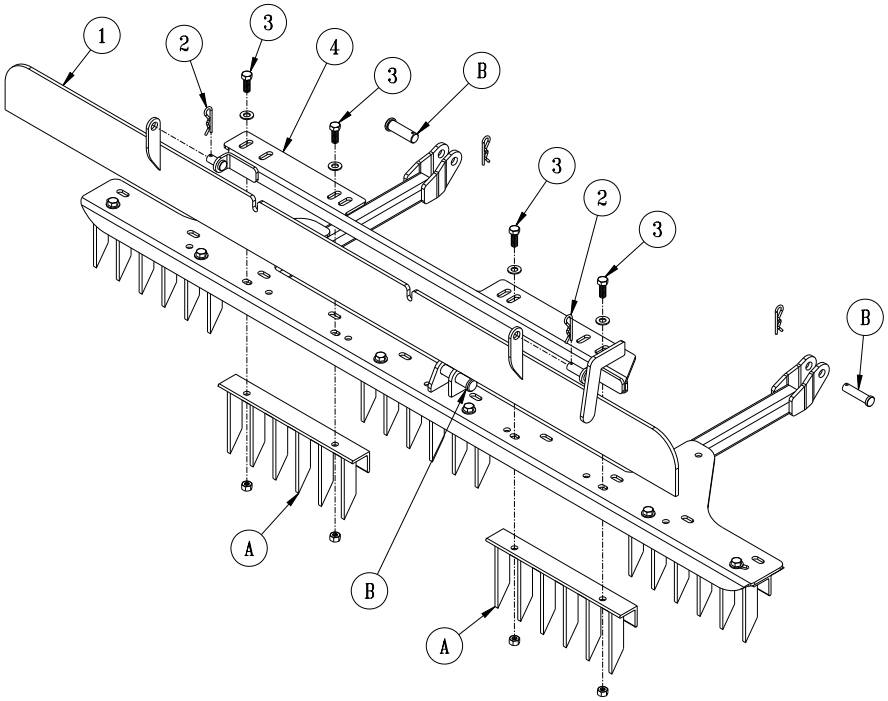
45-360 INFIELD SCARIFIER WITH LONG VERTICAL BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin, 1/8	3
2	HCP-12-200	Clevis Pin, 1/2 x 2	2
3	42-288	Left Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-205)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-205)	1
4	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	12
	HW-38	Flat Washer, 3/8	12
5	45-116	Center Lift Bar	1
6	42-241	Tine Segment	5
7	42-204	Castor Fork	2
8	HB-12-13-600	Hex Bolt, 1/2 -13 x 6	2
9	33-338	Axle Bearing	2
10	42-202	Tire and Wheel	2
11	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
12	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
13	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	14
14	HMB-34-14	Machine Bushing, 3/4 x 14GA	2
15	42-289	Right Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-206)	2
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 42-206)	1
16	42-215	Short Spacer	2
17	HMB-34-10	Machine Bushing, 3/4 x 10GA	8
18	42-214	Long Spacer	2
19	42-539	Lynch Pin, 5/16	2
20	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	2
	HW-38	Flat Washer, 3/8	2

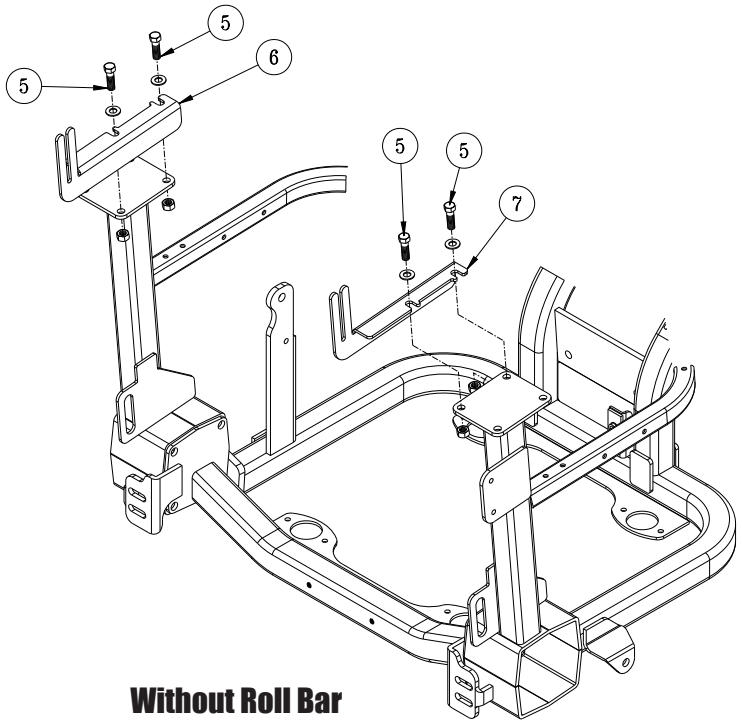
INSTALLATION INSTRUCTIONS

1. Assemble the tine Segments (Ref 6) to the center lift bar (Ref 5) using the 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 4).
2. Mount the right and left caster wheel brackets (Ref 3 and 15) to the center lift bar (Ref 5) using the rest of 3/8 - 16 x 1 Hex Bolts, washers and nuts (Ref 4 & 13). Mount the last two digger blades at this time using the 3/8 - 16 x 1 1/4 Hex Bolts, washers and nuts (Ref 20 & 13).
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the center lift bar.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the center lift bar and secure with a clevis pin (Ref 12) and bridge pin (Ref 1).
7. Attach the arms on the center lift bar to the main frame on the machine and secure with clevis pin (Ref 2) and bridge pin (Ref 1).
8. Turn machine on and test for proper operation.
9. Adjust castor wheels (Ref 12) by placing the short (Ref 16) or long spacer (Ref 18) on the castor wheel fork before placing the castor wheel assembly into the castor wheel brackets. Be sure both castor wheels are adjusted to the same height.

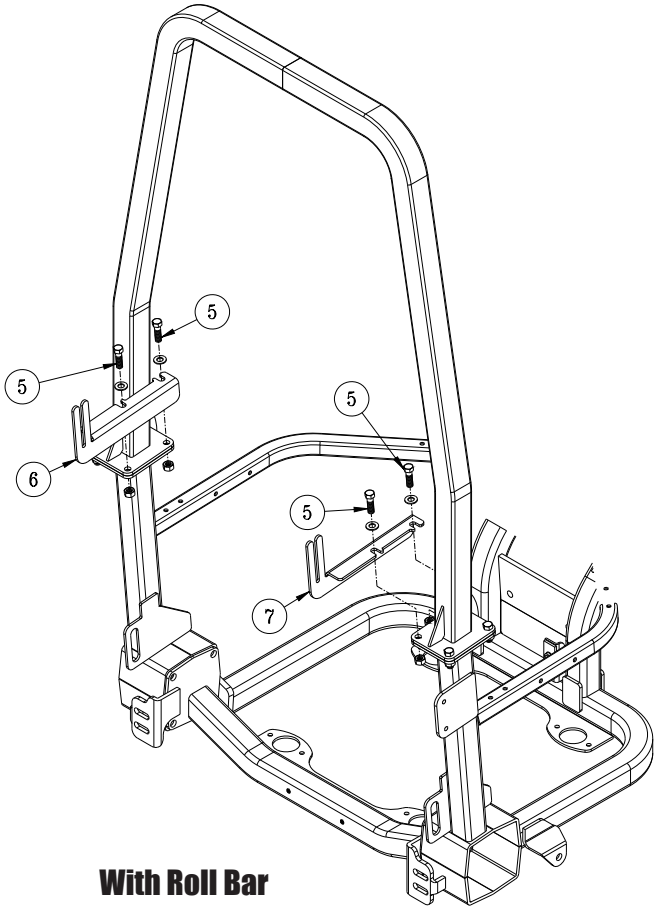
45-195 GRADER BLADE DRAWING



45-195 GRADER BLADE CARRIER DRAWINGS



Without Roll Bar



With Roll Bar

45-195 GRADER BLADE PARTS LIST

REF#	PART#	DESCRIPTION	QTY
1	42-207	Grader Blade	1
2	HHP-18	Bridge Pin, 1/8	2
3	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	4
	HW-38	Flat Washer, 3/8	4
4	45-190	Blade Mount	1
5	HB-716-14-150	Hex Bolt, 7/16 - 14 x 1 1/2	4
	HNTL-716-14	Nylon Lock Nut, 7/16 - 14	4
	HW-716	Flat Washer, 7/16	4
6	45-191	LH Carrier Bracket	1
7	45-192	RH Carrier Bracket	1

45-195 GRADER BLADE INSTALLATION INSTRUCTIONS

1. Lower center attachment to the ground and remove the 3 Clevis Pins**(Ref. B)**.
2. Remove the (4) Hex Bolts holding each of Blades**(Ref A)** to the right and left of the center blade. Set the Blades and (4) Nylon Lock Nuts aside.
3. Place the Blade Mount**(Ref. 4)** on top of the attachment frame, lining up the slots where the Hex Bolts were removed. Replace the removed Hex Bolts with the included 3/8 -16 x 1 1/4 Hex Bolts and 3/8 Flat Washers**(Ref 3)**. Reinstall the Blades**(Ref. A)** and secure using the 3/8 -16 Nylon Lock Nuts that were set aside.
4. Check all hardware for tightness.
5. Reinstall center attachment. Slide the Grader Blade**(Ref. 1)** onto the pins, as illustrated, and secure using the Bridge Pins**(Ref 2)**.

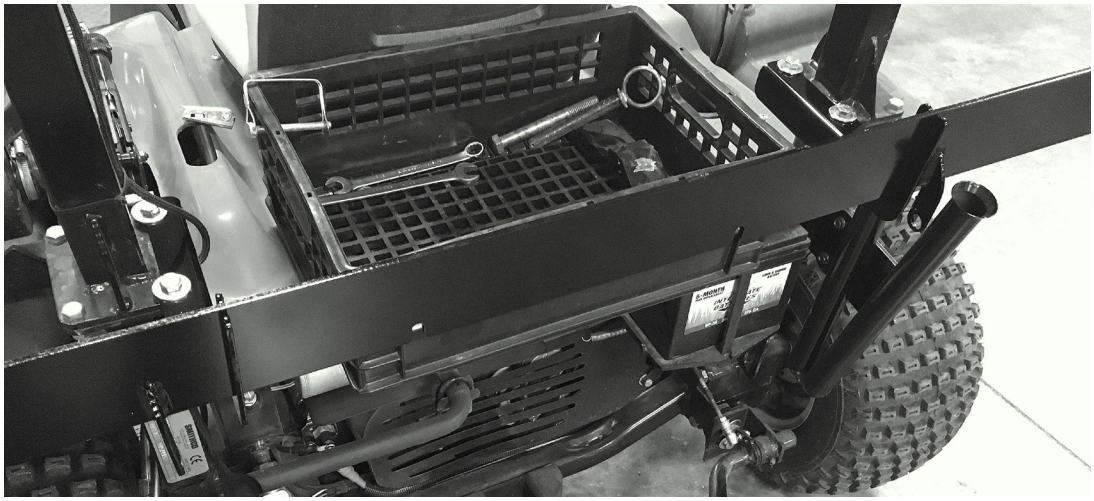
6a. *To install the Carrier Brackets on a machine **without a roll bar**:*

Mount the RH Carrier Bracket**(Ref. 7)** and LH Carrier Bracket**(Ref. 6)** to the to the ROPS towers using the inside set of holes. Secure each Bracket using the 7/16 -14 x 1 1/2 Hex Bolts, 7/16 Flat Washers and 7/16 -14 Nylon Lock Nuts.

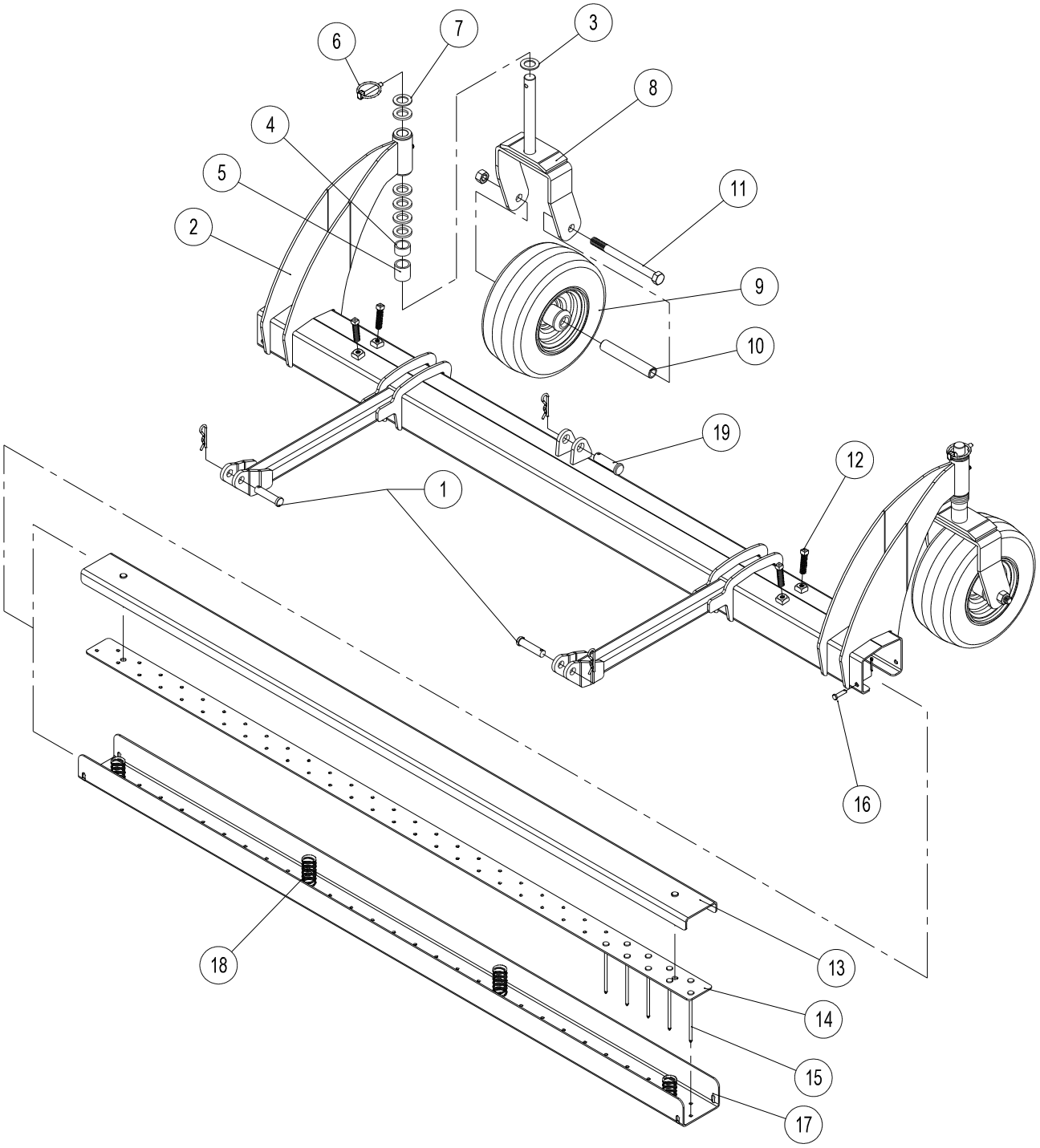
6b. *To install the Carrier Brackets on a machine **with a roll bar**:*

Remove the (4) inside Hex Bolts, position each Carrier Bracket**(Refs. 6 & 7)** over the holes and use the 7/16 -14 x 1 1/2 Hex Bolts, 7/16 Flat Washers and 7/16 -14 Nylon Lock Nuts to secure.

7. When placing the Grader Blade in the Carriers point the mounting tabs downward as shown in the photo below.



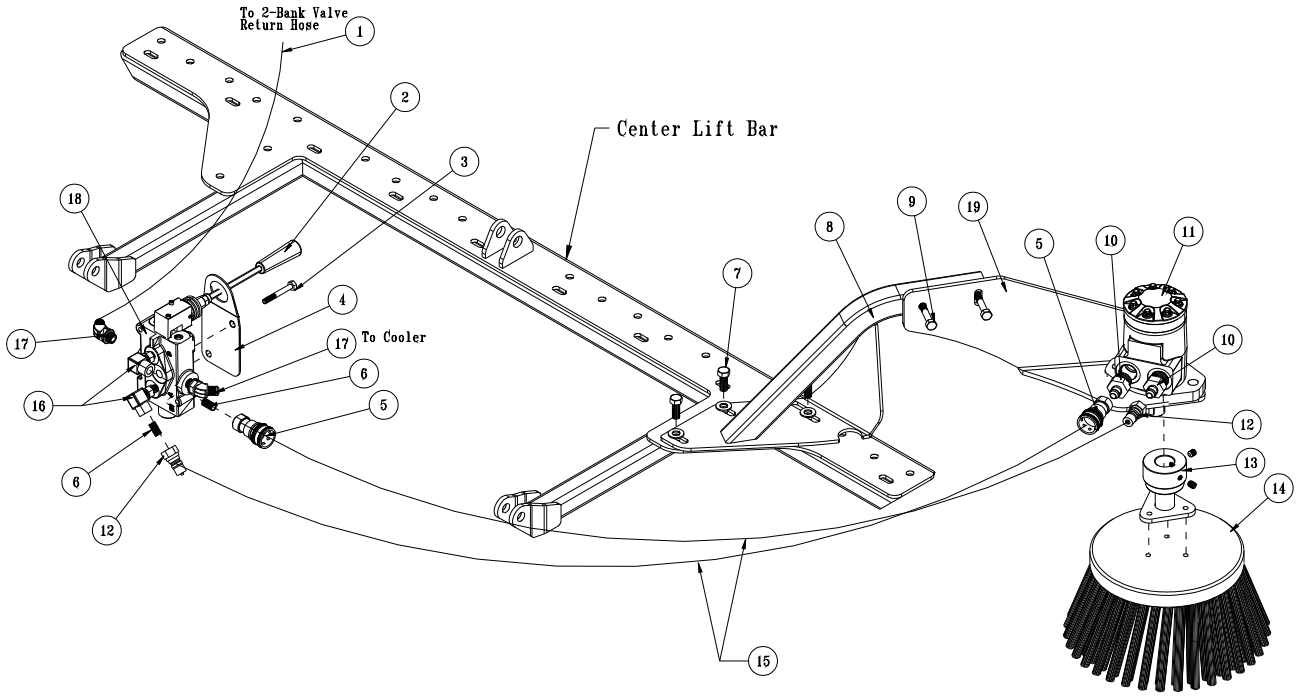
45-177 NAIL SCARIFIER WITH CASTOR WHEELS DRAWING



45-177 NAIL SCARIFIER WITH CASTOR WHEELS PARTS LIST

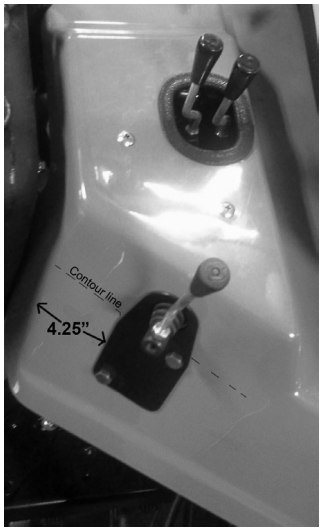
REF#	PART#	DESCRIPTION	QUANTITY
1	HCP-12-200	Clevis Pin, ½ x 2	2
	HHP-18	Bridge Pin, 1/8	2
2	45-171	Nail Scarifier Frame	1
	10-025	Flange Bushing (Part of 43-171)	4
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 43-171)	2
3	HMB-34-14	Machine Bushing, ¾ x 14GA	2
4	42-215	Short Spacer	2
5	42-214	Long Spacer	2
6	42-539	Lynch Pin, ¼"	2
7	HMB-34-10	Machine Bushing, ¾ x 10GA	12
8	42-204	Castor Fork	2
9	42-202	Tire & Wheel	2
10	33-338	Axle Bearing	2
11	HB-12-13-600	Hex Bolt, ½ - 13 x 6	2
	HNTL-12-13	Nylon Lock Nut, ½ - 13	2
12	HSSQS-38-16-150	SS Sq. Head Set Screw, 3/8 - 16 x 1½	4
	HN-38-16	Hex Nut, 3/8 - 16	4
13	45-172	Nail Channel Cover	1
14	45-170	Nail Plate	1
15	9028	Spiral Shank Nail, 7GA x 4"	57
16	HCP-14-075	Clevis Pin, ¼ x ¾	1
	HP-332-075	Cotter Pin, 3/8 x ¾	1
17	45-169	Nail Channel	1
18	43-175	Compression Spring	4
19	HCP-58-200	Clevis Pin, 5/8 x 2	1
	HHP-18	Bridge Pin, 1/8	1

45-015 MOTORIZED BRUSH DRAWING



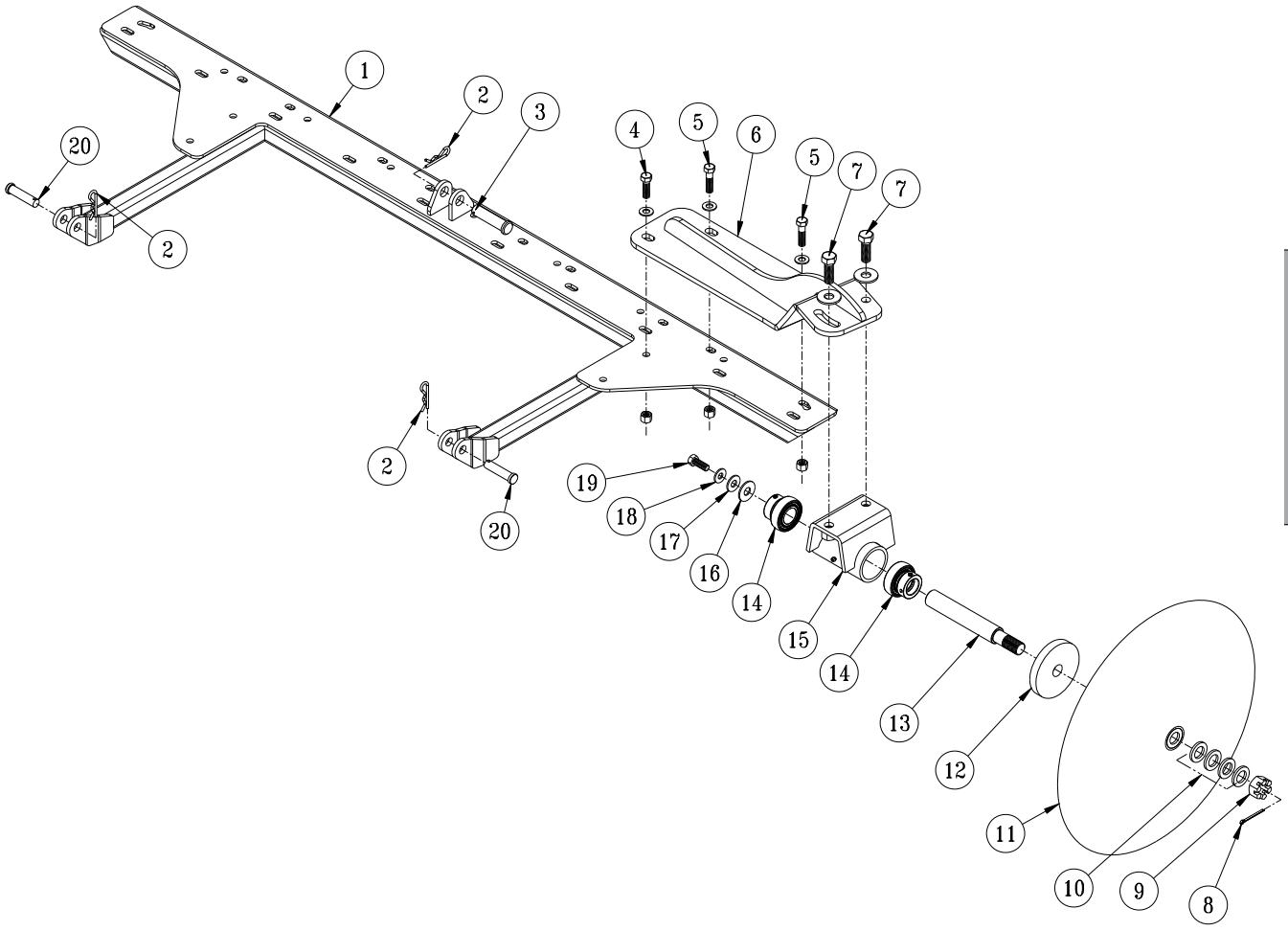
REF#	PART #	DESCRIPTION	QUANTITY
1	45-143	Hydraulic Hose 21"	1
2	78-417	Handle	1
3	HB-516-18-200	Hex Bolt $^{5}/_{16}$ - 18 x 2	2
	HNTL-516-18	Nylon Lock Nut $^{5}/_{16}$ -18	2
4	45-127	Valve Mount Plate	1
5	78-230	Coupler $^{1}/_{4}$"	2
6	18-011	Black Pipe Close Nipple $^{1}/_{4}$	2
7	HB-38-16-100	Hex Bolt $^{3}/_{8}$ -16 x 1	3
	HW-38	Washer $^{3}/_{8}$	3
	HNTL-38-16	Nylon Lock Nut $^{3}/_{8}$ - 16	3
8	45-152	Brush Motor Support	1
9	HB-516-18-200	Hex Bolt $^{5}/_{16}$ - 18 x 2	2
	HNFL-516-18	Flange Whiz-Loc Nut $^{5}/_{16}$ -18	2
10	18-331	Adapter	2
11	45-149	Hydraulic Motor	1
12	78-231	Nipple, $^{1}/_{4}$	2
13	45-150	Hub Assembly	1
	HB-14-20-150	Hex Bolt $^{1}/_{4}$ - 20 x $1^{1}/_{2}$	3
	HNTL-14-20	Nylon Lock Nut $^{1}/_{4}$ - 20	3
14	45-144	8" Polypro Side Broom	1
15	45-142	Hydraulic Hose 42"	2
16	23-018	O-ring Elbow	2
17	18-188	45° Elbow	2
18	45-148	Single Bank Valve	1
19	45-151	Brush Motor Mount	1

1. **This product only fits on a Sand Star I(45-001) and Sand Star II (45-002).**
2. Center lift bar must be installed on our machine. This kit does not come with a lift bar.
3. If your center lift bar has castor wheels on it, you must remove the castor wheels and brackets.
4. Install Brush Motor Support (Ref 8) on your right side of center lift arm using the holes where the caster wheel would Hex Bolt to. Hex Bolt in place with hardware (Ref 7).
5. Place Hub Assembly (Ref 13) on brush (Ref 14) with the (Ref 13) hardware.
6. Place motor (Ref 11) on Motor mount (Ref 19) and then mount that assembly to the Brush Motor Support (Ref 8).
7. Connect the brush and hub assembly to the motor and tighten set screws.
8. Place adapter (Ref 10) into motor. The place the Coupler (Ref 5) on the inside adapter and the nipple (Ref 12) on the outside adapter.
9. Assemble the valve as shown in the drawing.
10. The Valve assembly mounts on the right front fender. The valve goes underneath the fender with the handle pointing outward. The valve mount plate (Ref 4) mounts on the outside of the fender.
11. Using the valve mount as a template, Measure in approximately **4.25 inches** from edge of right fender and mark. Line valve mount up with contour of the fender and the right side of the line you just marked. Trace holes onto fiberglass. Drill holes out.



12. Mount the Single Bank Hydraulic Valve (Ref # 18) to the Valve Mount (Ref # 4) as illustrated, using the two $^{5}/_{16}$ - 18 x 2 Hex Bolts (Ref # 3). Secure with the two Nylon Lock Nuts. Connect the Straight Handle (Ref # 2) to the Valve.
13. Connect 42" hoses (Ref 15) from the motor to the valve. Connect the 21" hose from the valve to the cooler. The return hose on the 2-bank valve connects to the single bank valve.
14. Test operation of the broom before using on turf.

45-175 ADJUSTABLE DISC EDGER DRAWING



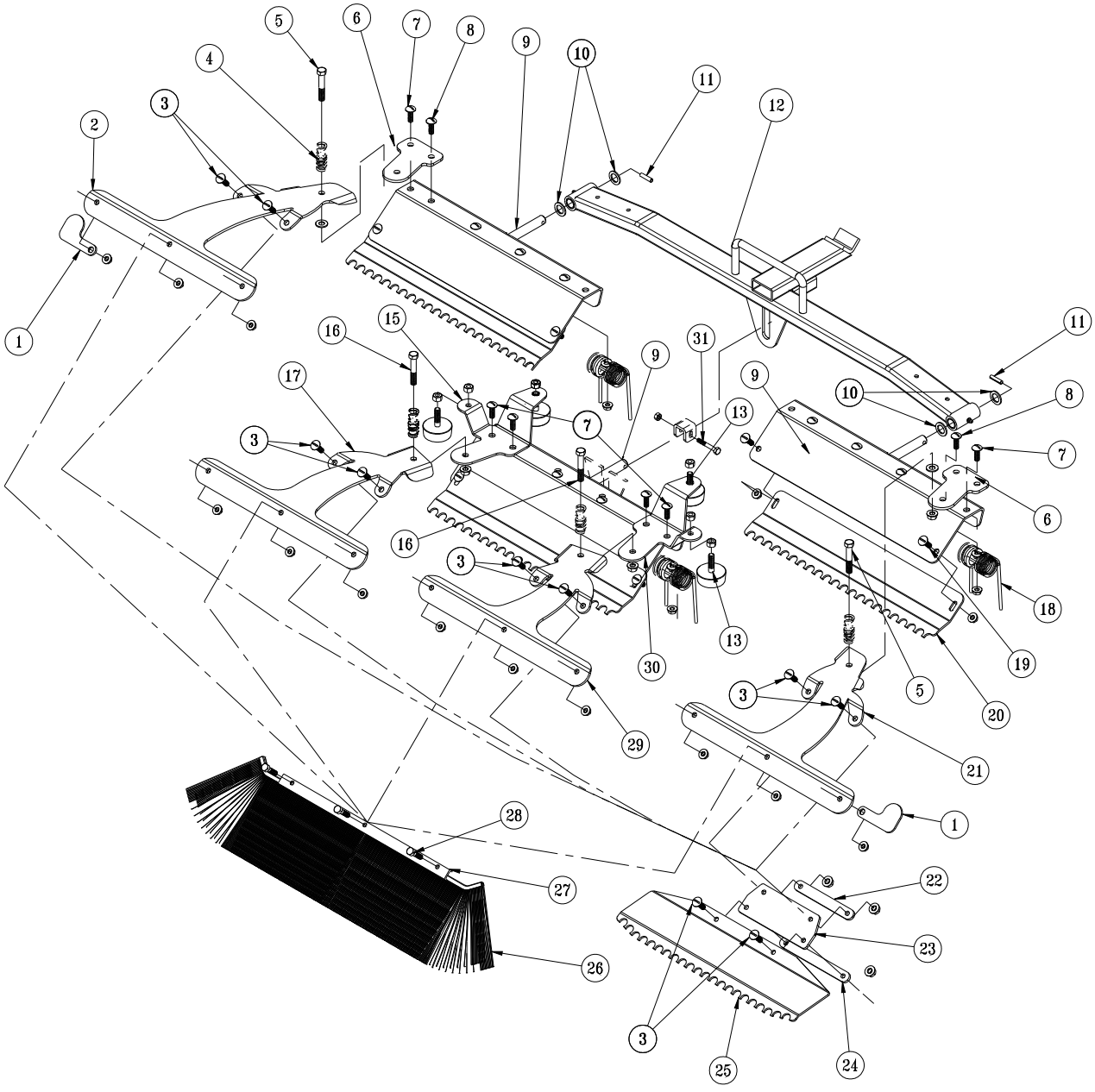
45-175 ADJUSTABLE DISC EDGER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	45-116	Center Lift	1
2	HHP-18	Bridge Pin, 1/8	3
3	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
4	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	1
	HW-38	Flat Washer, 3/8	1
	HNTL-38-16	Nylon Lock Nut, 3/8 -16	1
5	HB-38-16-150	Hex Bolt, 3/8 - 16 x 1 1/2	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
6	45-166	Edger Mount	1
7	HB-12-13-150	Hex Bolt, 1/2 - 13 x 1 1/2	2
	HW-12	Flat Washer, 1/2	2
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	2
8	HP-18-150	Cotter Pin, 1/8 x 1 1/2	1
9	HNA-34-16	Axle Nut, 3/4 - 16	1
10	HMB-34-10	Machine Bushing, 3/4 x 10GA	4
11	13-204	Disc	1
12	13-205	Disc Flange	1
13	13-206	Spindle Shaft	1
14	13-391	Bearing and Collar	2
15	13-203	Spindle	1
	HG-14-28-180	Grease Fitting	1
16	HW-716	Flat Washer 7/16	1
17	HWL-38	Lock Washer, 3/8	1
18	HW-516	Flat Washer, 5/16	1
19	HB-38-16-100	Hex Bolt, 3/8 -16 x 1	1
20	HCP-12-200	Clevis Pin, 1/2 x 2	2

INSTALLATION INSTRUCTIONS

1. For initial assembly, Hex Bolt Spindle Assembly **(Ref. 13 thru 19)** to the Edger Mount **(Ref. 6)**. Use the 1/2 - 13 Hex Bolts, Washers and Nylon Lock Nuts **(Ref. 7)** to secure.
2. Slide the Disc Flange **(Ref. 12)** on the Spindle Shaft **(Ref. 13)** up to the shoulder. Then place the Disc **(Ref.11)** onto the shaft, orienting the concave side towards the Spindle followed by the four Machine Bushings **(Ref. 10)**, and the axle nut **(Ref. 9)**.
3. Tighten Axle Nut, insert and clinch the Cotter Pin **(Ref. 8)**.
4. Connect the Edger Mount onto the Center Lift **(Ref.1)** using the 3/8 Hex Bolts, Washers and Nylon Lock Nuts **(Refs. 4 & 5)**, **with the 1 1/4" Hex Bolt (Ref. 4)** going into the last hole on the Mount Plate.
5. The Edger mounts under the center of the trap rake.
6. Start the engine and lower the cylinder for the attachment lift FULLY. Stop engine.
7. Slide Edger under the trap rake from the right side.
8. Position the lift arms on the attachment lift assembly to the lift brackets on the machine. Hold in place with 1/2 x 2 clevis pin and bridge pins **(Refs. 2 & 20)**.
9. Attach the cylinder to the center tab on the Center Lift using the 5/8 x 2 1/2 Clevis Pin and Bridge Pin **(Refs. 2 & 3)**.
10. Start engine and test lift and Edger to make sure all works well.

42-391Q 72"(183CM) ProBrush TOURNAMENT RAKE DRAWING



42-391Q 72"(183CM) ProBrush TOURNAMENT RAKE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-489	Tip Guard	2
2	42-397	Outside Brush Arm, LH	1
3	HSTP-516-18-100	Phillip Truss Head Screw, 5/16 - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-275	Hex Bolt, 3/8 - 16 x 21¾	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, 5/16 - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, 5/16 - 18 x 1¼	12
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	12
9	42-140	Outside Rake	3
10	HMB-58-14	Machine Bushing 5/8 x 14GA	4
11	HRP-14-100	Roll Pin 1/4 x 1	2
12	43-154	Draw Bar	1
	20-018	Oilite Bushing (comes with 43-154)	4
13	50-081	Rubber Bumper	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	6
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2½	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
17	42-454	Inside Brush Arm, LH	1
18	42-122	Rake Spring	12
	42-177	Spring Holder	12
19	HSTP-516-18-075	Phillip Truss Head Screw, 5/16 - 18 x 3/4	6
	HNFL-516-18	Flange Whiz-Loc Nut 5/16 - 18	6
20	42-171	Groomer Blades	3
21	42-393	Outside Brush Arm, RH	1
22	42-105	Top Strap	4
23	42-107	Matting	4
24	42-106	Bottom Strap	4
25	42-170	Finishing Blades	4
26	42-466	Brush, 21"	4
27	42-465	Brush Clamp	4
28	HB-516-18-125	Hex Bolt, 5/16 - 18 x 1 1/4 - 18	12
29	42-453	Inside Brush Arm, RH	1
30	42-398	Brush Arm Mount, RH	1
31	HB-14-20-175	Hex Bolt, 1/4 - 20 x 1 3/4	1
	HNTL-14-20	Nylon Lock Nut, 1/4 - 20	1

42-391Q 72"(183CM) ProBrush TOURNAMENT RAKE DRAWING

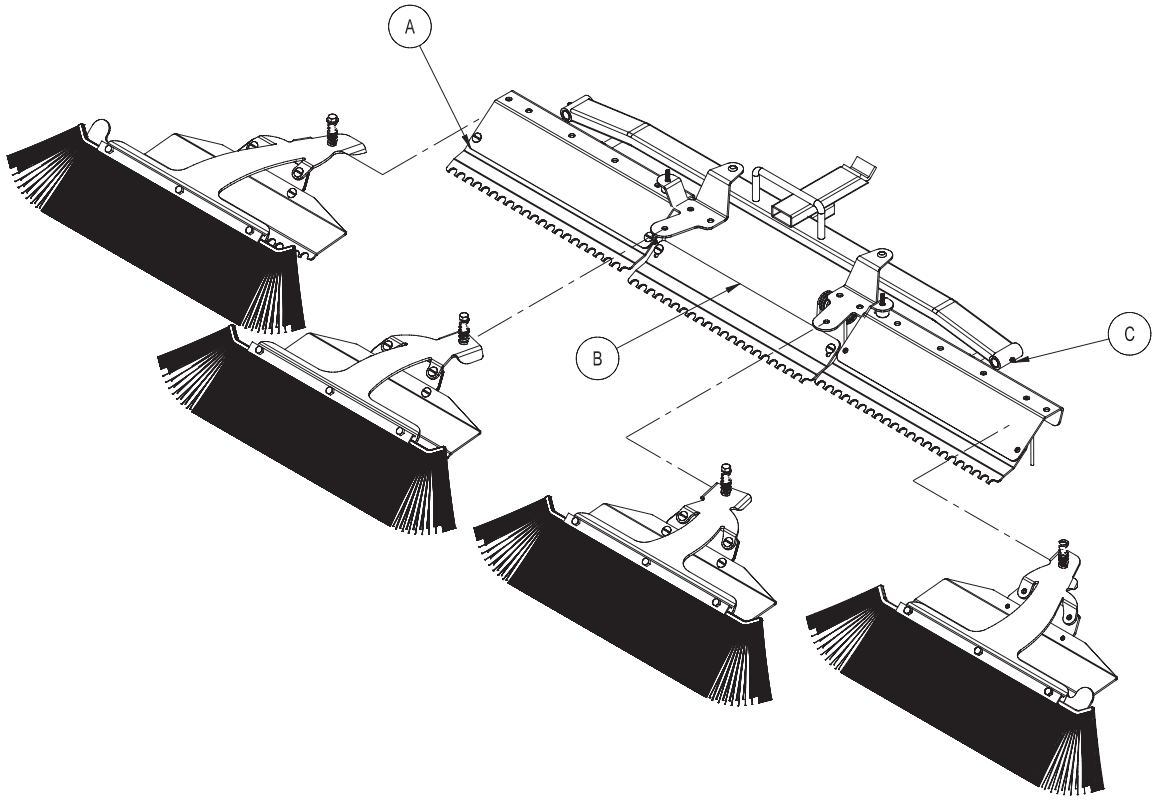


Fig. 1

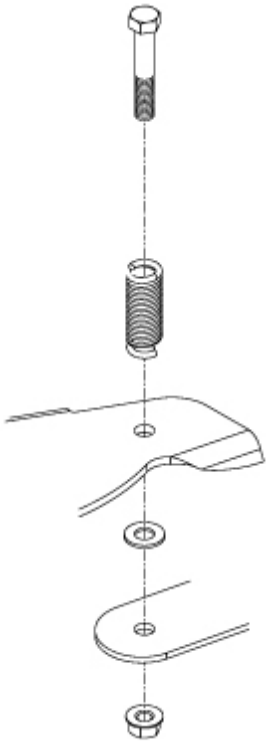


Fig. 2

Fig. 3

ProBrush TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your **ProBrush TOURNAMENT RAKE** comes mostly assembled.

1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are 1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are mounted on the outside (RH & LH) have flat washers that are between the Brush Arms (Refs 2 & 21) and the Brush Arm Mount (Ref 6).
2. Also please note the placement of the Brush/Finish Blade Assemblies as illustrated in Fig 1. They must be mounted as illustrated to work as intended.
3. Begin assembling your **ProBrush TOURNAMENT RAKE** by inserting the Outside and Center Groomer Blade Assemblies (Refs A, B & C in Fig.1) in their locations as illustrated. Secure the Outside Assemblies with the ¼" Pin (Ref 11) and the Center Assembly with the ¼" x 1¾" Hex Bolt and Nylon Lock Nut (Ref 31).
4. Mount the Brush/Finish Blade Assemblies to the Brush Arm Mounts (Refs 6, 30 & 15) as illustrated using the $^{3}/_{8}$ x 2½ Hex Bolts and Nylon Lock Nuts. Assemble with the Springs (Ref 4) as shown in Fig. 2. Please note that the $^{3}/_{8}$" Flat Washers are used only on the Outside Assemblies. Secure when assembled.
5. Mount your **ProBrush TOURNAMENT RAKE** to the trap rake quick hitch. Position the Rake so it is centered and equal distance away from the right and left hand tires (2-3 inches). Fig. 4. Once positioned, set the Adjustment Screws on the Hitch so they touch the trap rake hitch. Fig. 5.
6. Run machine and test for operation of the Rake by raising and lowering the assembly and with rake down turn sharp corners in both directions to ensure rake is not contacting the tires. Test Rake in sand to ensure tire tracks are covered when turning sharp corners. If the tire tracks are not covered by the Rake, turn the Adjustment Screws on the Rake Hitch so the rake comes closer to the tires when turning. For reference see Fig. 4 and 5 below.

NOTE:

The Outside Brush/Finish Blade Assemblies may be rotated 180° for transport and for working in narrow areas, as illustrated in Fig.3 on the facing page.

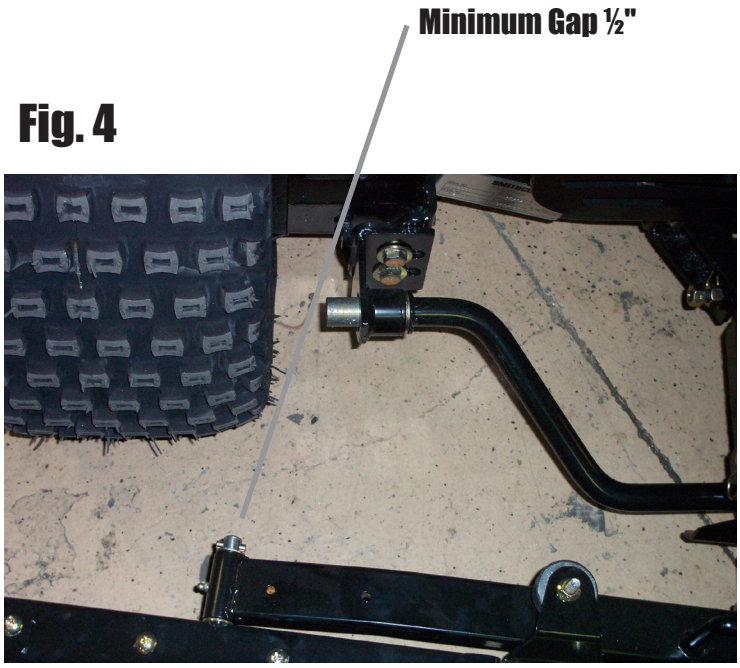


Fig. 4

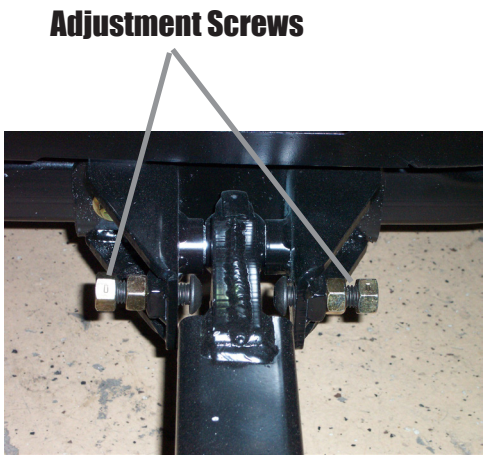
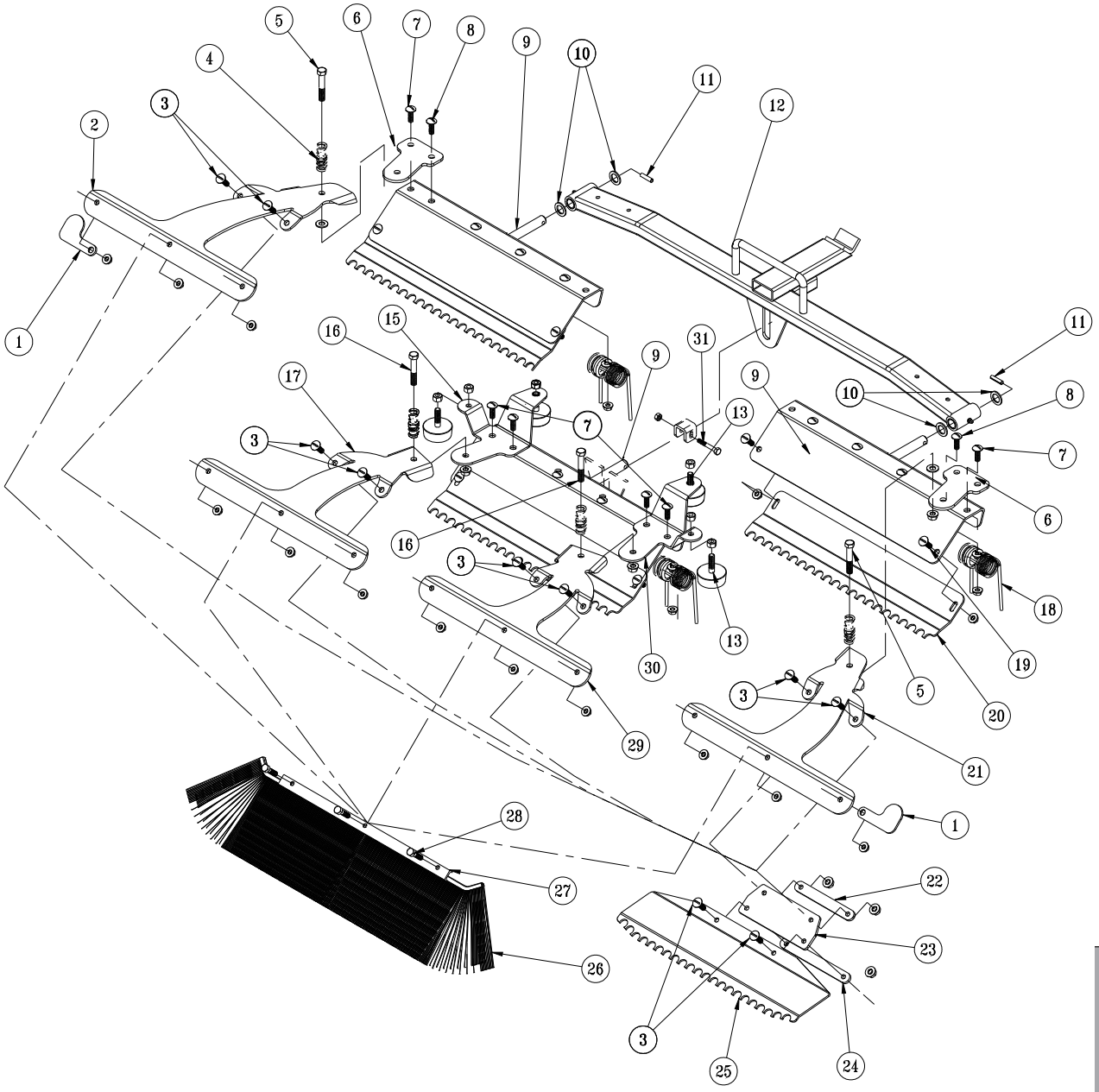


Fig. 5

42-392Q 84"(213CM) ProBrush TOURNAMENT RAKE DRAWING

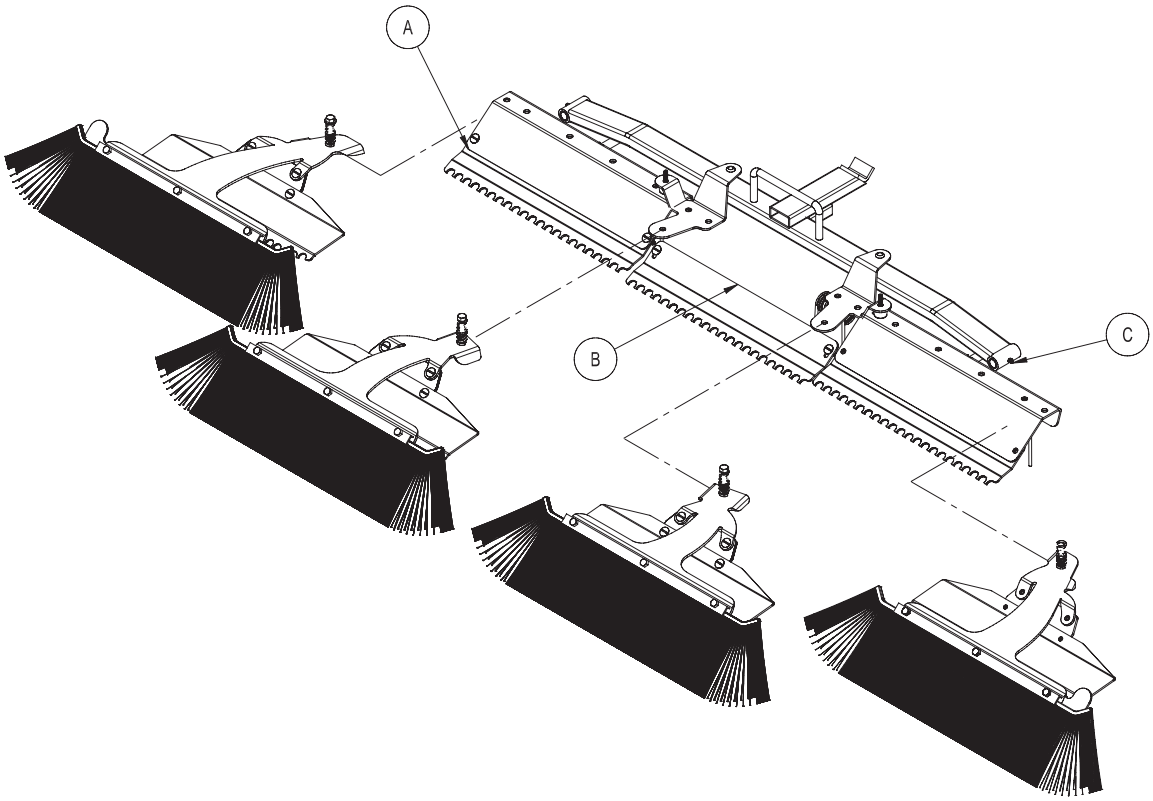


42-392Q 84"(213CM) ProBrush TOURNAMENT RAKE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-489	Tip Guard	2
2	42-397	Outside Brush Arm, LH	1
3	HSTP-516-18-100	Phillip Truss Head Screw, 5/16 - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	2
	HW-38	Flat Washer, 3/8	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, 5/16 - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, 5/16 - 18 x 1¼	12
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	12
9	42-102	84" Outside Rake	3
10	HMB-58-14	Machine Bushing, 5/8 x 14GA	4
11	HRP-14-100	Roll Pin, 1/4 x 1	2
12	43-144	84" Draw Bar	1
13	50-081	Rubber Bumper	4
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16	6
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2½	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
17	42-454	Inside Brush Arm, LH	1
18	42-122	Rake Spring	12
	42-177	Spring Holder	12
19	HSTP-516-18-075	Phillip Truss Head Screw, 5/16 - 18 x 3/4	6
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	6
20	42-129	Groomer Blades	3
21	42-393	Outside Brush Arm, RH	1
22	42-105	Top Strap	4
23	42-107	Matting	4
24	42-106	Bottom Strap	4
25	42-135	Finishing Blades	4
26	42-466	Brush, 21"	4
27	42-465	Brush Clamp	4
28	HB-516-18-125	Hex Bolt, 5/16 - 18 x 1 1/4	12
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	12
29	42-453	Inside Brush Arm, RH	1
30	42-398	Brush Arm Mount, RH	1
31	HB-14-20-175	Hex Bolt, ¼ - 20 x 1 3/4	1
	HNTL-14-20	Nylon Lock Nut, ¼ - 20	1

42-392Q 84"(213CM) ProBrush TOURNAMENT RAKE DRAWING

Fig. 1



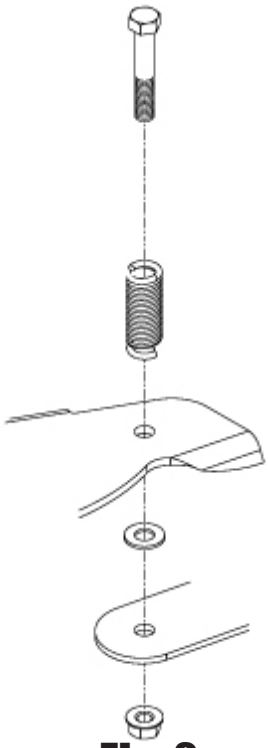


Fig. 2

Fig. 3

ProBrush TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your **ProBrush TOURNAMENT RAKE** comes mostly assembled.

1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are mounted on the outside (RH & LH) have flat washers that are between the Brush Arms (Refs 2 & 21) and the Brush Arm Mount (Ref 6).
2. Also please note the placement of the Brush/Finish Blade Assemblies as illustrated in Fig 1. They must be mounted as illustrated to work as intended.
3. Begin assembling your **ProBrush TOURNAMENT RAKE** by inserting the Outside and Center Groomer Blade Assemblies (Refs A, B & C in Fig.1) in their locations as illustrated. Secure the Outside Assemblies with the ¼" Pin (Ref 11) and the Center Assembly with the ¼" x 1¾" Hex Bolt and Nylon Lock Nut (Ref 31).
4. Mount the Brush/Finish Blade Assemblies to the Brush Arm Mounts (Refs 6, 30 & 15) as illustrated using the ⅜ x 2½ Hex Bolts and Nylon Lock Nuts. Assemble with the Springs (Ref 4) as shown in Fig. 2. Please note that the ⅜" Flat Washers are used only on the Outside Assemblies. Secure when assembled.
5. Mount your **ProBrush TOURNAMENT RAKE** to the trap rake quick hitch. Position the Rake so it is centered and equal distance away from the right and left hand tires (2-3 inches). Fig. 4. Once positioned, set the Adjustment Screws on the Hitch so they touch the trap rake hitch. Fig. 5.
6. Run machine and test for operation of the Rake by raising and lowering the assembly and with rake down turn sharp corners in both directions to ensure rake is not contacting the tires. Test Rake in sand to ensure tire tracks are covered when turning sharp corners. If the tire tracks are not covered by the Rake, turn the Adjustment Screws on the Rake Hitch so the rake comes closer to the tires when turning. For reference see Fig. 4 and 5 below.

NOTE:

The Outside Brush/Finish Blade Assemblies may be rotated 180° for transport and for working in narrow areas, as illustrated in Fig.3 on the facing page.

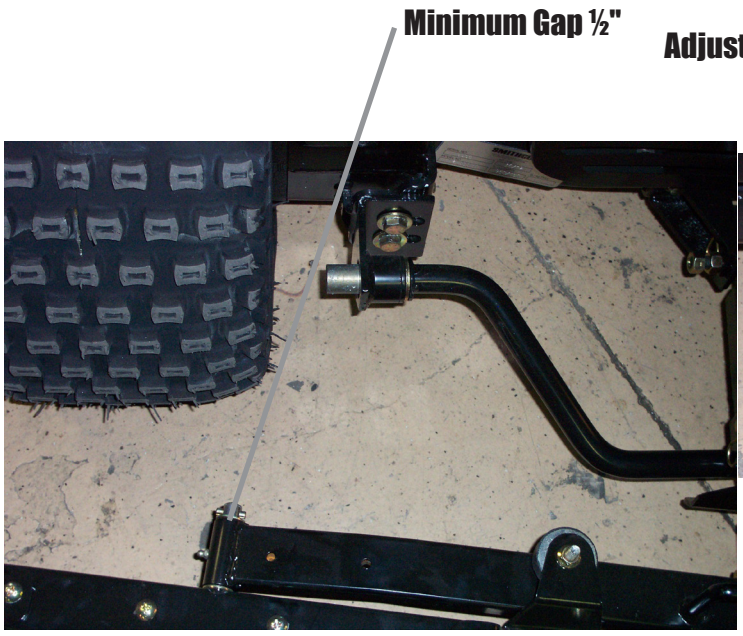


Fig. 4

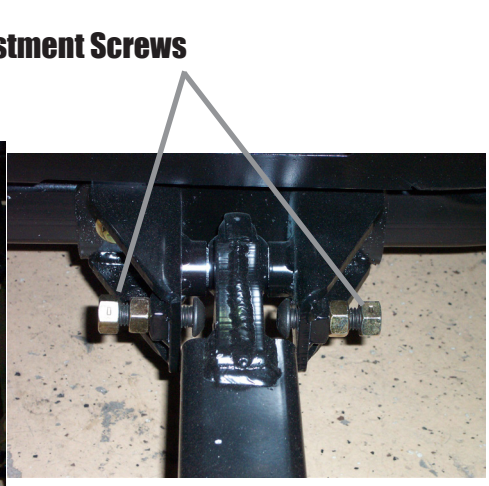
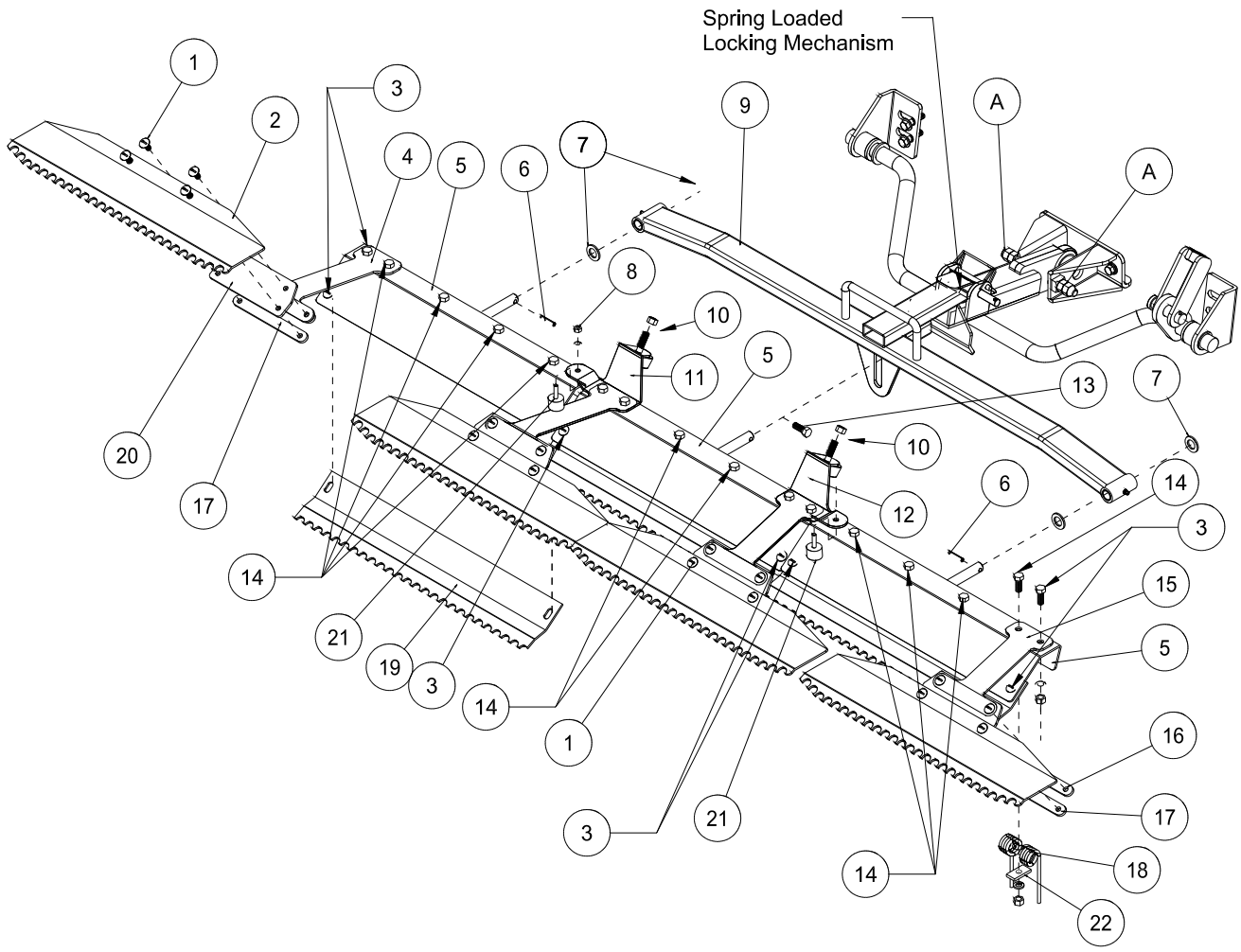


Fig. 5

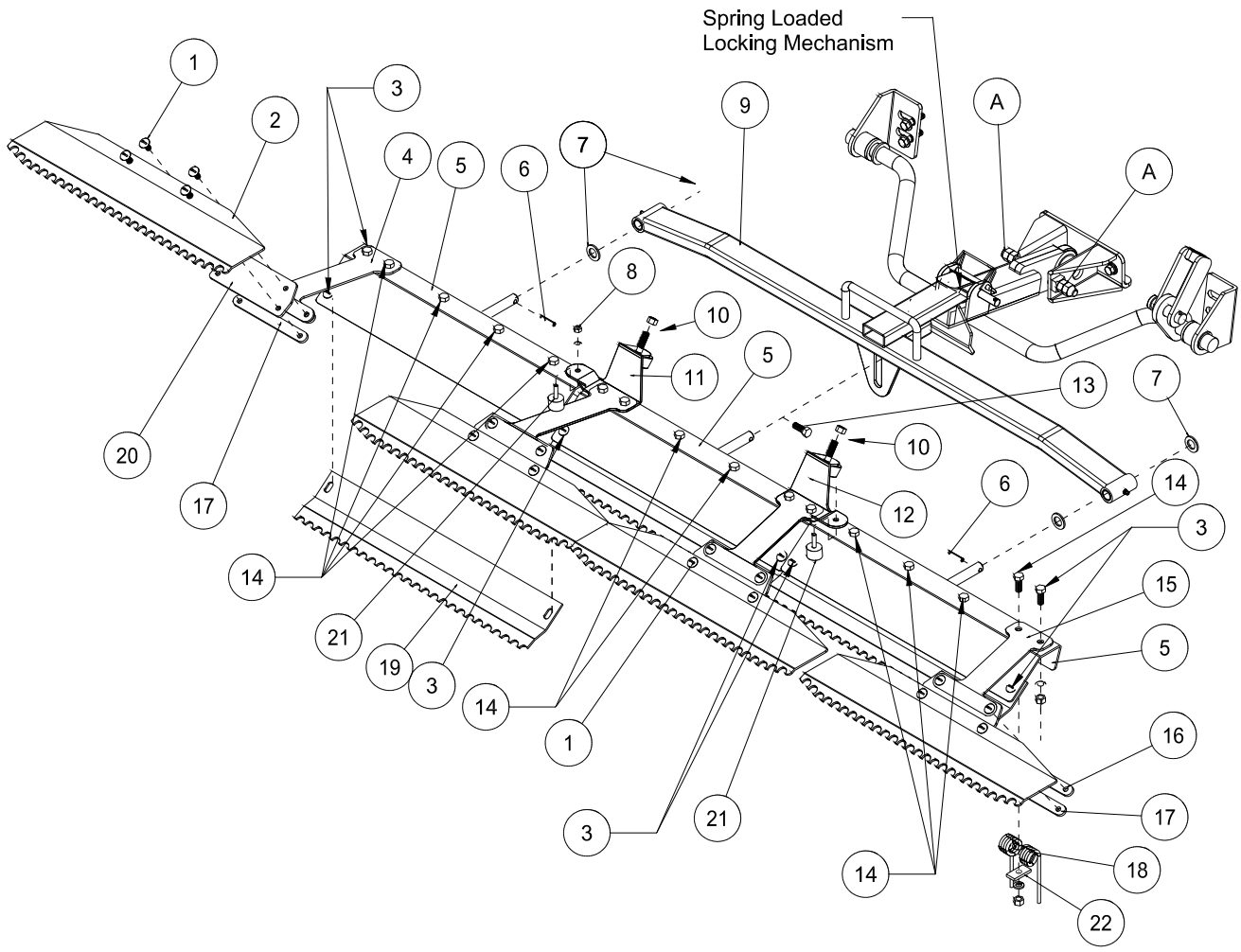
42-130Q 84" (213CM) MILD STEEL TOURNAMENT RAKE DRAWING



42-130Q 84" (213CM) MILD STEEL TOURNAMENT RAKE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HSTP-516-18-100	Phillips Machine Screw, 5/16 - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	16
2	42-135	Finishing Blades	4
3	HSTP-516-18-075	Phillips Machine Screw, 5/16 - 18 x 3/4	8
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	8
4	42-111	Left Outside Mount	1
5	42-102	Outside Rake	3
6	HRP-14-100	Roll Pin, 1/4 x 1	2
7	HMB-58-14	Machine Bushing, 5/8 x 14GA	4
8	HNC-14-20	Cap Nut, 1/4 - 20	2
	HWL-14	Lock Washer, 1/4	2
9	43-144	Draw Bar	1
10	50-081	Rubber Bumper	2
11	42-110	Left Inside Mount	1
12	42-108	Inside Trowel Mount	1
13	HB-14-20-175	Hex Bolt, 1/4 - 20 x 1 3/4	1
	HNTL-14-20	Nylon Lock Nut, 1/4 - 20	1
14	HSTP-516-18-125	Phillips Machine Screw, 5/16 - 18 x 1 1/4	12
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	12
15	42-109	Outside Towel Mount	1
16	42-105	Top Strap	4
17	42-106	Bottom Strap	4
18	42-122	Rake Spring	12
19	42-129	Groomer Blades	3
20	42-107	Matting	4
21	15-013	Rubber Bumper	2
22	42-177	Spring Holder	12

42-130Q 84" (213CM) MILD STEEL TOURNAMENT RAKE DRAWING

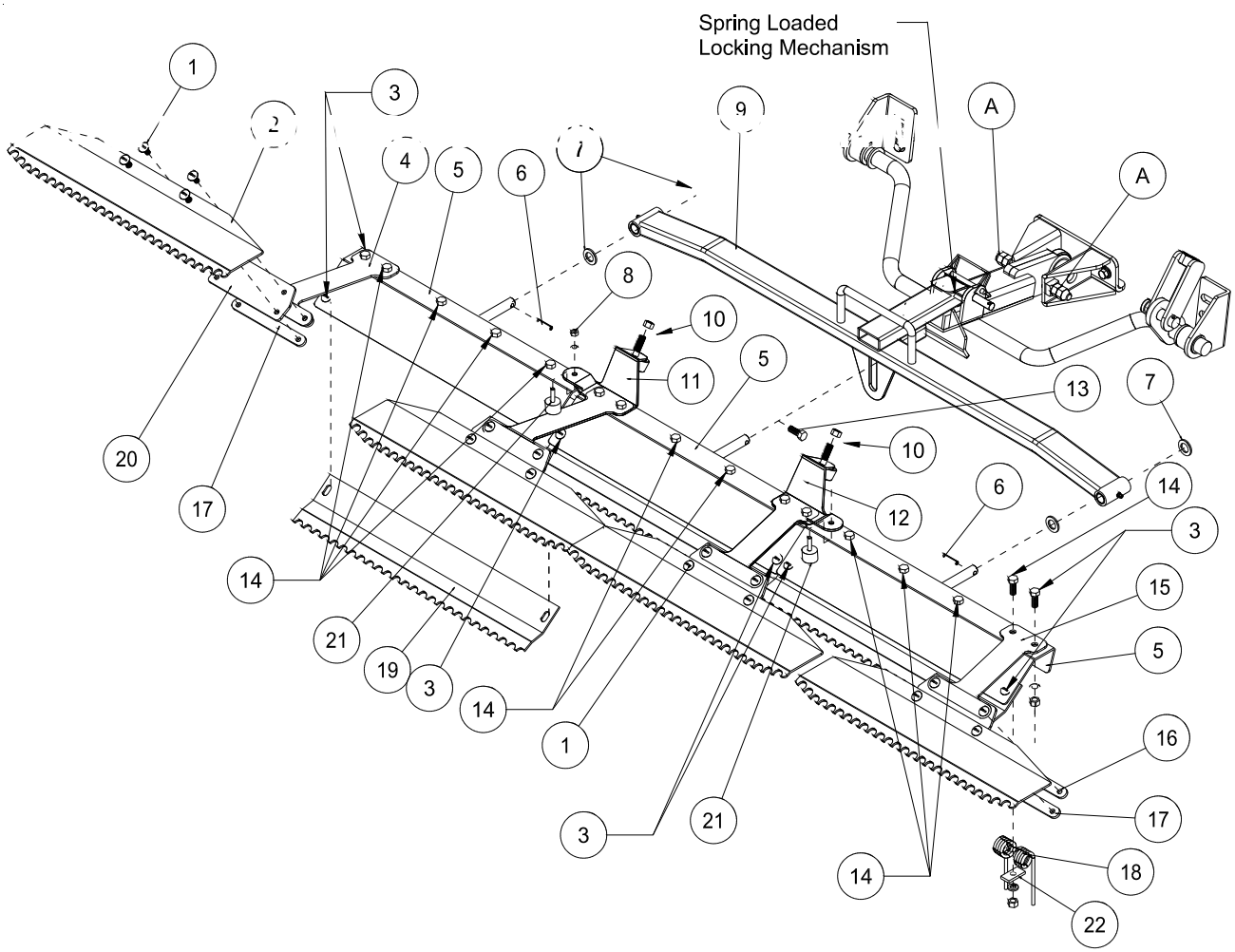


RAKE ASSEMBLY INSTRUCTIONS

1. Hex Bolt rake spring (Ref 18) to rake frames (Ref 5) using hardware (Ref 14). Leave the two outside holes on right, left, and center rake open.
2. Attach rubber bumper (Ref 21) using cap nut and washer (Ref 8). Attach rubber grommet (Ref 10)to inside mounts (Ref 11 & 12)
3. Attach the left outside mount (Ref 4), the left inside mount (Ref 11), the outside trowel mount (Ref 15), and the inside trowel mount (Ref 12) to the outside and center rakes (Ref 5) as shown. Use the $^{3}/_{4}$" truss head screws (Ref 3) on the outside hole of each rake. Use the spring holder (Ref 22) and the $1^{1}/_{4}$" truss head screws (Ref 14) to attach rake springs (Ref 18) to the rakes under the left outside and inside mounts and the outside and inside trowel mounts.
4. Slide a machine bushing onto outside rake frames then slide the outside rake frames (Ref 5) into the tubing on the end of the drawbar. Hold in place with another machine bushing and a roll pin (Ref 6).
5. Attach center rake (Ref 5) to draw bar (Ref 9) as shown, using $1^{3}/_{4}$ Hex Bolts and Nylon Lock Nuts (Ref 13) with the shaft of the center rake in the slot on the bottom of the drawbar.
6. Attach the matting (Ref 20) and the top strap (Ref 16) to the inside and outside mounts using the truss head screw $^{5}/_{16}$ - 18 x 1 (Ref 1). Attach four finishing blades (Ref 2) to the matting on the inside and outside mounts with the truss head screw $^{5}/_{16}$ - 18 x 1 (Ref 1) going through the finishing blade, matting, and bottom strap (Ref 17).
7. Place the three groomer blades (Ref 19) under the three rake assemblies as shown, using (Ref 3).
8. Attach the rake lift to the trap rake quick hitch, by sliding the the hitch into the spring loaded locking mechanism.
9. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
10. Using the adjustment Hex Bolts (Ref A) on the side of hitch, adjust the Hex Bolts until it hits the trap rake hitch. Lock jam nut so adjustment will not change.
11. Repeat steps for the left side.
12. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.

NOTE: Test rake in sand to assure tire tracks are covered by the rake when turning sharp corners in either direction. If there are tire tracks, readjust using the adjusting screws on the hitch, so the rake comes closer to the tire.

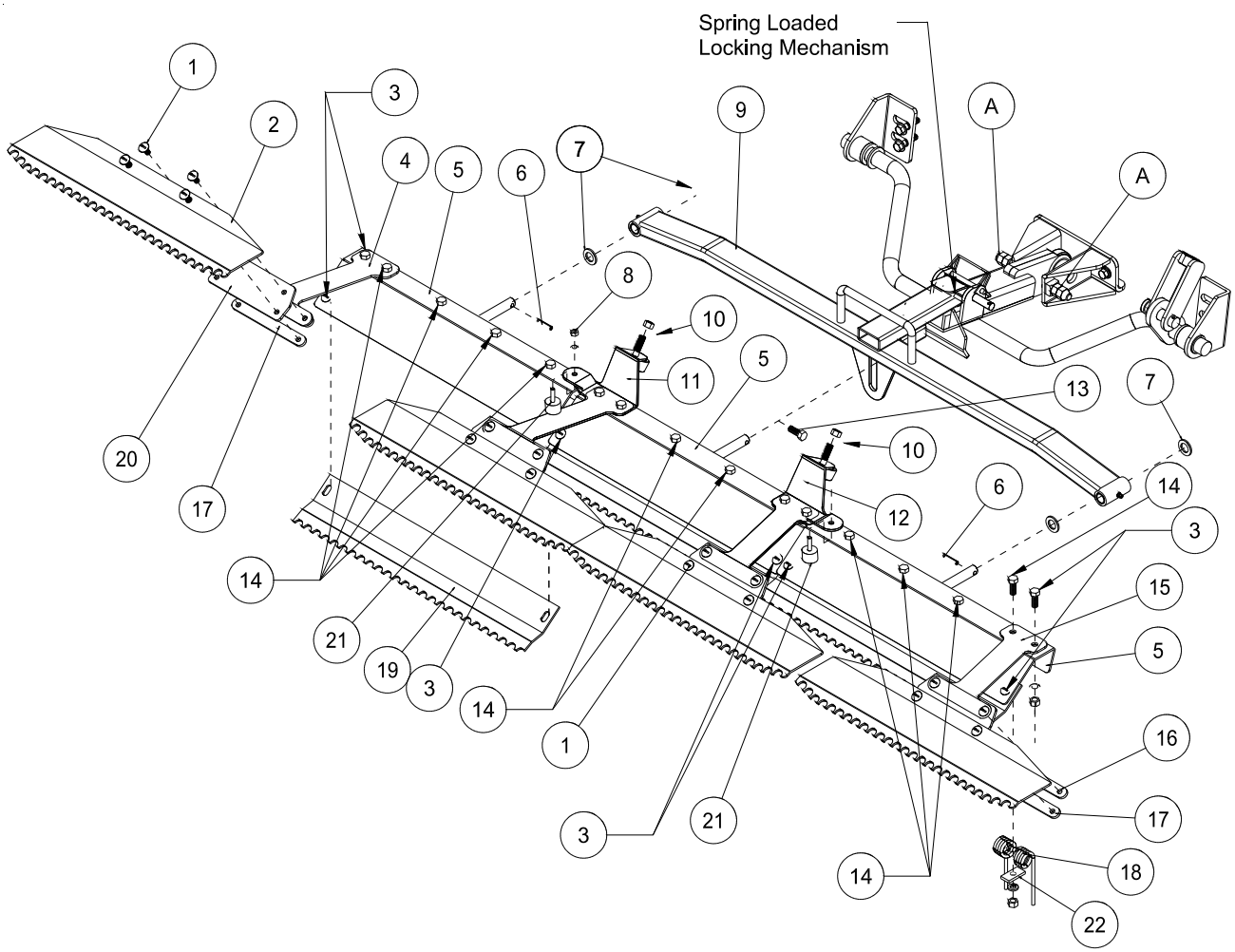
42-132Q 72" (183CM) MILD STEEL TOURNAMENT RAKE DRAWING



42-132Q 72"(183CM) MILD STEEL TOURNAMENT RAKE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HSTP-516-18-100	Phillips Machine Screw, 5/16 - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	16
2	42-170	Finishing Blades	4
3	HSTP-516-18-075	Phillips Machine Screw, 5/16 - 18 x 3/4	10
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	10
4	42-111	Left Outside Mount	1
5	42-140	Outside Rake	3
6	HRP-14-100	Roll Pin, 1/4 x 1	2
7	HMB-58-14	Machine Bushing, 5/8 x 14GA	4
8	HNC-14-20	Cap Nut, 1/4 - 20	2
	HWL-14	Lock Washer, 1/4	2
9	43-154	Draw Bar	1
	20-018	Oilite Bushing (comes with 43-154)	4
10	50-081	Rubber Bumper	2
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 18	2
11	42-110	Left Inside Mount	1
12	42-108	Inside Trowel Mount	1
13	HB-14-20-175	Hex Bolt, 1/4 - 20 x 1 3/4	1
	HNTL-14-20	Nylon Lock Nut, 1/4 - 20	1
14	HSTP-516-18-125	Phillips Machine Screw, 5/16 - 18 x 1 1/4	12
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	12
15	42-109	Outside Towel Mount	1
16	42-105	Top Strap	4
17	42-106	Bottom Strap	4
18	42-122	Rake Spring	12
19	42-171	Groomer Blades	3
20	42-107	Matting	4
21	15-013	Rubber Bumper	2
22	42-177	Spring Holder	12

42-132Q 72"(183CM) MILD STEEL TOURNAMENT RAKE DRAWING

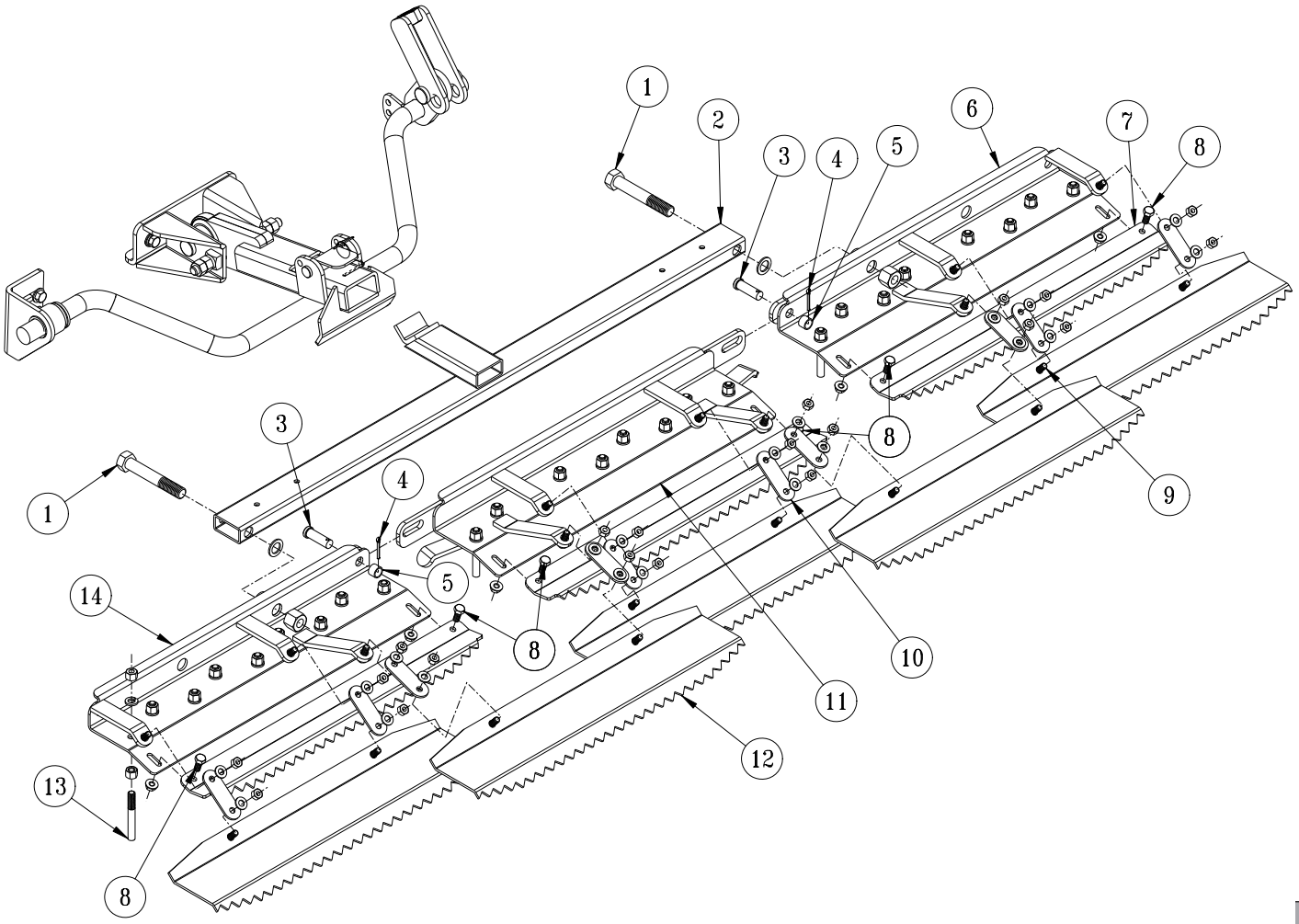


RAKE ASSEMBLY INSTRUCTIONS

1. Hex Bolt rake spring (Ref 18) to rake frames (Ref 5) using hardware (Ref 14). Leave the two outside holes on right, left, and center rake open.
2. Attach rubber bumper (Ref 21) using cap nut and washer (Ref 8). Attach rubber grommets (Ref 10) to inside mounts (Ref 11 & 12)
3. Attach the left outside mount (Ref 4), the left inside mount (Ref 11), the outside trowel mount (Ref 15), and the inside trowel mount (Ref 12) to the outside and center rakes (Ref 5) as shown. Use the $^{3}/_{4}$" truss head screws (Ref 3) on the outside hole of each rake. Use the spring holder (Ref 22) and the $1^{1}/_{4}$" truss head screws (Ref 14) to attach rake springs (Ref 18) to the rakes under the left outside and inside mounts and the outside and inside trowel mounts.
4. Slide a machine bushing onto outside rake frames then slide the outside rake frames (Ref 5) into the tubing on the end of the drawbar. Hold in place with another machine bushing and a roll pin (Ref 6).
5. Attach center rake (Ref 5) to draw bar (Ref 9) as shown, using $1^{3}/_{4}$ Hex Bolts and Nylon Lock Nuts (Ref 13) with the shaft of the center rake in the slot on the bottom of the drawbar.
6. Attach the matting (Ref 20) and the top strap (Ref 16) to the inside and outside mounts using the truss head screw $^{5}/_{16}$ - 18 x 1 (Ref 1). Attach four finishing blades (Ref 2) to the matting on the inside and outside mounts with the truss head screw $^{5}/_{16}$ - 18 x 1 (Ref 1) going through the finishing blade, matting, and bottom strap (Ref 17).
7. Place the three groomer blades (Ref 19) under the three rake assemblies as shown, using (Ref 3).
8. Attach the rake lift to the trap rake quick hitch, by sliding the the hitch into the spring loaded locking mechanism.
9. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
10. Using the adjustment Hex Bolts (Ref A) on the side of hitch, adjust the Hex Bolts until it hits the trap rake hitch. Lock jam nut so adjustment will not change.
11. Repeat steps for the left side.
12. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.

NOTE: Test rake in sand to assure tire tracks are covered by the rake when turning sharp corners in either direction. If there are tire tracks, readjust using the adjusting screws on the hitch, so the rake comes closer to the tire.

13-758 MAX FLEX SAND RAKE



13-758 MAX FLEX SAND RAKE

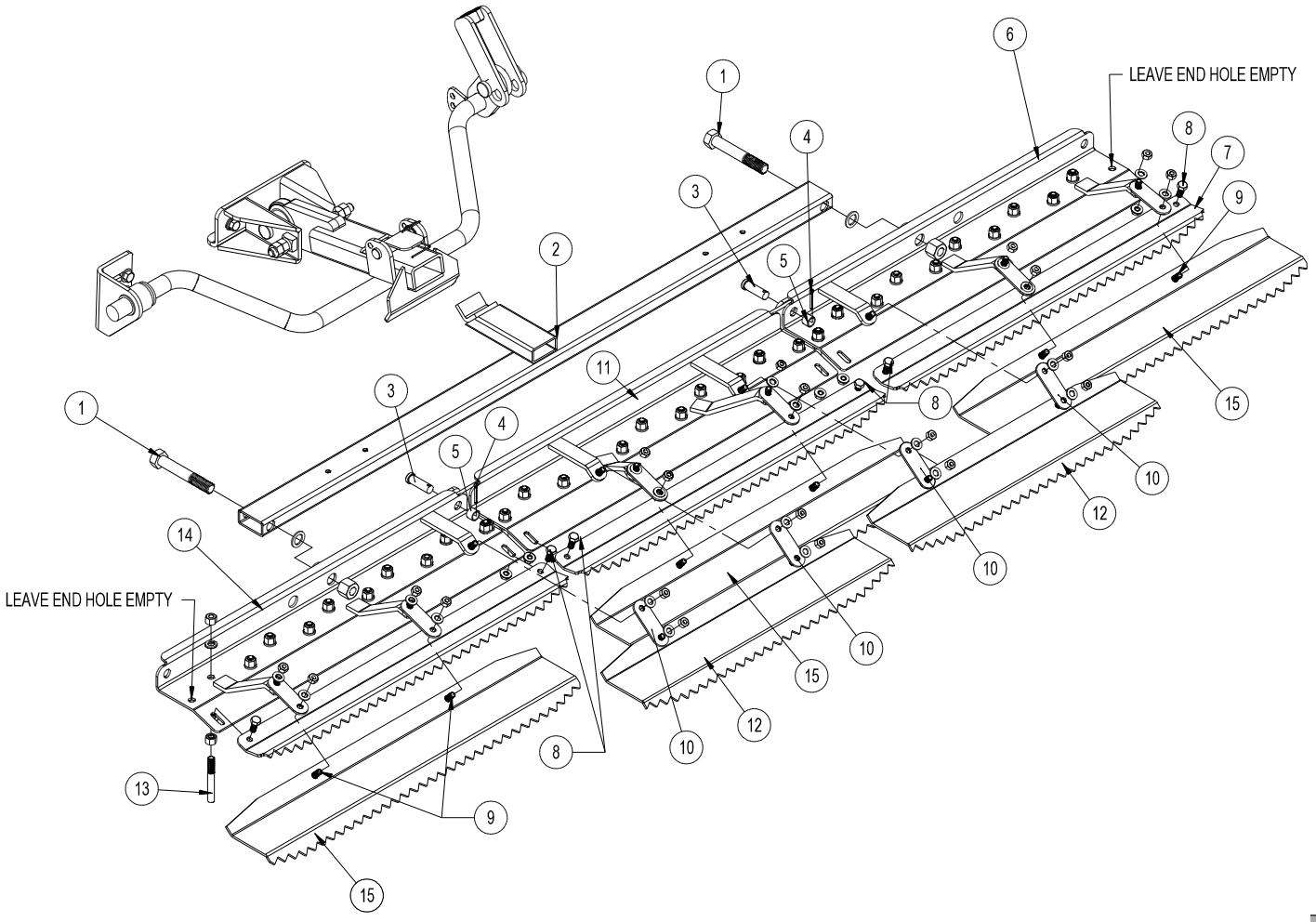
REF#	PART#	DESCRIPTION	QUANTITY
1	HB-58-11-400	Hex Bolt, 5/8 - 11 x 4	2
	HMB-58-14	Machine Bushing, 5/8 x 14GA	2
	HNCL-58-11	Nylon Lock Nut, 5/8 - 11	2
2	43-145	Draw bar	1
3	HCP-12-150	Clevis Pin, 1/2 - 1 1/2	2
4	HP-18-100	Cotter Pin, 1/8 x 1	2
5	76-275	Spacer	2
6	13-762	Right Rake	1
7	13-759	Grooming Blade	3
8	HB-516-18-075	Hex Bolt, 5/16 - 18 x 3/4	6
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	6
9	HBFL-516-18-100	Flange Lock Hex Bolt, 5/16 - 18 x 1	20
	HNTL-516-18	Nylon Lock Nut, 5/16 - 18	20
	HW-516	Flat Washer, 5/16	20
10	13-757	Rake Connect Strap	10
11	13-761	QH Center Rake	1
12	13-443	Finishing Blade	5
14	13-763	Left Rake	1
13*	13-445	Rake Teeth Kit (27 Studs and Hardware)	1

INSTALLATION INSTRUCTIONS

1. Hex Bolt rake teeth (Ref 13) to frames, keeping all the same length.
2. Lay out rake frames (Refs 6, 11 & 14). Connect them using Clevis Pin (Ref 3), Spacer (Ref 5) and Cotter Pin (Ref 4).
3. Attach Left Frame (Ref 14) and Right Frame (Ref 6) to Draw bar (Ref 2) using 5/8 Hex Bolt, Machine Bushing, and Center Nylon Lock Nut (Ref 1).
4. Attach the three Groomer Blades (Ref 7), one to each of the Rake Frames (Refs 6, 11 & 14) using two Hex Bolts and Flange Whiz-Loc Nuts (Ref 8). Slide Groomer Blades to end of slot and tighten hardware.
5. Attach the five Finishing Blades (Ref 12) to the tabs of the rake frames using two Rake Connect Strap (Ref 10) per Finishing blade. Secure using Flange Lock Hex Bolt, Flat Washer and Nylon Lock Nut (Ref 9).

   NOTE: Attach Straps using hardware as illustrated, placing Flat Washer on Strap then secure with Nylon Lock Nut. Attaching with the Flange Hex Bolt in contact with the Strap will cause the Strap to bind and misalign Finishing Blade.
6. Attach the rake to the trap rake quick hitch by sliding the draw bar hitch into the spring loaded locking mechanism.
7. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
8. Repeat steps on left side.
9. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.
10. **NOTE:** Test rake in sand to assure tire tracks are covered by the rake when turning sharp corners in either direction. If there are tire tracks, readjust using the adjusting screws on the hitch, so the rake comes closer to the tire.

45-503 84" RAKE ASSEMBLY DRAWING



45-503 84" RAKE ASSEMBLY PARTS LIST

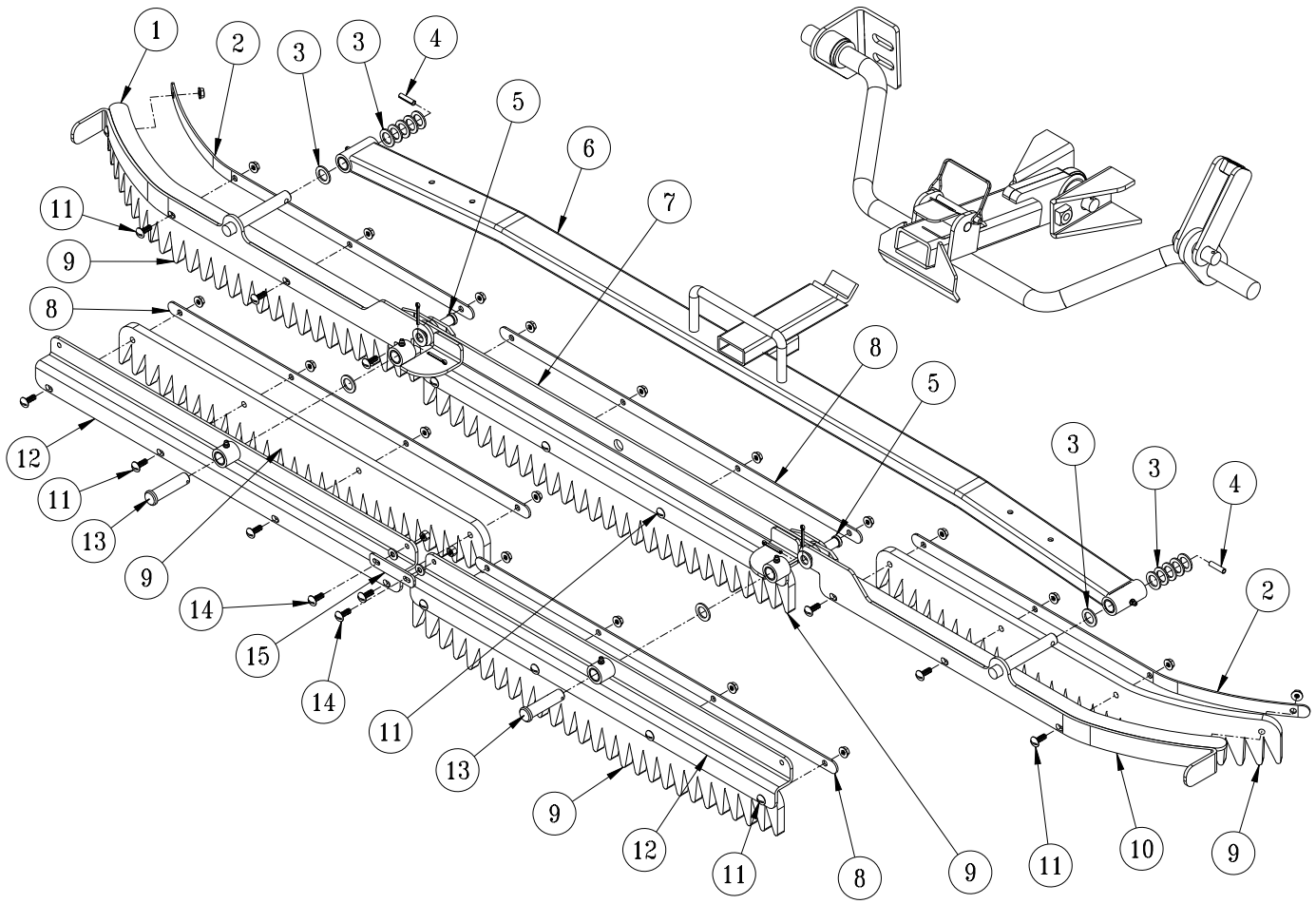
REF#	PART#	DESCRIPTION	QUANTITY
1*	HB-58-11-400	Hex Bolt, 5/8 - 11 x 4	2
	HMB-58-14	Machine Bushing, 5/8 x 14GA	2
	HNCL-58-11	Nylon Lock Nut, 5/8 - 11	2
2	45-588	Draw bar	1
3*	HCP-12-150	Clevis Pin, 1/2 - 1 1/2	2
4*	HP-18-100	Cotter Pin, 1/8 x 1	2
5	76-275	Spacer	2
6	45-590	Right Rake Frame	1
7	45-586	Grooming Blade	3
8*	HB-516-18-075	Hex Bolt, 5/16 - 18 x 3/4	6
	HNFL-516-18	Flange Whiz-Loc Nut, 5/16 - 18	6
9*	HBFL-516-18-075	Flange Whiz-Loc Bolt, 5/16 - 18 x 3/4	20
	HNTL-516-18	Nylon Lock Nut, 5/16 - 18	20
	HW-516	Flat Washer, 5/16	20
10	13-757	Rake Connect Strap	10
11	45-589	Center Rake Frame	1
12	13-443	Finishing Blade	2
13	19-106	Rake Teeth	31
	HN-38-16	Hex Nut, 3/8-16	62
	HWL-38	Lock Washer, 3/8	31
14	45-591	Left Rake Frame	1
15	45-587	Finishing Blades	3
*	13-764	Hardware Kit	1

INSTALLATION INSTRUCTIONS

1. Hex Bolt rake teeth (Ref 13) to frames, keeping all the same length.
2. Lay out rake frames (Refs 6, 11 & 14). Connect them using clevis pin (Ref 3), Spacer (Ref 5) and cotter pin (Ref 4).
3. Attach left frame (Ref 14) and right frame (Ref 6) to draw bar (Ref 2) using 5/8 Hex Bolt, machine bushing, and center Nylon Lock Nut (Ref 1).
4. Attach the three groomer blades (Ref 7), one to each of the rake frames (Refs 6, 11 & 14) using two Hex Bolts and Flange Whiz-Loc Nuts (Ref 8). Slide groomer blades to end of slot and tighten hardware.
5. Attach three large finishing blades (Ref 15) and then the two smaller finishing blades (Ref 12) to the tabs of the rake frames using two rake connect strap (Ref 10) per finishing blade. Secure, using flange lock Hex Bolt, flat washer and Nylon Lock Nut (Ref 9).

   NOTE: Attach Straps using hardware as illustrated, placing Flat Washer on Strap then secure with Nylon Lock Nut. Attaching with the Flange Hex Bolt in contact with the Strap will cause the Strap to bind and misalign Finishing Blade.
6. Attach the rake to the trap rake quick hitch by sliding the draw bar hitch into the spring loaded locking mechanism.
7. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
8. Repeat steps on left side.
9. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.
10. **NOTE:** Test rake in sand to assure tire tracks are covered by the rake when turning sharp corners in either direction. If there are tire tracks, readjust using the adjusting screws on the hitch, so the rake comes closer to the tire.

45-511 RUBBER FLEX RAKE ASSEMBLY DRAWING



45-511 RUBBER FLEX RAKE ASSEMBLY PARTS LIST

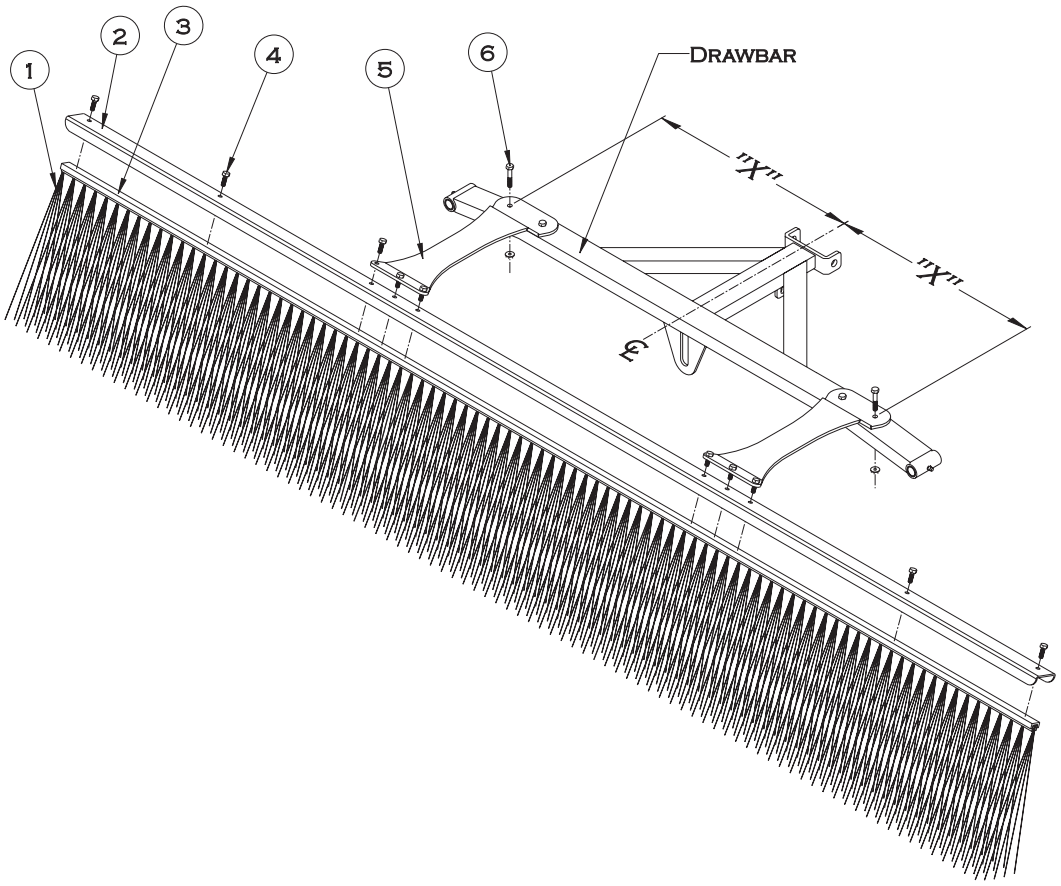
REF#	PART#	DESCRIPTION	QUANTITY
1	45-653	LH Wing	1
2	45-657	Curved Cover Strap	2
3	HMB-58-14	Machine Bushing, 5/8 x 14GA	12
4	HRP-14-100	Roll Pin, 1/4 x 1	2
5	HCP-12-150	Clevis Pin, 1/2 - 1 1/2	2
	HMB-12-14	Machine Bushing, 1/2 x 14GA	2
	HP-18-100	Cotter Pin, 1/8 x 1	2
6	45-649	Draw bar	1
7	45-654	Center Rake	1
8	45-658	Flat Cover Strap	1
9	45-651	Rubber Rake Blade	5
10	45-652	RH Wing	1
11	HSTP-14-20-100	Phillips Machine Screw, 1/4 - 20 x 1	20
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	20
12	45-655	Rear Rake Mount	2
13	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	2
	HMB-58-14	Machine Bushing, 5/8 x 14GA	2
	HP-18-100	Cotter Pin, 1/8 x 1	2
14	HSTP-14-20-075	Phillips Machine Screw, 1/4 - 20 x 3/4	2
	HNTL-14-20	Nylon Lock Nut, 1/4 - 20	2
	HW-14	Flat Washer, 1/4	2
15	45-656	Rake Strap	1

INSTALLATION INSTRUCTIONS

1. Hex Bolt rubber rake blades (Ref 9) onto all five rake sections using 1/4 x1 machine Hex Bolts, and Flange Whiz-Loc Nuts (Ref 11). Add cover straps (Ref 8) and then tighten hardware.
2. Lay out right, left and center rake sections and connect them using 1/2 x 1 1/2 clevis pins, machine bushings, and cotter pins (Ref 5).
3. Attach the three assembled sections onto the draw bar (Ref 6) and secure with machine bushings and roll pins (Ref 3 and 4).
4. Connect the two rear rake mounts (Ref 12) together with the rake strap (Ref 8) using two 1/4 x 3/4 machine Hex Bolts with Nylon Lock Nuts (Ref 14). **Only tighten enough so they move freely.**
5. Connect the two assembled rear rake mounts onto the other rake sections using two 5/8 x 2 1/2 clevis pins, machine bushings and cotter pins (Ref 13).
6. Attach the rake to the bunker rake quick hitch by sliding the draw bar into the spring loaded locking mechanism.
7. With the rake on the ground, pull the rake to the sides and adjust hitch stops so the rake stops about 2" from the tires.
8. Start machine and test for operation of rake assembly by raising and lowering the rake assembly. Check for loose hardware.

13-740 SAND RAKE BRUSH KIT DRAWING

For use with 42-130 and 45-511



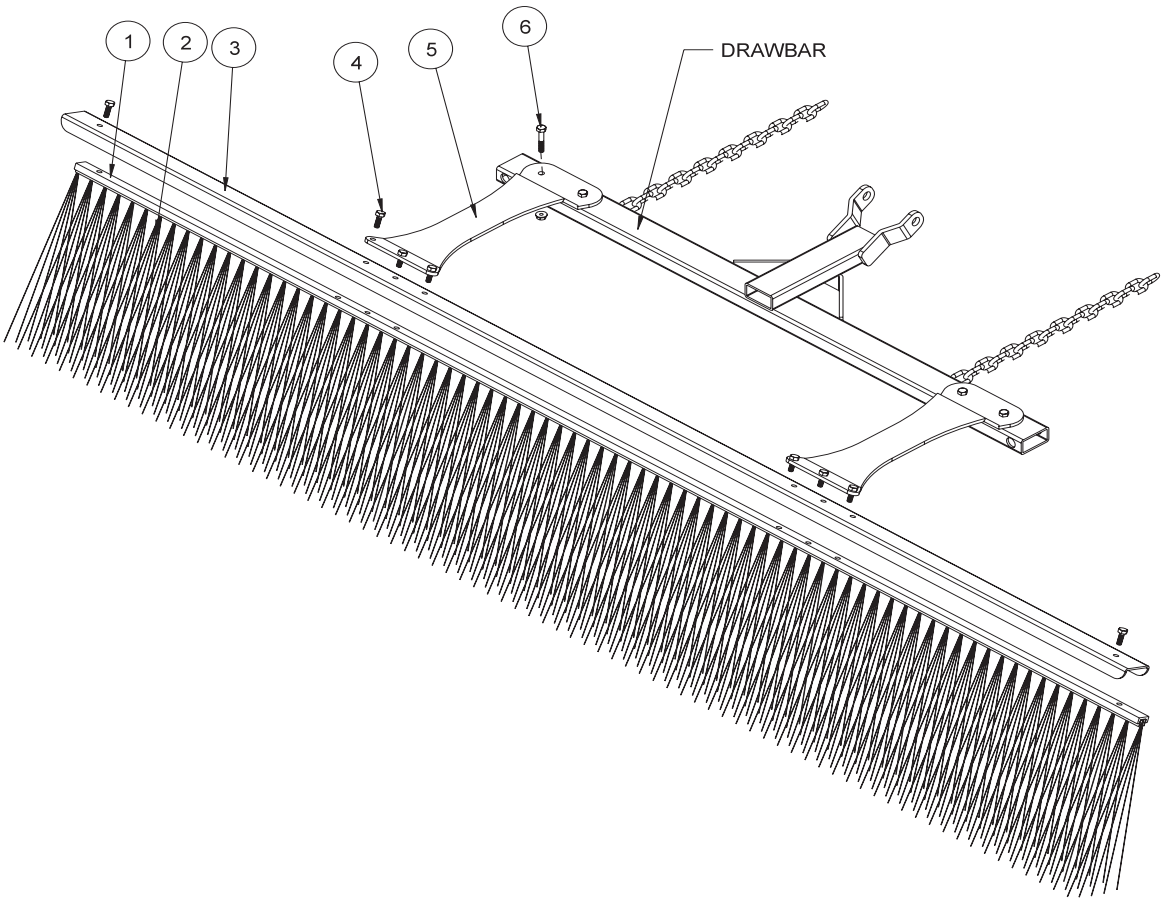
REF#	PART#	DESCRIPTION	QUANTITY
1	13-738	Brush, 89 x 11	1
2	13-737	Brush Channel	1
3	13-739	Brush Track	1
4	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	10
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	10
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Hex Bolt, 1/4 - 20 x 1 1/2	4
	HNFL-14-20	Flange Whiz-Loc Nuts, 1/4 - 20	4

INSTALLATION INSTRUCTIONS

1. Place the Brush (Ref 1) into the Brush Track (Ref 3). Place the Brush Channel (Ref 2) between the brush track and the mounting brackets. Now Hex Bolt the Mounting Brackets (Ref 5) to the brush track using the ¾" Hex Bolts and flange whiz-Nylon Lock Nuts(Ref 4).
2. To mount the Brush Assembly (Refs 1-5) to the Rake Draw bar, first align the Mounting Brackets so the Brush Assembly is centered ("X" measurements are equal) on the Rake Draw bar. Mark the locations for the four holes that will need to be drilled. *Note: To fit the curve of the Rake Draw bar, a small amount of twist will need to be put in the Mounting Brackets. This can be done by clamping the Mounting Brackets to the Draw bar.*
3. Mount the Brush Assembly to the Draw bar using the four 1½" Hex Bolts and flange whiz-Nylon Lock Nuts(Ref 6).

13-684 SAND RAKE BRUSH KIT DRAWING

For use with 13-438

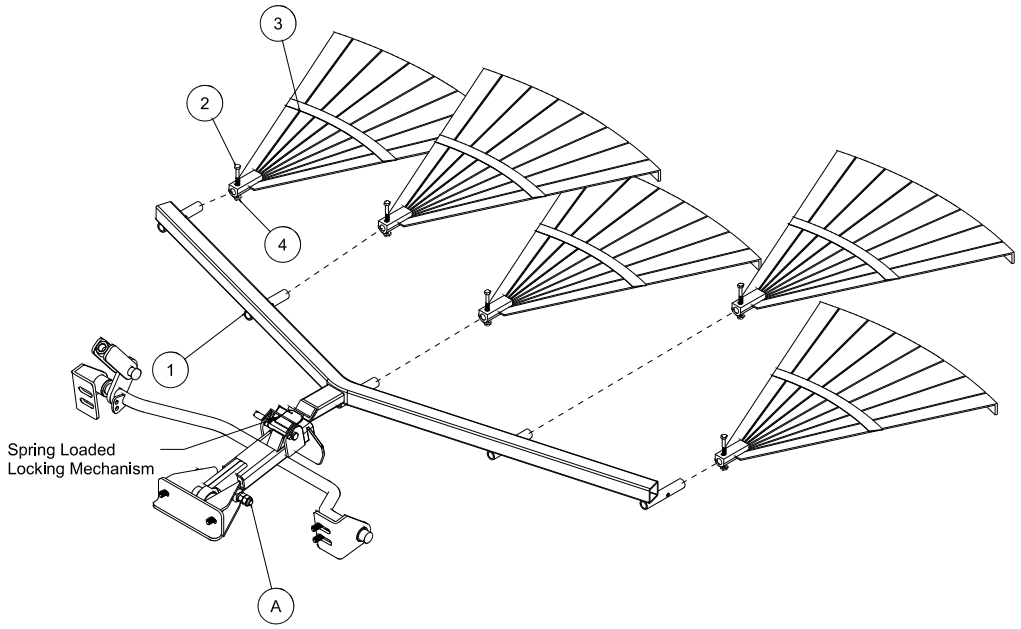


REF#	PART#	DESCRIPTION	QUANTITY
1	13-683	Brush Track	1
2	13-682	Brush 77 x 11	1
3	13-688	Brush Channel	1
4	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	8
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	8
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Hex Bolt, 1/4 - 20 x 1 1/2	4
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	4

INSTALLATION INSTRUCTIONS

1. Place the brush (Ref 2) into the brush track (Ref 1). Place the brush channel (Ref 3) between the brush track and the mounting brackets. Now Hex Bolt the mounting brackets (Ref 5) to the brush track using the 3/4" Hex Bolts and flange whiz-Nylon Lock Nuts (Ref 3).
2. Mount the brush assembly to the draw bar using four 3/4" Hex Bolts and flange whiz-Nylon Lock Nuts (Ref 5).

13-298Q FAN RAKE ATTACHMENT DRAWING

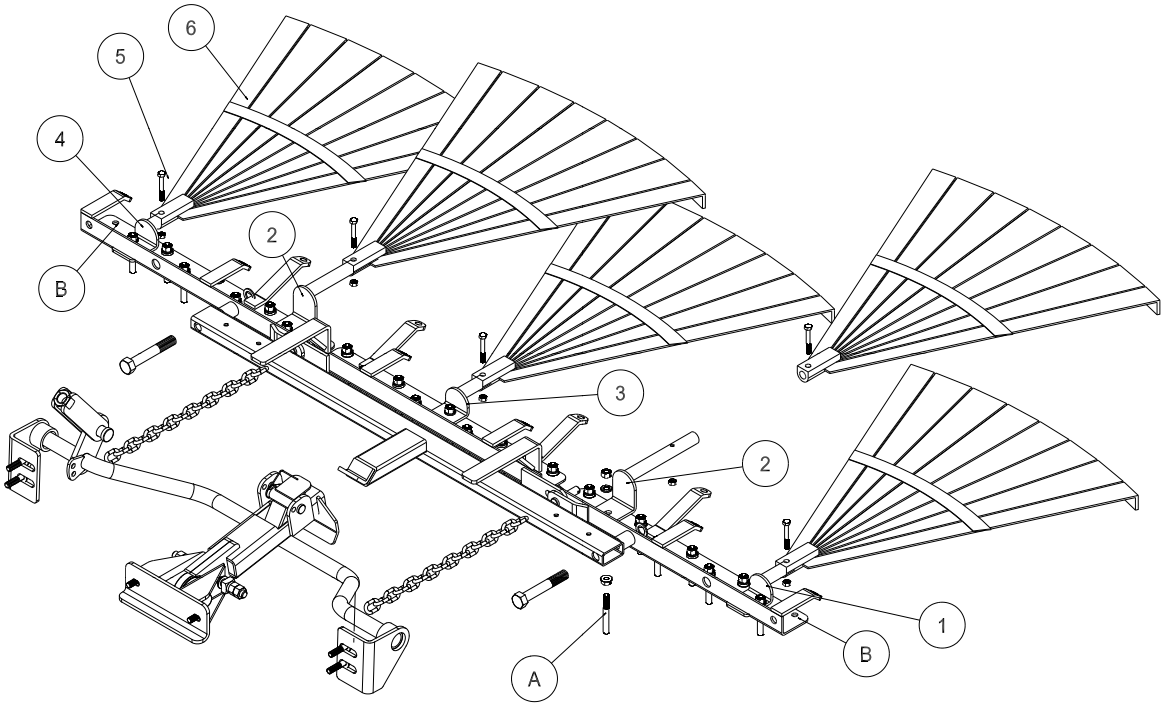


REF#	PART#	DESCRIPTION	QUANTITY
1	43-153	Frame	1
2	HB-14-20-200	Hex Bolt, 1/4 - 20 x 2	5
3	13-310	Rake	5
4	HNCL-14-20	Center Nylon Lock Nut, 1/4 - 20	5

INSTALLATION INSTRUCTIONS

1. Assemble the five rakes (Ref 3) to the frame using the Hex Bolt and center Nylon Lock Nuts (Ref 2 and 4). Slide the fan rake assembly under the rear of the trap rake to the hitch.
2. Attach the rake lift to the trap rake quick hitch, by sliding the hitch into the spring loaded locking mechanism.
3. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
4. Repeat steps on left side.
5. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.

13-319-K FAN RAKE KIT DRAWING

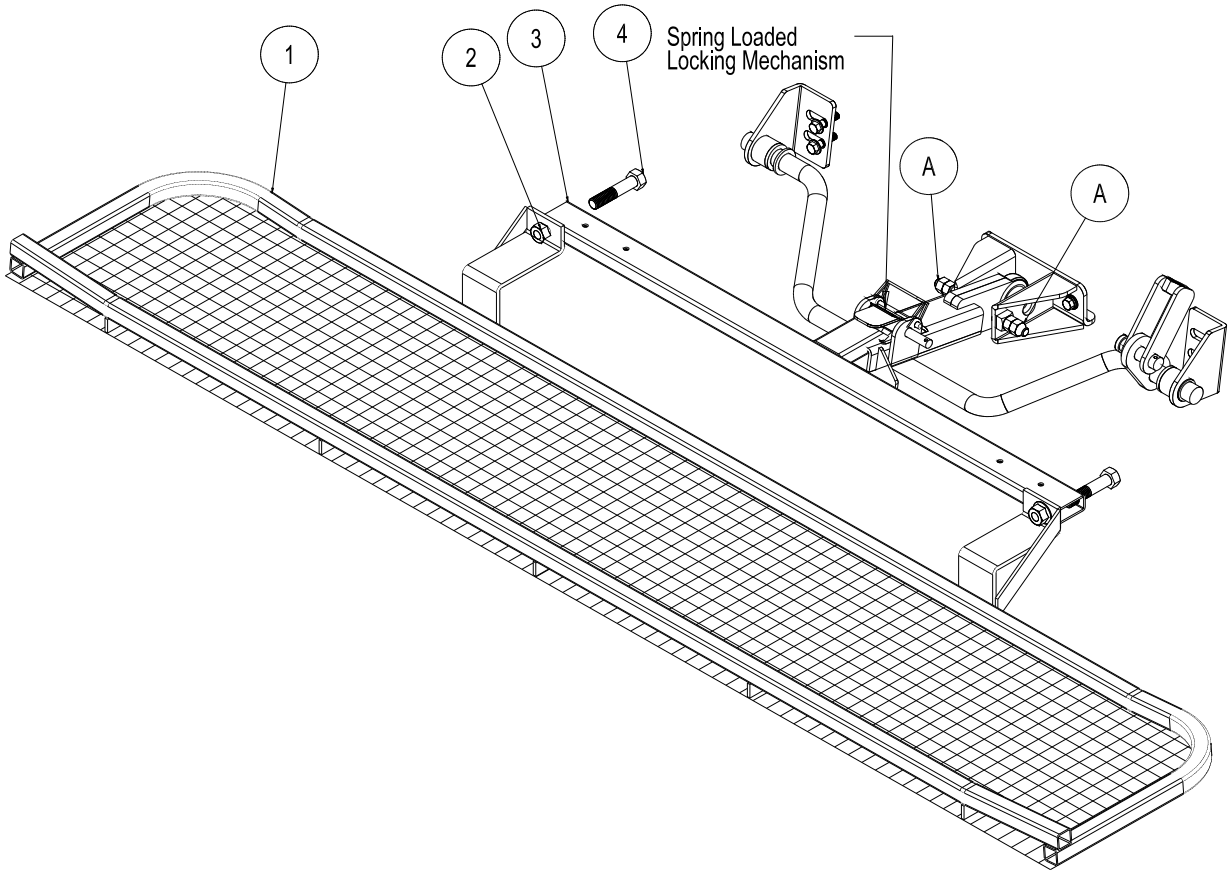


REF#	PART#	DESCRIPTION	QUANTITY
1	13-326	Left Holder	1
2	13-329	Long Holder	2
3	13-327	Center Holder	1
4	13-328	Right Holder	1
5	29-541	Lock Pin	5
6	13-310	Rake	5
B	No Studs in first slot - Leave Empty.		

FAN RAKE KIT INSTRUCTIONS

1. Remove connector links that hold rake blades to rake frame if desired.
2. Remove groomer blades from rake frame that are held on with rake teeth studs (Ref A). Replace rake teeth studs, if desired.
3. Place left holder (Ref 1), angle side up, to the second rake tooth hole from the end and install rake tooth stud. The first rake tooth hole from each end (Ref B) have no rake teeth in them.
4. Remove the 8th rake tooth stud from the end of right and left rake frame and place long holders (Ref 2) on top, reinstall rake teeth studs.
5. Remove rake tooth in direct center of rake and install the center holder (Ref 3). Reinstall rake teeth studs.
6. Place right holder (Ref 4), angle side up, to the second rake tooth hole from the end and install rake tooth stud. The first rake tooth hole from each end (Ref B) have no rake teeth in them.
7. Slide fan rake (Ref 6) onto holders and pin with lock pin (Ref 5).

26-007Q PROFESSIONAL INFIELD FINISHER DRAWING



26-007Q PROFESSIONAL INFIELD FINISHER PARTS LIST

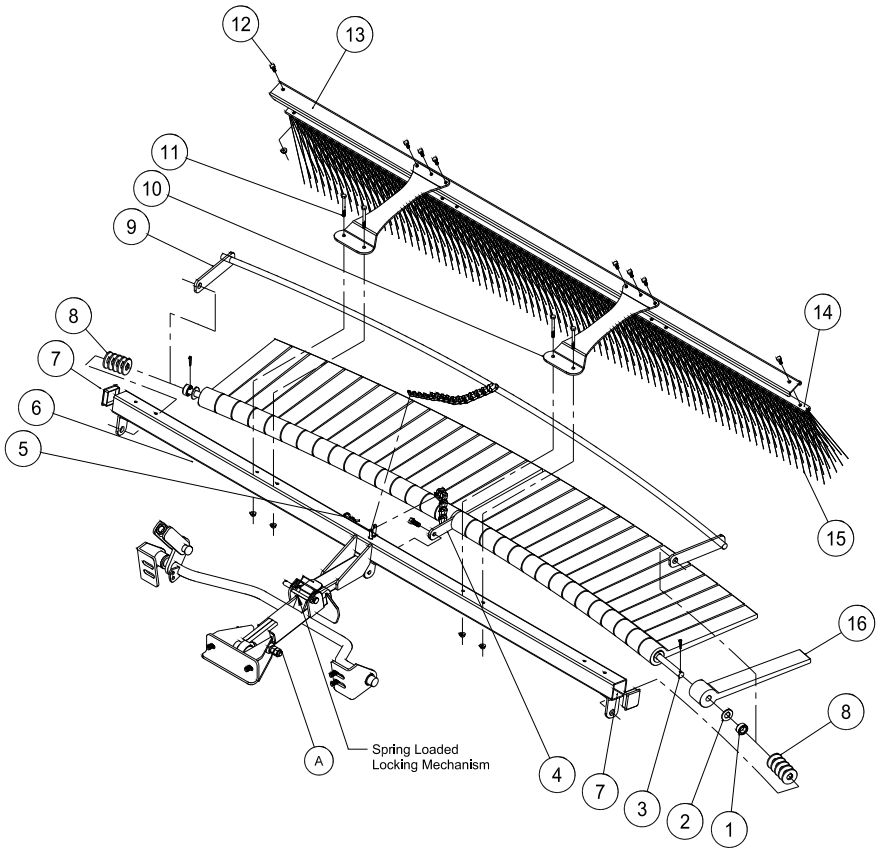
REF#	PART#	DESCRIPTION	QUANTITY
1	26-045	Leveling Screen	1
2	HNCL-58-11	Center Nylon Lock Nut, $^{5}/_{8}$ - 11	2
3	43-145	Draw bar	1
4	HB-58-11-300	Hex Bolt, $^{5}/_{8}$ - 11 x 3	2

INSTALLATION INSTRUCTIONS

The Professional Field Finisher is used for smoothing and leveling fields to professional standards.

1. Attach leveling screen (Ref 1) to draw bar (Ref 3) using two Hex Bolts (Ref 4) and center Nylon Lock Nuts (Ref 2).
2. Mount Professional Field Finisher to the hitch on the trap rake by sliding the draw bar into the quick hitch locking mechanism.
3. When Professional Field Finisher is attached, adjust Hex Bolts on hitch (Ref A) to hold Finisher in desired position.
4. **NOTE:** When assembled properly, rake will angle down from front to back. If front of finisher is not higher than the back, damage will result to infield.
5. When removing the attachment from machine. Push down on quick hitch locking mechanism and pull accessory out.

43-002Q FLEX ACTION FIELD FINISHER WITH BRUSH DRAWING



REF#	PART#	DESCRIPTION	QUANTITY
1	11-040	Spacer, 3/4"	2
2	HW-58	Washer, 5/8	32
3	26-049	Mounting Bar	1
	HP-18-100	Cotter Pin, 1/8 x 1	2
4	26-048	Flail Bar Strap	1
	HB-38-16-100	Hex Bolt 3/8-16 x 1	1
	HNCL-38-16	Center Nylon Lock Nut 3/8-16	1
5	HHP-18	Bridge Pin, 1/8	2
6	43-146	Frame	1
7	18-297	Cap Plug	2
8	HMB-58-14	Machine Bushing 5/8 x 14GA	10
9	26-047	Leveler Bar	1
10	13-681	Mount Bracket	2
11	HB-14-20-250	Hex Bolt, 1/4-20 x 2 1/2	4
	HNFL-14-20	Flange Whiz-Nylon Lock Nut, 1/4-20	4
12	HB-14-20-075	Hex Bolt, 1/4-20 x 3/4	8
	HNFL-14-20	Flange Whiz-Nylon Lock Nut, 1/4-20	8
13	13-688	Brush Channel	1
14	13-683	Brush Track	1
15	13-682	Brush, 77 x 11	1
16	26-041	Rasp Flail	32

43-002Q FLEX ACTION FIELD FINISHER WITH BRUSH INSTRUCTIONS

ASSEMBLY INSTRUCTIONS

1. Install flail bar strap (Ref 4) to center of mounting bar (Ref 3) with chain on top of flail bar strap and mounting bar bent away from you. Apply a light coat of lubricant to overall length of mounting bar.
2. Install one rasp flail (Ref 17) with knobby side down adjacent to sides of flail bar strap. Now install a flat washer (Ref 2) so it sits adjacent with the outside of the rasp flail. Continue to install flails with knobby sides down with washers between until you have **16** flails and washers on the **left hand side** of bar strap and **17** flails and washers on the **right hand side**. Force all flails tightly toward bar strap.
3. After all 33flails have been installed, place one spacer (Ref 1) to each end of mounting bar adjacent to washer.
4. Install leveler bar (Ref 10) to mounting bar, with curved leveler bar resting on top on the smooth sides of flails. **If all flails and washers do not fit snugly at this time, remove leveler bar and install enough machine bushings next to spacer to ensure a snug fit.** Then reinstall leveler bar.
5. Lay the frame (Ref 7) on the floor or bench with welded tabs facing up. Install ends of assembled mounting bar, with knobby sides of flails up, into welded tabs on each end of frame and secure with $^1/_8$ x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with $^3/_8$ -16 x $1^1/_2$ Hex Bolt and $^3/_8$ -16 center Nylon Lock Nut. Loose fit is required. Do not over tighten.
7. Flip assembly over so knobby sides of flails are now facing down. Connect Finisher to the Quick Hitch frame, locking securely in the locking mechanism, as illustrated.
8. Install bar strap chain over welded pin on frame. Install leveler bar chain on to pin and secure in place with bridge pin. Use last bridge pin and clevis pin to hitch field finisher to your machine.

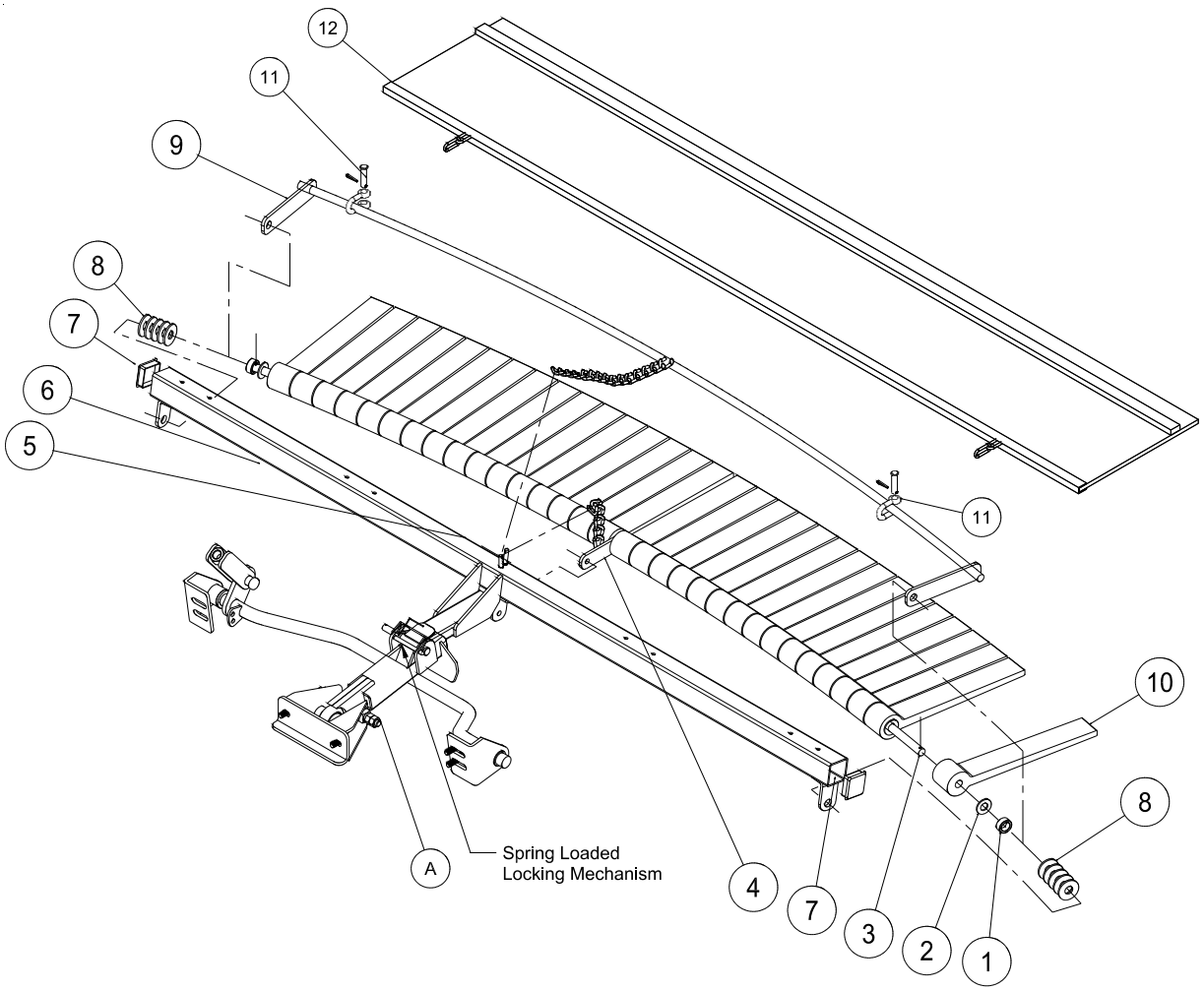
OPERATING INSTRUCTIONS

Running attachment with all flails down, flat on the surface, will provide a leveling function. Running attachment partially raised and flails at a 20° - 40° angle in relation to the level surface, will provide a finishing function. The flails increase down pressure for desired finish. Drive in wide circular patterns and increase or decrease ground speed to achieve desired finish.

BRUSH ASSEMBLY

1. Place the brush (Ref 16) into the brush track (Ref 15). Place the brush channel (Ref 14) between the brush track and the mounting brackets. Now Hex Bolt the mounting brackets (Ref 11) to the brush track using the $^1/_4$ - 20 x $^3/_4$ Hex Bolts and $^1/_4$ - 20 flange whiz-loc Nuts (Ref 13).
2. Mount the brush assembly to the frame using the (4) $^1/_4$-20 x $2^1/_2$ Hex Bolts and $^1/_4$ - 20 flange whiz-loc Nuts (Ref 12).

26-008Q FLEX ACTION FIELD FINISHER DRAWING



26-008Q FLEX ACTION FIELD FINISHER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	11-040	Spacer, 3/4"	2
2	HW-58	Flat Washer, 5/8	32
3	26-049	Mounting Bar	1
4	26-048	Flail Bar Strap	1
	HB-38-16-100	Hex Bolt, 3/8 - 16 x 1	1
	HNCL-38-16	Center Nylon Lock Nut, 3/8 - 16	1
5	HHP-18	Bridge Pin, 1/8	2
6	43-146	Frame	1
7	18-297	Cap Plug	2
8	HMB-58-14	Machine Bushing, 5/8 x 14GA	10
9	26-047	Leveler Bar	1
10	26-041	Rasp Flail	32
11	21-260	Clevis	2
12	26-115	Mesh Finisher	1

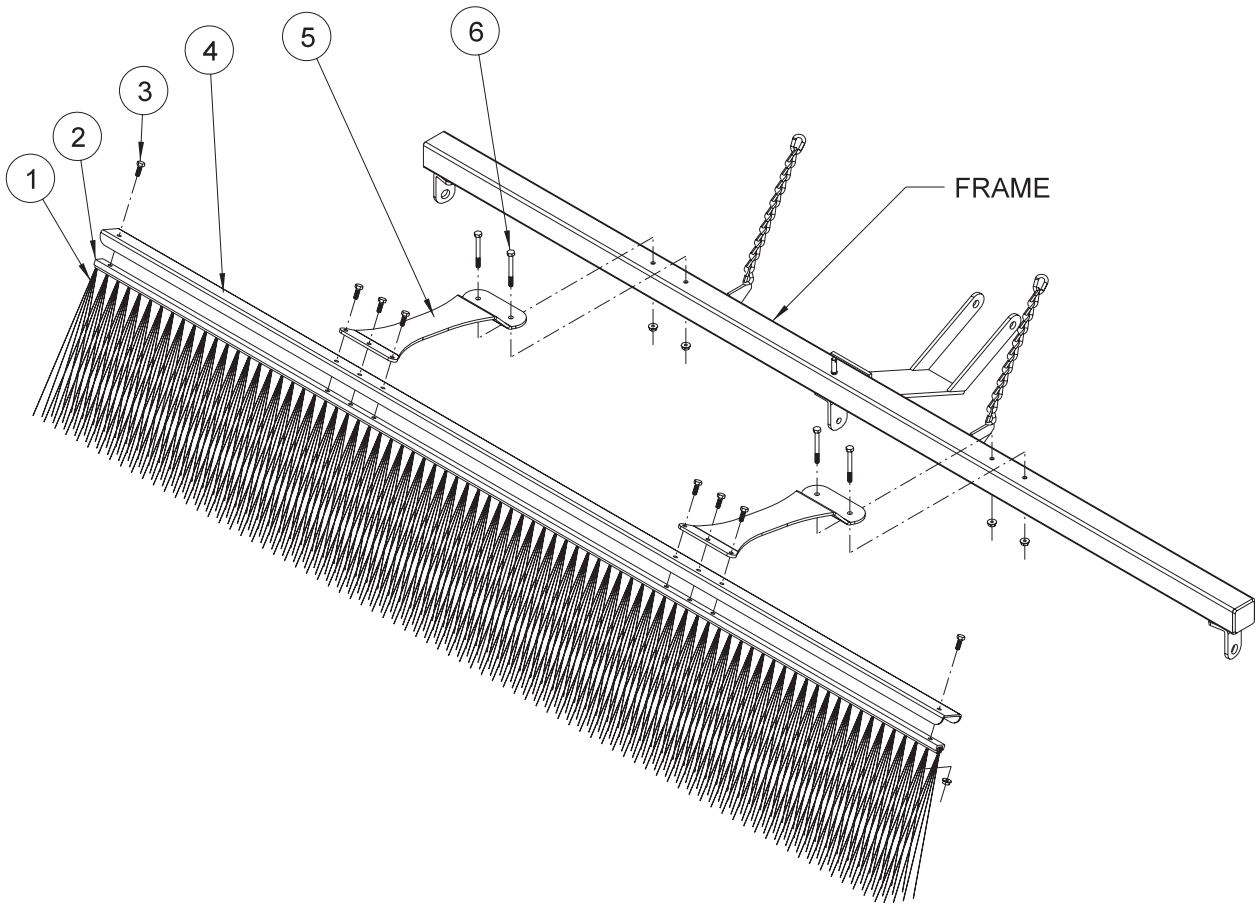
INSTALLATION INSTRUCTIONS

1. Install flail bar strap (Ref 4) to center of mounting bar (Ref 3) with chain on top of flail bar strap and mounting bar bent away from you. Apply a light coat of lubricant to overall length of mounting bar.
2. Install one rasp flail (Ref 16) with knobby side down adjacent to sides of flail bar strap. Now install a flat washer (Ref 2) so it sits adjacent with the outside of the rasp flail. Continue to install flails with knobby sides down with washers between until you have 16 flails and washers on each side of bar strap. Force all flails tightly toward bar strap.
3. After all 32 flails have been installed, place one spacer (Ref 1) to each end of mounting bar adjacent to washer.
4. Install leveler bar (Ref 9) to mounting bar, with curved leveler bar resting on top on the smooth sides of flails. If all flails and washers do not fit snugly at this time, remove leveler bar and install enough machine bushings to ensure a snug fit. Then reinstall leveler bar.
5. Lay the frame (Ref 6) on the floor or bench with welded tabs facing up. Install ends of assembled mounting bar, with knobby sides of flails up, into welded tabs on each end of frame and secure with 1/8 x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with 3/8 -16 x 1 Hex Bolt and 3/8 -16 center Nylon Lock Nut. Loose fit is required. Do not over tighten.
7. Flip assembly over so knobby sides of flails are now facing down. Install hitch to frame with clevis pin (Ref 3) and cotter pin (Ref 24). The hitch should be attached to the frame as shown.
8. Install bar strap chain over welded pin on frame. Install leveler bar chain on to pin and secure in place with bridge pin. Use last bridge pin and clevis pin to hitch field finisher to your machine.

OPERATING INSTRUCTIONS

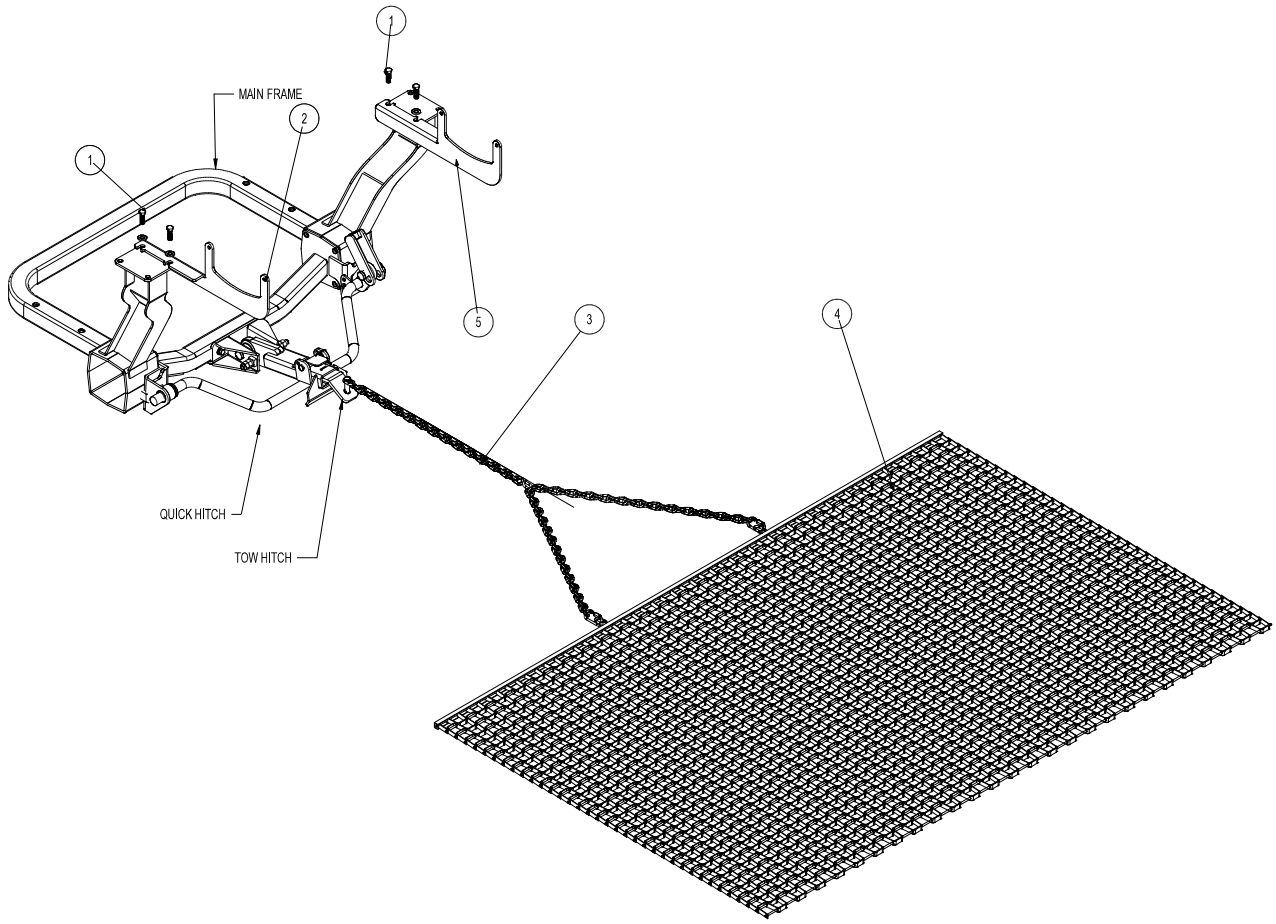
Running attachment with all flails down, flat on the surface, will provide a leveling function. Running attachment partially raised and flails at a 20° - 40° angle in relation to the level surface, will provide a finishing function. The flails increase down pressure for desired finish. Drive in wide circular patterns and increase or decrease ground speed to achieve desired finish.

43-043 FINISHING BRUSH KIT DRAWING



REF#	PART#	DESCRIPTION	QUANTITY
1	13-682	Brush, 77 x 11	1
2	13-683	Brush Track	1
3	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	8
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	8
4	13-688	Brush Channel	1
5	13-681	Mount Bracket	2
6	HB-14-20-250	Hex Bolt, 1/4 - 20 x 2 1/2	4
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	4

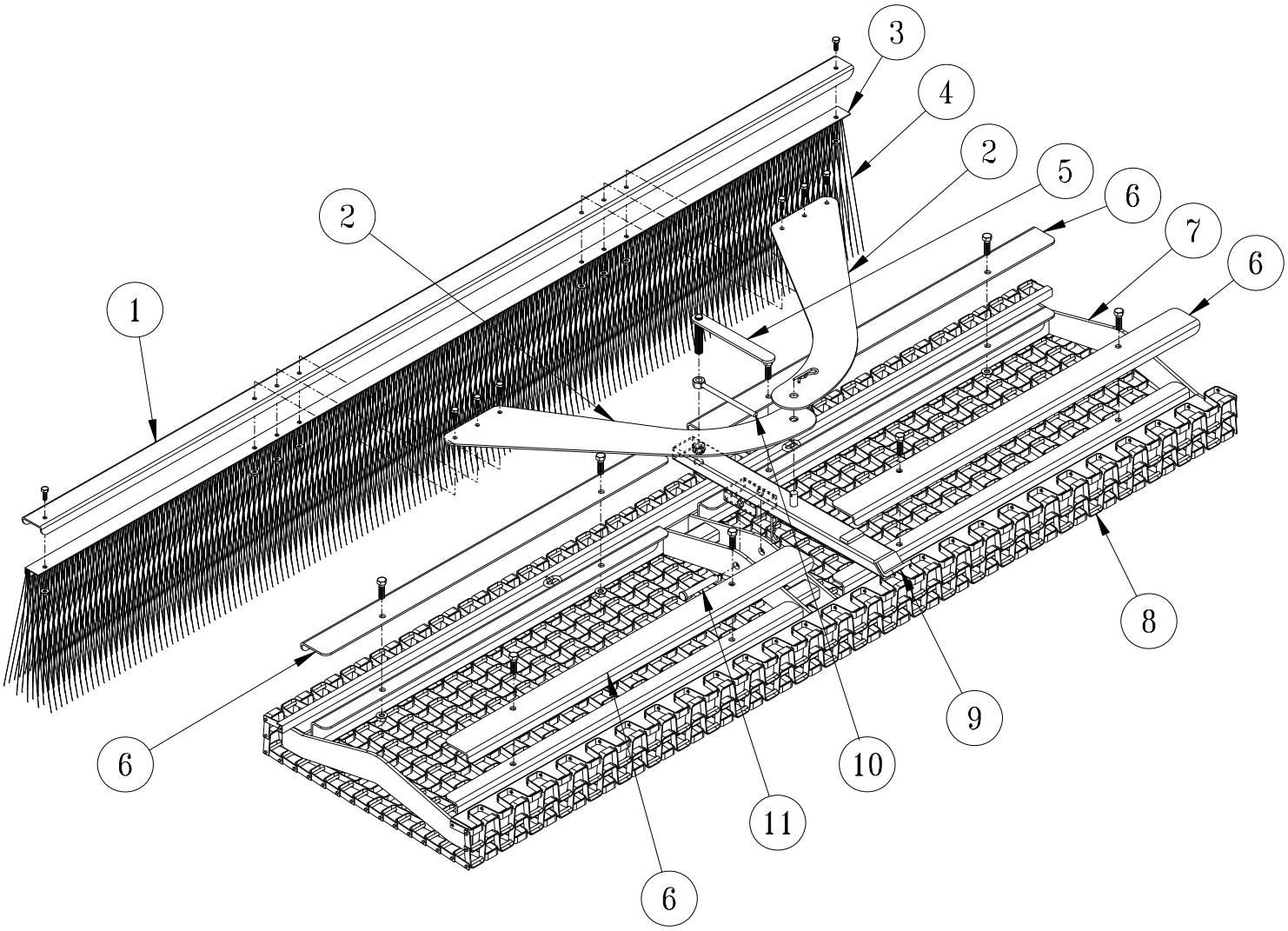
1. Remove the mesh finisher from your unit, it will not be used with the brush.
2. Place the brush (Ref 1) into the brush track (Ref 2). Place the brush channel (Ref 4) between the brush track and the mounting brackets (Ref 5). Now Hex Bolt the mounting brackets (Ref 5) to the brush track using the 1/4 - 20 x 3/4" Hex Bolts and 1/4 - 20 flange whiz-Nylon Lock Nuts (Ref 3).
3. Mount the brush assembly to the frame using the four 1/4 - 20 x 2 1/2" Hex Bolts and 1/4 - 20 flange whiz-Nylon Lock Nuts (Ref 5).



REF#	PART#	DESCRIPTION	QUANTITY
1	HB-716-14-125	Hex Bolt, $^{7}/_{16}$ - 14 x $1^{1}/_{4}$	4
	HW-716	Flat Washer, $^{7}/_{16}$	4
	HNTL-716-14	Nylon Lock Nut, $^{7}/_{16}$-14	4
2	13-751	Right Carrier Mount	1
3	19-605	Drag Mat Chain	1
	HHP-18	Bridge Pin, $^{1}/_{8}$	1
4	19-601	Steel Drag Mat	1
5	13-752	Left Carrier Mount	1

1. The Drag Mat Kit can be installed on all Super Star with or without the optional Roll Bars.
2. Remove the two insides Hex Bolts from the roll bar mounts. Install the flat washers and secure right and left carrier mounts on opposite sides. Tighten all hardware.
3. Install the tow hitch insert into the quick hitch. This is where the tow chain on the drag mat attaches to the machine.

45-176 72" DRAG MAT + FINISHER BRUSH DRAWING



45-176 72" DRAG MAT + FINISHER BRUSH PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-688	Brush Channel	1
	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	2
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	2
2	43-168	Brush Mount Arm	2
	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	8
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	8
3	13-683	Brush Track	1
4	13-682	Brush, 77 x 11	1
5	43-164	Adjustment Handle	1
6	43-166	Mat Clamp	4
	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	8
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16 x 1 1/4	8
7	43-165	Frame	1
8	45-167	Steel Mat, 72 x 29	1
9	43-162	Draw Bar	1
	HHP-18	Bridge Pin, 1/8	1
10	43-163	Lock Handle	1
11	HCP-12-300	Clevis Pin, 1/2 x 3	1
	HHP-18	Bridge Pin, 1/8	1

DRAG MAT ASSEMBLY INSTRUCTIONS

Some components of your ***Drag Mat + Finisher Brush*** have been assembled at the factory for your convenience.

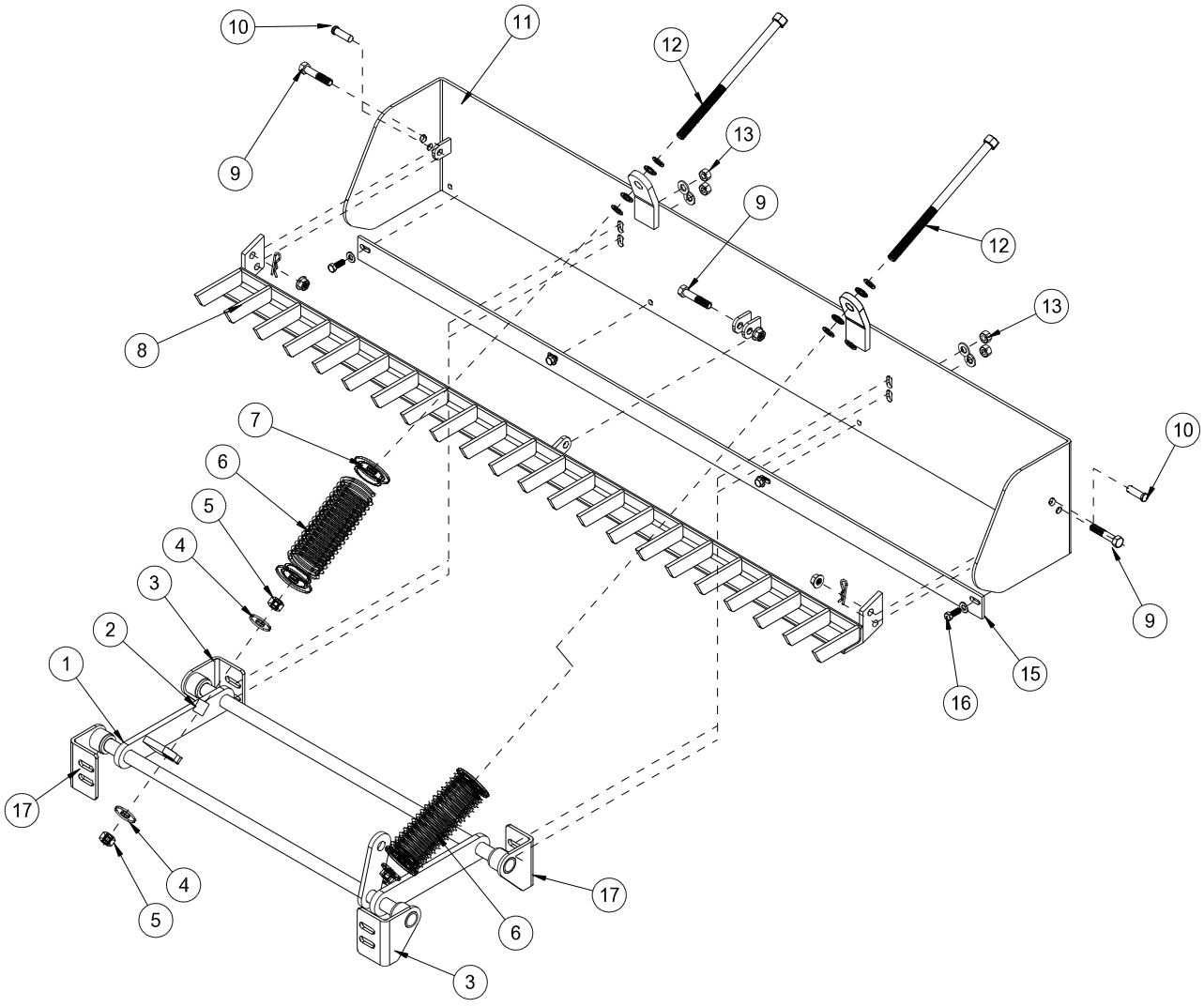
1. Start by mounting the Draw bar (Ref 9) to the Frame (Ref 7) using the Clevis Pin and Bridge Pin (Ref 11). Position the Draw bar, using either set of holes, as illustrated.
2. Next, mount the Brush assembly (Ref 1, 3 & 4) to the Brush Mount Arms (Ref 2), as illustrated, using the (6) 1/4 - 20 x 3/4 Hex Bolts and 1/4 - 20 Flange Whiz-Loc Nuts. Secure fasteners tight.
3. The holes on each of the Brush Mount Arms will line up. Mount to the pin on the Draw bar (Ref 9) and secure using the remaining Bridge Pin.
4. Thread the Lock Handle (Ref 10) on to the Adjustment Handle (Ref 5). Thread the Adjustment Handle into the nut on top of the Draw bar (Ref 9), continuing until the threaded rod is through the Draw bar tube. Turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.

Adjusting the ***Steel Mat Finisher***.

Adjusting the leading edge (front) will affect the performance of the ***Finisher***. Various field compositions and conditions can benefit from fine tuning of the ***Finisher's*** leading edge angle.

1. Release the Lock Handle (Ref 10) by holding the Adjustment Handle (Ref 5) and turning the Lock Handle counter-clockwise (↺).
2. To raise the leading edge (front) of the ***Finisher***, turn the Adjustment Handle clockwise (↻). When you obtain your desired position, turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.
3. To lower the leading edge (front) of the ***Finisher***, turn the Adjustment Handle counter-clockwise (↺). When you obtain your desired position, turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.

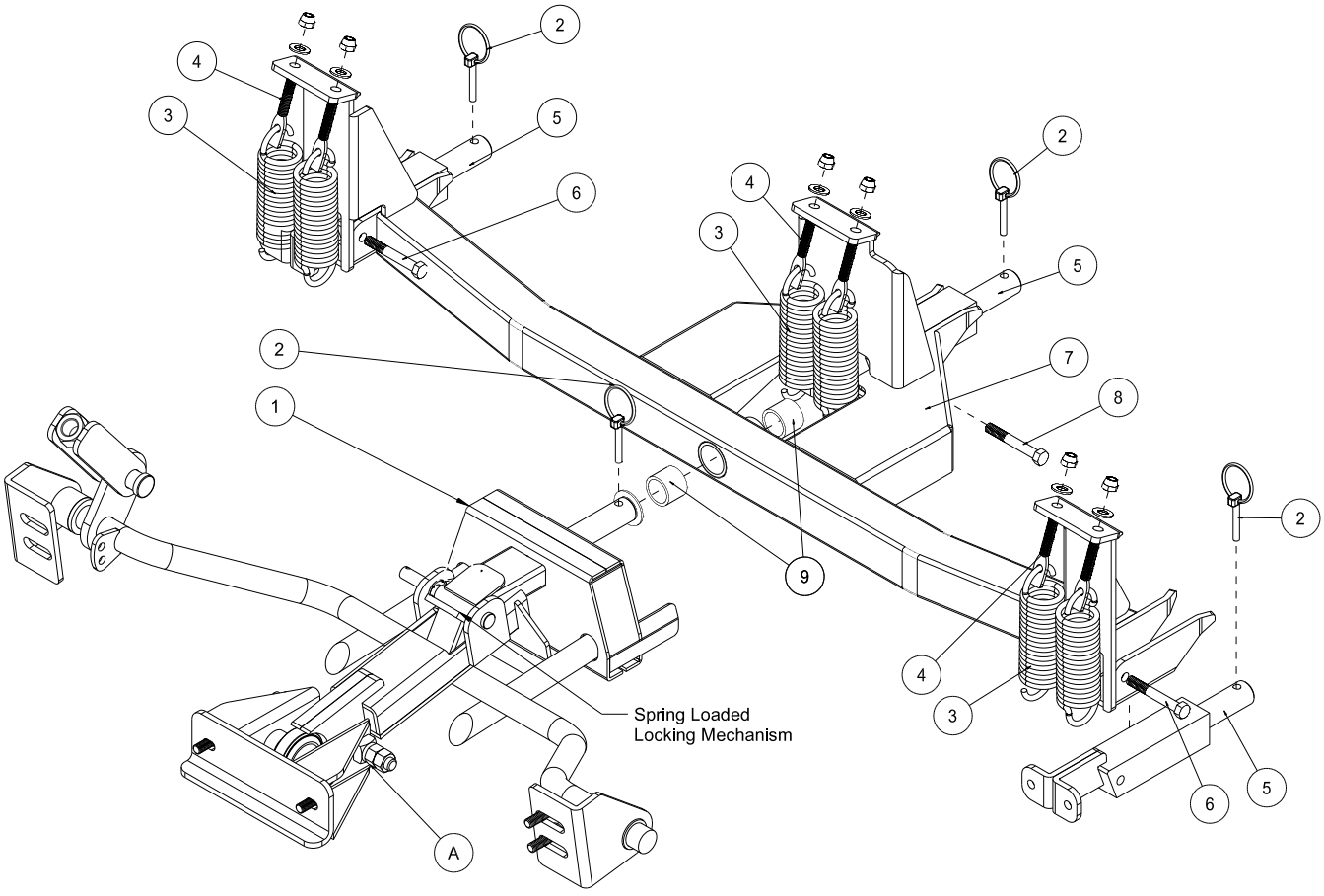
45-010 BOX GRADER DRAWING



45-010 BOX GRADER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	45-141	Lift Assembly	1
2	34-215	Spacer	2
3	34-220	Right Pivot Bracket	2
	33-086	Bushing	2
4	HW-58	Flat Washer, 5/8	4
5	HNTL-58-18	Nylon Lock Nut, 5/8 - 18	2
	HN-58-18	Hex Nut, 5/8 - 18	4
6	13-276	Compression Spring	2
7	13-277	Spring Pad	4
8	34-217	Break Up Bar	1
9	HB-12-13-200	Hex Bolt, 1/2 -13 x 2	3
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	3
10	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	2
	HHP-18	Bridge Pin, 1/8	2
11	34-216	Blade Assembly	1
12	34-214	Spring Rod	2
	HMB-58-14	Machine Bushing, 5/8 - 14GA	4
13	HB-12-13-125	Hex Bolt, 1/2 - 13 x 1 1/4	4
	HW-716	Flat Washer, 7/16	8
	HWL-12	Lock Washer, 1/2	4
	HN-12-13	Hex Nut, 1/2 -13	4
15	34-218	Cutter Blade	1
16	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	4
	HW-38	Flat Washer, 3/8	4
	HWL-38	Lock Washer, 3/8	4
	HN-38-16	Nylon Lock Nut, 3/8 - 16	4
17	34-219	Left Pivot Bracket	2
	33-086	Bushing	2

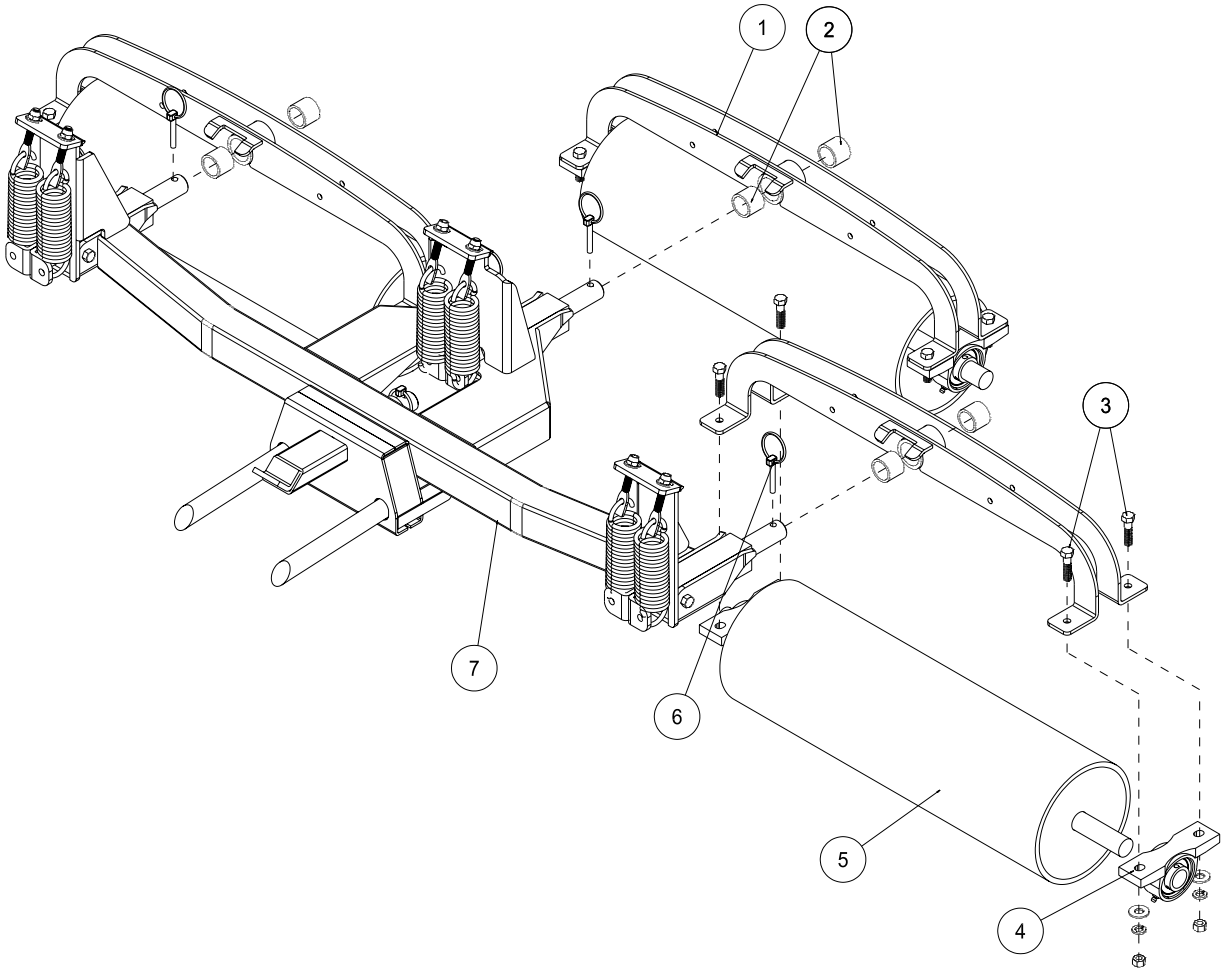
42-586Q GREEN STAR RBS MAIN FRAME DRAWING



42-586Q GREEN STAR RBS MAIN FRAME PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	43-155	Hitch	1
2	42-539	Lynch Pin, 5/16	4
3	42-536	Spring	6
4	42-537	Spade Hex Bolt	6
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	6
5	42-576	Spring Tower	3
6	HB-38-16-275	Hex Bolt, 3/8 - 16 x 2 3/4	2
	HNTL-38-16	Nylon Lock Nut, 3/8 - 16	2
7	42-577	Frame	1
8	HB-38-16-250	Hex Bolt, 3/8 - 16 x 2 1/2	1
	HNCL-38-16	Center Nylon Lock Nut, 3/8 - 16	1
9	18-295	Oilite Bushing (part of 42-577)	2

42-581 GREEN STAR RBS ROLLER SET (3) DRAWING



42-581 GREEN STAR RBS ROLLER SET (3) PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-574	Fork	3
2	18-295	Oilite Bushing (part of 42-574)	6
3	HB-38-16-150	Hex Bolt, 3/8 - 16 x 1 1/2	12
	HWL-38	Lock Washer, 3/8	12
	HW-38	Flat Washer, 3/8	12
	HN-38-16	Hex Nut, 3/8 - 16	12
4	11-094	Pillow Block	6
5	42-584	Roller	3
6	42-539	Lynch Pin, 5/16 (part of main frame)	3
7	42-586Q	Green Star RBS Main Frame	1

ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

The springs are preset for maximum down pressure, and should not need to be adjusted. If you feel the need to adjust the springs please call for further instructions. The unit comes pre-adjusted for most models. The four adjustment holes on the hitch are for making sure all three rollers are touching the ground at the same pressure. When installing roller system start with the lower mounting holes on hitch.

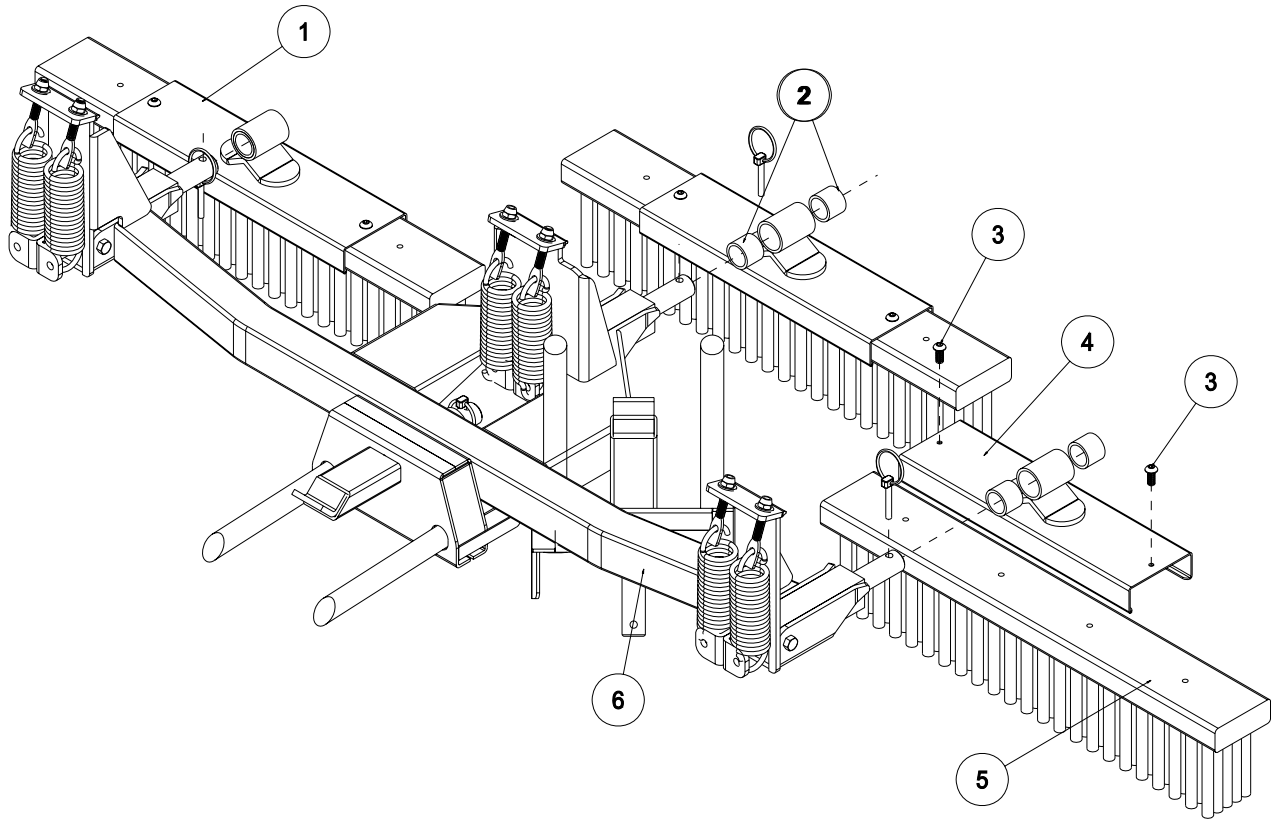
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

OPERATION

Make sure the rolling system has been installed and adjusted properly for your model of bunker rake. Always transport in fully raised position. Always remove flag pole before rolling green. Do not stop on green while rolling. Do not roll up steep slopes or loss of traction may result. Do not turn while rolling.

To begin rolling, lower unit all the way down as you come across collar and continue straight across green until reaching other collar and raise as you come off of green. Overlap stripes the same as if you were mowing.

42-585 GREEN STAR RBS BRUSH SET (3) DRAWING



42-585 GREEN STAR RBS BRUSH SET (3) PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-539	Lynch Pin, $^{5}/_{16}$ (part of main frame)	4
2	18-295	Oilite Bushing (part of 42-579)	6
3	HSPP-516-18-075	Phillip Head Screw, $^{5}/_{16}$ - 18 x $^{3}/_{4}$	6
4	42-579	Brush Bracket	3
5	42-545	Brush Head	3
6	42-586Q	Green Star RBS Main Frame	1

ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

The springs are preset for maximum down pressure, and should not need to be adjusted. If you feel the need to adjust the springs please call for further instructions. The unit comes pre-adjusted for most models. The four adjustment holes on the hitch are for making sure all three brushes are touching the ground at the same pressure. When installing brush system start with the lower mounting holes on hitch.

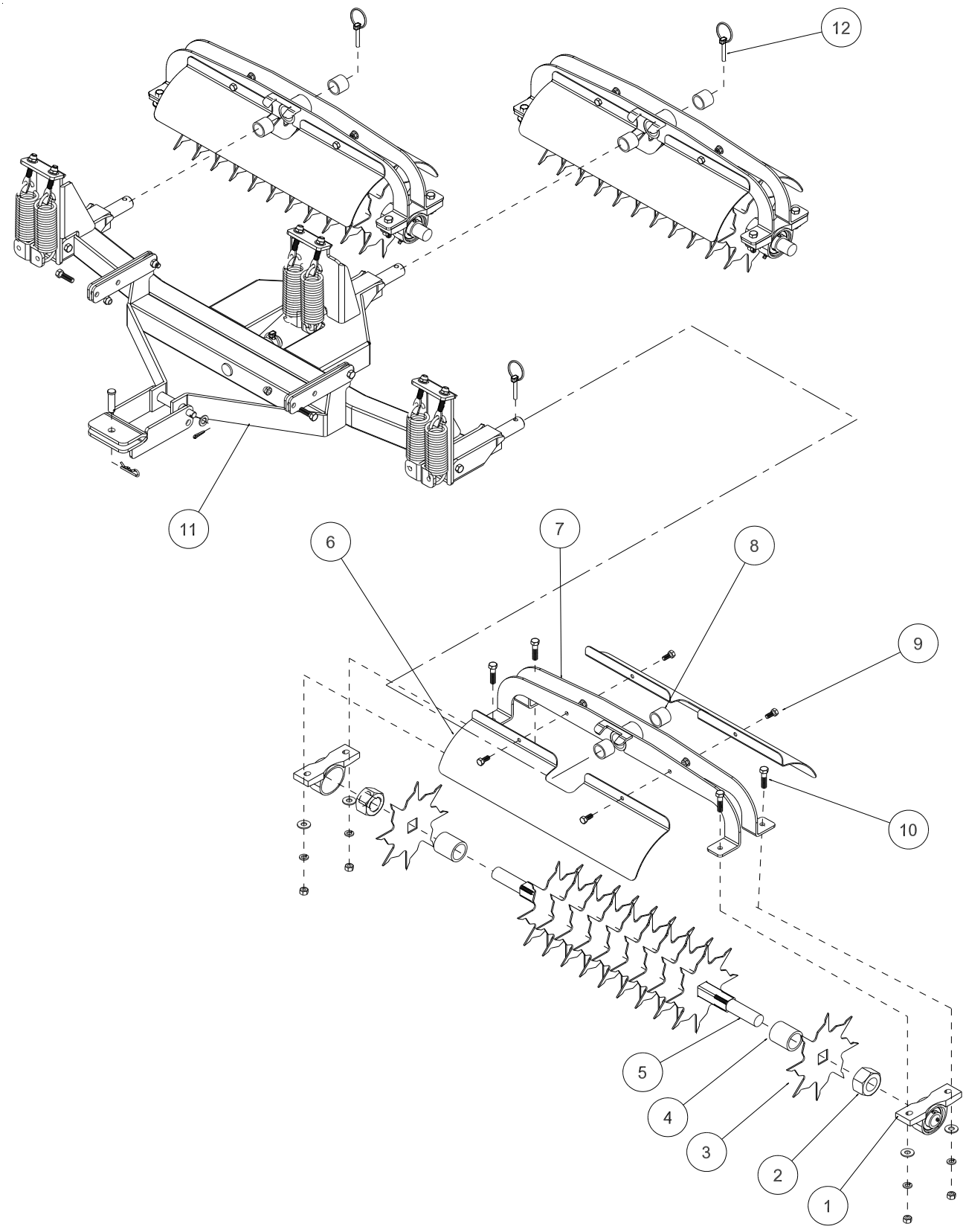
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

OPERATION

Make sure the brush system has been installed and adjusted properly for your model of bunker rake. Always transport in fully raised position. Always remove flag pole before brushing green. Do not stop on green while brushing. Do not brush up steep slopes or loss of traction may result. Do not turn while brushing.

For drag brushes use hydraulics to control the amount of down pressure required to move your top dressing material. We recommend reversing drag brushes after each use for even wear. To begin brushing, lower unit as you come across collar and continue straight across green until reaching other collar and raise as you come off of green. Overlap stripes the same as if you were mowing.

42-582 GREEN STAR RBS SPIKER SET (3) DRAWING



42-582 GREEN STAR RBS SPIKER SET (3) DRAWING

REF#	PART#	DESCRIPTION	QUANTITY
1	11-094	Pillow Block	6
2	HNJ-114-12	Jam Nut, 1 1/4 - 12	6
3	42-583	Spiker Blade	33
4	8965-1.875	Spiker Blade Spacer (1.875")	30
5	42-554	Spiker Shaft	3
6	42-578	Spiker Cover	6
7	42-574	Fork	3
8	18-295	Oilite Bushing (part of 42-574)	6
9	HB-516-18-075	Hex Bolt, 5/16 - 18 x 3/4	12
	HNTL-516-18	Nylon Lock Nut, 5/16 - 18	12
10	HB-38-16-150	Hex Bolt, 3/8 - 16 x 1 1/2	12
	HWL-38	Lock Washer, 3/8	12
	HW-38	Flat Washer, 3/8	12
	HN-38-16	Hex Nut, 3/8 - 16	12
11	42-586Q	Green Star RBS Main Frame	1
12	42-539	Lynch Pin, 5/16 (part of main frame)	3

ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

The springs are preset for maximum down pressure, and should not need to be adjusted. If you feel the need to adjust the springs please call for further instructions. The unit comes pre-adjusted for most models. The four adjustment holes on the hitch are for making sure all three spikers are touching the ground at the same pressure. When installing spiker system start with the lower mounting holes on hitch.

Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

OPERATION

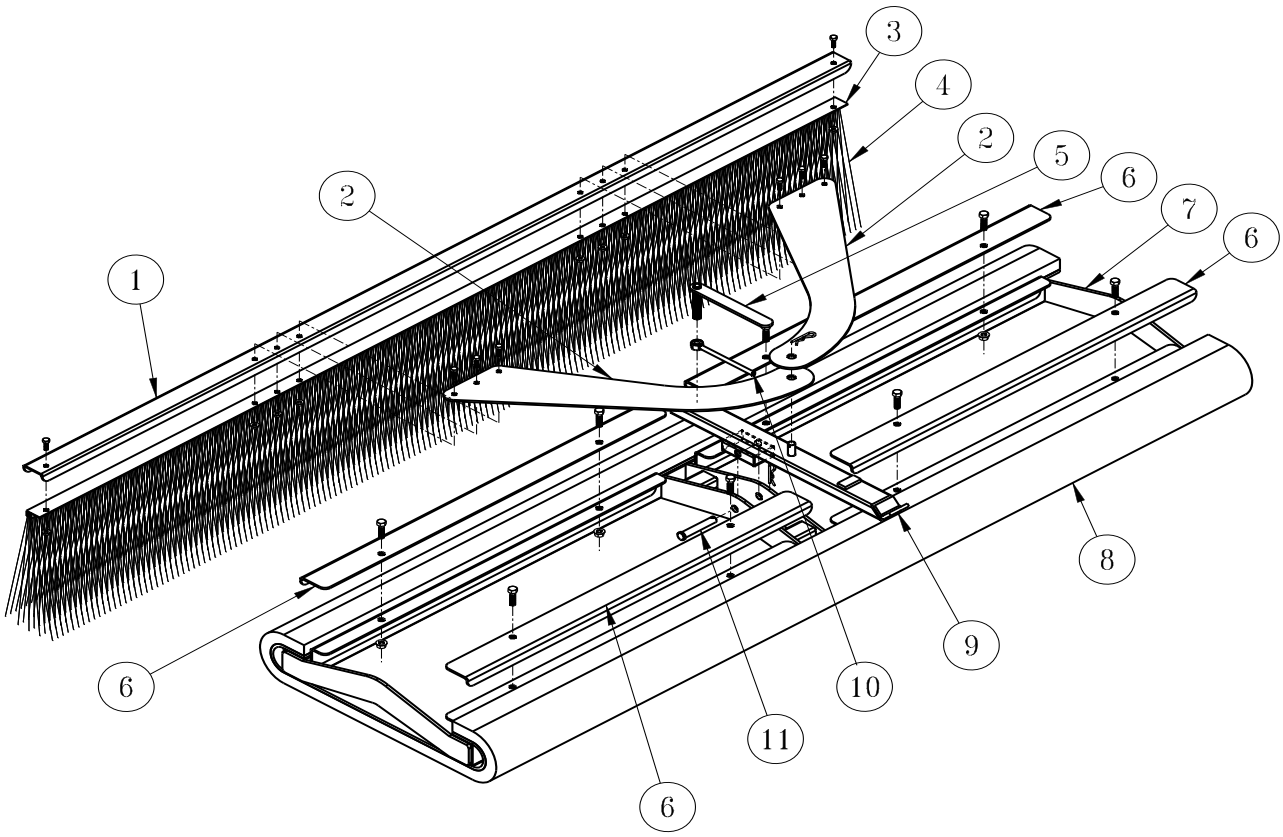
Make sure the spiker system has been installed and adjusted properly for your model of bunker rake. Always transport in fully raised position. Always remove flag pole before spiking green. Do not stop on green while spiking. Do not spike up steep slopes or loss of traction may result. Do not turn while spiking.

To begin spiking, lower unit all the way down as you come across collar and continue straight across green until reaching other collar and raise as you come off of green. Overlap stripes the same as if you were mowing.

INSTALLATION

Spiker blades must be installed so that the jagged side of the tooth cuts into the turf first. This allows only a piercing of the turf, whereas if the straight edge of the spiker blades enters first it will act more as a cutting effect.

43-009 72" COCO MAT FINISHER DRAWING



72" COCO MAT FINISHER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-688	Brush Channel	1
	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	2
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	2
2	43-168	Brush Mount Arm	2
	HB-14-20-075	Hex Bolt, 1/4 - 20 x 3/4	6
	HNFL-14-20	Flange Whiz-Loc Nut, 1/4 - 20	6
3	13-683	Brush Track	1
4	13-682	Brush, 77 x 11	1
5	43-164	Adjustment Handle	1
6	43-166	Mat Clamp	4
	HB-38-16-125	Hex Bolt, 3/8 - 16 x 1 1/4	8
	HNFL-38-16	Flange Whiz-Loc Nut, 3/8 - 16 x 1 1/4	8
7	43-165	Frame	1
8	43-167	Coco Mat, 27 x 72	1
9	43-162	Draw Bar	1
	HHP-18	Bridge Pin, 1/8	1
10	43-163	Lock Handle	1
11	HCP-12-300	Clevis Pin, 1/2 x 3	1
	HHP-18	Bridge Pin, 1/8	1

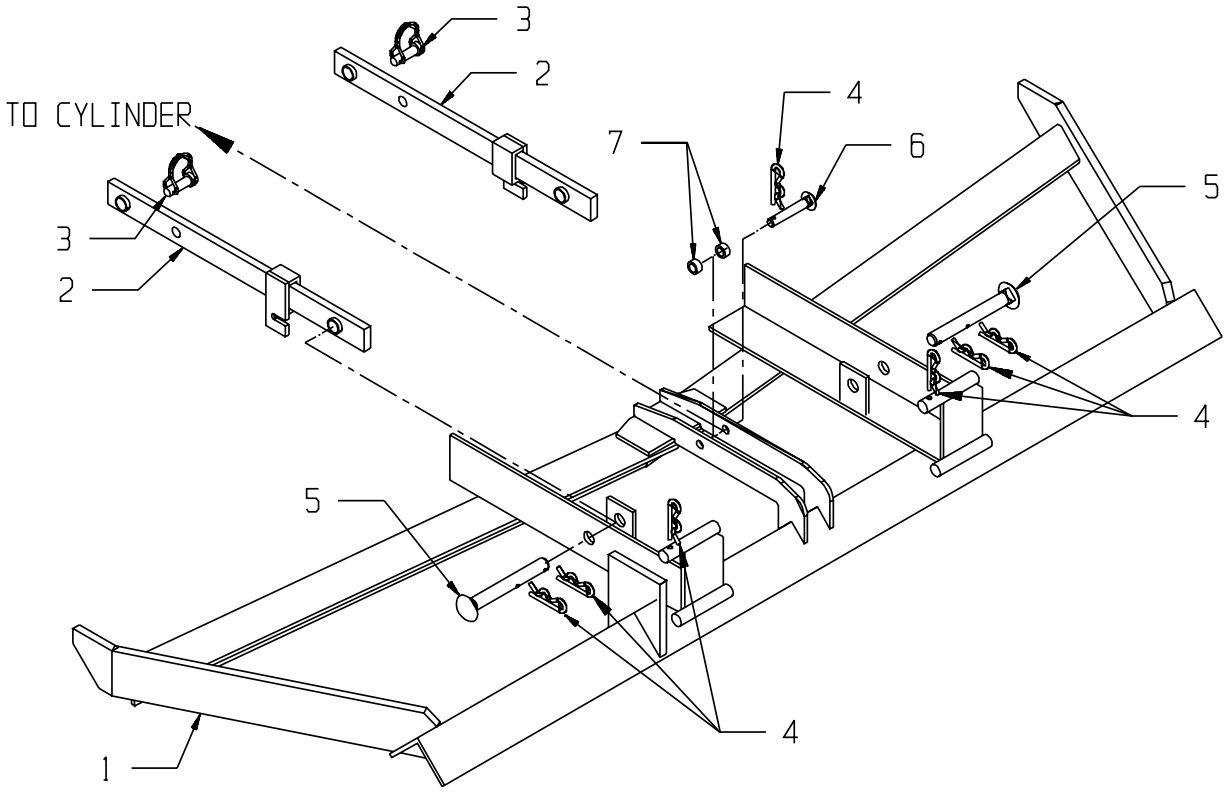
Some components of your ***Coco Mat Finisher*** have been assembled at the factory for your convenience.

1. Start by mounting the Draw bar (Ref 9) to the Frame (Ref 7) using the Clevis Pin and Bridge Pin (Ref 11). Position the Draw bar, using either set of holes, as illustrated.
2. Next, mount the Brush assembly (Ref 1, 3 & 4) to the Brush Mount Arms (Ref 2), as illustrated, using the (6) 1/4 - 20 x 3/4 Hex Bolts and 1/4 - 20 Flange Whiz-Loc Nuts. Secure fasteners tight.
3. The holes on each of the Brush Mount Arms will line up. Mount to the pin on the Draw bar (Ref 9) and secure using the remaining Bridge Pin.
4. Thread the Lock Handle (Ref 10) on to the Adjustment Handle (Ref 5). Thread the Adjustment Handle into the nut on top of the Draw bar (Ref 9), continuing until the threaded rod is through the Draw bar tube. Turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.

Adjusting the ***Coco Mat Finisher***.

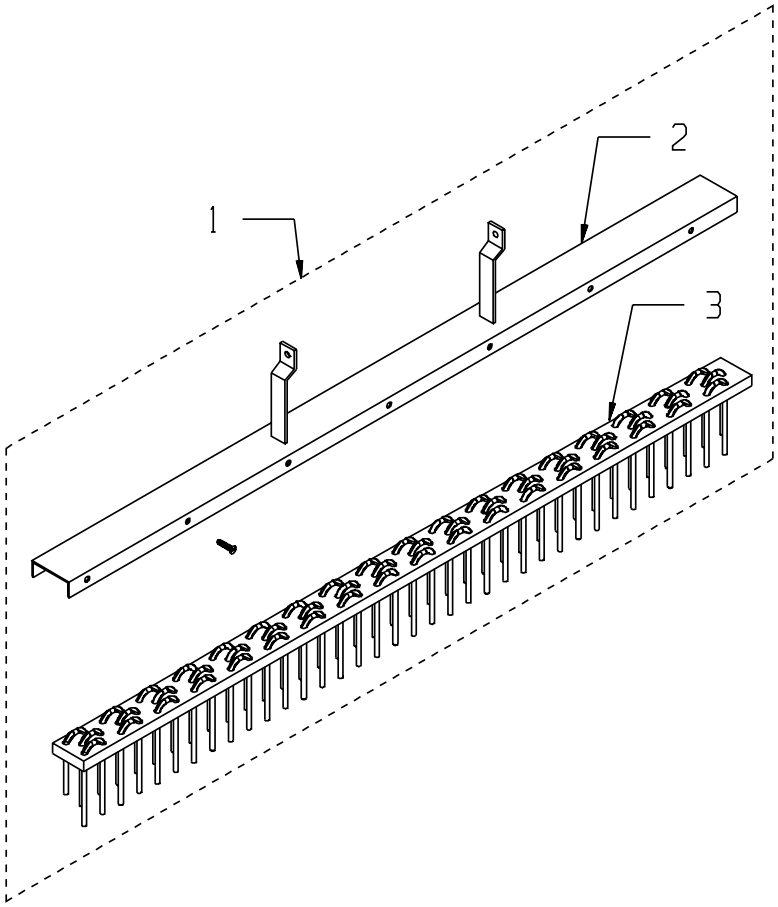
Adjusting the leading edge (front) will affect the performance of the ***Finisher***. Various field compositions and conditions can benefit from fine tuning of the ***Finisher's*** leading edge angle.

1. Release the Lock Handle (Ref 10) by holding the Adjustment Handle (Ref 5) and turning the Lock Handle counterclockwise (↺).
2. To raise the leading edge (front) of the ***Finisher***, turn the Adjustment Handle clockwise (↻). When you obtain your desired position, turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.
3. To lower the leading edge (front) of the ***Finisher***, turn the Adjustment Handle counterclockwise (↺). When you obtain your desired position, turn the Lock Handle clockwise (↻) to lock the Adjustment handle in place.



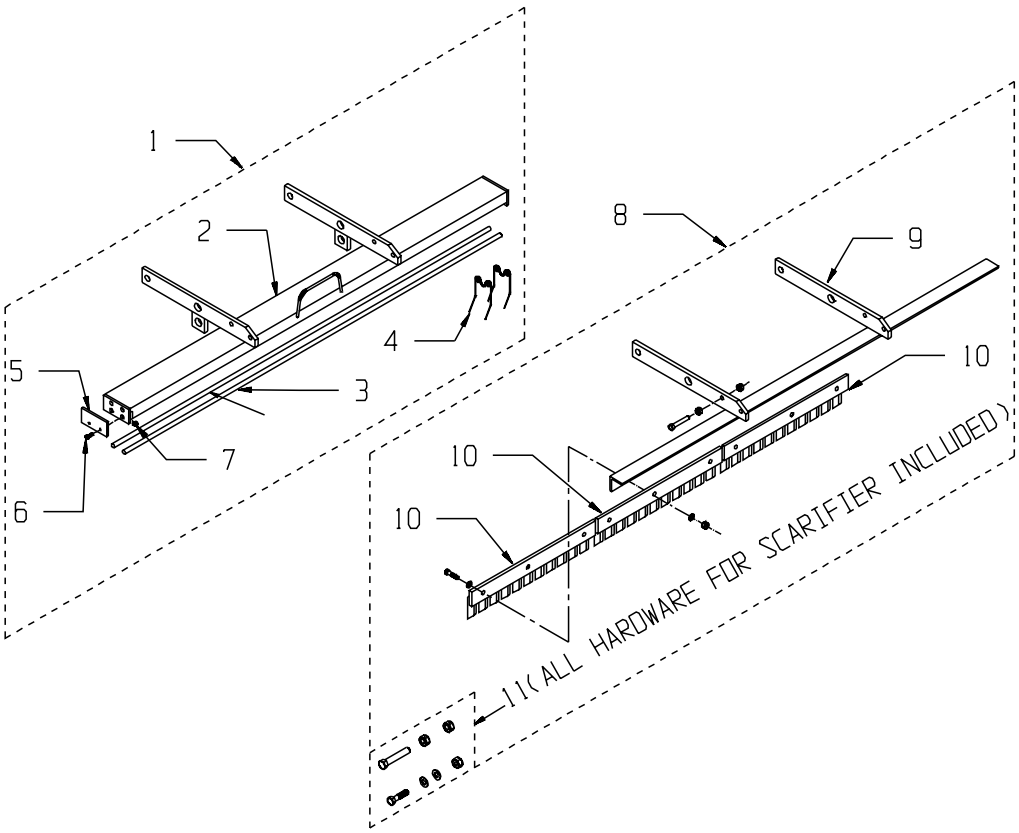
Base Unit, Infield Groomer

REF#	PART#	DESCRIPTION	QUANTITY
1	GL650-1	Groomer Frame	1
2	GL650-3	Pull Arms, Set (includes 2 arms)	1
3	HP8-09-01	Pull Arm Locking Pins, Set (included 2 pins)	1
4	HP-8-10	Hitch Pin	7
5	HP-8-02	6” Mounting Pin Set.(Included 2 pins)	1
6	HP8-03	Mounting Pin, 3” x 1/2”	1
7	HP-8-382	Spacer (Set of 2)	1



6’ Broom Assembly

REF#	PART#	DESCRIPTION	QUANTITY
1	GL650-6	Broom Assembly, Complete	1
2	GL650-6-2	Broom Channel with Arms	1
3	GL650-6-1	Replacement Broom	1



Scarifier Options

REF#	PART#	DESCRIPTION	QUANTITY
1	GL650-4-10	Spring Tine Assembly, Complete	1
2	GL650-4-10-1	Spring Tine Channel with Arms	1
3	GL650-4-10-2	Rods, $^1/_2$" x 60"	2
4	GL650-4-15	Spring Tine Replacement Set (includes 38 pcs)	1
5	GL650-4-10-3	End Cap	1
6		HHCS, $^1/_4$ x $^3/_4$	2
7		Nylon Lock Nut, $^1/_4$	2
8	GL650-4	Scarifier Assembly	1
9	GL650-4-1-1	5 Foot Scarifier Angle	1
10	GL650-4-5-3	Scarifier Replacement Set	1
11	GL650-4-9	Hardware Package	1

Picture #1

Picture #2

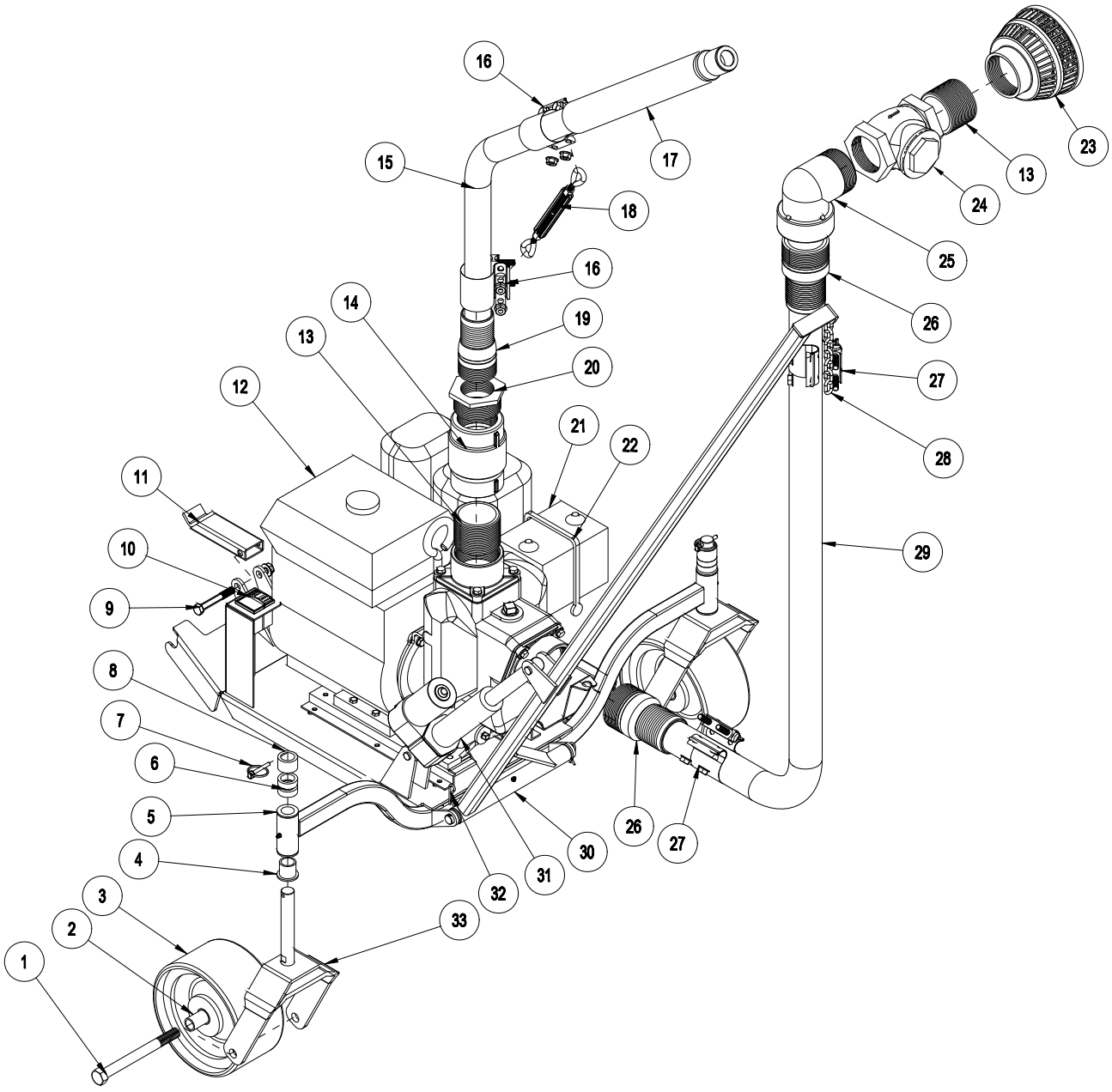
SMITHCO QUICK ATTACH MOUNTING INSTRUCTIONS

1. INSTALL RAHN CENTER LIFT ASSEMBLY INTO THE SMITHCO QUICK ATTACH MOUNTING SLOT UNTIL IT ENGAGES WITH THE SPRING ASSISTED STOP. MAKE SURE THE 3/4" RODS ARE BELOW THE QUICK ATTACH CROSS MEMBER. (PICTURE #1)

2. INSTALL THE RAHN PULL ARM BRACKETS (LEFT & RIGHT) ON TOP OF THE BRACKETS USED FOR THE QUICK ATTACH SYSTEM USING THE HARDWARE PROVIDED. WHEN INSTALLING THE BRACKETS, THE HEX BOLT HOLES ARE LOCATED TOWARD THE WHEELS AND THE EARS OF THE BRACKET ARE TO THE INSIDE.

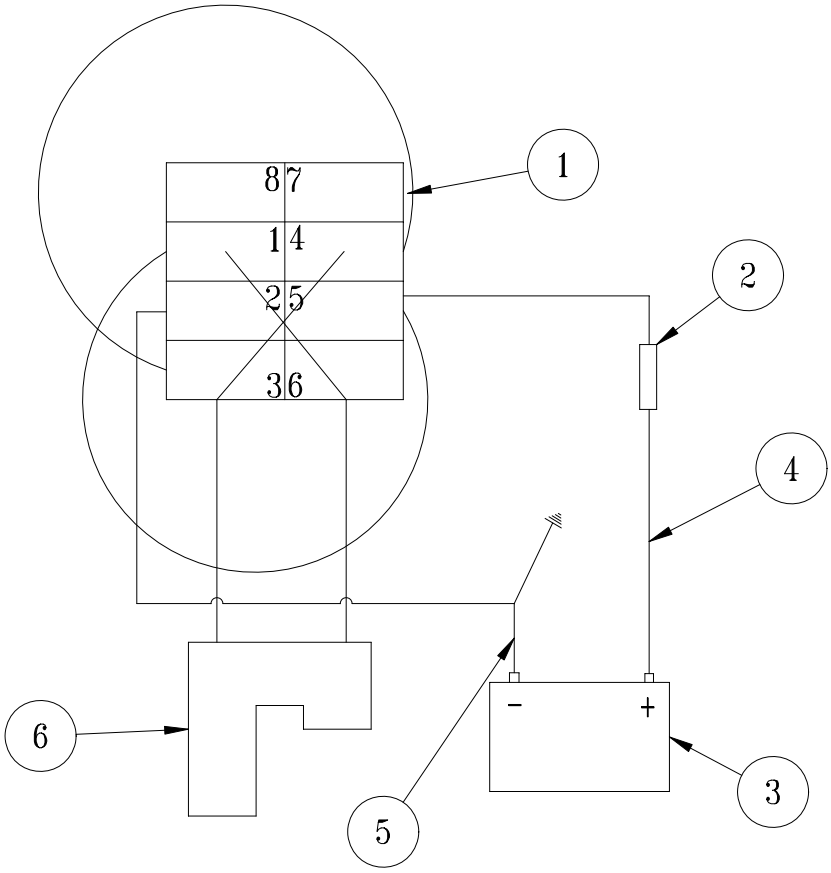
3. REMOVE CLEVIS PIN IN THE ROD END OF THE CYLINDER. INSTALL CYLINDER MOUNT EXTENDER OVER EXISTING EAR ON CROSS MEMBER. TIGHTEN HEX BOLT AND REPLACE PIN. (PICTURE #2)

TYPHOON DRAWING



REF#	PART#	DESCRIPTION	QUANTITY
1	HB-34-10-800	Hex Bolt, 3/4 - 10 x 8	2
	HNTL-34-10	Nylon Lock Nut, 3/4 -10	2
2	72-135	Castor Wheel Spacer	4
3	78-012	Tire and Wheel	2
4	18-223	Flange Bushing (part of 41-520)	4
5	41-520	Frame	1
6	29-584	Adjustment Spacer, 1/2"	4
7	42-539	Lynch Pin	2
8	29-585	Adjustment Spacer, 1"	2
9	HB-12-13-350	Hex Bolt, 1/2 -13 x 3 1/2	1
	HNTL-12-13	Nylon Lock Nut, 1/2 - 13	1
10	15-725	Mount Panel End	2
	15-727	Switch Actuator, no light	1
	15-728	Switch Body, On-Off-On	1
	15-730	Mount Panel Plug	1
11	41-522	Quick Hitch Bar	1
12	41-532	Pump with 11 HP Honda Engine	1
	41-532-01	Impeller, Wear Plate, Gasket and Seal	1
	41-532-02	Gasket	1
	41-532-03	Seal	1
13	18-376	Close Nipple, 3"	2
14	41-530	Swivel Joint, 3"	1
15	18-382	2.5" Suction Hose	1
16	41-527	Band Clamp, 2.5"	2
17	41-529	Discharge Tube	1
18	41-525	Turnbuckle	1
19	18-375	King Nipple, 2.5"	1
20	18-378	Bushing, 3" x 2.5"	1
21		U-1 300 Amp Battery (not supplied)	1
22	8-603	Battery Strap	1
23	41-531	3" Basket Strainer	1
24	18-380	Check Valve, 3"	1
25	18-379	Plastic Elbow	1
26	18-374	King Nipple, 3"	1
27	41-526	Band Clamp, 3"	2
28	8820-8	Machine Chain, 8 links	1
29	18-381	3" Suction Hose	1
30	41-521	Hose Boom	1
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180°	1
31	16-754	Actuator with 8" Stroke	1
	HCP-12-225	Clevis Pin, 1/2 x 2 1/4	2
	HP-18-100	Cotter Pin, 1/8 x 1	2
32	41-523	Pivot Rod	1
	HHP-18	Bridge Pin, 1/8	2
33	72-134	Castor Wheel	1

TYPHOON WIRING



WIRING PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	15-727	Switch Actuator, no light	1
	15-728	Switch Body, On-Off-On	1
2	77-261	Circuit Breaker, 40 amp	1
	8977	Circuit Breaker Boot	1
3		U-1 300 Amp Battery (not supplied)	1
4	22-056	Cable	1
	12-031	Battery Boot	1
5	22-065	Starter Cable	1
6	16-754	Actuator	1
	41-524	Wire Harness	1
	16-088	Decal, Moving Parts Hot	1
	25-286	Decal, Pinch Points	2
	25-298	Decal, Warning, Hot	1

⚠ WARNING

READ ENGINE MANUAL PRIOR TO STARTING THIS MACHINE.
Machine is shipped with NO OIL in engine.
Fill Engine with oil as suggested in Engine Manual.

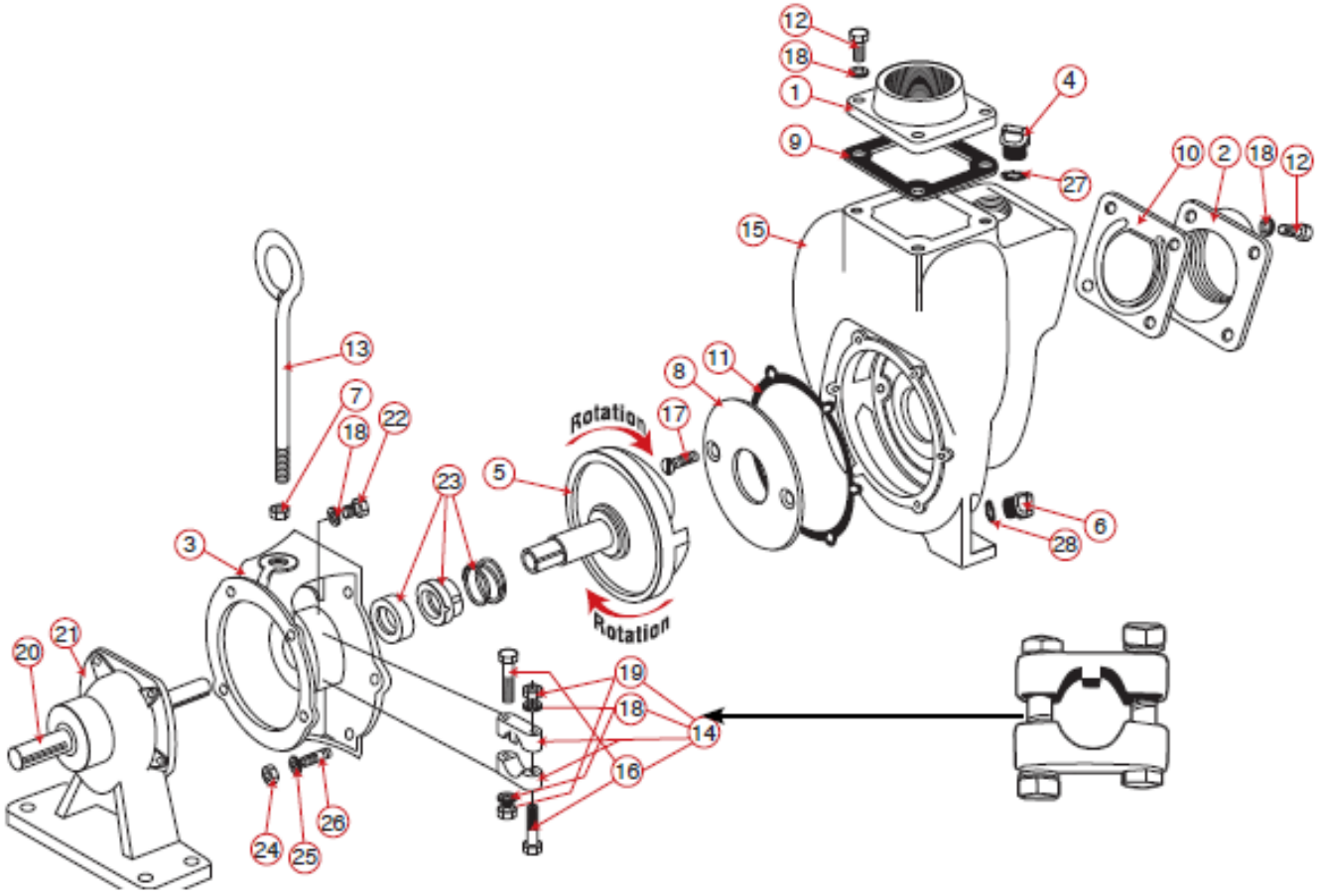
1. You must prime pump before starting the engine. To do so, insert garden hose in Discharge Tube and fill system to full. Full is when you see water in both suction hoses.
2. Fill engine up with 4-stroke motor oil as advised in the engine manual.
3. Install a U-1 300 Amp Battery into the battery box on the right side of the engine. Connect battery cables and strap battery into place.
4. Make yourself familiar with engine controls located on the engine by reading the Engine Owner's Manual.
5. Once the pump is primed, battery installed, and the engine oil is filled you may hook the Typhoon up to the Super Star Bunker Rake.
6. The Typhoon is equipped with a quick hitch attachment. Insert quick hitch bar into hitch on Super Star and lock in place with lock pin.
7. There are 1/2" and 1" spacers on the castor wheels that can be arranged in any combination to achieve the desired height. Please keep both side adjusted the same.
8. Transport the Typhoon to the water hole that needs to be siphoned. Back Typhoon to edge of water.
9. Using the rocker switch on the left side of the engine, lower the boom and suction screen into the water.
10. Stand clear of the discharge tube. Make sure the discharge tube is pointing in a direction that is free of bystanders and buildings.
11. Start engine. There will be immediate water discharge from the discharge tube. There is a swivel tube that allows you to turn the discharge in any direction you desire. There is also a turnbuckle that can be lengthened to give a longer flow or shortened for a closer distance. For best performance keep hand on discharge tube to prevent it from straying.
12. When water is siphoned, shut off engine, leaving water in the pump and discharge hose, so you do not run the pump dry.

⚠ WARNING

DO NOT RUN THE PUMP DRY!

13. Using the rocker switch, raise boom out of the water hole.

41-532 PUMP DRAWING



41-532 PUMP REPLACEMENT PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	41-532-07	NPT Outlet Flange	1
2	41-532-05	NPT Inlet Flange	1
3		Adapter for Gas Engine	1
4	41-532-10	Plug	1
5*		Impeller & Drive Shaft for Gas Engine	1
6	41-532-11	Plug	1
7		5/8 SS Jam Nut	1
8*		Wear Plate	1
9	41-532-06	EPDM Outlet Gasket	1
10	41-532-04	Gasket Check Valve Assembly	1
11*	41-532-02	Adapter Gasket	1
12		3/8 -16 x 1 1/8 SS Cap Screw HXHD	8
13		Handle	1
14		Clamp Assembly	1
15	41-532-08	Pump Housing	1
16		3/8 - 24 x 2 1/4 Hex Bolt	2
17*		Wear Plate Flat Head Screw	2
18		3/8 Lock Washer	8
19		3/8 x 24 SS Hex Nut	1
20		1" Shaft	1
21		Bearing Pedestal	2
22		Hex Bolt	4
23*	41-532-03	Viton Seal Assembly	1
24		3/8 - 16 SS Hex Nut	6
25		3/8 SS Lock Washer	6
26		3/8 - 16 x 3/8 -24 x 1 1/2 SS Stud	6
27	41-532-12	O-ring	1
28	41-532-13	O-ring	1
	41-532-01	Repair Kit (includes * items)	