

Parts & Service



Super Star LE
2 Wheel Drive
42-400-A
SN: 400151

January 2010

Product Support:

Hwy 55 & Poplar Ave; Cameron WI 54822

1-800-891-9435 productsupport@smithco.com

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Reference

Thank you for purchasing a **SMITHCO** product.

Read this manual and all other manuals pertaining to the Super Star LE carefully as they have safety, operating, assembly and maintenance instructions. Failure to do so could result in personal injury or equipment damage.

Keep manuals in a safe place after operator and maintenance personnel have read them. Right and left sides are from the operator's seat, facing forward.

All **SMITHCO** machines have a Serial Number and Model Number. Both numbers are needed when ordering parts. The serial number plate on the Super Star is located on the rear axle. Refer to engine manual for placement of engine serial number.

For easy access record your Serial and Model numbers here.

SMITHCO		DATE OF MFG.
WAYNE, PENNSYLVANIA 19087 USA 610-688-4009 Fax 610-688-6069		<input type="text"/>
SERIAL NO.	kW/hp	
<input type="text"/>	<input type="text"/>	
MODEL NO.	kg/lb	
<input type="text"/>	<input type="text"/>	



Information needed when ordering replacement parts:

1. Model Number of machine
2. Serial Number of machine
3. Name and Part Number of part
4. Quantity of parts

SAFE PRACTICES

1. It is your responsibility to read this manual and all publications associated with this machine (engine, accessories and attachments).
2. Never allow anyone to operate or service the machine or its attachments without proper training and instructions. Never allow minors to operate any equipment.
3. Learn the proper use of the machine, the location and purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears, hands and feet. Operate the machine only in daylight or in good artificial light.
5. Inspect the area where the equipment will be used. Beware of overhead obstructions and underground obstacles. Stay alert for hidden hazards.
6. Never operate equipment that is not in perfect working order or without decals, guards, shields, or other protective devices in place.
7. Never disconnect or bypass any switch.
8. Carbon monoxide in the exhaust fumes can be fatal when inhaled, never operate a machine without proper ventilation.
9. Fuel is highly flammable, handle with care.
10. Keep engine clean. Allow the engine to cool before storing and always remove the ignition key.
11. After engine has started, machine must not move. If movement is evident, the neutral mechanism is not adjusted correctly. Shut engine off and readjust so the machine does not move when in neutral position.
13. Never use your hands to search for oil leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury.
14. This machine demands your attention. To prevent loss of control or tipping of the vehicle:
 - A. Use extra caution in backing up the vehicle. Ensure area is clear.
 - B. Do not stop or start suddenly on any slope.
 - C. Reduce speed on slopes and in sharp turns. Use caution when changing directions on slopes.
 - D. Stay alert for holes in the terrain and other hidden hazards.
15. Before leaving operator's position for any reason:
 - A. Disengage all drives.
 - B. Lower all attachments to the ground.
 - C. Shut engine off and remove the ignition key.
16. Keep hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
17. Keep the area of operation clear of all bystanders.
18. Never carry passengers.
19. Stop engine before making repairs/adjustments or checking/adding oil to the crankcase.
20. Use parts and materials supplied by SMITHCO only. Do not modify any function or part.

These machines are intended for professional maintenance on golf courses, sports turf, and any other area maintained turf and related trails, paths and lots. No guaranty as to the suitability for any task is expressed or implied.



WEIGHTS AND MEASURES

Length	64" (163 cm)
Width	57" (145 cm)
Height	47" (119 cm)
Wheel Base	41" (104 cm)
Weight	950 lbs. (451 kg)

SOUND LEVEL

At Ear Level	85 dB
At 3ft (.914 m)	83 dB
At 30 ft (9.14 m)	73 dB

ENGINE

Make	Briggs and Stratton Vanguard
Model#	305447
Type / Spec#	0230 G1
Horsepower	16 hp (11.9 kW)
Fuel	Unleaded 87 Octane Gasoline Minimum
Cooling System	Air Cooled
Lubrication System	Full Pressure
Alternator	16 amp

WHEELS & TIRE

Three: 22 X 11 - 10.0 Knobby Tires 8 psi (.55 bar)
 Front tire fluid filled to 80 lbs. total 45.5 pints of windshield washer fluid or equivalent.

Speed

Forward Speed	0 to 11 m.p.h. (0-18 kph)
Reverse Speed	0 to 5 m.p.h. (0-8 kph)

BATTERY

Automotive Type	45-12 Volt
BCI Group	Size 45
Cold Cranking Amps	480
Ground Terminal Polarity	Negative (-)
Maximum Length	9" (23 cm)
Maximum Width	5.38" (14 cm)
Maximum Height	9" (23 cm)

FLUID CAPACITY

Crankcase Oil	See Engine Manual
Fuel	20 quarts (18.93 liters)
Hydraulic Fluid	20 quarts (18.93 liters)
Grade of Hydraulic Fluid	SAE 10W-40 API Service SJ or higher Motor Oil

MAINTENANCE



Before servicing or making adjustments to machine, stop engine and remove key from ignition.

NOTE: Use all procedures and parts prescribed by the manufacturer's. Read the engine manual.

LUBRICATION

Use No. 2 General purpose Lithium Base Grease and lubricate every 100 hours. The Super Star has two grease fittings. One is located on the shift idler arm and one on the rod end of the attachment lift cylinder.

AIR CLEANER ON ENGINE

1. Unhook clips on both sides of cover and remove cover.
2. Carefully slide pre-cleaner of cartridge. To service pre-cleaner, wash in liquid detergent and water. Squeeze dry in clean cloth. Saturate in engine oil. Squeeze in clean absorbent cloth to remove excess oil. Replace if very dirty or damaged.
3. Remove knob and plate. Carefully remove cartridge to prevent debris from entering carburetor. To service cartridge, clean by tapping gently on flat surface. Do not oil cartridge. Replace if very dirty or damaged.

NOTE: Do not use petroleum solvents, e.g., kerosene, which will cause cartridge to deteriorate. Do not use pressurized air to clean cartridge. Pressurized air can damage cartridge.

4. Reinstall cartridge, plate and knob.
5. Reassemble pre-cleaner on cartridge.
6. Replace cover and reattach clips to body.

REMOTE AIR CLEANER

1. Unclip the two clips, remove the cover and pull out the element.
2. To service, clean by tapping gently on flat surface. Do not oil. Replace if very dirty or damaged.
3. Clean out the inside of the body and cover.
4. Place the element into the body and put the cover back on.

TOWING

When it is necessary to move the Super Star without engine running, bypass valve built into hydrostatic pump must be "open" by turning it counterclockwise. The valve is located on the right side of the pump. An "open" valve allows fluid to pass through the wheels freely. When normal, driven, operation is desired, valve should be "closed" by turning it clockwise. Failure to "close" the valve with engine running means no power to wheels. The machine can be moved for a short distance with the engine off, but we **do not** recommend this as a standard procedure. When towing **do not** tow the machine faster than 2-3 MPH (3-5 km/h) because the drive system may be damaged. The tires may lock up if the machine is towed too fast. If this occurs, stop towing the machine. If the machine must be moved a considerable distance, transport it on a truck or trailer.



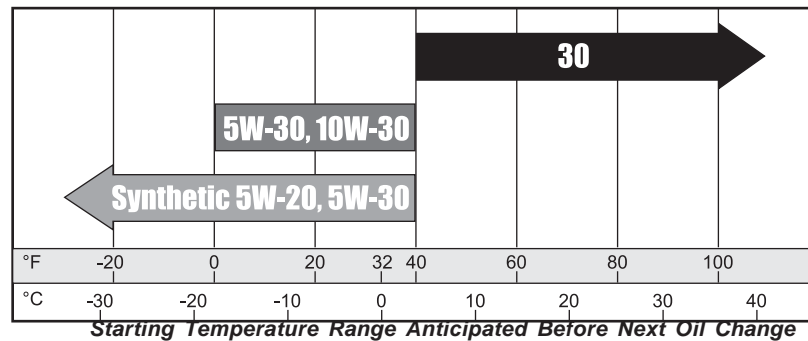
TIRE PRESSURE

Caution must be used when inflating a low tire to recommended pressure. Over inflating can cause tires to explode. Tires should be 8 psi (0.55 bar). Improper inflation will reduce tire life considerably.

ENGINE

Change and add oil according to chart below. Do not overfill. Use a high quality detergent oil classified "For Service SJ or higher" SAE 30 oil. Use no special additives with recommended oils. Do not mix oil with gasoline.

SAE VISCOSITY GRADES



Air cooled engine run hotter than automotive engines. Use of multi-viscosity oils (10W-30, etc.) above 40° F (4° C) will result in high oil consumption and possible engine damage. Check oil level more frequently if using these types of oils.

SAE 30 oil, if used below 40° F (4° C), will result in hard starting and possible engine bore damage due to inadequate lubrication.

HYDRAULIC OIL

1. Use SAE 10W-40 API Service SJ or higher motor oil.
2. For proper warranty, change oil every 500 hours or annually, which ever is first and change filter after the first 20 hours, then at 100 hours, then every 250 hours thereafter.
3. The oil level should be 2" to 2½" from top of tank when fluid is cold. Do not overfill.
4. After changing oil and/or filter, run the machine for a few minutes. Check oil level and for leaks.
5. Always use caution when filling hydraulic oil tank or checking level to keep system free of contaminants. Check and service more frequently when operating in extremely cold, hot or dusty conditions.
6. If natural color of fluid is black or smells burnt, it is possible that an overheating problem exists.
7. If fluid becomes milky, water contamination may be a problem.
8. If either of the above conditions happen, change oil and filter immediately after fluid is cool and find cause. Take fluid level readings when system is cold.
9. In extreme temperatures you can use straight weight oil. We recommend SAE 30W API Service SJ or higher when hot (above 90°F (33°C)) and SAE 10W API Service SJ or higher when cold (below 32°F (0°C) ambient temperature. Use either motor oil or hydraulic oil, but do not mix.
10. Oil being added to the system must be the same as what is already in the tank. Mark tank fill area as to which type you put in.

MAINTENANCE

WHEEL MOUNTING PROCEDURE

1. Turn machine off and remove key.
2. Block one of the other wheels.
3. Loosen nuts slightly on wheel to be removed.
4. Jack up machine being careful not to damage underside of machine.
5. Remove nuts. Remove wheel.
5. Place new wheel on hub lining up bolt holes.
6. Torque nuts to 64-74 ft/lb (87-100 Nm) using a cross pattern. Re-torque after first 10 hours and every 200 hours thereafter.
7. Lower machine to ground and remove blocks and jack.

BATTERY

Batteries normally produce explosive gases which can cause personal injury. Do not allow flames, sparks or any ignited object to come near the battery. When charging or working near battery, always shield your eyes and always provide proper ventilation.

Battery cable should be disconnected before using "Fast Charge".

Charge battery at 15 amps for 10 minutes or 7 amps for 30 minutes. Do not exceed the recommended charging rate. If electrolyte starts boiling over, decrease charging.

Always remove grounded (-) battery clamp first and replace it last. Avoid hazards by:

1. Filling batteries in well-ventilated areas.
2. Wear eye protection and rubber gloves.
3. Avoid breathing fumes when electrolyte is added.
4. Avoid spilling or dripping electrolyte.



WARNING

Battery Electrolyte is an acidic solution and should be handled with care. If electrolyte is splashed on any part of your body, flush all contact areas immediately with liberal amounts of water. Get medical attention immediately.

JUMP STARTING



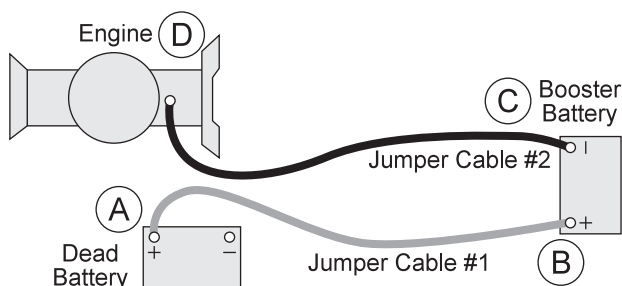
WARNING

Use of booster battery and jumper cables. Particular care should be used when connecting a booster battery. Use proper polarity in order to prevent sparks.

To jump start (negative grounded battery):

1. Shield eyes.
2. Connect ends of one cable to positive (+) terminals of each battery, first (A) then (B).
3. Connect one end of other cable to negative (-) terminal of "good" battery (C).
4. Connect other end of cable (D) to engine block on unit being started (NOT to negative (-) terminal of battery)

To prevent damage to other electrical components on unit being started, make certain that engine is at idle speed before disconnecting jumper cables.





Before servicing or making adjustments to the machine, stop engine, set park break, block wheels and remove key from ignition.



Follow all procedures and **ONLY** use parts prescribed by the manufacturer. Read the engine manual before maintenance.

The suggested maintenance checklist is not offered as a replacement for the manufacturer's engine manual but as a supplement. You must adhere to the guidelines established by the manufacturer for warranty coverage. In adverse conditions such as dirt, mud or extreme temperatures, maintenance should be more frequent.

Maintenance Service Interval	Maintenance Procedure
After the first 8 operating hours	Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm))
	Change the engine oil filter.
	Change the hydraulic filter.
After the first 20 operating hours	Change oil filter after first 20 and first 100 hours.
Before each use daily	Check the engine oil.
	Check the hydraulic fluid level.
	Check the tire pressure.
	Check condition of hydraulic hoses and fittings.
	Inspect and clean the machine.
	Inspect cooling system.
Every 25 hours	Check the battery fluid level and cable connections.
	Change oil when operating under heavy load or high
Every 50 hours	Change the engine oil and filter.
Every 100 hours	Check engine for leaks or loose parts.
	Check air cleaner.
	Check tire pressure (5 psi (.035 bar)).
	Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm))
	Grease Machine.
	Check belt tension (where needed)
Every 250 hours	Change oil filter
	Change hydraulic filter
	Clean battery terminals
Every 400 hours	Check spark plugs
Every 500 hours or yearly	Lubricate machine
	Visual inspection of machine and hydraulic hoses
	Change oil.
	Torque lug nuts.
	Check battery terminals and electrolyte level.
	Change all filters.

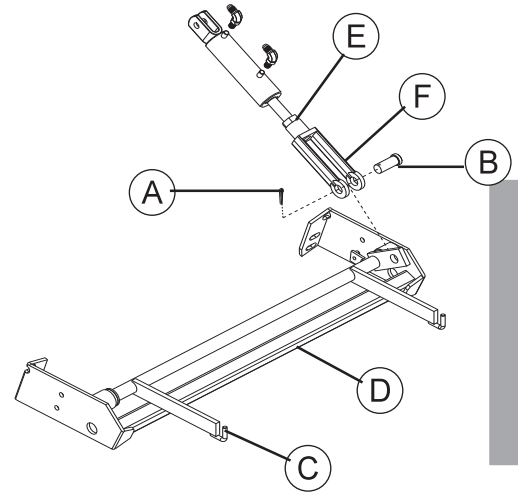


RAKE LIFT CYLINDER

Completely lower Rake Lift. Remove cotter pin (A) and clevis pin (B). Place attachment lift arms (C) at $\frac{1}{16}$ " above cross member (D) on Rake Lift. Loosen jam nut (E). Twist cylinder extension (F) so clevis pin end of cylinder extension lines up with holes in attachment lift arm. Replace clevis and cotter pins. Tighten jam nut. Raise and lower Rake Lift to check for proper clearance.

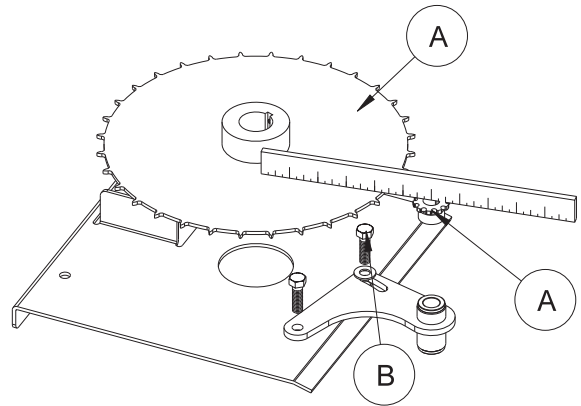


When the rear rake attachment is lowered while the machine is in forward motion, the forward speed of the machine will slow drastically. Operator should be prepared for a rapid change in speed.



STEERING CHAIN ADJUSTMENT

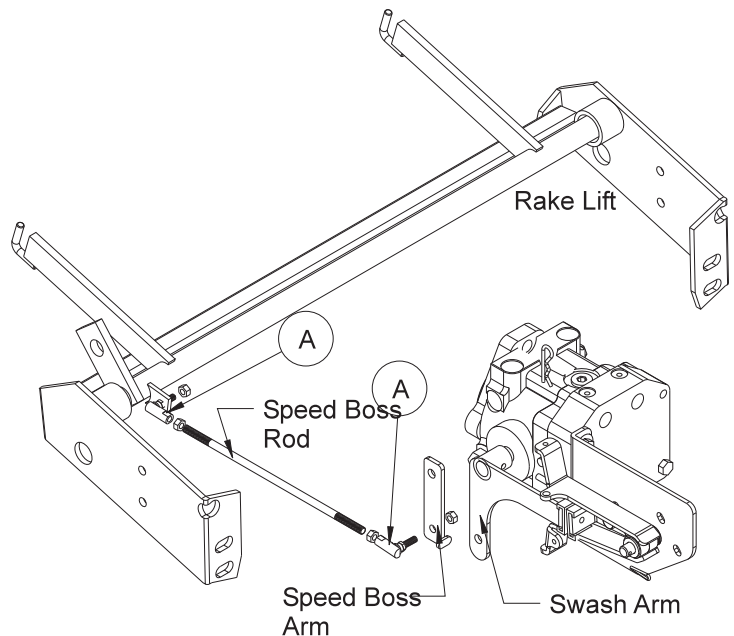
You will have to remove the nose cone assembly to get at steering sprockets. Steering Sprockets (A) should be level with each other. Check with straight edge. Make any adjustments. Adjust the chain tensioner bolt (B) so that the chain is snug. Tighten all nuts and bolts in place.



SPEED BOSS

Speed Boss allows the machine to operate at a proper speed while raking sand traps on golf courses. This speed boss has been factory set at an average speed of 3-4 m.p.h. (5-6.5 kph). The Speed Boss will only limit the speed while the rake is lowered into the operating position. The speed setting may be adjusted by turning the Ball Joint (A) counterclockwise to make the machine operate slower or turn clockwise to go faster. Tighten jam nut. Check to make sure nothing is binding and test drive to check desired speed.

For RBS System, Spiker and Grader Box remove the speed boss arm and the speed boss rod from machine so it does not interfere with other operations.

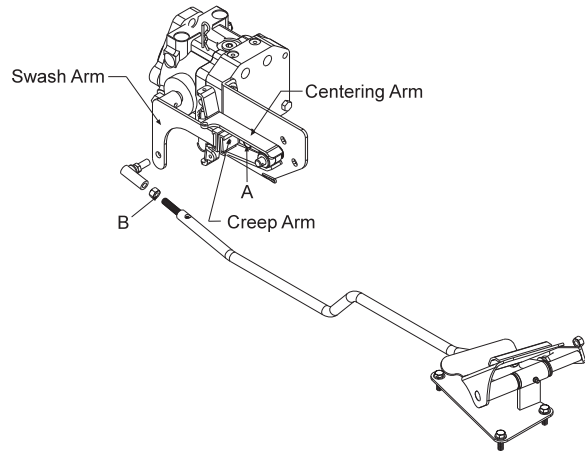


ADJUSTMENTS (CONTINUED)

WHEEL 'CREEP' ADJUSTMENT

'Creep' is when engine is running and hydrostatic transmission is in neutral, but due to inadequate alignment, wheels still move. Do the following procedures to stop this motion.

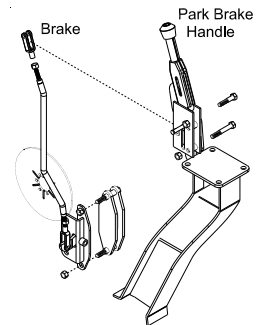
1. Lift up and support machine so all wheels are off the ground and can turn freely.
2. On the side of the pump there is a creep arm inside a centering arm. Loosen bolt (A).
3. With engine running adjust the creep arm up or down in slot so centering arm centers on the swash arm.
4. Tighten all fasteners and test by using foot pedal linkage to see that the "creep" is removed.
5. Turn engine off and lower machine.



PARK BRAKE

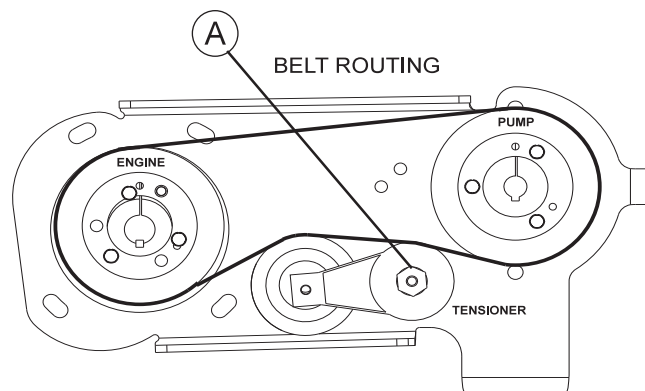
The park brake is located on the right hand side of the machine and operates a brake on the right rear wheel. Push lever forward to engage and pull back to disengage.

To adjust turn the knob on the end of the handle. For further adjustment you may turn the yokes (A) clockwise to tighten and counter clockwise to loosen.



ADJUSTMENT OF BELT TENSIONER

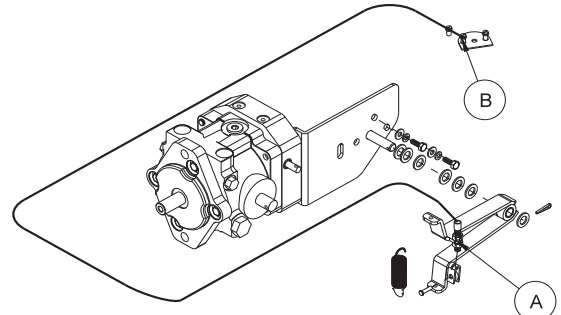
The belt tensioner controls the tension on the belt from the engine to the pump. The proper tension of the idler should be in the second notch on the side of the tensioner. Over tightening the belt will shorten the life of the belt and the machine may not perform to the best of its ability. To adjust belt tensioner, loosen the bolt holding the tensioner (A). Bring idler pulley tight to the belt and turn tensioner into belt to the second notch. Tighten bolt on tensioner.



ADJUSTMENTS (CONTINUED)

TO ADJUST FOOT PEDAL THROTTLE CABLE

1. Jack up unit so that all drive wheel are off the ground. (Use jack stands)
2. Start the engine, make certain that the hand throttle is in the idle position (1200 engine RPM).
3. Engine speed must increase as soon as the foot pedal begins to move in either direction. At the full forward position, the engine RPM must be 3600 RPM \pm 100.
4. Minor adjustment can be made by backing out (unscrewing) (Ref A) until you reach full engine RPM with the foot pedal fully depressed in the forward position. Be sure to recheck after the nuts are fully tightened.
5. Major adjustment needs to be made at (Ref B) by pulling the slack out of the cable. Loosen the screw in the wire block that is clamped onto the end of the cable and sliding it up to the cable block that is through the throttle plate. Do not let the throttle plate move to increase idle speed. Tighten the screw.
6. Test run to determine that there is no binding and that engine idle speed is 1200 RPM and that it is 3600 RPM at full forward position of the foot pedal.



Service

STORAGE

When storing, remove the key from the key switch to avoid unauthorized persons from operating machine.

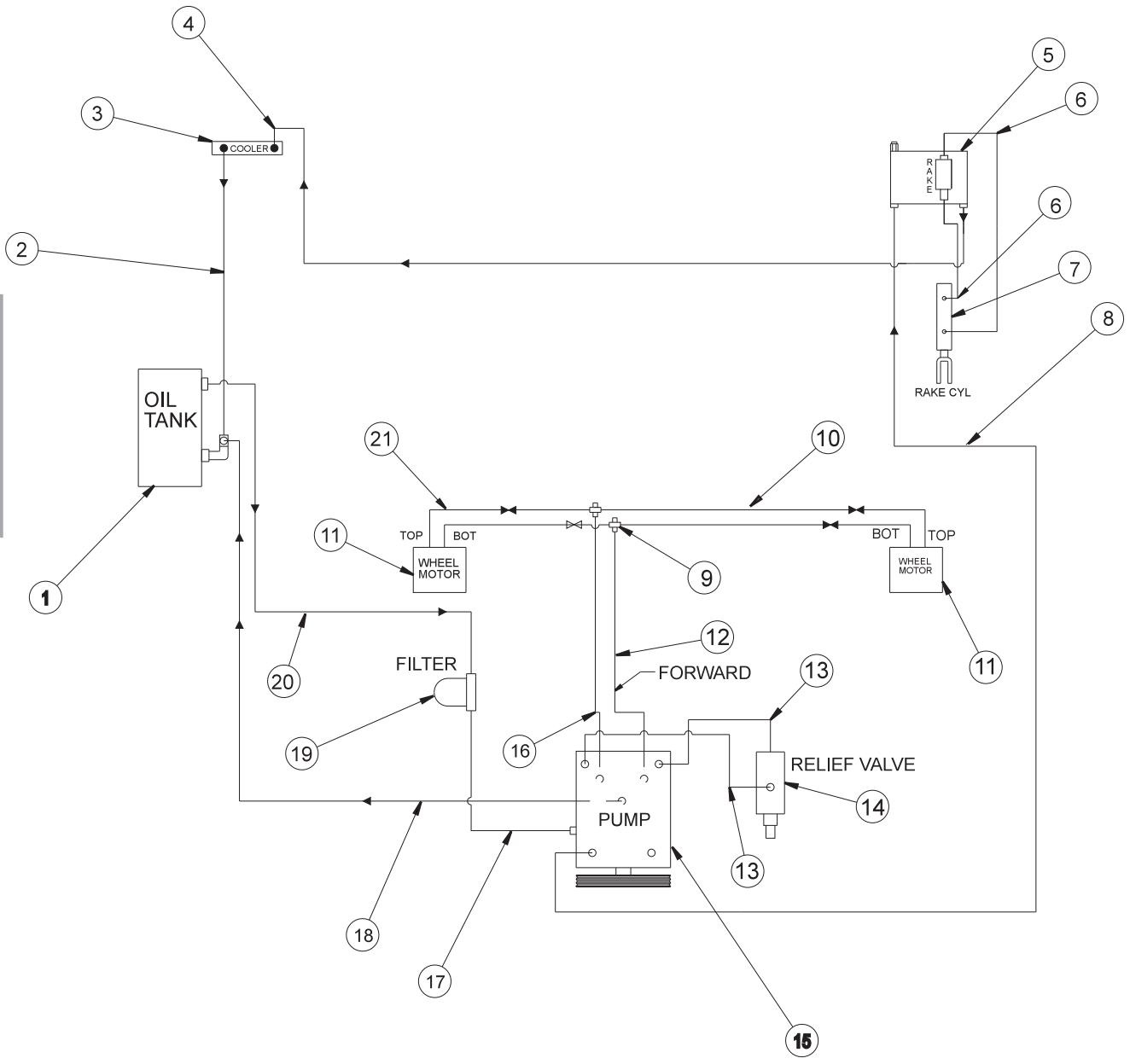
1. Before storing clean machine thoroughly.
2. Check bolts and nuts, tighten as necessary.
3. Make all repairs that are needed and remove any debris.
4. Remove the battery, adjust the electrolyte level and recharge it. Store the battery in a dry, dark place.
5. Store in a clean and dry area, but NOT near a stove, furnace or water heater which uses a pilot light or any device that can create a spark.
6. Engines stored over 30 days need to be protected or drained of fuel to prevent gum from forming in a fuel system or on essential carburetor parts. Check the engine manual and follow the instructions for the storage of the engine.

WIRING PARTSLIST

REF #	PART #	DESCRIPTION	QUANTITY
1		After Fire Solenoid (on engine)	1
2	50-359	Oil Pressure Warning Light	1
3	12-017	Hour Meter	1
4	13-488	Ignition Switch (B & S# 496603)	1
	76-310	Key Set (comes with 13-488)	1
5	14-292	Seat Switch	1
6	76-327	Ground Battery Cable	1
7		Battery (not included)	
8	75-518	Battery Cable	1
9	42-252	Wire, Circuit Breaker to Solenoid	1
10	8975	30 Amp Circuit Breaker	1
	8977	Circuit Breaker Boot	1
11	13-492	Solenoid (B & S# 807829)	1
12	22-017	Cable Black	1
13		Starter (on engine)	1
14	13-491	Oil Sender (on engine B & S# 491657)	1
15		Stop Switch Terminal (on engine)	1
16		Rectifier (on engine)	1
	42-763	Wire Harness (includes all wire colors with *)	1

HYDRAULIC DRAWING

Diagrams



HYDRAULIC PARTSLIST

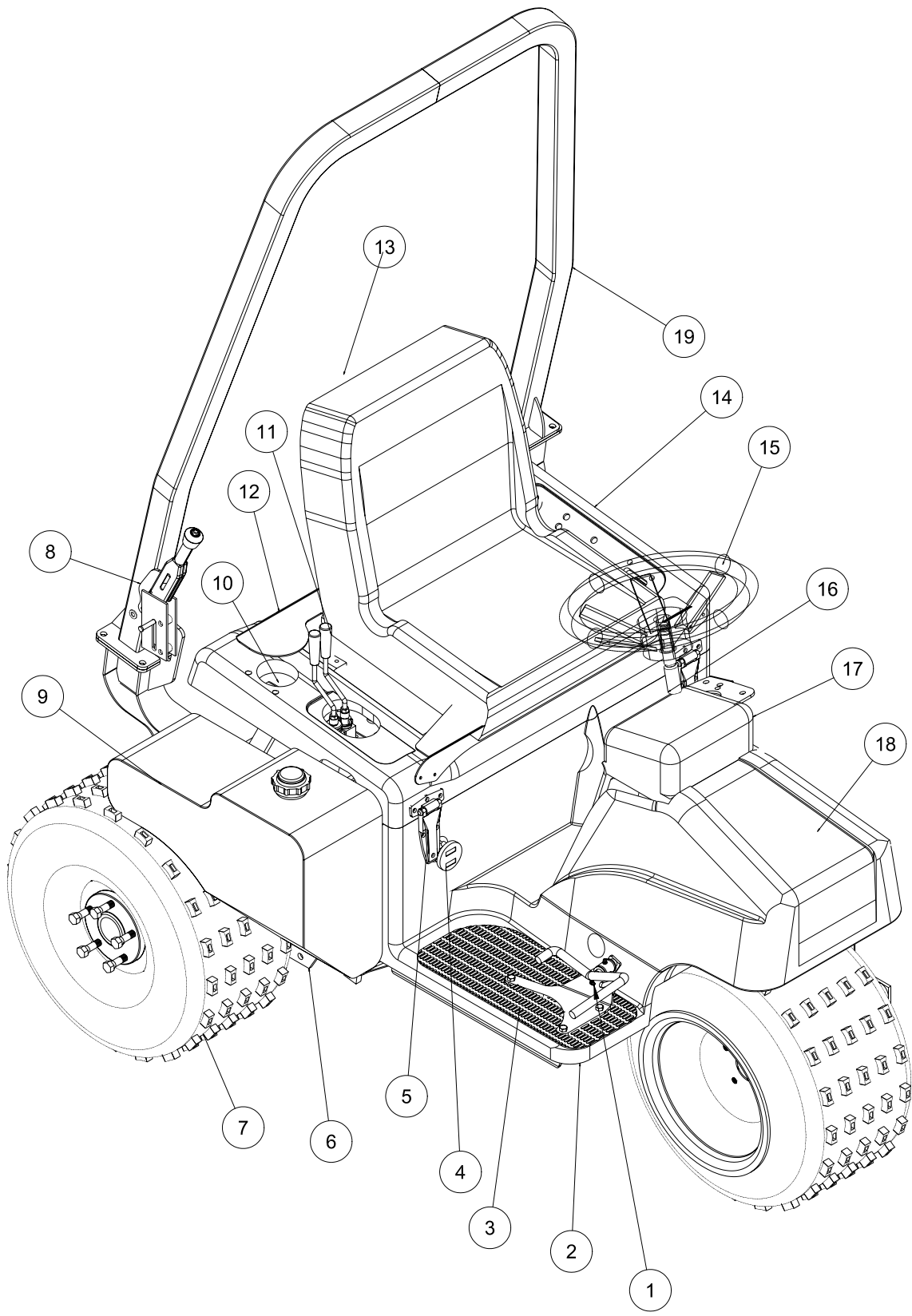
REF #	PART #	DESCRIPTION	QUANTITY
1	42-005	Oil Tank	1
	13-747	Filler Breather	1
2	42-366	Hydraulic Hose	1
3	42-265	Aluminum Oil Cooler	1
4	42-363	Hydraulic Hose	1
5	13-731	Single Bank Valve	1
	78-418	Valve HAndle	1
6	42-365	Hydraulic Hose	1
7	43-150	Hydraulic Cylinder	1
	42-040	Yoke End	1
	HNJ-34-16	Jam Nut ³ / ₄ - 16	1
8	42-046	Hydraulic Hose	1
9	18-342	Cross	2
	18-344	Caps	2
10	42-261	Hydraulic Tube	2
11	42-002	Rear Wheel Motor	2
12	42-369	Hydraulic Hose 10 ³ / ₄ "	1
13	42-370	Hydraulic Hose	2
14	42-192	Relief Valve	2
15	34-109	Variable Pump	1
16	42-368	Hydraulic Hose 9"	1
17	8832-45	Suction Hose	1
	18-222	Hose Clamp	2
18	42-367	Hydraulic Hose	1
19	23-006	Oil Filter	1
	23-031	Replacement Filter Only	
20	8832-24	Suction Hose	1
	18-222	Hose Clamp	2
21	42-304	Hydraulic Tube	2

HYDRAULIC PRESSURES

Pump Displacement	.913 in ³ /rev	Charge Pump Displacement	.33 in ³ /rev
Pump Input Speed (up to)	3600 rpm	Max. Inlet Vacuum	5 in. Hg
Max. Operating Pressure	3500 psi, 2500 peak psi	Max. Case Pressure	25 psi
Implement Setting	700-1000 psi	Relief Valve Pressure (set at)	2500 psi
13-729 Hydraulic Valve (2 bank)	900 psi		

MAINFRAME DRAWING

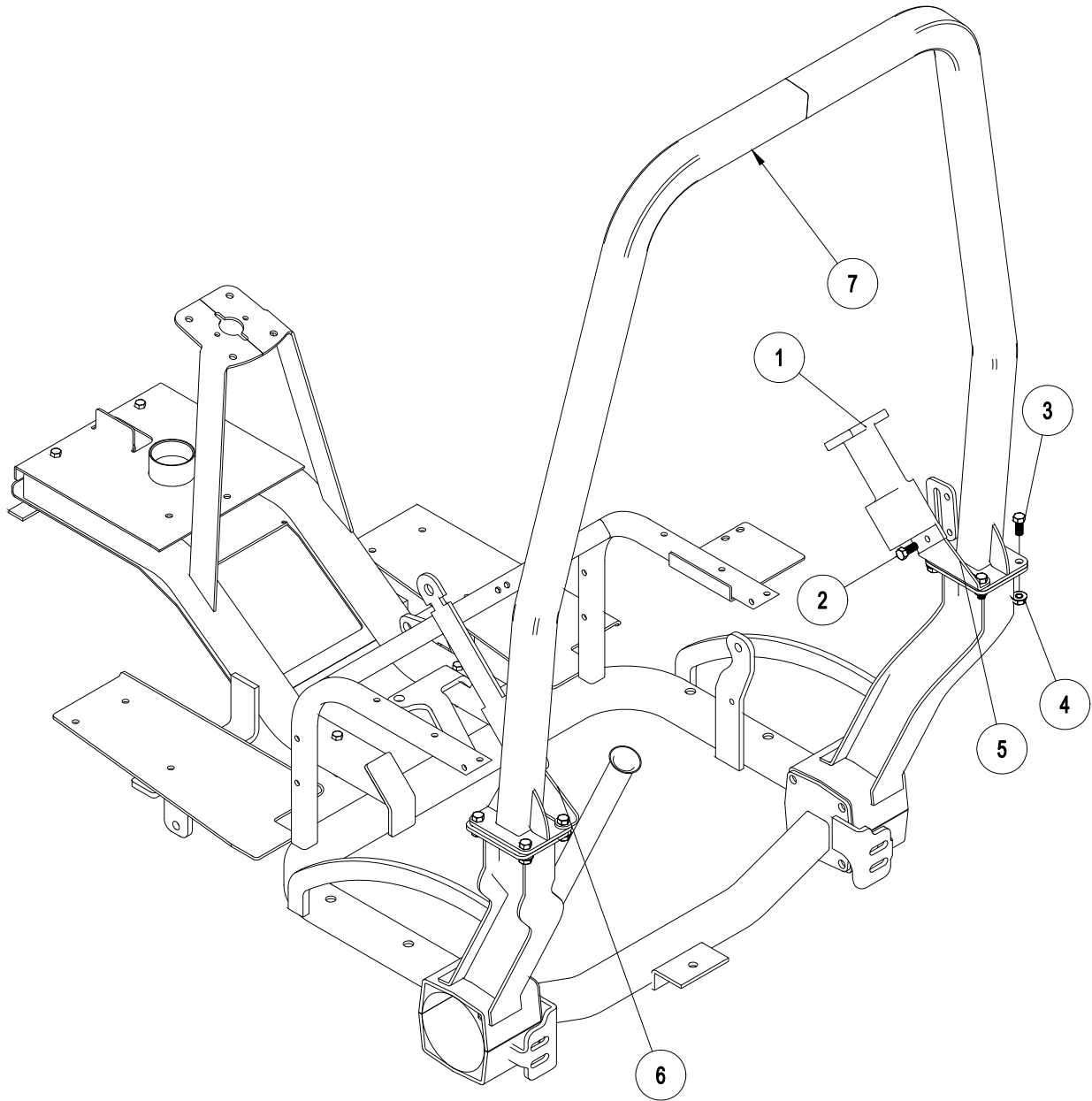
Parts



MAIN PARTS COMMON LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-813	Foot Pedal	1
2	42-780	Floor Panel (fiberglass)	1
3	42-767	Right Floor Mat	1
	42-768	Left Floor Mat	1
4	12-017	Volt/Hour Meter	1
5	27-055	Hinge	2
6	42-425	Main Frame	1
7	42-161	Tire and Wheel	3
	42-161-01	Tire 22 x 11 x 10	3
	42-161-02	Wheel	3
	60-268	Lug Bolt	10
8	60-106	Park Brake Lever	1
9	42-006	Gas Tank	1
	15-492	Cap	1
10	42-786	Plastic Cup Holder	1
11	78-418	Valve Handle	1
12	42-375	Seat Panel	1
	8803-17	Trim w/ Black Lace	1
13	14-518	Adjustable Low Back Seat	1
14	42-779	Seat Panel (fiberglass)	1
15	20.057	Steering Wheel	1
16	42-760	Top Steering Shaft	1
17	42-422	Tower Console (fiberglass)	1
18	42-741	Nose Cone (fiberglass)	1
	HST-14-20-100	Truss Head Screw $\frac{1}{4}$ - 20 x 1	6
	78-274	Cage Nuts	2
	HNTL-14-20	Lock Nut $\frac{1}{4}$ - 20	4
19	42-801	ROPs	1

ROPS DRAWING

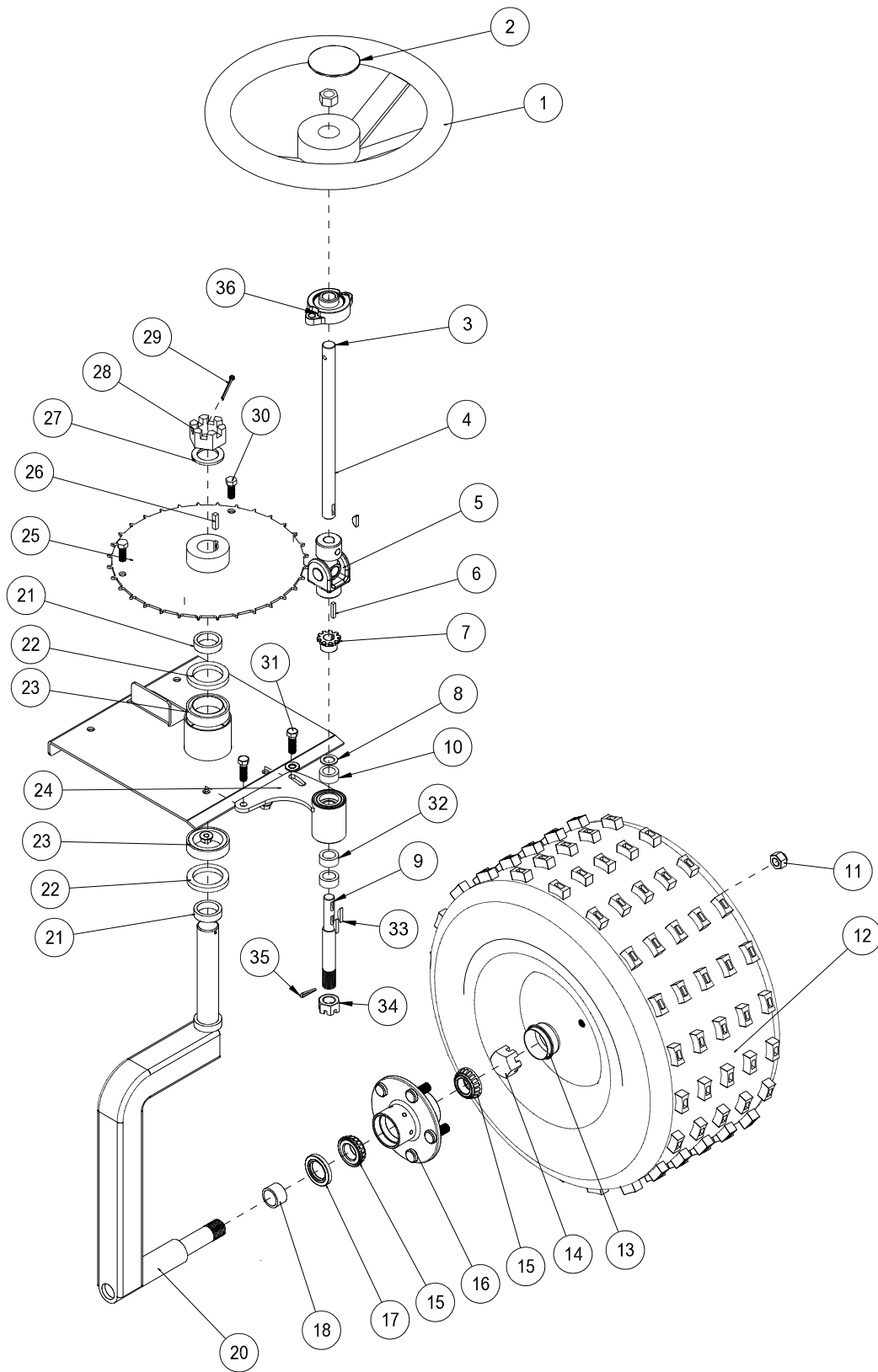


Parts

ROPS PART LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	76-198-03	Seat belt	1
2	HB-716-14-100	Bolt $\frac{7}{16}$ - 14 x 1	2
3	HB-716-14-125	Bolt $\frac{7}{16}$ - 14 x $1\frac{1}{4}$	8
4	HNTL-716-14	Lock Nut $\frac{7}{16}$ - 14	10
5	42-802	Right Seat belt Bracket	1
6	42-803	Left Seat Belt Bracket	1
7	42-801	ROPS Bar	1

2 WHEEL DRIVE FRONT FORK DRAWING



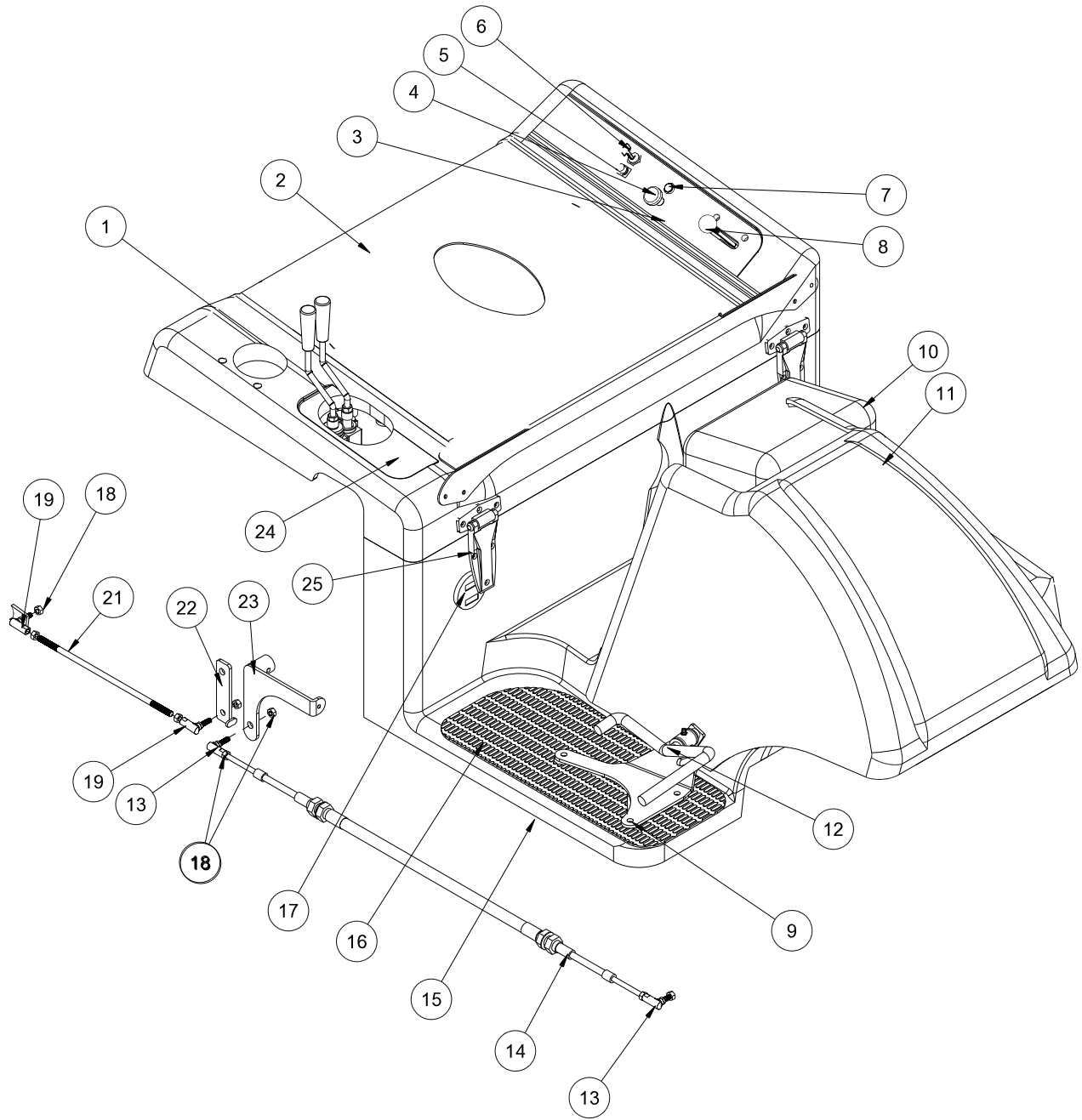
Parts

2 WHEEL DRIVE FRONT FORK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	20-057	Steering Wheel	1
2	20-129	Center Cap	1
	27-077	Decal, Smithco Round	1
	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
	HWK-316-075	Woodruff Key $\frac{3}{16}$ x $\frac{3}{4}$	1
3	HRP-14-150	Roll Pin $\frac{1}{4}$ x $1\frac{1}{2}$	1
4	42-376	Top Steering Shaft	1
	HWK-316-075	Woodruff Key $\frac{3}{16}$ x $\frac{3}{4}$	1
5	60-300	U-Joint	1
6	HKSQ-316-100	Machine Key $\frac{3}{16}$ x $\frac{3}{16}$ x 1	2
7	60-298	Sprocket	1
8	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14 GA	1
9	13-005	Bottom Steering Shaft	1
10	60-325	Spacer	1
11	60-268	Lug Nut	5
12	42-161	Tire and Wheel	1
	42-161-01	Tire 22 x 11 x 10	1
	42-161-02	Wheel	1
	8839	Windshield Washer Fluid or Equivalent	43.5 pints
13	80-167	Dust Cap	1
14	HNA-100-14	Jam Nut 1 - 14	1
	HP-18-150	Cotter Pin $\frac{1}{8}$ x $1\frac{1}{2}$	1
15	11-043	Bearing	2
16	80-019	Hub (includes bearings, seal, dust cap, lug nuts, and studs)	1
	27-022-02	Stud $\frac{1}{2}$ - 20	5
17	11-041	Seal	1
18	11-042	Spacer	1
20	13-448	Front Fork	1
21	20-141	Spacer	2
22	20-142	Oil Seal	2
23	20-143	Bearing	2
24	13-744	Chain Tensioner	1
	11-038	Bearing with Race	2
	11-039	Oil Seat	2
25	42-295	Steering Sprocket	1
	8834-37.5	Roller Chain	1
	18-114	Master Link	1
26	HKSQ-14-100	Square Key $\frac{1}{4}$ x $\frac{1}{4}$ x 1	1
27	HMB-114-10	Machine Bushing $1\frac{1}{4}$ x 10GA	1
28	HNA-114-12	Axle Nut $1\frac{1}{4}$ - 12	1
29	HP-18-200	Cotter Pin $\frac{1}{8}$ x 2	1
30	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	2
31	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	2
	HW-38	Washer $\frac{3}{8}$	1
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	2
32	11-040	Spacer	2
33	HWK-316-063	Woodruff Key, $\frac{3}{16}$ x $\frac{5}{8}$	2
34	HNAT-34-16	Thick Slotted Nut, $\frac{3}{4}$ - 16	1
35	HP-18-150	Cotter Pin, $\frac{1}{8}$ x $1\frac{1}{2}$	1
36	40-009	Mounted Ball Bearing	1



LINKAGE DRAWING



Parts

LINKAGE PARTSLIST

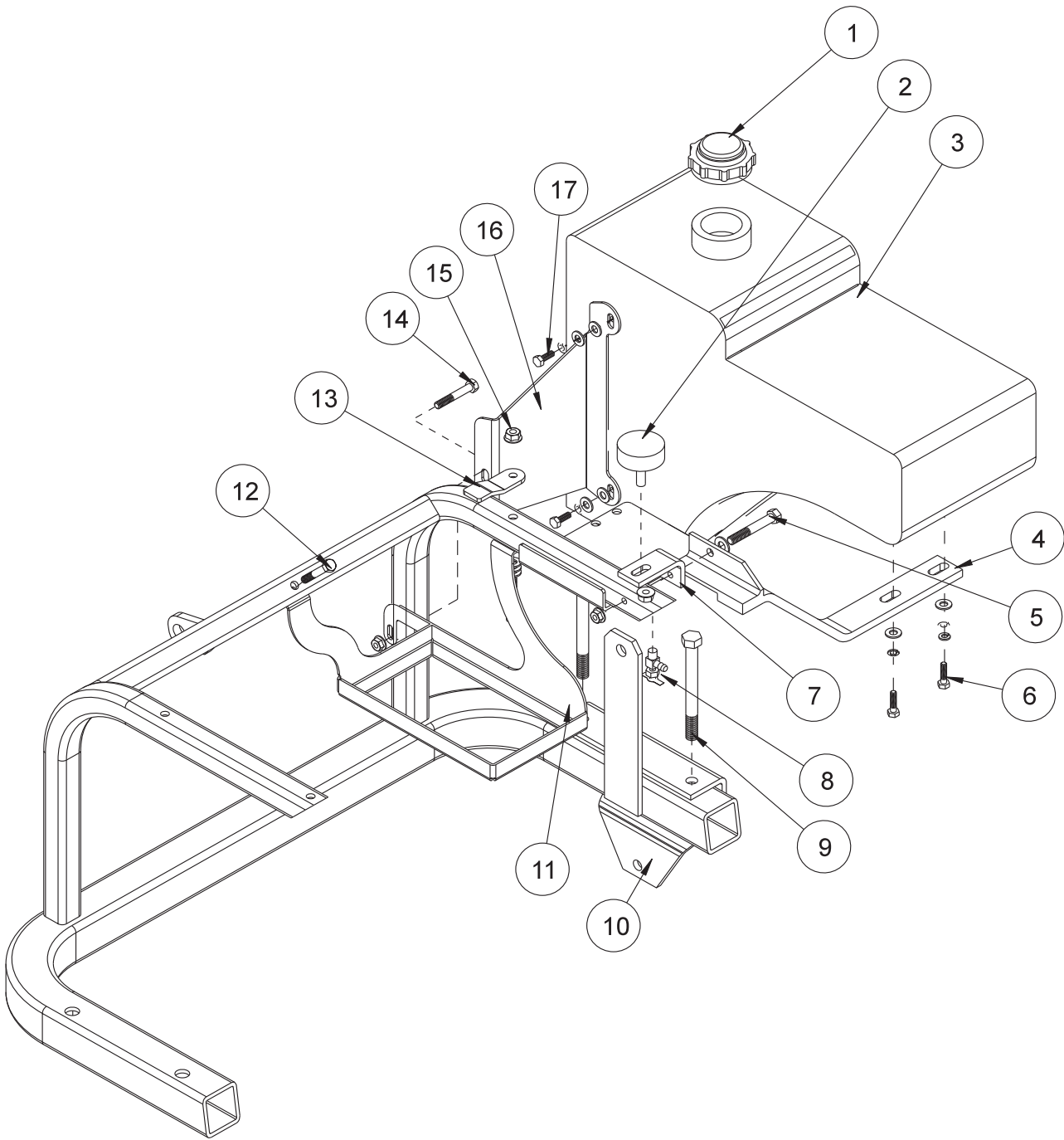
REF#	PART#	DESCRIPTION	QUANTITY
1	42-786	Plastic Cup Holder	1
2	42-375	Seat Panel	
3	42-593	Decal, Control Panel	1
4	42-783	Choke	1
6	13-488	Key Switch (B&S 496603)	1
	76-310	Key Set	1
7	50-359	Warning Light	1
8	21-463	Throttle Cable	1
	HSTP-14-20-075	Phillips Truss Head Screw $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HNFL-14-20	Flange Whiz Lock Nut $\frac{1}{4}$ - 20	2
9	42-313	Pedal Stop	1
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	2
10	42-422	Console (fiberglass)	1
11	42-471	Nose Cone (fiberglass)	1
12	42-813	Foot Pedal	1
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (comes with)	1
	76-299	Pedal Pad	1
	42-791	Short Pedal Pad	1
	HB-516-18-125	Bolt $\frac{5}{16}$ - 18 x $1\frac{1}{4}$	2
	HW-516	Washer $\frac{5}{16}$	2
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	2
13	18-115	Ball Joint $\frac{1}{4}$ - 28	2
14	27-132	Cable	1
15	42-780	Floorboard (fiberglass)	1
16	42-767	Right Floor Mat	1
	42-768	Left Floor Mat	1
17	12-017	Hour Meter	1
18	HN-14-28	Nut $\frac{1}{4}$ - 28	4
	HWL-14	Lockwasher $\frac{1}{4}$	2
19	21-462	Ball Joint $\frac{5}{16}$ - 24	2
21	42-267	Speed Boss Rod	1
22	42-249	Speed Boss Arm	1
23	42-308	Swash Arm	1
24	42-765	Decal, Lift Controls	1
25	27-055	Hinge	2
	HSMFCS-10-32-100	Machine Screw #10 - 32 x 1	12
	HNFL-10-32	Flange Whiz Lock Nut #10 - 32	12

*

Used with Blower Kit, On/Off Valve and Light Kit



GAS TANK DRAWING

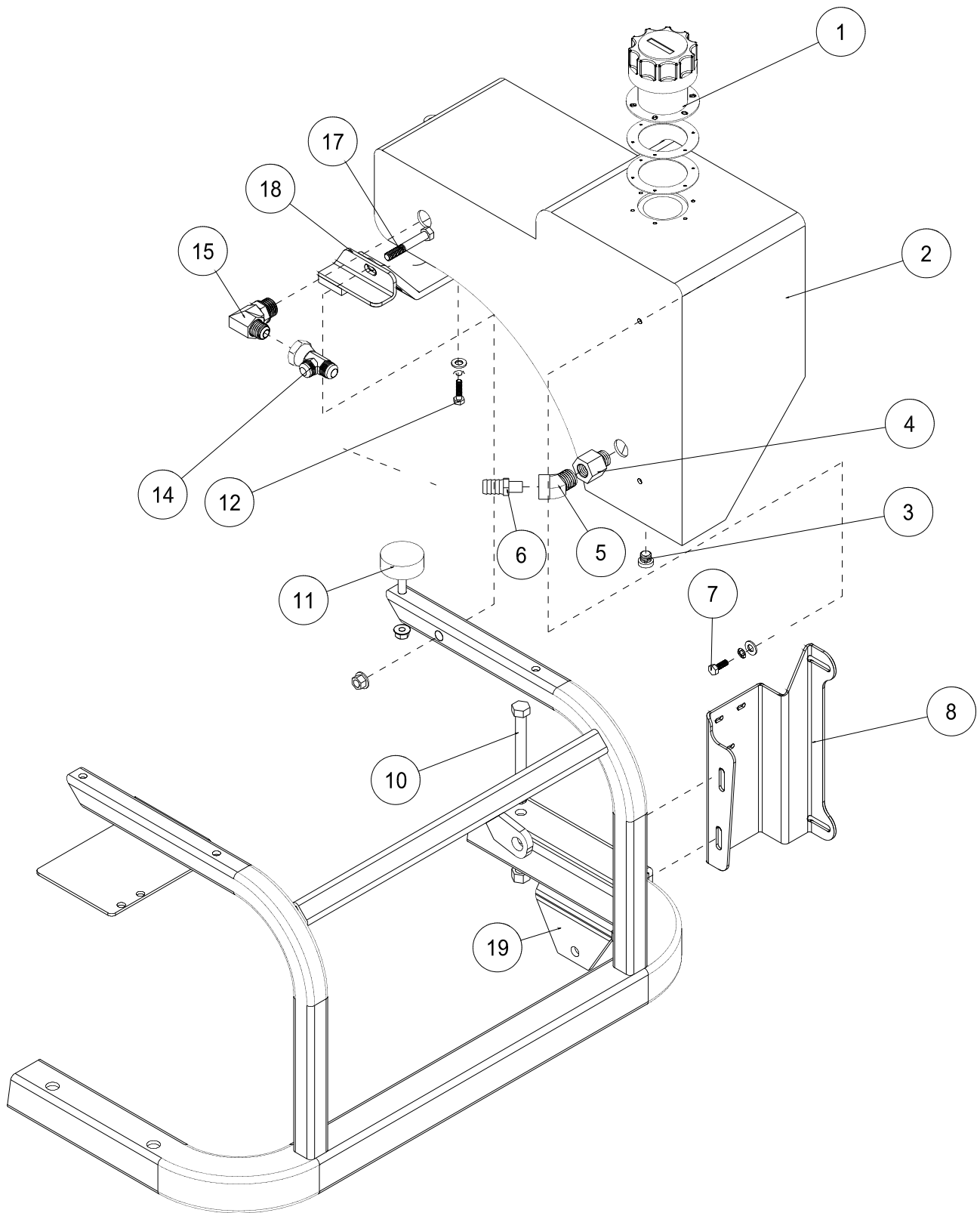


Parts

GAS TANK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	15-492	Cap	1
2	50-081	Rubber Bumper	1
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	1
3	42-006	Gas Tank	1
4	42-770	Right Tank Support	1
5	HB-38-16-200	Bolt $\frac{3}{8}$ - 16 x 2	1
	HW-38	Washer $\frac{3}{8}$	2
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	1
6	HB-14-20-100	Bolt $\frac{1}{4}$ - 20 x 1	2
	HW-14	Washer $\frac{1}{4}$	2
	HW-516	Washer $\frac{5}{16}$	2
	HWL-14	Lock Washer $\frac{1}{4}$	2
7	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HWL-14	Lockwasher $\frac{1}{4}$	2
	HW-14	Washer $\frac{1}{4}$	2
8	26-055	Fuel Shut Off (comes with 42-006)	1
	26-054	Rubber Grommet (comes with 42-006)	1
	8800-41	Fuel Hose	1
	18-186	Hose Clamp	2
9	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	2
	HNFL-12-13	Flange Whiz Lock Nut $\frac{1}{2}$ - 13	2
10	42-015	Attachment Mount	1
11	42-273	Battery Box	1
12	HB-516-18-200	Bolt $\frac{5}{16}$ - 18 x 1	2
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	2
13	42-248	Battery Hold-down	1
	15-020	Grip	1
14	HB-516-18-225	Bolt $\frac{5}{16}$ - 18 x $2\frac{1}{4}$	2
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	2
15	HB-516-18-225	Bolt $\frac{5}{16}$ - 18 x $2\frac{1}{4}$	1
	HW-516	Washer $\frac{5}{16}$	3
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	1
16	42-773	Gas Tank Bracket	1
17	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HW-14	Washer $\frac{1}{4}$	2
	HWL-14	Lock Washer $\frac{1}{4}$	2
18	23-006	Oil Filter	1
	23-031	Replacement Filter	1
19	34-123	Elbow	2
20	42-377	Hood Rod	1
	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	2
21	42-379	Hood Rod Bracket	1
22	42-375	Seat Panel	1
23	42-374	Hood Prop Bracket	1

OIL TANK DRAWING



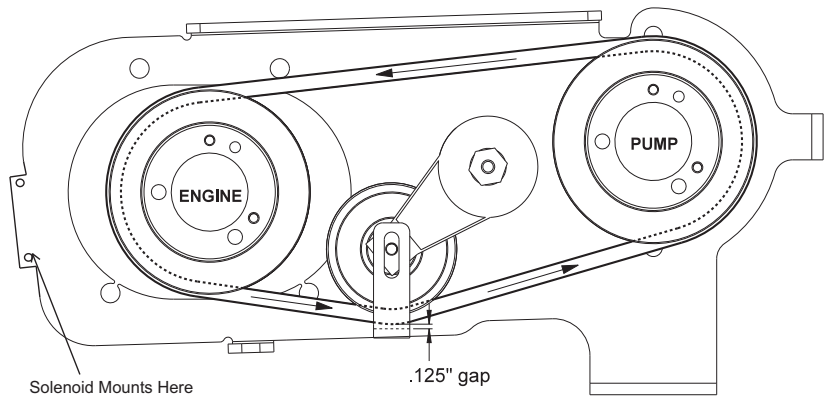
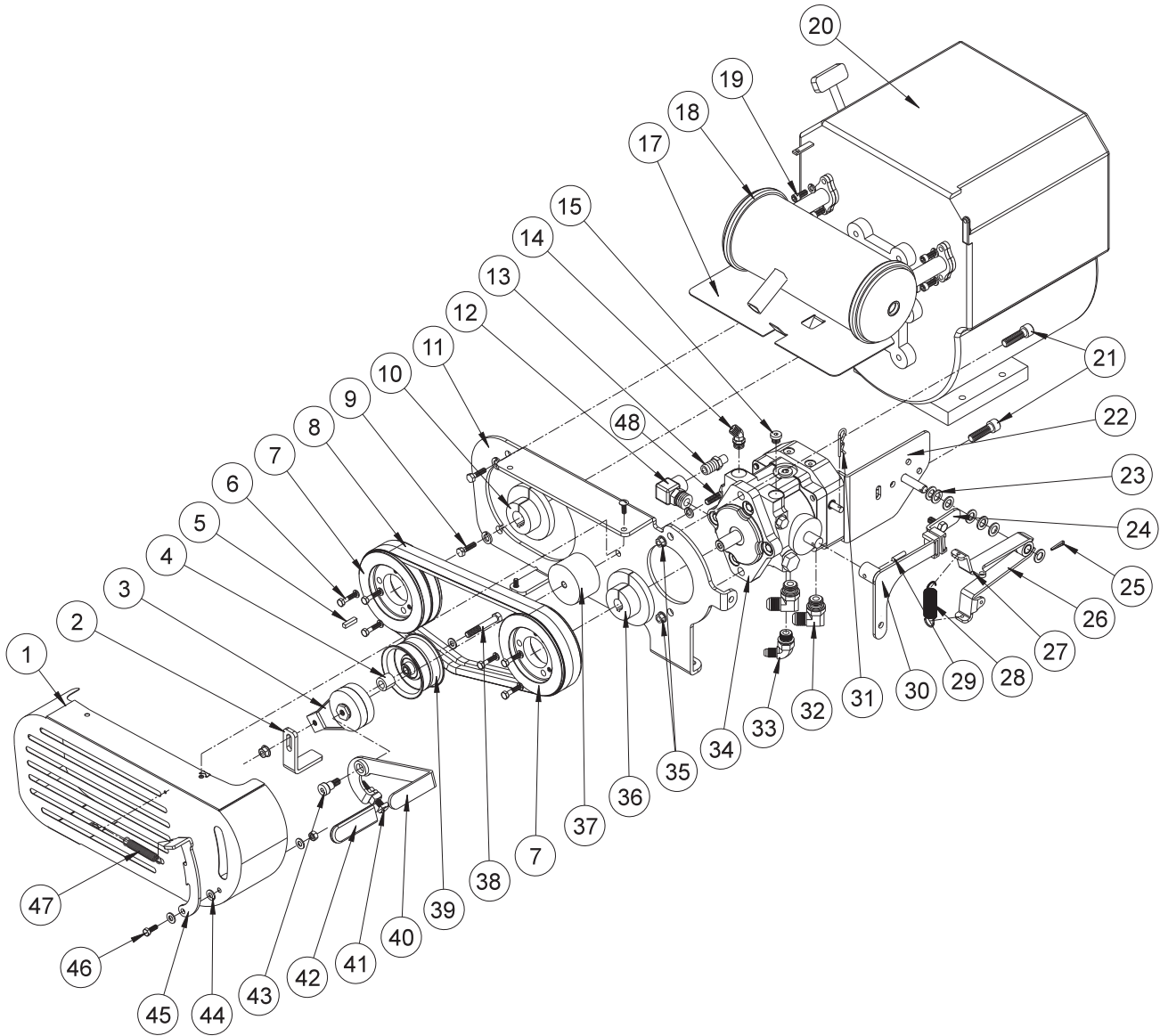
Parts

OIL TANK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-747	Filler Breather	1
	13-586-03	Neck	1
	HSTC-10-32-050	Self Cutting Screw 10 -32 x 1/2	6
2	42-005	Oil Tank	1
3	23-126	#6 Plug	1
4	18-240	Adapter	1
5	18-072	45° Elbow	1
6	18-133	Barb Fitting	1
7	HB-14-20-075	Bolt 1/4 - 20 x 3/4	2
	HW-14	Washer 1/4	2
	HWL-14	Lock Washer 1/4	2
8	42-774	Oil Tank Bracket	1
	HB-516-18-225	Bolt 5/16 - 18 x 2 1/4	2
	HNFL-516-18	Flange Whiz Lock Nut 5/16 - 18	2
10	HB-12-13-500	Bolt 1/2 - 13 x 5	2
	HNTL-12-13	Top Lock Nut 1/2 - 13	2
11	50-081	Rubber Bumper	1
	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	1
12	HB-14-20-100	Bolt 1/4 - 20 x 1	2
	HW-516	Washer 5/16	2
	HW-14	Washer 1/4	2
	HWL-14	Lock Washer 1/4	2
14	18-337	Tee	1
15	23-189	90° Elbow	1
17	HB-38-16-200	Bolt 3/8 - 16 x 2	1
	HW-38	Washer 3/8	1
	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	1
18	42-378	Left Tank Bracket	1
19	42-015	Attachment Mount	2

PUMP AND ENGINE DRAWING

Parts



Belt Routing

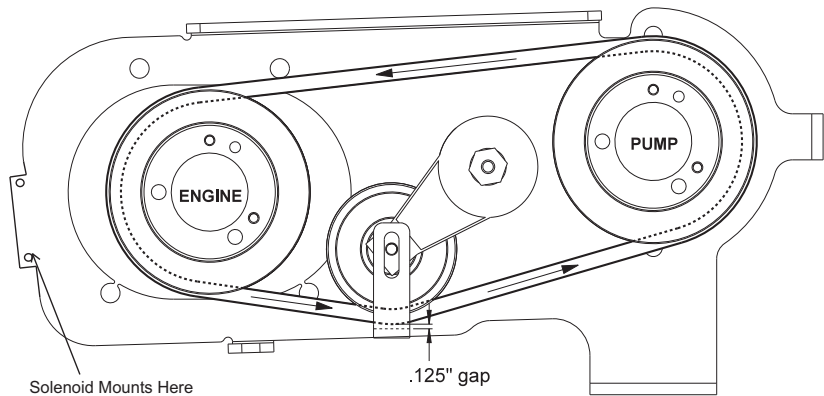
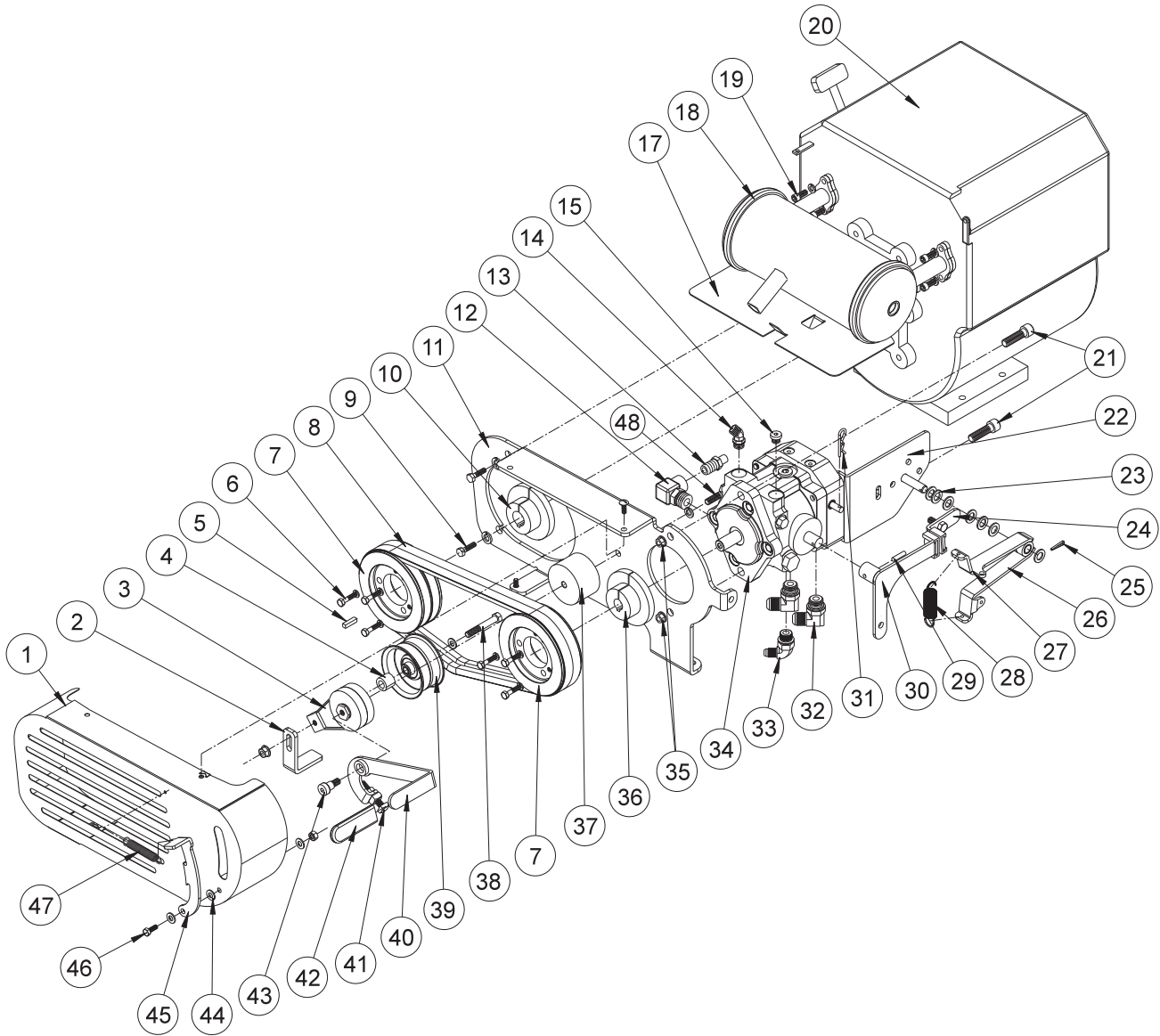
PUMP AND ENGINE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-353	Belt Guard	1
	78-274	Cage Nut	2
	HB-14-20-075	Hex Bolt, $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HWL-14	Lock Washer, $\frac{1}{4}$	2
2	42-357	Belt Stop	1
3	42-327	Tensioner	1
4	16-990	Spacer	1
5	HKSQ-14-100	Machine Key $\frac{1}{4}$ x $\frac{1}{4}$ x 1	1
6	HB-14-20-125	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{4}$ (comes with 42-245 & 42-246)	6 (3 per hub)
	HW-14	Lockwasher (comes with 42-245 & 42-246)	6 (3 per hub)
7	42-331	Pulley	2
8	42-359	Belt	2
9	HB-716-14-100	Bolt $\frac{7}{16}$ - 14 x 1	4
	HWL-716	Lockwasher $\frac{7}{16}$	4
10	42-245	Hub 1"	1
11	42-354	Pump Mount	1
12	23-130	Elbow 90°	1
13	18-133	Barb Fitting	1
14	18-188	Elbow 45°	1
15	23-126	Plug	1
16	18-232	Elbow 90°	2
17	42-601	Heat Shield	1
	18-222	Hose Clamp	2
18	42-600	Muffler	1
19	HSSHSM-8-1.25-20	Metric Cap Screw M8 - 1.25 x 20	4
	HWLM-8	Lockwasher M8	4
20	15-165	Engine B&S 16 HP	1
	15-165-01	Air Filter Element with Pre-Cleaner (comes with engine)	1
	13-531	Engine Oil Filter (comes with engine)	1
	13-491	Oil Switch	1
	13-492	Solenoid	1
21	HSSH-12-13-175	Socket Screw $\frac{1}{2}$ - 13 x $1\frac{3}{4}$	2
22	42-279	Filter Mount	1
	HW-38	Washer $\frac{3}{8}$	2
23	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14 GA	7
24	42-247	Creep Arm	1
	8946-1.5	Wear Strip (part of 42-247)	1
	HRS-316-050	Rivet (part of 42-247)	1
	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	2
25	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
26	42-312	Bottom Centering Arm	1
	18-234	Bushing (part of 42-312)	1
27	42-311	Top Centering Arm	1
	18-234	Bushing (part of 42-311)	1
28	11-050	Extension Spring	1
29	HRP-14-100	Roll Pin $\frac{1}{4}$ x 1	1
30	42-308	Swash Arm	1
	8946-1	Wear Strip (part of 42-308)	1
	HRS-316-050	Rivet (part of 42-308)	1

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PUMP AND ENGINE DRAWING

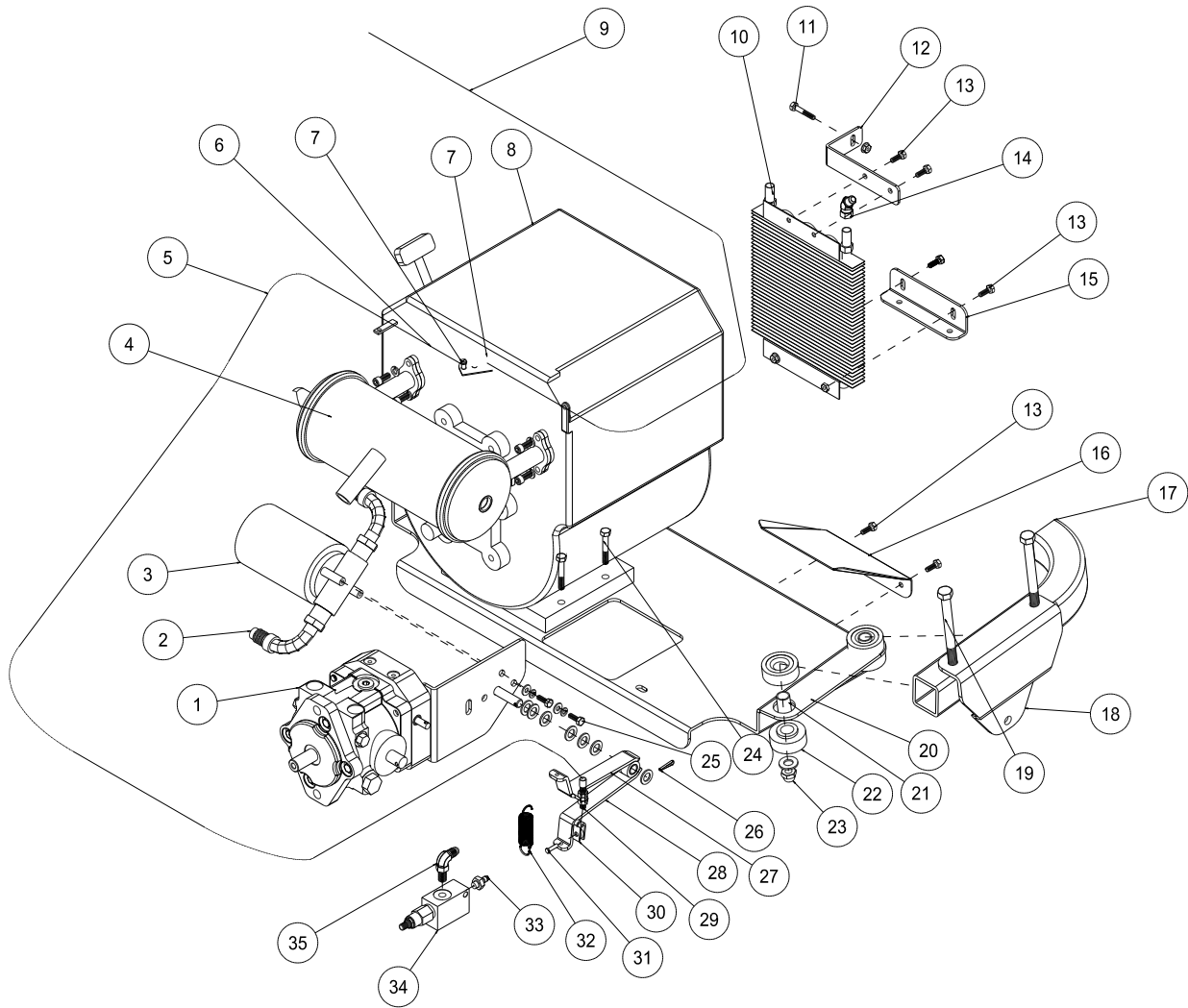
Parts



Belt Routing

PUMP AND ENGINE PARTS LIST

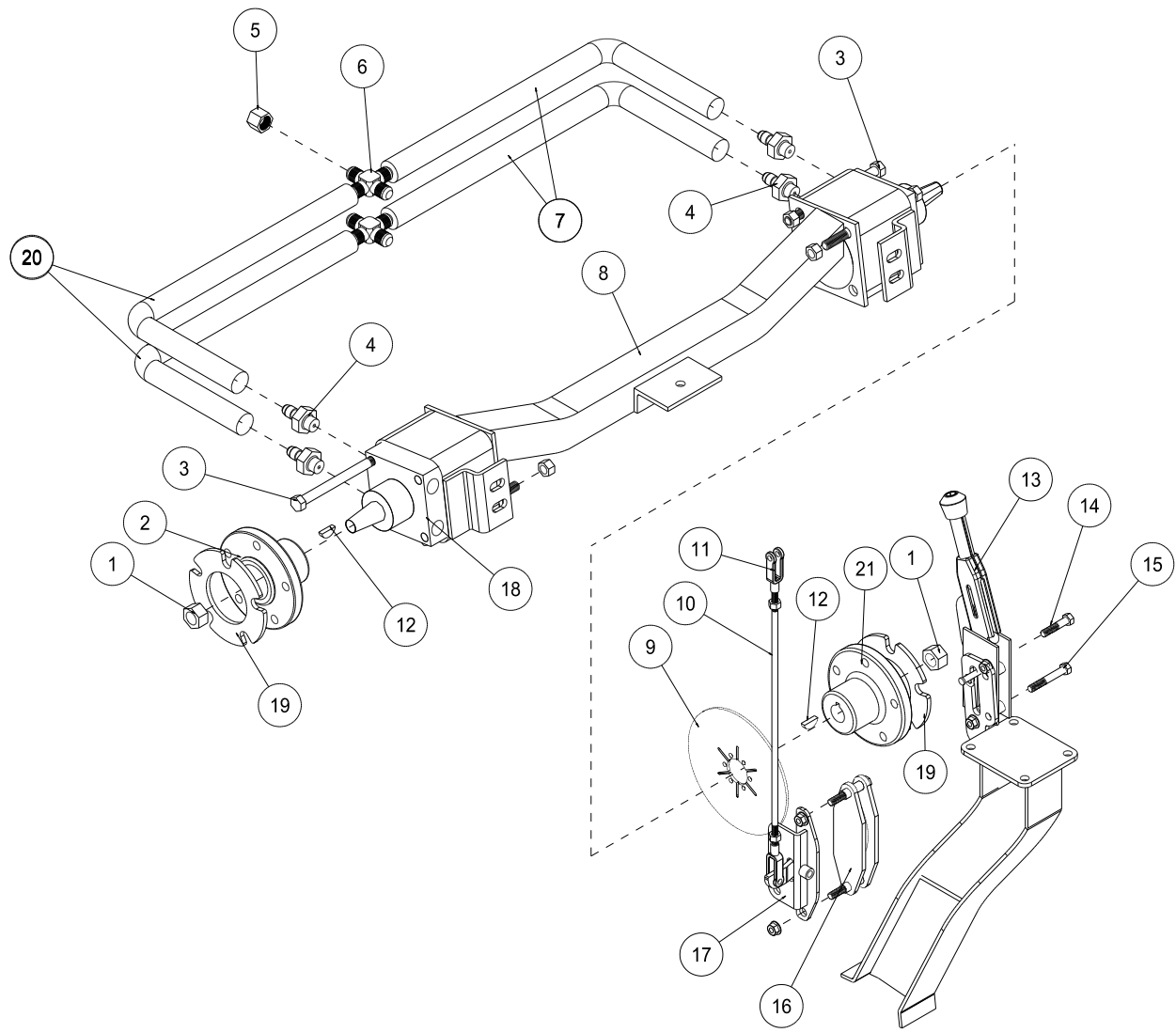
REF#	PART#	DESCRIPTION	QUANTITY
31	HHP-18	Bridge Pin $\frac{1}{8}$	1
32	18-174	Elbow 90°	2
33	18-185	Elbow	1
34	34-109	Variable Pump	1
35	HNFL-12-13	Flange Whiz Lock Nut $\frac{1}{2}$ - 13	2
36	42-246	Hub $\frac{3}{4}$	1
	HWK-316-075	Woodruff Key	1
37	42-361	Tensioner Spacer	1
38	HB-38-16-275	Hex Bolt, $\frac{3}{8}$ -16 x $2\frac{3}{4}$	1
	HNFL-38-16	Flange Whiz Lock Nut, $\frac{3}{8}$ -16	1
	HW-38	Flat Washer, $\frac{3}{8}$	1
39	42-358	Idler Pulley	1
	42-338	Oilite Bushing	1
40	42-355	Clutch Handle	1
41	HSSQ-38-16-150	Socket Head Square Screw $\frac{3}{8}$ - 16 x $1\frac{1}{2}$	1
	HN-38-16	Hex Nut, $\frac{3}{8}$ - 16	1
42	15-020	Grip	1
43	42-352	Hex Socket Head shoulder Screw	1
44	HW-38	Flat Washer, $\frac{3}{8}$	3
45	42-356	Lock Handle	1
46	HB-516-18-075	Hex Bolt, $\frac{5}{16}$ -18 x $\frac{3}{4}$	1
	HNTL-516-18	Lock Nut, $\frac{5}{16}$ -18	1
47	16-046	Spring	1
48	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ -16 x $2\frac{1}{2}$	1
	HWL-38	Lock Washer, $\frac{3}{8}$	1



Parts

REF #	PART #	DESCRIPTION	QUANTITY
1	34-109	Variable Pump	1
2	42-307	Cable Bracket	1
3	HB-516-18-100	Bolt $\frac{5}{16}$ - 18 x 1	2
	HW-516	Washer $\frac{5}{16}$	2
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	2
4	42-600	Muffler	1
5	17-152	Conduit	1
6	17-151	Cable	1
7	21-161	Wire Block	4
8	15-165	Engine B&S 16 hp	1
9	21-463	Throttle	1
10	42-265	Aluminum Oil Cooler	1
11	HB-14-20-150	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{2}$	1
	HNFL-14-20	Flange Whiz Lock Nut $\frac{1}{4}$ -20	1
12	42-771	Top Cooler Bracket	1
13	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	4
	HNFL-14-20	Flange Whiz Lock Nut $\frac{1}{4}$ - 20	4
14	18-214	Elbow 45°	1
15	42-275	Bottom Cooler Bracket	1
17		Main Frame	
18	42-015	Attachment Mount	2
19	HB-12-13-500	Bolt $\frac{1}{2}$ -13 x 5	4
20	42-269	Engine Plate	1
21	60-168	Spacer	4
22	60-107	Rubber Bushing	8
23	HNFL-12-13	Flange Whiz Lock Nut $\frac{1}{2}$ - 13	4
	HW-12	Washer $\frac{1}{2}$	4
24	HB-516-18-225	Bolt $\frac{5}{16}$ - 18 x $2\frac{1}{4}$	4
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	4
25	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14 GA	7
26	42-311	Top Centering Arm	1
	18-234	Bushing (part of 42-311)	1
27	42-312	Bottom Centering Arm	1
	18-234	Bushing (part of 42-312)	1
28	17-155	Retainer	1
	HN-516-24	Nut $\frac{5}{16}$ - 24	2
29	17-153	Clevis	1
30	HCP-14-075	Clevis Pin $\frac{1}{4}$ x $\frac{3}{4}$	1
	HP-332-075	Cotter Pin $\frac{3}{32}$ x $\frac{3}{4}$	1
31	11-050	Extension Spring	1
32	18-169	Adapter	1
33	42-192	Relief Valve	1
34	18-168	Elbow	1

REAR AXLE DRAWING



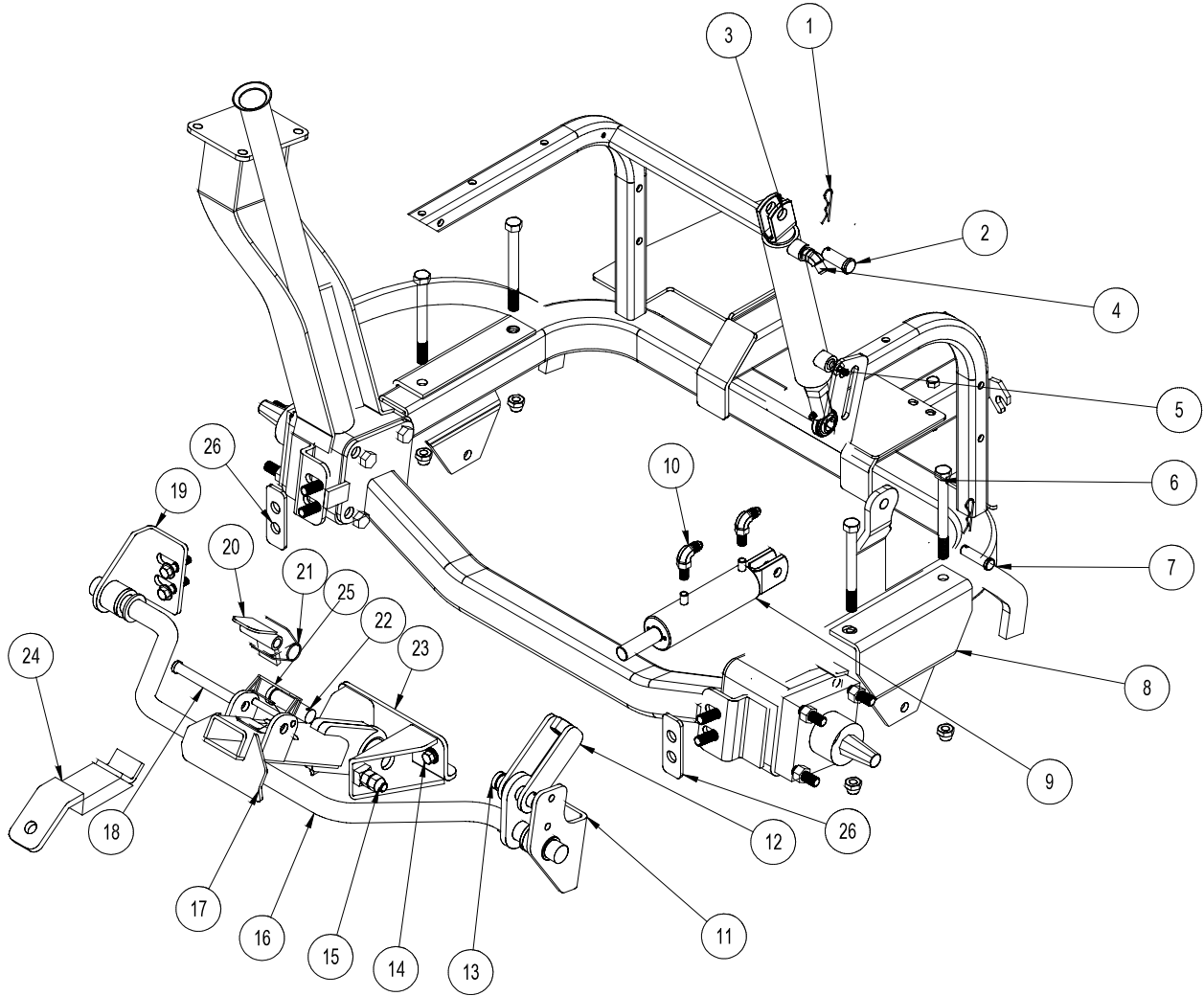
Parts

REAR AXLE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-002-12	Nut $\frac{3}{4}$ - 16 (part of 42-002)	2
2	42-007	Hub	1
3	HB-12-13-650	Bolt $\frac{1}{2}$ - 13 x $6\frac{1}{2}$	8
	HNFL-12-13	Flange Whiz Lock Nut $\frac{1}{2}$ - 13	8
4	18-343	Adapters	4
5	18-344	Caps	2
6	18-342	Cross	2
7	42-261	$\frac{1}{2}$ " Hydraulic Tube x $27\frac{1}{2}$ "	2
8	42-380	Main Frame	1
9	50-041	Brake Disk	1
	42-176	Low Head Cap Screw $\frac{1}{4}$ - 20 x $\frac{3}{4}$	6
10	42-155	Brake Rod	1
	HN-516-24	Nut $\frac{5}{16}$ - 24	2
11	11-100	Linkage Yoke	2
	HCP-516-100	Clevis Pin $\frac{5}{16}$ x 1	2
	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	2
12	HWK-14-100	Woodruff Key $\frac{1}{4}$ x 1 (part of 42-002)	2
13	60-106	Brake Lever	1
14	HB-516-18-175	Bolt $\frac{5}{16}$ - 18 x $1\frac{3}{4}$	1
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	1
15	HB-516-18-250	Bolt $\frac{5}{16}$ - 18 x $2\frac{1}{2}$	1
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	1
16	50-042	Brake Caliper	1
	60-563	Disc Pad, Outside	1
	60-564	Disc Pad, Inside	1
17	42-151	Brake Bracket	1
18	42-002	Wheel Motor	2
19	42-305	Shim	2
20	42-304	$\frac{1}{2}$ " Hydraulic Tube x 27"	2
21	42-157	Right-hand Hub	1

RAKELIFT DRAWING

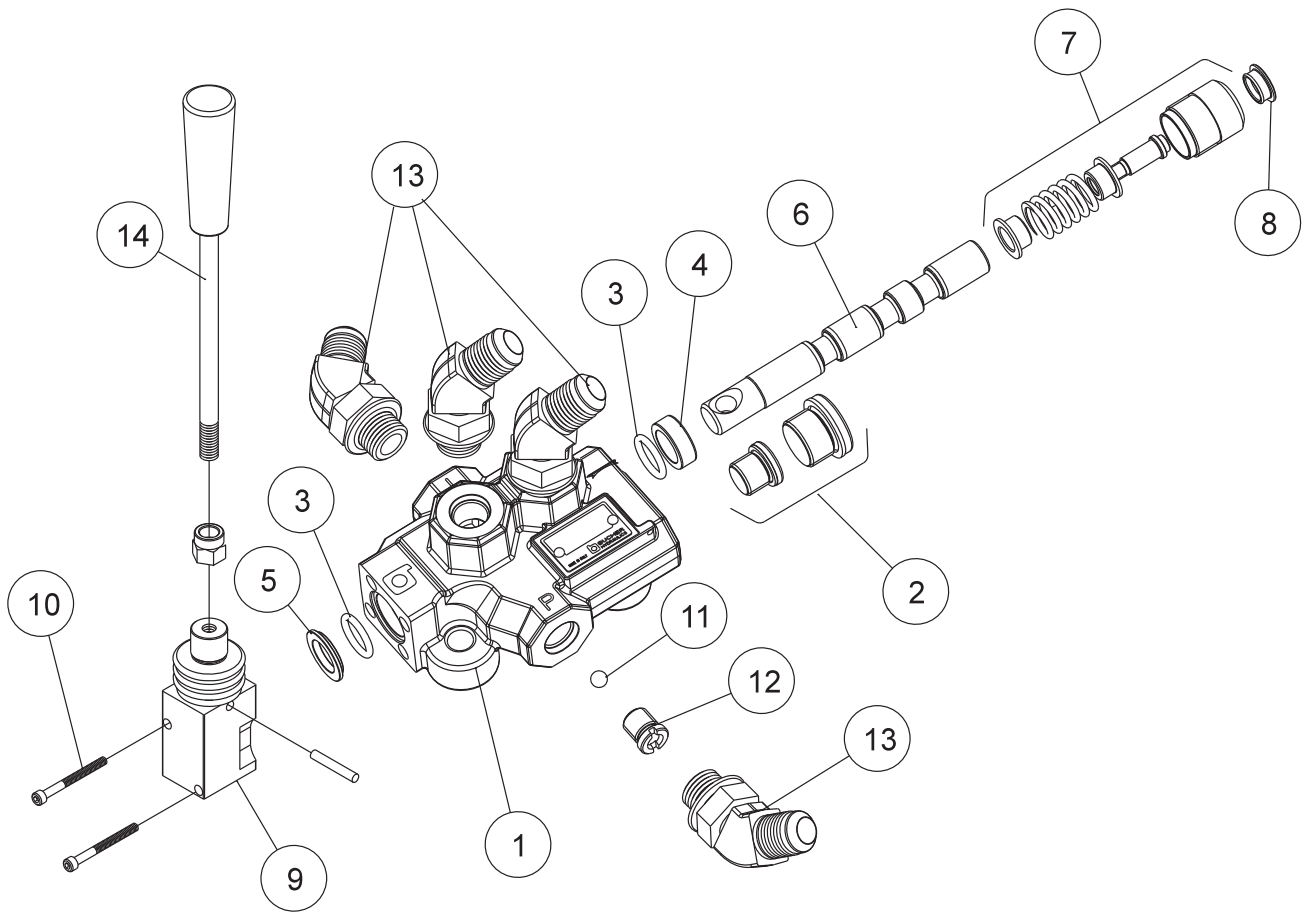
Parts



RAKE LIFT PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	3
2	HCP-58-175	Clevis Pin $\frac{5}{8}$ - $1\frac{3}{4}$	1
3	10-135	Hydraulic Cylinder	1
	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
	8-154	Rod End	1
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180°	1
4	18-214	45° Elbow	1
5	18-169	$\frac{3}{8}$ Adapter	1
6	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	4
	HNFL-12-13	Flange Lock Nut $\frac{1}{2}$ - 13	4
7	HCP-12-300	Clevis Pin $\frac{1}{2}$ - 3	1
	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
8	42-015	Attachment Mount	2
9	43-150	Hydraulic Cylinder	1
10	18-168	90° Elbow	2
11	34-220	Pivot Bracket - RH	1
12	43-138	Lift Linkage	1
13	HCP-34-200	Clevis Pin $\frac{3}{4}$ x 2	1
14	HB-38-24-100	Bolt $\frac{3}{8}$ - 24 x 1	2
15	HSSHB-12-13-200	Button Socket Head Cap Screw	2
	HN-12-13	Nut $\frac{1}{2}$ -13	2
	HNCL-12-13	Center Lock Nut $\frac{1}{2}$ - 13	2
16	43-137	Lift Bar	1
	15-019	Rubber Grip	2
17	43-141	Lift Arm	1
18	HCP-12-450	Clevis Pin $\frac{1}{2}$ - $4\frac{1}{2}$	1
19	34-219	Pivot Bracket - LH	1
20	43-139	Lock	1
21	43-136	Torsion Spring	1
22	HCP-78-350	Clevis Pin $\frac{7}{8}$ x $3\frac{1}{2}$	1
23	43-140	Frame Mount	1
24	43-143	Towing Hitch	1
25	25-382	Lock Pin	1

13-731 SINGLE-BANK HYDRAULIC VALVE DRAWING

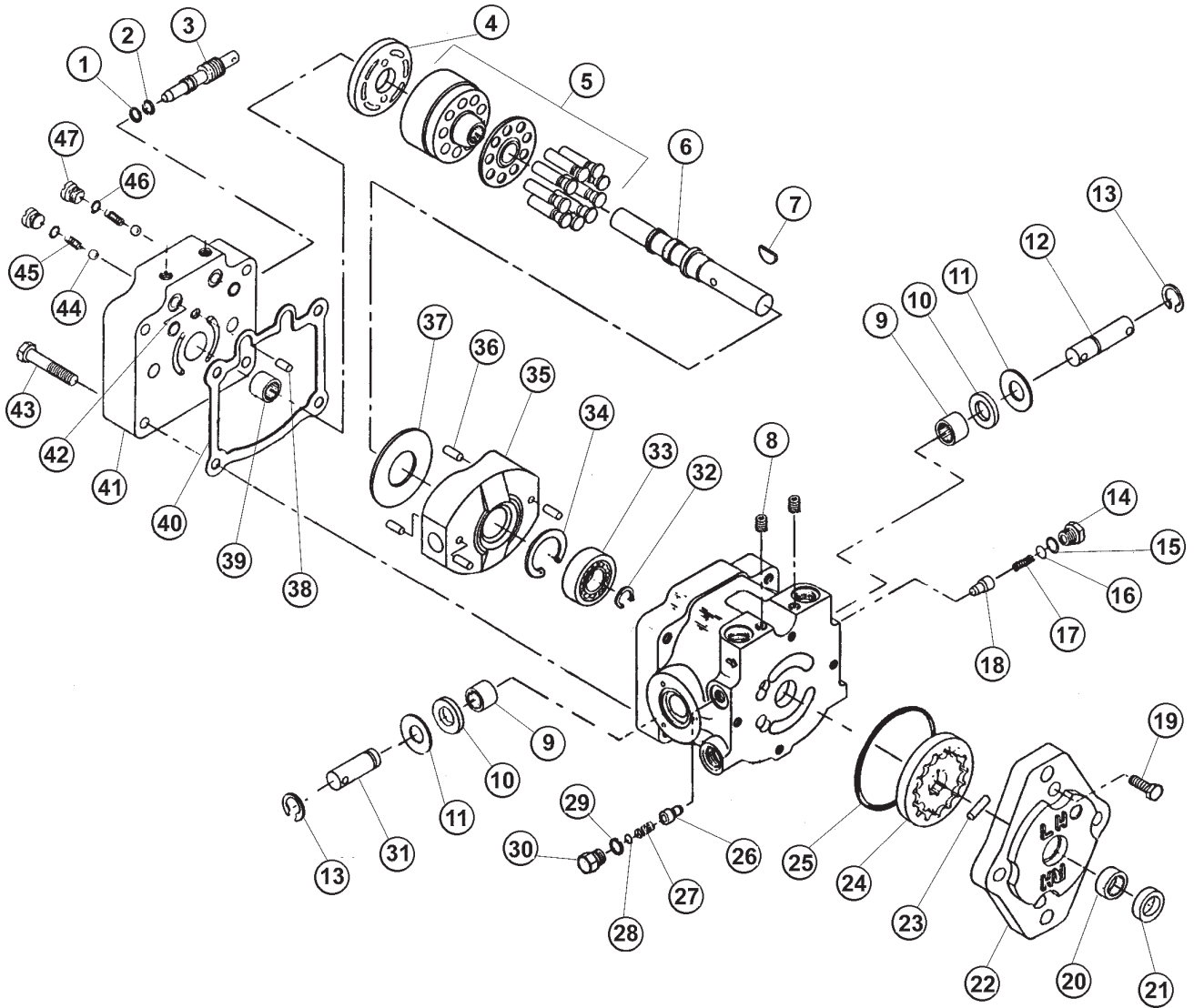


Parts

13-731 SINGLE-BANK HYDRAULIC VALVE PARTS LIST

REF #	PART #	DESCRIPTION	QUANTITY
1*	13-731-01	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	1
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	18-188	45° ELbow	4
14	78-417	Straight Handle	1
* †	13-731 13-731-01	Single Bank Hydraulic Valve (includes all * items) Actuator Housing Assembly	1 per Bank

34-109 VARIABLE PUMP DRAWING



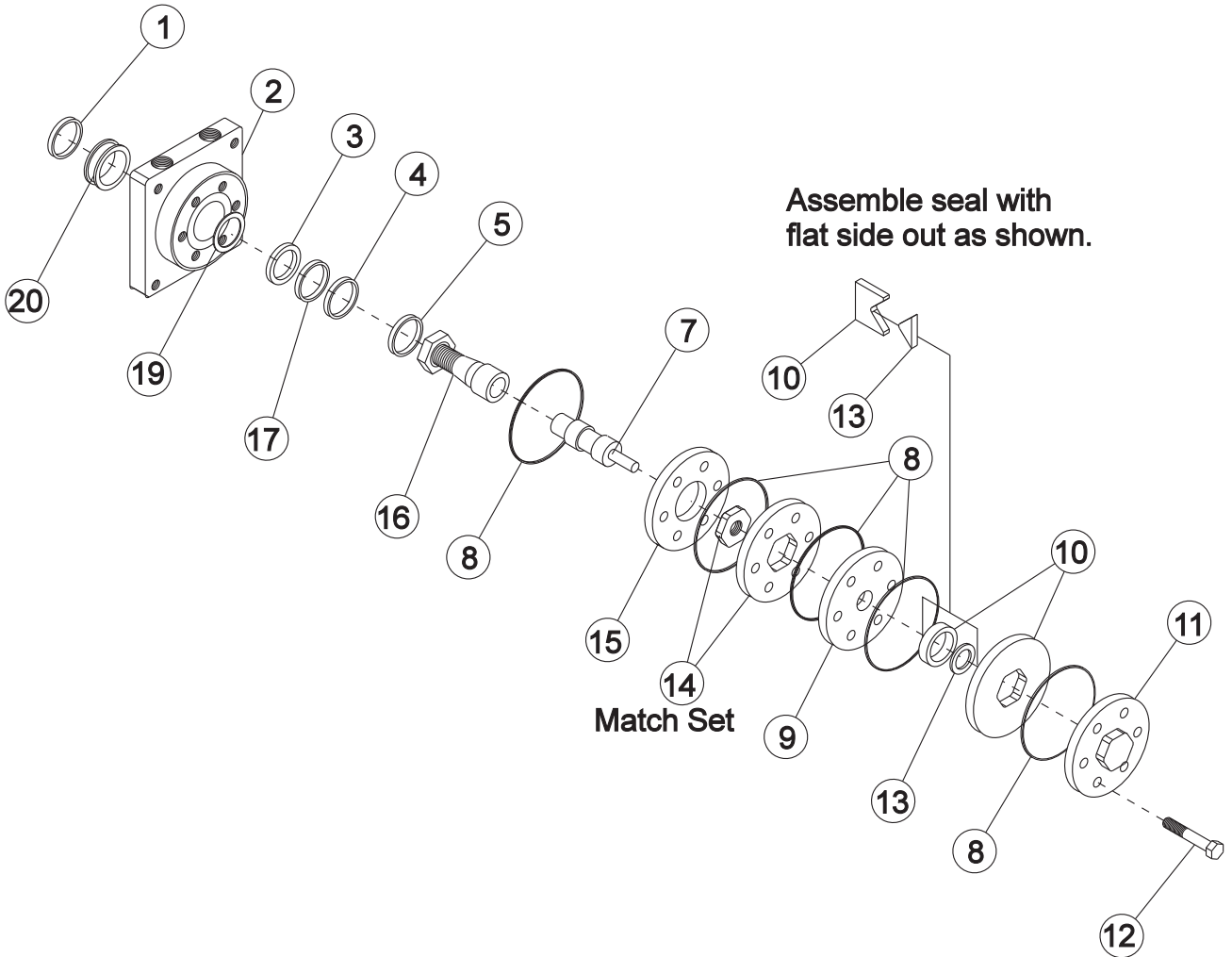
Parts

34-109 VARIABLE PUMP PARTS LIST

REF #	PART #	DESCRIPTION	QUANTITY
1	14-222	O-Ring	1
2	14-130	Ring	1
3	13-110-01	By-Pass Valve	1
4	34-109-01	Valve Plate	1
5†		Cylinder Block	1
6	14-084	Pump Shaft with Bearing	1
7	14-131	Woodruff Key	1
8	13-110-05	Pipe Plug	2
9	14-069	Needle Bearing	2
10*	14-014	Lip Seal	2
11	14-113	Washer	2
12	14-220	Truncated Shaft (long 2 holes)	1
13	14-105	Retaining Ring	2
14	13-110-10	Plug	1
15*		O-Ring	1
16	14-235	Shim Pack Kit	1
17	14-263	Release Valve Spring	1
18	13-110-11	Release Valve Cone	1
19§	13-110-14	Hex Head Screw	4
20§	14-129	Needle Bearing	1
21*§	14-054	Lip Seal	1
22§	13-110-13	Charge Pump Housing	1
23§	14-135	Straight Pin	1
24§	14-136	Gerotor Assembly	1
25*§		O-Ring	1
26	14-235	Release Valve Cone	1
27	14-234	Check Release Valve Spring	1
28	34-109-03	Shim Pack Kit	1
29*		O-Ring	1
30	13-110-10	Plug	1
31	14-212	Truncated Shaft (short 1 hole)	1
32	14-133	Retaining Ring	1
33	42-003-10	Ball Bearing	1
34	14-132	Retaining Ring	1
35	14-221	Variable Swash Plate	1
36	14-216	Spring Pin	3
37	14-114	Thrust Plate	1
38	14-215	Pin	1
39		Roller Bearing (comes with 14-084 Ref# 6)	1
40*	14-107	Gasket	1
41†		Pump End Cap	1
42*		O-Ring	2
43	13-110-04	Hex Head Screw	4
44▣	13-110-09	Ball	2
45▣	13-110-08	Check Valve Spring	2
46*▣		O-Ring	2
47▣	13-110-07	Check Valve Plug	2

- * 14-098 Seal Kit 1
- † Parts are not available. Replace with new unit.
- § 13-110-15 Charge Pump 1
- ▣ 13-110-16 Check Valve Kit 2

42-002 WHEEL MOTOR (8.0 C.I.) DRAWING

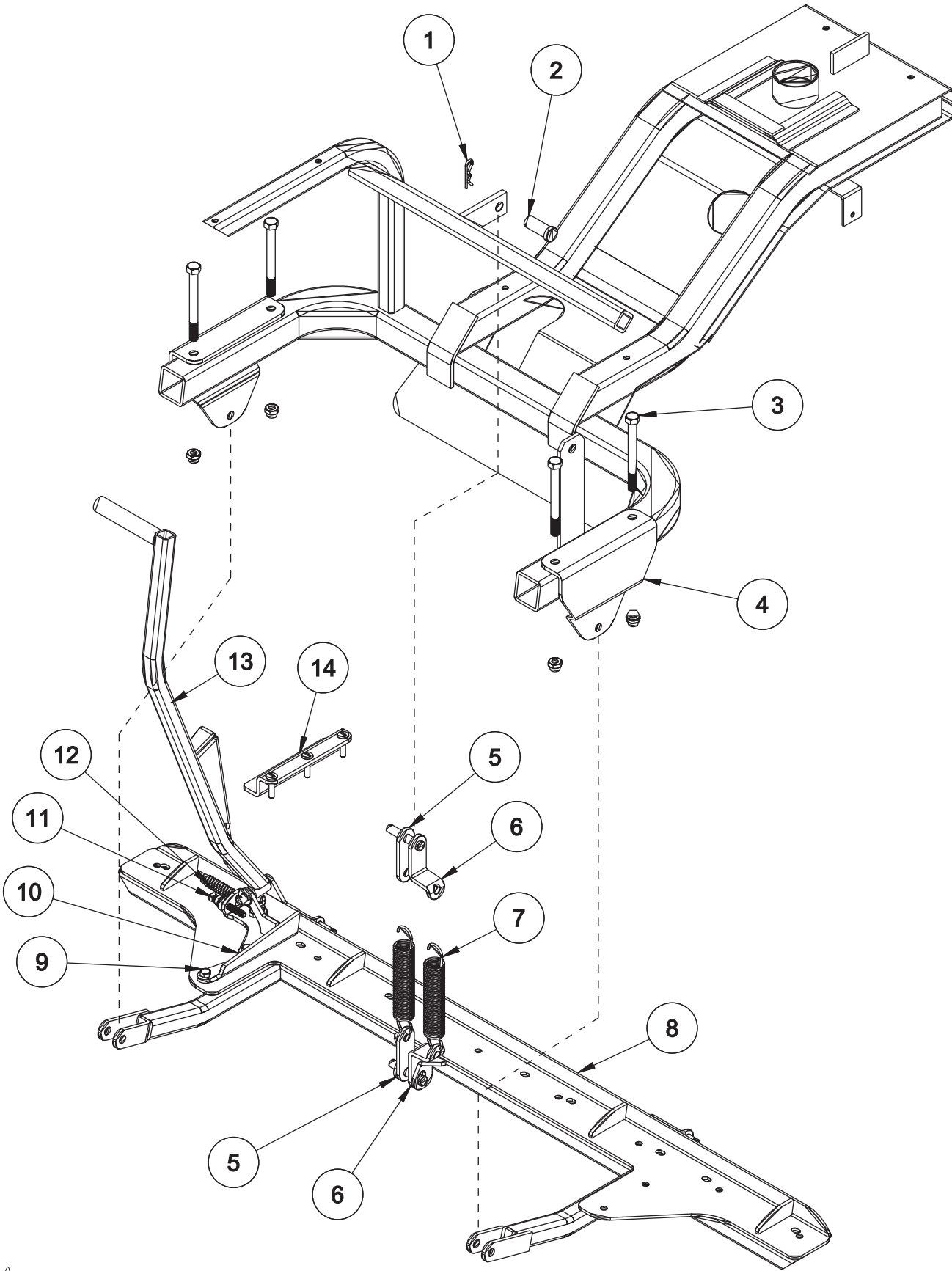


Parts

42-002 WHEEL MOTOR (8.0 C.I.) PARTSLIST

REF #	PART #	DESCRIPTION	QUANTITY
1*		Water & Dirt Seal	1
2	42-002-01	Service Housing Assembly	1
4	42-002-02	Thrust Bearing	1
5	42-002-03	Inner Bearing	1
7	42-002-04	Drive Link	1
8*		Ring Seal	5
9	42-002-05	Manifold	1
10	42-002-06	Commutator Assembly (matched set)	1
11	42-002-07	End Cap	1
12	42-002-08	Bolt	5
13*		Commutator Seal (matches with #10)	1
14	42-002-09	Rotor Set (matched set)	1
15	42-002-10	Wear Plate	1
16	42-002-11	Coupling Shaft	1
	HWK-14-100	Woodruff Key 1/4 x 1	1
	42-002-12	Nut 3/4 - 16	1
17	42-002-13	Thrust Washer	1
19*		Backup Ring	1
20	42-002-14	Outer Bearing	1
*	42-002-15	Seal Kit	1

42-401 MANUALLIFT DRAWING

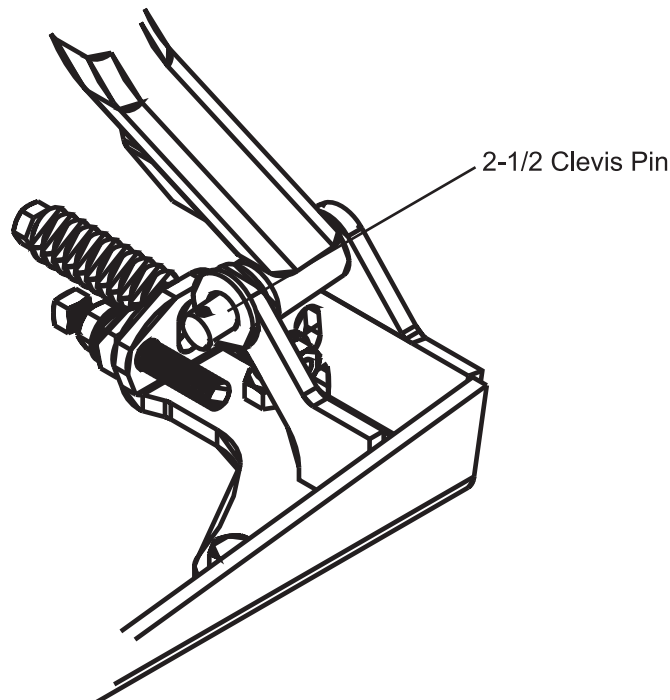


Accessories

42-401 MANUAL LIFT PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	3
2	HCP-12-250	Clevis Pin $\frac{1}{2}$ x $2\frac{1}{2}$	3
	HW-12	Washer $\frac{1}{2}$	8
3		Bolt $\frac{1}{2}$ - 13 x 5	4
		Lock Nut $\frac{1}{2}$ - 13	4
4		Attachment Mount	2
5	42-383	Flat Spring Bracket	2
6	42-384	Offset Spring Bracket	2
7	21-445	Spring	2
8		Attachment Lift	1
9	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	3
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	3
10	42-382	Lift Handle Mount	1
11	HSSQ-38-16-250	Square Head Set Screw $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	1
12	HB-516-18-400	Bolt $\frac{5}{16}$ - 18 x 4	1
	HW-516	Washer $\frac{5}{16}$	2
	11-055	Die Spring	1
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	1
13	42-381	Attachment Lift Handle	1
	15-019	Round Grip	1
14	42-385	Handle Lock Bracket (Bolts to LH Floorboard)	1
	HSTP-516-18-150	Phillips Machine Screw $\frac{5}{16}$ - 18 x $1\frac{1}{2}$	3
	HW-516	Washer $\frac{5}{16}$	3
	HNTL-516-18	Lock nut $\frac{5}{16}$ - 18	3

Handle Attachment



DECAL LIST

This is a list of decals located on the Euro Star. Part number, description and location will help in reordering decals.

13-556	Decal, Warning	1	Left Side Below Seat
25-277	Decal, Battery	1	Bottom Seat
25-286	Decal, Pinch Point	1	Bottom Seat Panel
25-298	Decal, Warning Hot	2	Bottom Seat Panel. Oil Filter Bracket
25-337	Decal, Speed Boss	1	Hang from Steering
25-344	Decal, Smithco 3" Star	1	Steering Column
25-349	Decal, Foot Pedal	1	Right Side Nose Cone
25-352	Decal, By-Pass Valve	1	Hang Tag
25-354	Decal, Tire Pressure 5psi	2	Rear Wheels
25-357	Decal, Smithco	1	Front Nose Cone
25-359	Decal, Fluid Filled Tire	1	Front Tire
25-361	Decal, Technical Assistance	1	Main Frame
27-077	Decal, Smithco Round	1	Steering Cap
43-110	Decal, Super Star	2	Nose Cone
42-765	Decal, Lift Control	1	Right Body Top
42-593	Decal, Control Panel	1	Left of Seat

QUICK REFERENCE REPLACEMENT PARTS

REPLACEMENT FILTERS

23-031	Hydraulic Oil Filter	
15-165-01	Air Filter Element with Pre-Cleaner	Briggs and Stratton# 5050
42-076-03	Air Filter Element Fender Mounted	
50-403	Fuel Filter	
13-531	Engine Oil Filter	Briggs and Stratton# 492932

SEAL KITS

34-109	Variable Pump	
14-098	Seal Kit	
42-002 and 42-039	Wheel Motors	
42-002-15	Seal Kit	
42-220	2-BankHydraulic Valve	
14-062	Seal Kit	
14-106	Relief Assembly Kit	
14-203	Spring Centering Assembly Kit (1 per bank)	
43-150	Hydraulic Cylinder	
43-150-01	Seal Kit	

FLUIDS

Engine Oil	Refer to Engine Manual
Hydraulic Fluid	SAE 10W-40 API Service SJ or higher Motor Oil

OTHER PARTS

Spark Plugs	RC12YC (Gap 0.030 inch (0.76mm))
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ACCESSORIES

Front Mounted Implements	A
13-731 Single Bank Valve	2
43-003 40" Hydraulic Sand Plow	4
43-013 40" Hydraulic Angle Sand Plow	8
42-011 40" Manual Sand Plow(Steel & Aluminum)	12
42-136 60" Manual Sand Plow	14
42-460 40" Manual Angle Plow	16
42-490 60" Manual Angle Plow	18
42-837 Light Kit For ROPs	20
42-800 ROPS for Super Star	22
Belly Attachments	B
42-223 Adjustable Disc Edger	2
42-750 Cart Path & Sidewalk Edger	4
42-287 Edger Kit w/ Castor Wheels	6
43-130 Weed Cultivator	8
42-008 Sand Cultivator	10
42-340 Sand Cultivator w/ Spring Tine	12
42-341 Sand Cultivatore w/ Castor Wheels	14
42-010 Construction Leveling Blade	16
42-210 Grader Blade Kit	18
42-178 Infield Scarifier(vertical blades)	20
42-179 Infield Scarifier(chisel blades)	24
42-285 Scarifier w/ Vertical Blades	28
43-011 Nail drag w/ Castor Wheels	30
Rear Attachments	C
42-391Q 72" Pro-Brush Tournament Rake	2
43-392Q 84" Pro-Brush Tournament Rake	6
42-130Q 84" Mild Steel Rake	10
42-132Q 72" Mild Steel Rake	14
13-438Q Rake with Finishing Blades	18
13-758Q Max Flex Sand Rake	20
13-740 Brush Attachment	22
13-684 Brush Attachment	24
13-298Q Fan Rake	26
13-319 Fan Rake Kit	26
26-007Q Professional Field Finisher	28
43-002Q Flex Action Field Finisher w/ Brush	30
26-008Q Flex Action Field Finisher	34
43-043 Finishing Brush	36
43-008 Drag Mat Kit	38
34-191 Box Grader	40
42-586Q Green Star RBS Main Frame	42
42-581 Green Star RBS Roller	44
42-585 Green Star RBS Brush	46
42-582 Green Star RBS Spiker	48
43-009 CoCo Mat Finisher	50
41-501 Typhoon	52
41-502 Earthway®	56
Warranty	

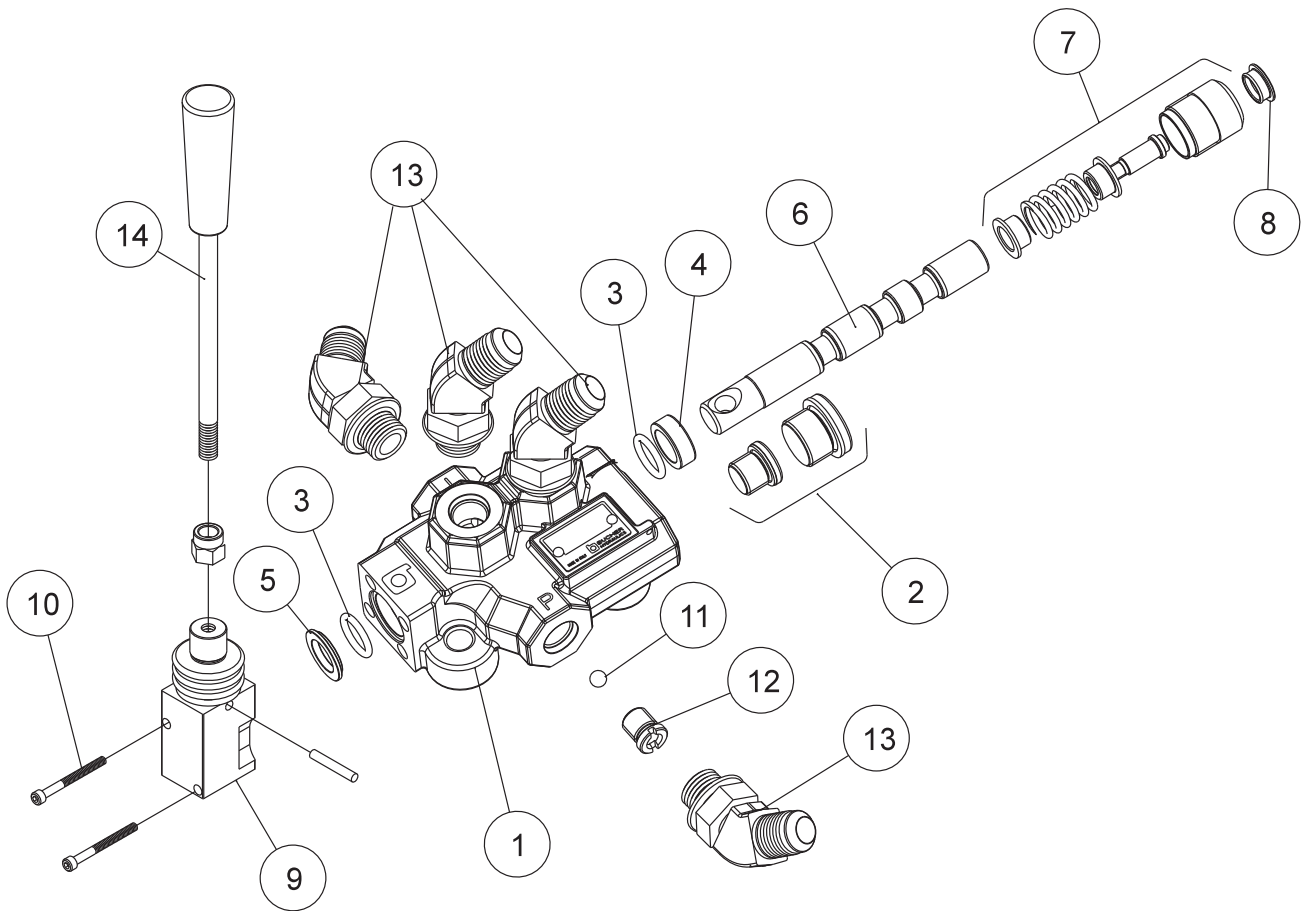
Front Attachment

Center Attachment

Rear Attachment

13-731 SINGLE BANK HYDRAULIC VALVE DRAWING

Front Attachment

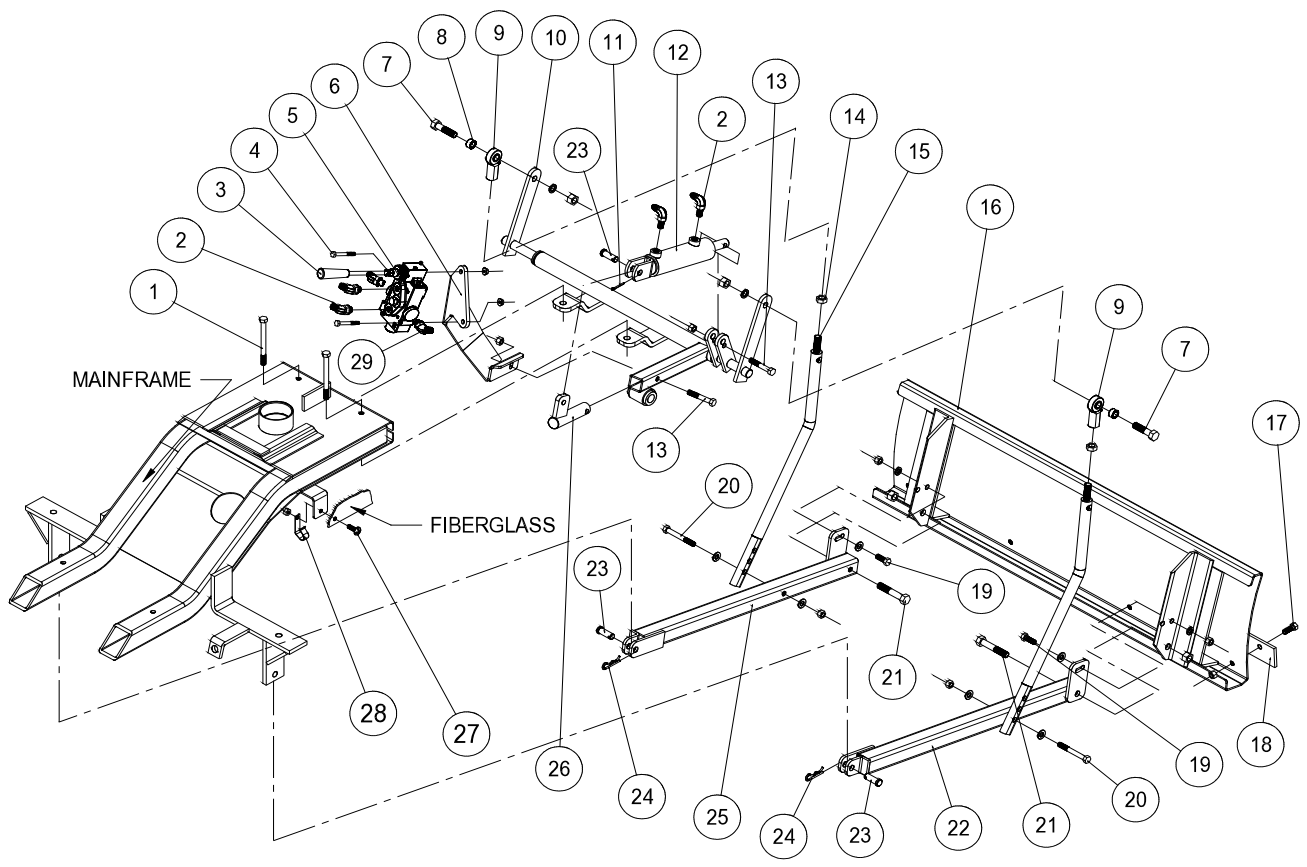


13-731 SINGLE BANK HYDRAULIC VALVE PARTSLIST

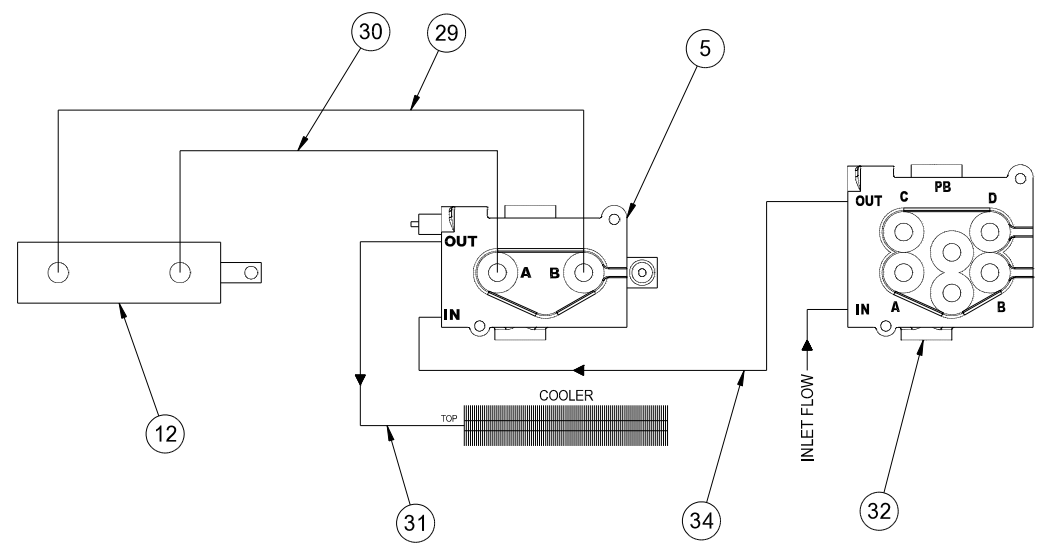
REF #	PART #	DESCRIPTION	QUANTITY
1*	13-731-01	Actuator Housing Assembly	1
2*	13-731-02	Valve Plug	1
3*†	78-415-03	O-Ring Seal	2
4*†	78-415-05	Spacer	3
5*	78-415-04	Flanged Washer HDM10	3
6*	13-731-03	Spool	1
7*	78-415-11	Positioner	1
8*	78-415-08	Plug	3
9*	78-415-09	Lever Group HDS11	3
10*	78-415-10	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	18-188	45° ELbow	4
14	78-417	Straight Handle	1
	78-417-01	Tapered Knob	1
*	13-731	Single Bank Hydraulic Valve (includes all * items)	
†	13-731-01	Actuator Housing Assembly	1 per Bank

43-003 HYDRAULIC SAND PLOW DRAWING

Front Attachment



HYDRAULIC VALVE PLUMBING DRAWING

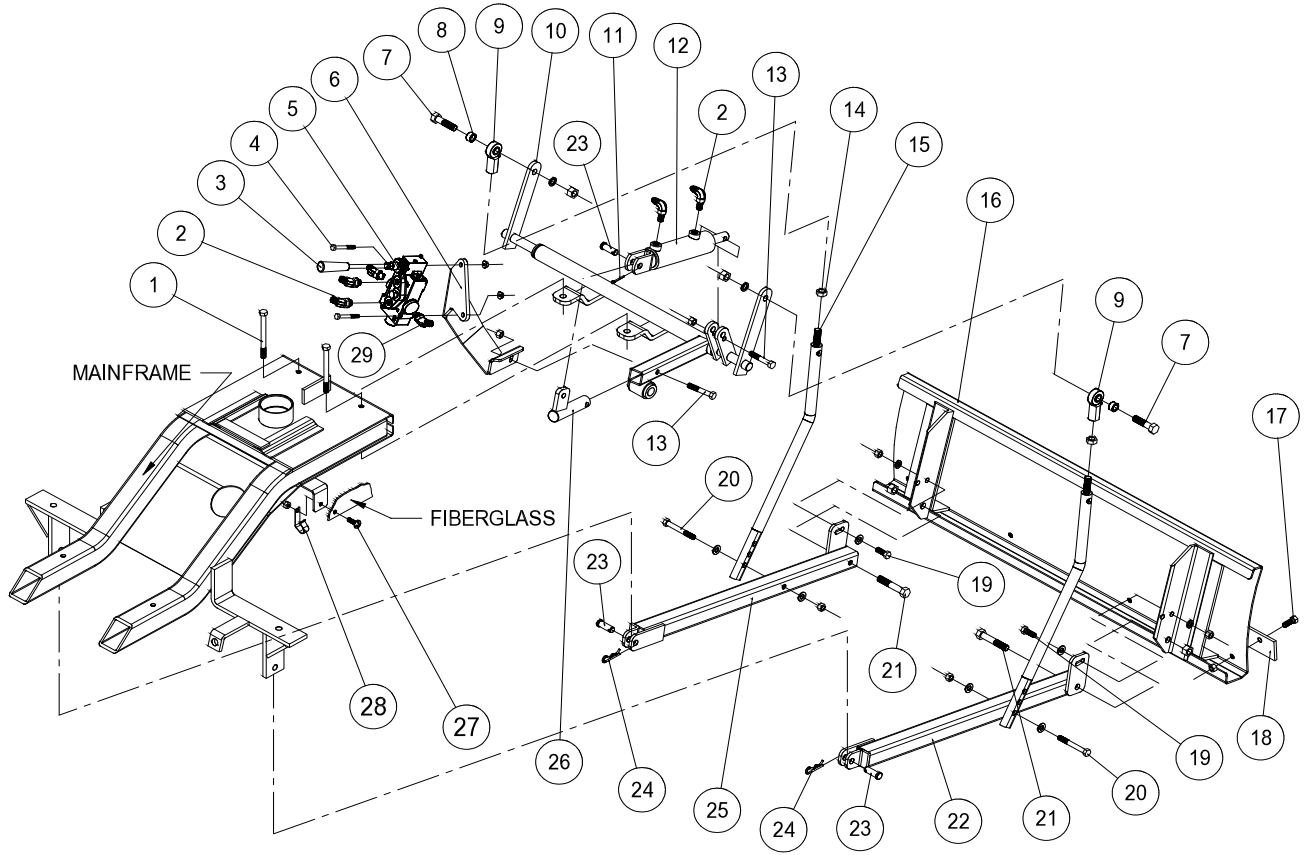


43-003 HYDRAULIC SAND PLOW PARTS LIST

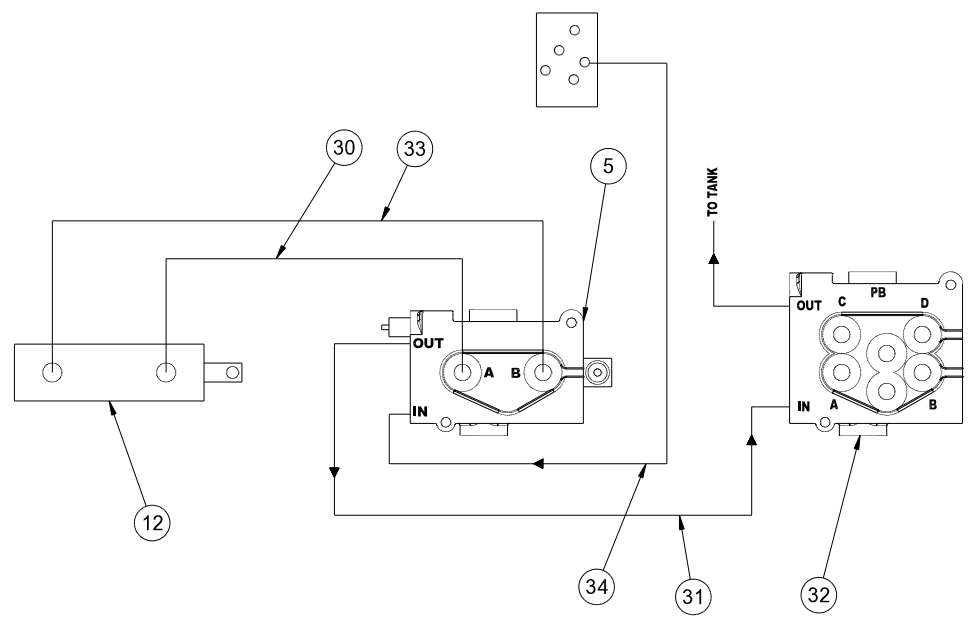
REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-350	Bolt, $\frac{3}{8}$ - 16 x $3\frac{1}{2}$ (Part of machine)	2
	HW-38	Washer, $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
2	18-188	45° Elbow	6
3	78-417	Straight Handle Kit	1
4	HB-14-20-200	Bolt, $\frac{1}{4}$ - 20x 2	2
	HNFL-14-20	Flange Whiz-Lock Nut, $\frac{1}{4}$ - 20	2
5	13-731	Single Bank Hydraulic Valve	1
6	43-050	Valve Mount	1
7	HB-12-13-200	Bolt, $\frac{1}{2}$ - 13 x 2	2
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 13	2
	HMB-12-14	Machine Bushing, $\frac{1}{2}$ x 14GA	2
8	42-836	Spacer	2
9	80-006	Rod End	2
10	42-346	Lift Assembly	1
11	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	1
12	14-534	Hydraulic Cylinder	1
13	HB-38-16-200	Bolt, $\frac{3}{8}$ - 16 x 2	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
14	HNJ-12-20	Jam Nut, $\frac{1}{2}$ - 20	2
15	27-073	Lift Rod	2
16	27-017	Aluminum Sand Plow Blade	1
17	HB-38-16-100	Bolt, $\frac{3}{8}$ - 16 x 1	4
	HNFL-38-16	Flange Whiz Lock Nut, $\frac{3}{8}$ - 16	4
18	13-167	Wear Blade	1
19	HB-38-16-125	Bolt, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	2
	HW-38	Washer, $\frac{3}{8}$	2
	HWL-38	Lockwasher, $\frac{3}{8}$	2
	HN-38-16	Nut, $\frac{3}{8}$ - 16	2
	HB-38-16-250	Bolt, $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	2
20	HW-38	Washer, $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
	HB-12-13-300	Bolt, $\frac{1}{2}$ - 13 x 3	2
21	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 13	2
	27-050	Right Pusher Bar	1
22	27-050	Right Pusher Bar	1
23	HCP-12-150	Clevis Pin, $\frac{1}{2}$ x $1\frac{1}{2}$	3
24	HHP-18	Bridge Pin, $\frac{1}{8}$	2
25	27-049	Left Pusher Bar	1
26	42-096	Cylinder Lift	1
27	HSTP-516-18-100	Machine Screw, $\frac{5}{16}$ - 18 x 1 (on machine)	
28	HLC-A-58	Loom Clamp	1
29	18-168	Elbow 90°	2
30	43-048	Hose, 20"	1
31	43-047	Hose, 57 $\frac{1}{2}$ "	1
32		Valve (on machine)	1
33	43-049	Hose, 18"	1
34	43-156	Hose, 75"	1

43-003 HYDRAULIC SAND PLOW DRAWING

Front Attachment



HYDRAULIC VALVE PLUMBING FOR 43-500 DIESEL

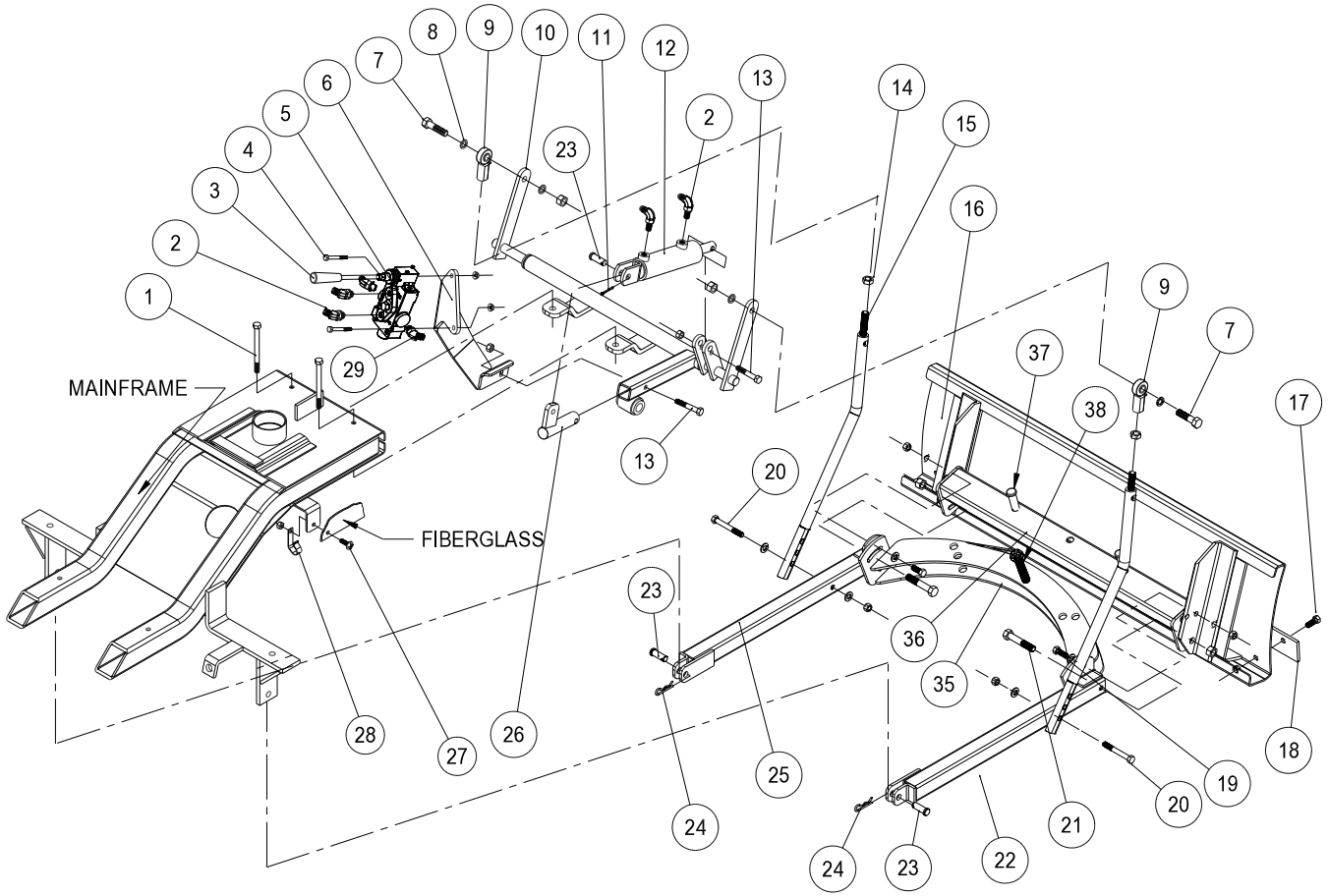


43-003 HYDRAULIC SAND PLOW INSTRUCTIONS

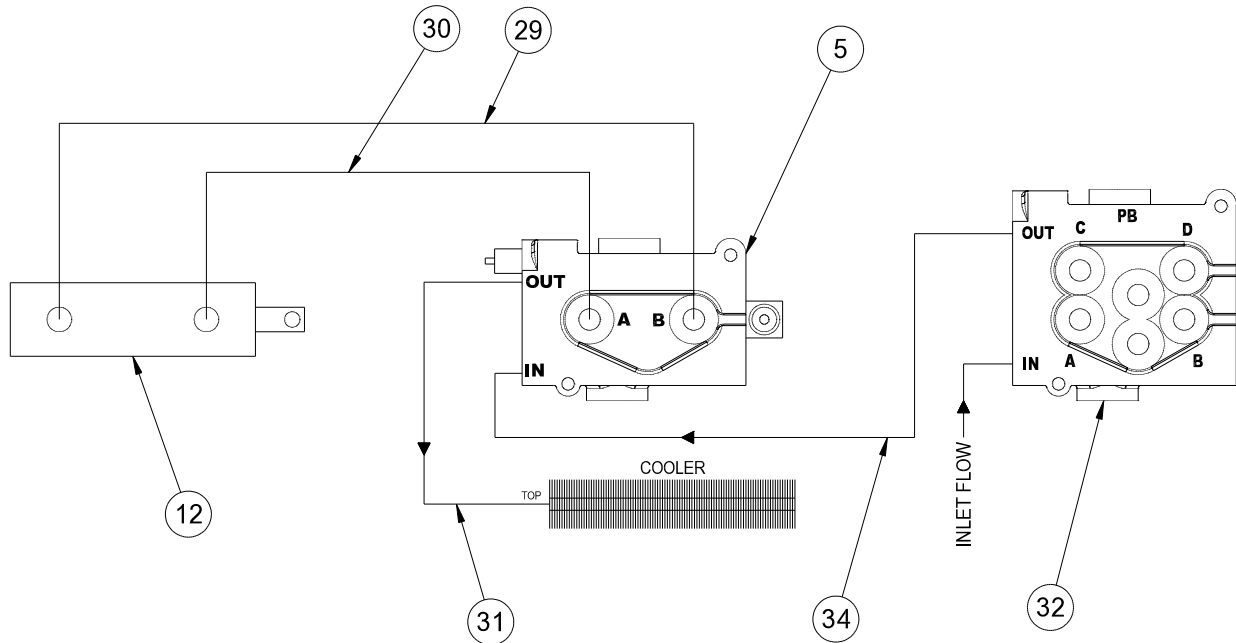
1. Assemble Pusher Bars (Ref # 22 and 25) to Plow Blade (Ref # 16) using one $\frac{3}{8}$ -16 x 1 Bolt (Ref # 19) and one $\frac{3}{8}$ -16 x 3 Bolt (Ref #21) per Pusher Bar. There are 2 holes to bolt (Ref # 19) hardware in. Using hole closest to the blade will result in a shallow cut, whereas using 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 Lift Assembly (Ref # 10) to the Main Frame using the two studs that are under the frame and below the front of the console.
3. Place Cylinder Lift (Ref # 26) into the tube on Lift Assembly (Ref # 10) with the tab pointing up hold with a $\frac{3}{8}$ -16 x 2 Bolt (Ref # 13), assemble the Valve Mount (Ref # 6) onto this bolt on the outside of the tube and secure both with one $\frac{3}{8}$ -16 Nut. Using a $\frac{3}{8}$ -16 x 2 Bolt mount the Hydraulic Cylinder (Ref # 12) to the Lift Assembly and secure with one $\frac{3}{8}$ -16 Nut. Connect the other end of the Hydraulic Cylinder to the Cylinder Lift using $\frac{1}{2}$ x $\frac{1}{2}$ Clevis Pin (Ref # 23) and $\frac{1}{8}$ x 1 Cotter Pin (Ref #11).
4. Thread one $\frac{1}{2}$ - 20 Jam Nut (Ref # 14) onto each Lift Rod (Ref # 15) followed by the Rod Ends (Ref # 9). Adjust to equal lengths. Bolt Lift Rods to Lift Arms on Lift Assembly (Ref # 10) with Rod Ends to the outside. Bolt from outside with the spacer (Ref # 8) between Rod End and Lift Arm and secure with $\frac{1}{2}$ -13 Lock Nut.
5. Slide the Plow/Pusher Bar Assembly under machine and connect to machine. Secure using $\frac{1}{2}$ x $\frac{1}{2}$ Clevis Pins (Ref # 23) and $\frac{1}{8}$ " Bridge Pins (Ref # 24).
6. To connect Lift Rods (Ref # 15) to Pusher Bars start by lifting up the Plow Blade. Using one $\frac{3}{8}$ -16 x 3 Bolt (Ref # 20) and two $\frac{3}{8}$ " Washers assembly the Lift Rods to the Right (Ref #22) and Left (Ref # 25) Pusher Bars using the bottom hole in the Lift Rods as illustrated. Secure each with one $\frac{3}{8}$ -16 Lock Nut.
7. To fine tune the height of the blade off ground; turn the Rod Ends (Ref # 9) on the Lift Rods (Ref # 15). Turning the Rod Ends counter-clockwise will increase down pressure. Turning them clockwise will decrease down pressure.
8. Thread four of the 45° Elbow fittings (Ref # 2) into the Single Bank Valve (Ref # 5), one each in the **A** port, **B** port, **IN** port and **OUT** port. Thread the remaining two 45° Elbow fittings into the ports on the Hydraulic Cylinder (Ref # 12). Make sure the fittings on the Hydraulic Cylinder are pointing towards the machine.
9. Connect the 57 $\frac{1}{2}$ " Hoses (Ref # 31) to the fittings on the Single Bank Hydraulic Valve (Ref #5). One to the **IN** port and one to the **OUT** port. Next connect the 18" Hose (Ref # 27) to the fitting in the **B** port and connect the 20" Hose (Ref # 28) to the fitting in the **A** port.
10. Mount the Single Bank Hydraulic Valve (Ref # 5) to the Valve Mount (Ref # 6) as illustrated using the two $\frac{1}{4}$ - 20 x 2 Bolts (Ref # 4). Secure with the two $\frac{1}{4}$ - 20 Flange Whiz-Lock Nuts. Connect the Straight Handle Kit (Ref # 3) to the Valve. Reference *Single Bank Hydraulic Valve Drawing* on page 6 for a detailed view of the Valve.
11. Route the 18" Hose (Ref # 29) from the **B** port on the Single Bank Hydraulic Valve (Ref # 5) to the rear port on the Hydraulic Cylinder. Route the 20" Hose (Ref # 30) from the **A** port on the Single Bank Hydraulic Valve to the front port on the Cylinder.
12. 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.**
13. Disconnect the hose from the **T** port on the 2 Bank Valve (Ref # 32) and the **top** port on the Oil Cooler. Discard this hose, it will not be used. Connect the 75" Hose (Ref # 34) from the **T** port on the Single Bank Valve to the top port on the Oil Cooler. *This hose may be a bit long on the Gasoline Models so you may have to loop the hose around the back of the pump to use up some hose.* Connect the 57 $\frac{1}{2}$ " Hose (Ref # 31) from the **P** port of the Single Bank Valve to the **T** port of the 2 Bank Valve. Tie up Hoses using $\frac{5}{8}$ Loom Clamp (Ref # 28). Route the 57 $\frac{1}{2}$ " & 75" Hoses under the body and along the frame avoiding any pinch points. Fasten to the frame using the 14 $\frac{1}{2}$ " Nylon Ties.
14. Reconnect the negative (-) ground battery cable to battery.
15. 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.
16. Check the hydraulic oil level. The level should be 2" to 2 $\frac{1}{2}$ " below the top of the tank. If more is needed, use SAE 10W-40 API service SG motor oil.

43-013 HYDRAULIC ANGLE SAND PLOW DRAWING

Front Attachment



HYDRAULIC VALVE PLUMBING DRAWING



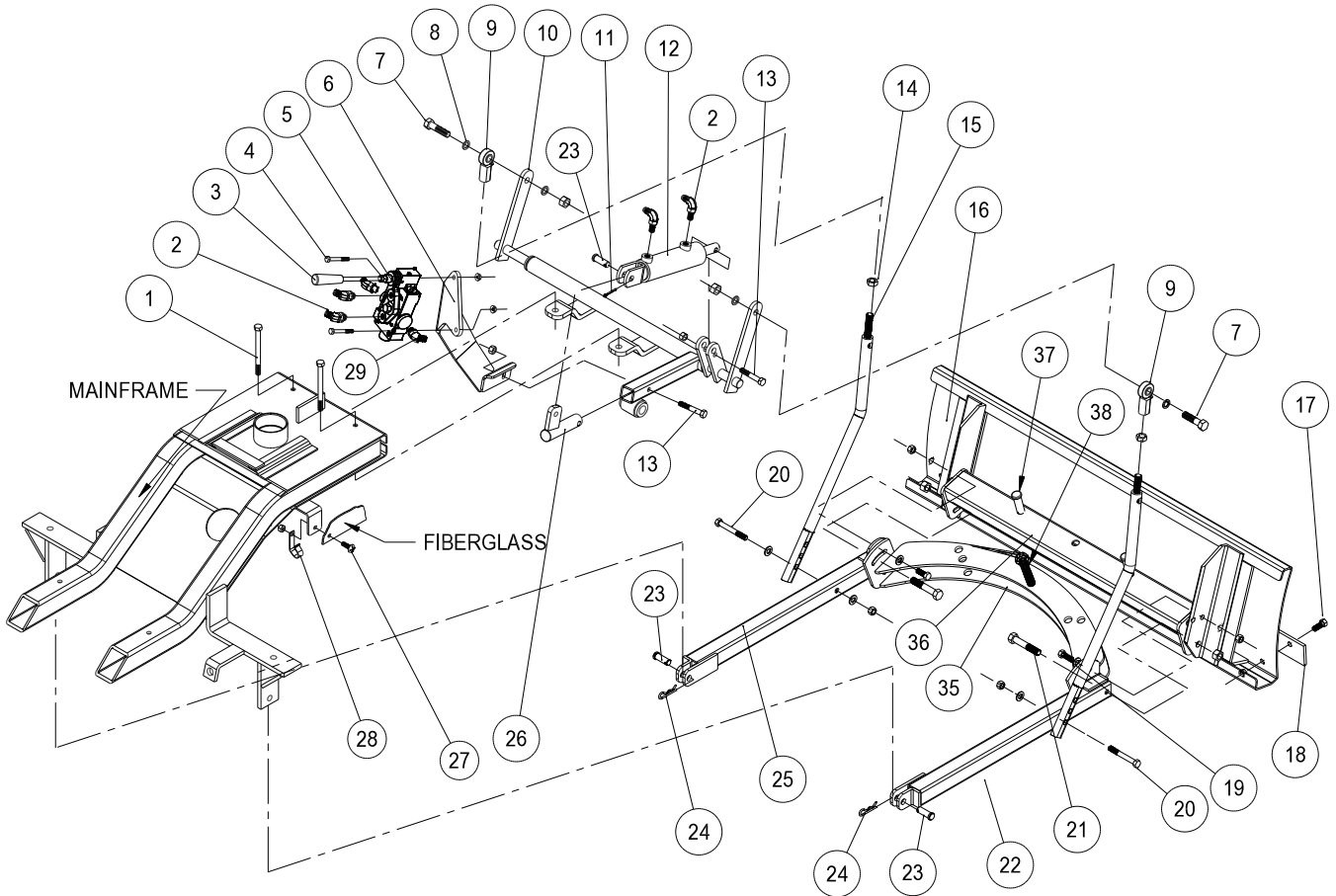
43-013 HYDRAULIC ANGLE SAND PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-350	Bolt, $\frac{3}{8}$ - 16 x $3\frac{1}{2}$ (Part of machine)	2
	HW-38	Washer, $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
2	18-188	45° Elbow	4
3	78-417	Straight Handle Kit	1
4	HB-14-20-200	Bolt, $\frac{1}{4}$ - 20x 2	2
	HNFL-14-20	Flange Whiz-Lock Nut, $\frac{1}{4}$ - 20	2
5	13-731	Single Bank Hydraulic Valve	1
6	43-050	Valve Mount	1
7	HB-12-13-200	Bolt, $\frac{1}{2}$ - 13 x 2	2
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 13	2
8	HMB-12-14	Machine Bushing, $\frac{1}{2}$ x 14GA	8
9	80-006	Rod End	2
10	42-346	Lift Assembly	1
11	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	1
12	14-534	Hydraulic Cylinder	1
13	HB-38-16-200	Bolt, $\frac{3}{8}$ - 16 x 2	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	6
14	HNJ-12-20	Jam Nut, $\frac{1}{2}$ - 20	2
15	27-073	Lift Rod	2
16	27-017	Aluminum Sand Plow Blade	1
17	HB-38-16-100	Bolt, $\frac{3}{8}$ - 16 x 1	4
	HNFL-38-16	Flange Whiz Lock Nut, $\frac{3}{8}$ - 16	4
18	13-167	Wear Blade	1
19	HB-38-16-125	Bolt, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	4
	HW-38	Washer, $\frac{3}{8}$	2
	HWL-38	Lockwasher, $\frac{3}{8}$	2
	HN-38-16	Nut, $\frac{3}{8}$ - 16	4
20	HB-38-16-250	Bolt, $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	2
	HW-38	Washer, $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
21	HB-38-16-250	Bolt, $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
22	42-458	Right Pusher Bar	1
23	HCP-12-150	Clevis Pin, $\frac{1}{2}$ x $1\frac{1}{2}$	3
24	HHP-18	Bridge Pin, $\frac{1}{8}$	2
25	42-459	Left Pusher Bar	1
26	42-096	Cylinder Lift	1
27	HSTP-516-18-100	Machine Screw, $\frac{5}{16}$ - 18 x 1 (on machine)	
28	HLC-A-58	Loom Clamp	1
29	18-168	Elbow 90°	2
30	43-048	Hose, 20"	1
31	43-047	Hose, 57 $\frac{1}{2}$ "	1
32		Valve (on machine)	1
33	43-049	Hose, 18"	1
34	43-156	Hose, 75"	1
35	42-456	Plow Mount	1
36	42-495	Pivot Frame	1
37	HCP-58-250	Clevis pin, $\frac{3}{8}$ - $2\frac{1}{2}$	2
	HHP-18	Bridge Pin	2
38	HB-58-11-300	Bolt, $\frac{5}{8}$ - 11 x 3	1
	HNTL-58-11	Lock Nut, $\frac{5}{8}$ - 11	1

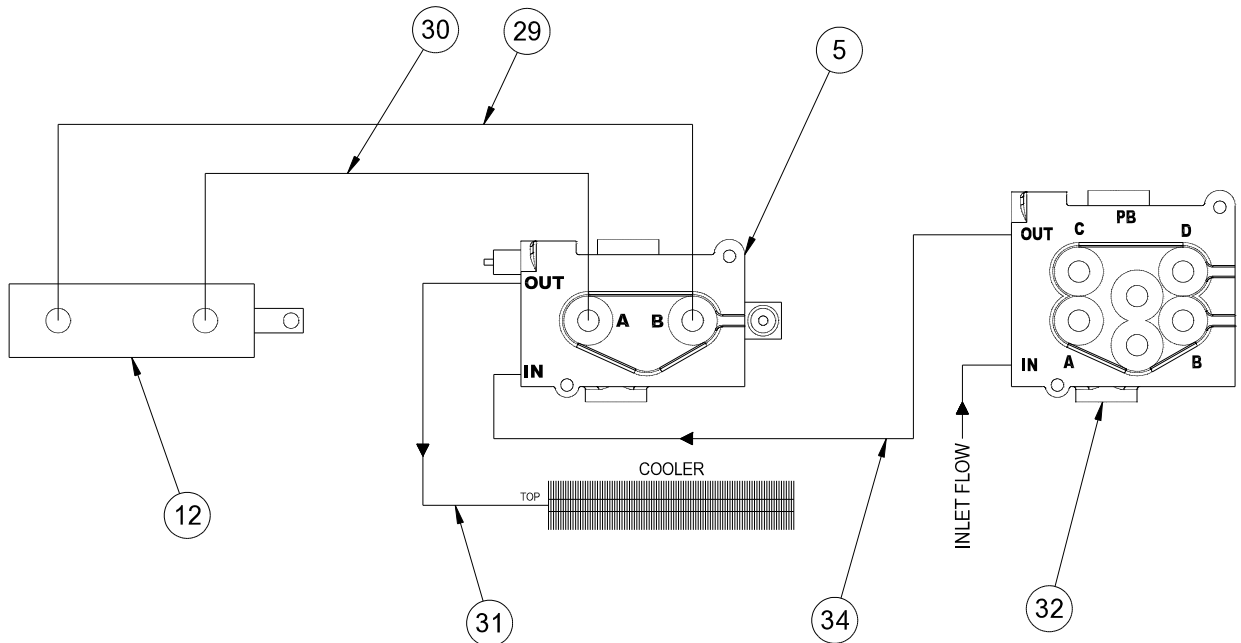


43-013 HYDRAULIC ANGLE SAND PLOW DRAWING

Front Attachment



HYDRAULIC VALVE PLUMBING DRAWING



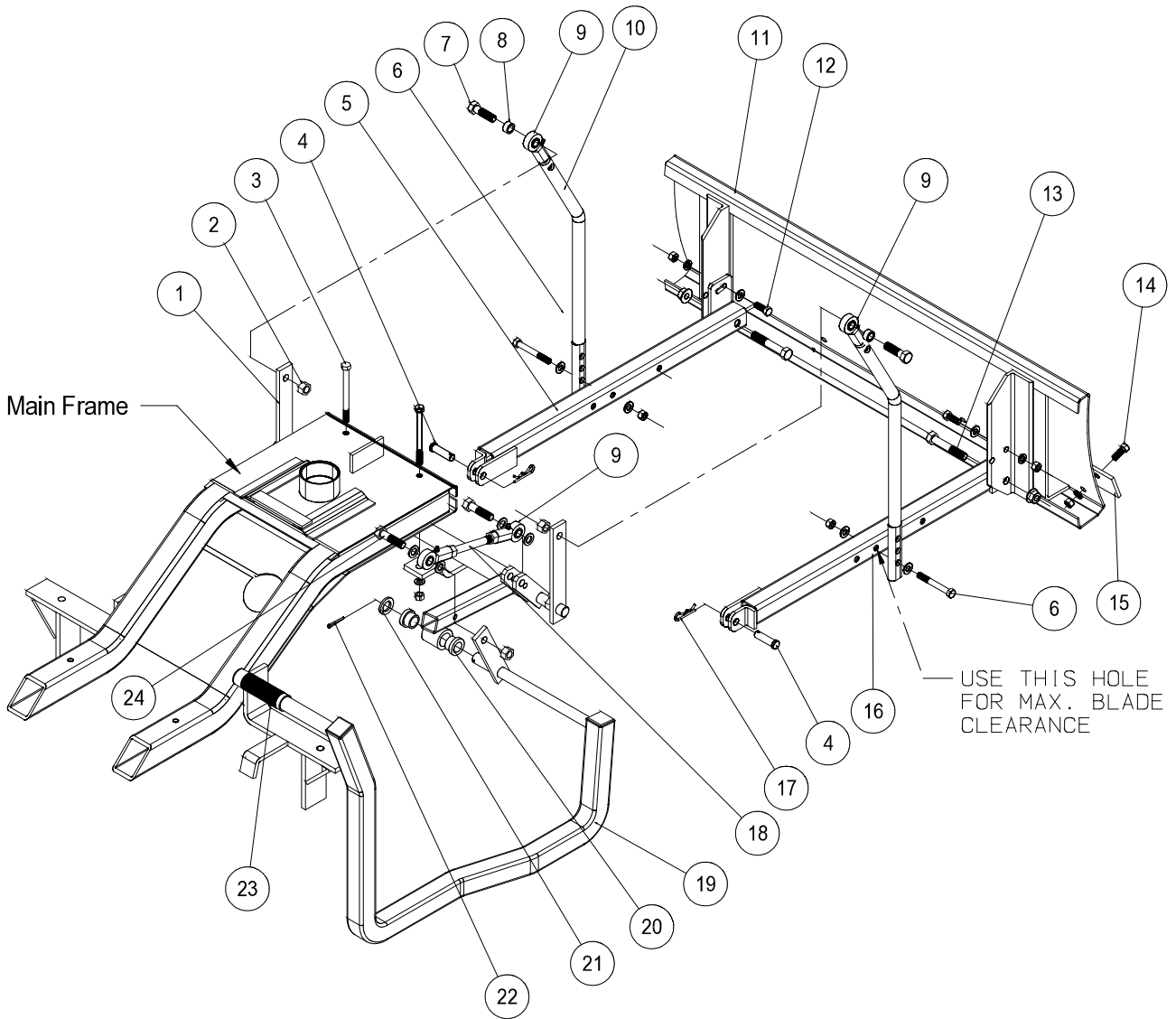
43-013 HYDRAULIC ANGLE SAND PLOW INSTRUCTIONS

1. Assemble Pusher Bars (Ref # 22 and 25) to Plow Blade (Ref # 16) using one $\frac{3}{8}$ -16 x $1\frac{1}{4}$ Bolt (Ref # 19) and one $\frac{3}{8}$ -16 x $2\frac{1}{2}$ Bolt (Ref #21) per Pusher Bar. There are 2 holes to bolt (Ref # 19) 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 Lift Assembly (Ref # 10) to the Main Frame using the two studs that are under the frame and below the front of the console.
3. Place Cylinder Lift (Ref # 26) into the tube on Lift Assembly (Ref # 10) with the tab pointing up hold with a $\frac{3}{8}$ -16 x 2 Bolt (Ref # 13), assemble the Valve Mount (Ref # 6) onto this bolt on the outside of the tube and secure both with one $\frac{3}{8}$ -16 Nut. Using a $\frac{3}{8}$ -16 x 2 Bolt mount the Hydraulic Cylinder (Ref # 12) to the Lift Assembly and secure with one $\frac{3}{8}$ -16 Nut. Connect the other end of the Hydraulic Cylinder to the Cylinder Lift using $\frac{1}{2}$ x $1\frac{1}{2}$ Clevis Pin (Ref # 23) and $\frac{1}{8}$ x 1 Cotter Pin (Ref #11).
4. Thread one $\frac{1}{2}$ - 20 Jam Nut (Ref # 14) onto each Lift Rod (Ref # 15) followed by the Rod Ends (Ref # 9). Adjust to equal lengths. Bolt Lift Rods to Lift Arms on Lift Assembly (Ref # 10) with Rod Ends to the outside. Bolt from outside with the $\frac{1}{2}$ " Machine Bushing (Ref # 8) between Rod End and Lift Arm and secure with $\frac{1}{2}$ -13 Lock Nut.
5. Slide the Plow/Pusher Bar Assembly under machine and connect to machine. Secure using $\frac{1}{2}$ x $1\frac{1}{2}$ Clevis Pins (Ref # 23) and $\frac{1}{8}$ " Bridge Pins (Ref # 24).
6. To connect Lift Rods (Ref # 15) to Pusher Bars start by lifting up the Plow Blade. Using one $\frac{3}{8}$ -16 x $2\frac{1}{2}$ Bolt (Ref # 20) and two $\frac{3}{8}$ " Washers assembly the Lift Rods to the Right (Ref #22) and Left (Ref # 25) Pusher Bars using the bottom hole in the Lift Rods as illustrated. Secure each with one $\frac{3}{8}$ -16 Lock Nut.
7. To fine tune the height of the blade off ground; turn the Rod Ends (Ref # 9) on the Lift Rods (Ref # 15). Turning the Rod Ends counter-clockwise will increase down pressure. Turning them clockwise will decrease down pressure.
8. Thread two of the 45° Elbow fittings (Ref # 2) into the Single Bank Valve (Ref # 5), one each in the **A** port, **B** port. Thread two of the 90° Elbow fittings (Ref # 29) into the Single Bank Valve **IN** port and **OUT** port. Thread the remaining two 45° (Ref # 2) Elbow fittings into the ports on the Hydraulic Cylinder (Ref # 12). Make sure the fittings on the Hydraulic Cylinder are pointing towards the machine.
9. Connect the 57½" Hose (Ref # 31) to the inlet on the Single Bank Hydraulic Valve (Ref #5). Connect the 75" Hose (Ref # 34) to the **OUT** port. Next connect the 18" Hose (Ref # 27) to the fitting in the **B** port and connect the 20" Hose (Ref # 28) to the fitting in the **A** port.
10. Mount the Single Bank Hydraulic Valve (Ref # 5) to the Valve Mount (Ref # 6) as illustrated using the two $\frac{1}{4}$ - 20 x 2 Bolts (Ref # 4). Secure with the two $\frac{1}{4}$ - 20 Flange Whiz-Lock Nuts. Connect the Straight Handle Kit (Ref # 3) to the Valve. Reference *Single Bank Hydraulic Valve Drawing* on page 6 for a detailed view of the Valve. *The Single Bank Valve is used in some other applications, therefore the handle housing may need to be reversed. Remove the two screws holding the housing assembly onto the valve body, turn it over and reinstall the screws. The handle must be pointing upward (reference drawing on page 2) when the valve is sitting on a table.*
11. Route the 18" Hose (Ref # 29) from the **B** port on the Single Bank Hydraulic Valve (Ref # 5) to the rear port on the Hydraulic Cylinder. Route the 20" Hose (Ref # 30) from the **A** port on the Single Bank Hydraulic Valve to the front port on the Cylinder.
12. 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.**
13. Disconnect the hose from the **I** port on the 2 Bank Valve (Ref # 32) and the **top** port on the Oil Cooler. Discard this hose, it will not be used. Connect the 75" Hose (Ref # 34) from the **I** port on the Single Bank Valve to the top port on the Oil Cooler. *This hose may be a bit long on the Gasoline Models so you may have to loop the hose around the back of the pump to use up some hose.* Connect the 57½" Hose (Ref # 31) from the **P** port of the Single Bank Valve to the **I** port of the 2 Bank Valve. Tie up Hoses using $\frac{5}{8}$ Loom Clamp (Ref # 28). Route the 57½" & 75" Hoses under the body and along the frame avoiding any pinch points. Fasten to the frame using the $1\frac{1}{2}$ " Nylon Ties.
14. Reconnect the negative (-) ground battery cable to battery.
15. 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.
16. 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.

42-011-AB ALUMINUM SAND PLOW DRAWING

42-011-SB STEEL SAND PLOW DRAWING

Front Attachment



42-011 SAND PLOW PARTS LIST

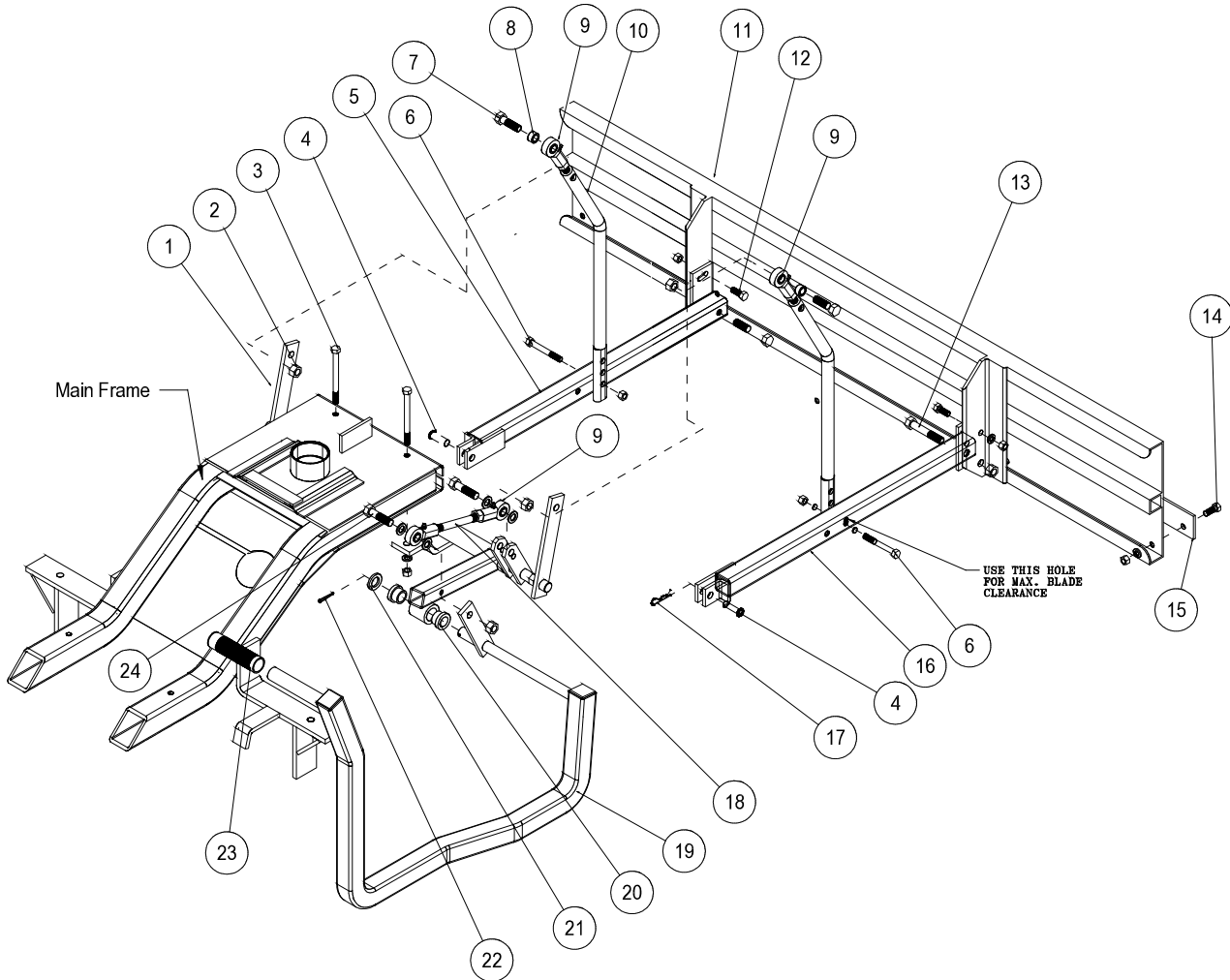
REF#	PART#	DESCRIPTION	QUANTITY
1	42-346	Lift Assembly	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-38-16-350	Bolt 3/8 - 16 x 3 1/2 (part of main frame)	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
4	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
5	27-049	Left Pusher Bar	1
6	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HW-38	Washer 3/8	4
	HNTL-38-16	Lock Nut 3/8 - 16	2
7	HB-12-13-200	Bolt 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing 1/2 x 14GA	8
8	42-836	Spacer	2
9	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
10	27-073	Lift Rod	2
11	27-017	Aluminum Sand Plow Blade	1
	13-352	Steel Sand Plow Blade	1
12	HB-38-16-125	Bolt 3/8 - 16 x 1 1/4	2
	HW-38	Washer 3/8	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
13	HB-12-13-300	Bolt 1/2 - 13 x 3	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
14	HB-38-16-100	Bolt 3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	4
15	13-167	Wear Blade	1
16	27-050	Right Pusher Bar	1
17	HHP-18	Bridge Pin 1/8	2
18	42-348	Rod	1
19	42-347	Lift Handle (includes Ref# 20)	1
20	18-221	Flange Bushing	2
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	HB-12-13-200	Bolt 1/2 - 13 x 2	2

SAND PLOW INSTALLATION

- Assemble (Ref# 5 and 16) Pusher Bars to (Ref# 11) Plow using (Ref# 12 and 13) hardware. There are 2 holes to bolt (Ref# 12) 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.
- 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.
- Attach the (Ref# 19) Lift Handle to the lift assembly using (Ref# 21 & 22) Cotter Pin and Machine Bushing. Using (Ref# 18 & 9) Rod and Yoke attach the handle to the lift assembly.
- Put (Ref# 9) Rod Ends onto (Ref# 10) Lift Rods with Jam Nut first. Adjust to equal lengths. Bolt Lift Rods to Lift Arms with Ball Joints to the outside. 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# 7) Hardware. Use the spacer (Ref# 8) between Rod end and lift assembly.
- Slide Plow under machine and connect to machine. Use (Ref# 4 & 17) Clevis Pin and Bridge Pin.
- Lift up the plow using the bottom hole in the Lift Rod as a starting point. Secure to the Pusher Bars. Use (Ref# 6) 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.
- For fine tuning of blade height off ground twist (Ref# 9) rod end on (Ref# 18) rod. Twisting the rod end out will increase down pressure. Twisting the rod end onto the rod will decrease down pressure.

42-136 60" SAND PLOW DRAWING

Front Attachment



42-136 60" SAND PLOW PART LIST

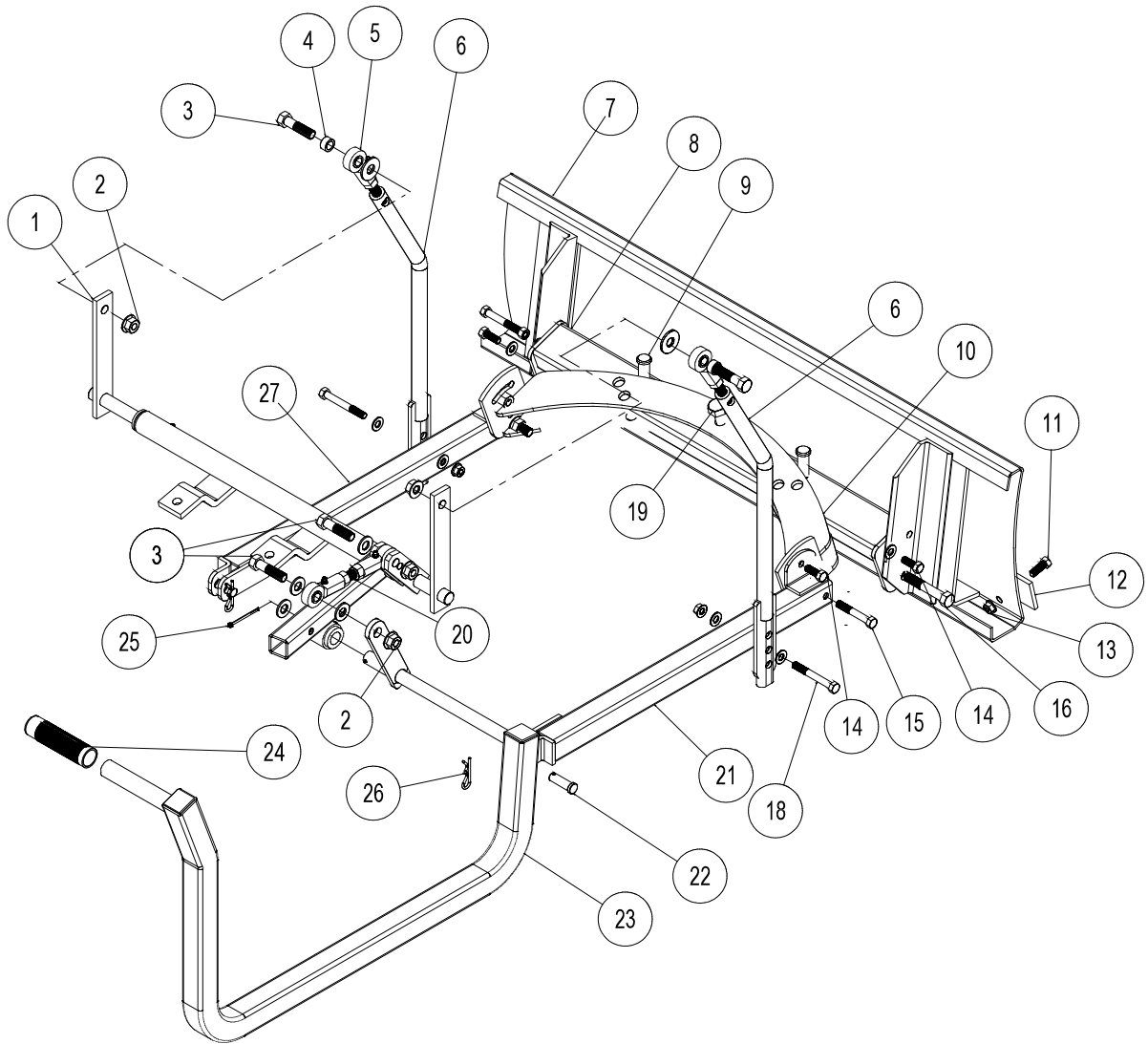
REF#	PART#	DESCRIPTION	QUANTITY
1	42-092	Lift Assembly (includes Ref# 20)	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-38-16-350	Bolt 3/8 - 16 x 3 1/2 (part of main frame)	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
4	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
5	27-049	Left Pusher Bar	1
6	HB-38-16-300	Bolt 3/8 - 16 x 3	2
	HW-38	Washer 3/8	4
	HNTL-38-16	Lock Nut 3/8 - 16	2
7	HB-12-13-200	Bolt 1/2 - 13 x 2	2
	HMB-12-14	Machine Bushing 1/2 x 14GA	6
8	42-836	Spacer	2
9	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
10	27-073	Lift Rod	2
11	35-011	Aluminum Plow Blade 60"	1
12	HB-38-16-100	Bolt 3/8 - 16 x 1	2
	HW-38	Washer 3/8	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
13	HB-12-13-300	Bolt 1/2 - 13 x 3	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
14	HB-38-16-100	Bolt 3/8 - 16 x 1	5
	HWL-38	Lock Washer 3/8	5
	HN-38-16	Nut 3/8 - 16	5
15	35-012	Wear Blade	1
16	27-050	Right Pusher Bar	1
17	HHP-18	Bridge Pin 1/8	2
18	42-348	Threaded Rod	1
19	42-093	Lift Handle	1
20	18-221	Flange Bushing	2
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	HB-12-13-200	Bolt 1/2 - 13 x 2	2

INSTALLATION INSTRUCTIONS

- Assemble pusher bars (Ref 5 and 16) to plow (Ref 11) using hardware (Ref 12 & 13). There are 2 holes to bolt the 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 fine tuned adjustment.
- Assemble the lift assembly (Ref 1) to the main frame using the two studs that are under the frame and below the front of the console.
- Attach the lift handle (Ref 19) to the lift assembly using cotter pin and machine bushing (Ref 21 & 22). Using rod and yoke (Ref 18 & 9) attach the handle to the lift assembly.
- Put rod ends (Ref 9) onto lift rods (Ref 10) with jam nut first. Adjust to equal lengths. Bolt lift rods to lift arms with ball joints to the outside. Bolt from outside with the 1/2" machine bushing between rod end and lift arm and the 1/2 -13 nylon lock nut on the inside. Use (Ref 7) hardware. Use spacer(Ref 8) between rod ends and lift assembly (Ref 1).
- Slide plow under machine and connect to machine. Use clevis pin and bridge pin (Ref 4 & 17).
- Lift up the plow using the bottom hole in the Lift Rod as a starting point. Secure to the Pusher Bars. Use (Ref# 6) 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 hte lever to the rear of the machine.
- For fine tuning of blade height off ground twist rod end (Ref 9) on rod (Ref 18). Twisting the rod end out will increase down pressure. Twisting the rod end onto the rod will decrease down pressure.

42-460 40" ANGLE PLOW

Front Attachment

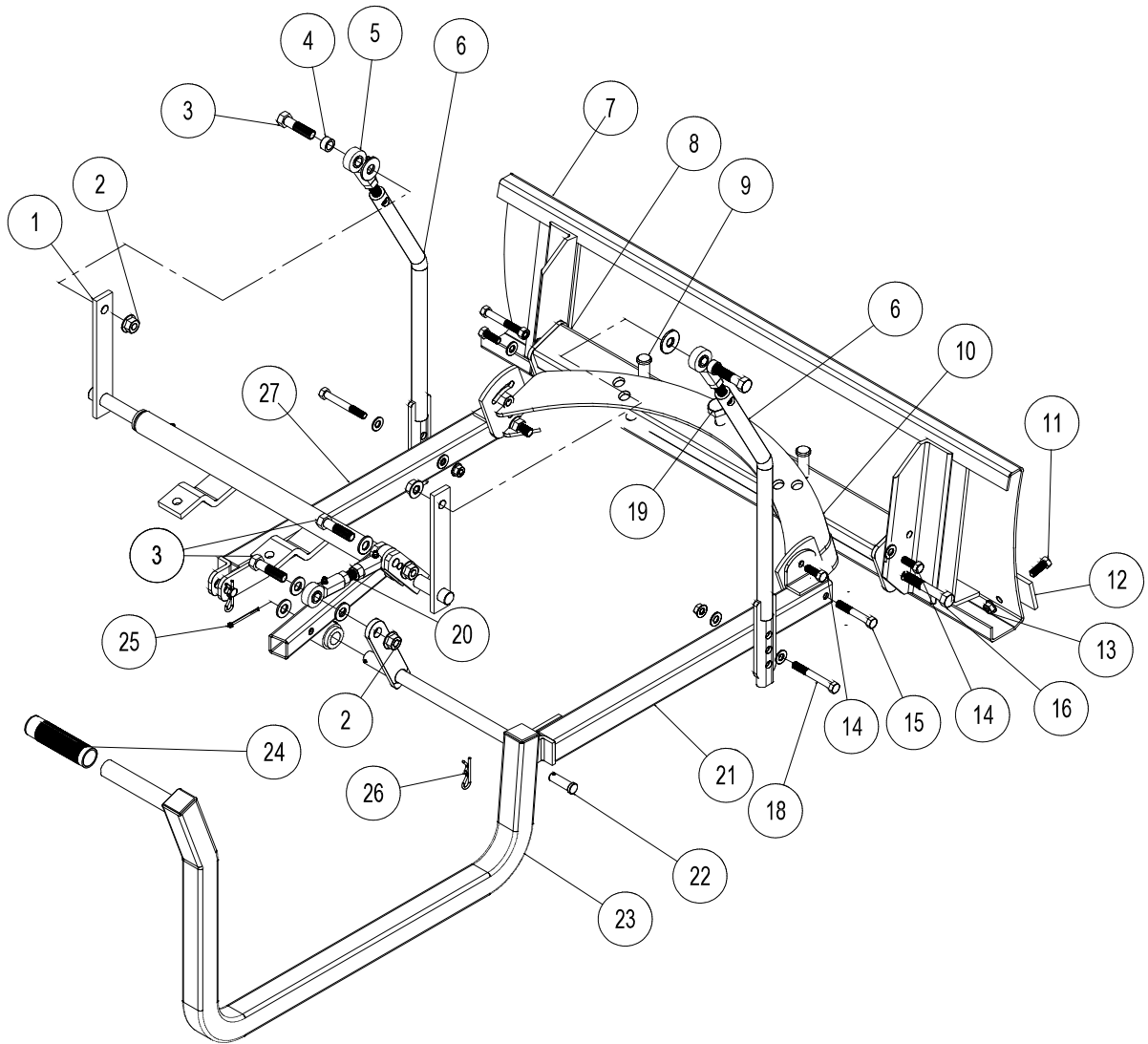


40" ANGLE PLOW PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-346	Lift Assembly	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-12-13-200	Bolt 1/2 - 13 x 2	4
	HMB-12-14	Machine Bushing 1/2 x 14GA	8
4	42-836	Spacer	2
5	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
6	27-073	Lift Rod	2
7	27-017	Aluminum Sand Plow Blade	1
8	42-495	Pivot Frame	1
9	HCP-58-250	Clevis Pin 5/8 x 2 1/2	2
	HHP-18	Bridge Pin 1/8	2
10	42-456	Plow Mount	1
11	HB-38-16-100	Bolt 3/8 - 16 x 1	4
12	13-167	Wear Blade	1
13	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	4
14	HB-38-16-125	Bolt 3/8 - 16 x 1 1/4	4
	HW-38	Washer 3/8	4
	HWL-38	Lock Washer 3/8	4
	HN-38-16	Nut 3/8 - 16	4
15	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Lock Nut 3/8 - 16	2
16	HB-12-13-200	Bolt 1/2 - 13 x 2	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
18	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HW-38	Washer 3/8	4
	HNTL-38-16	Lock Nut 3/8 - 16	2
19	HB-58-11-300	Bolt 5/8 - 11 x 3	1
	HNTL-58-11	Lock Nut 5/8 - 11	1
20	42-348	Rod	1
21	42-458	Right Pusher Bar	1
22	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
23	42-347	Lift Handle	1
	18-221	Flange Bushing	2
24	15-019	Grip	1
25	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
	HMB-34-14	Machine Bushing 3/4 - 14GA	1
26	HHP-18	Bridge Pin 1/8	2
27	42-459	Left Pusher Bar	1

42-490 60" ANGLE PLOW

Front Attachment

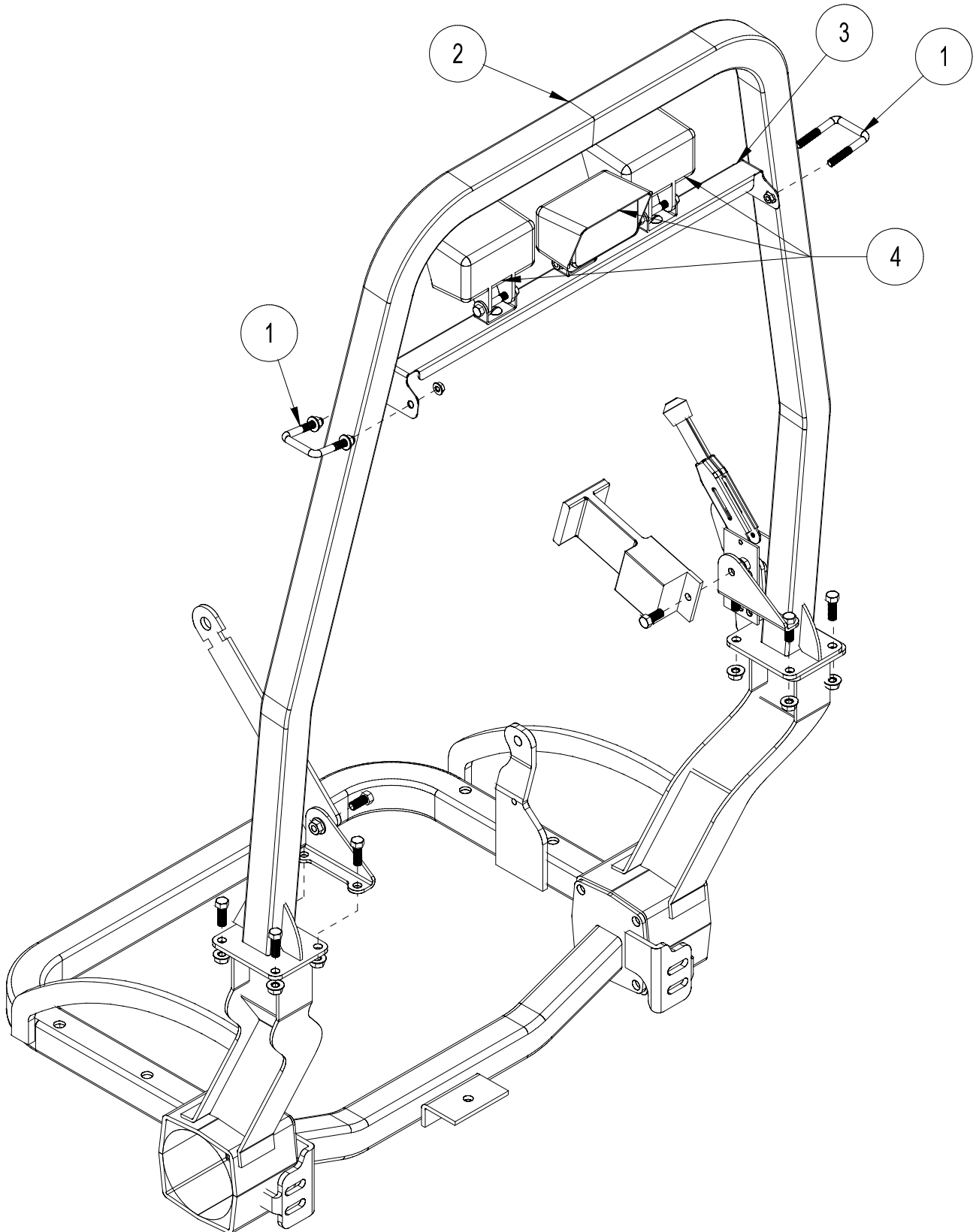


60" ANGLE PLOW PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-346	Lift Assembly	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-12-13-200	Bolt 1/2 - 13 x 2	4
	HMB-12-14	Machine Bushing 1/2 x 14GA	8
4	42-836	SPacer	2
5	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
6	27-073	Lift Rod	2
7	35-012	Aluminum Sand Plow Blade	1
8	42-495	Pivot Frame	1
9	HCP-58-250	Clevis Pin 5/8 x 2 1/2	2
	HHP-18	Bridge Pin 1/8	2
10	42-456	Plow Mount	1
11	HB-38-16-100	Bolt 3/8 - 16 x 1	5
12	35-011	Wear Blade	1
13	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	5
14	HB-38-16-125	Bolt 3/8 - 16 x 1 1/4	4
	HW-38	Washer 3/8	4
	HWL-38	Lock Washer 3/8	4
	HN-38-16	Nut 3/8 - 16	4
15	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Lock Nut 3/8 - 16	2
16	HB-12-13-200	Bolt 1/2 - 13 x 2	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
18	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HW-38	Washer 3/8	4
	HNTL-38-16	Lock Nut 3/8 - 16	2
19	HB-58-11-300	Bolt 5/8 - 11 x 3	1
	HNTL-58-11	Lock Nut 5/8 - 11	1
20	42-348	Rod	1
21	42-458	Right Pusher Bar	1
22	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
23	42-347	Lift Handle	1
	18-221	Flange Bushing	2
24	15-019	Grip	1
25	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
	HMB-34-14	Machine Bushing 3/4 - 14GA	1
26	HHP-18	Bridge Pin 1/8	2
27	42-459	Left Pusher Bar	1

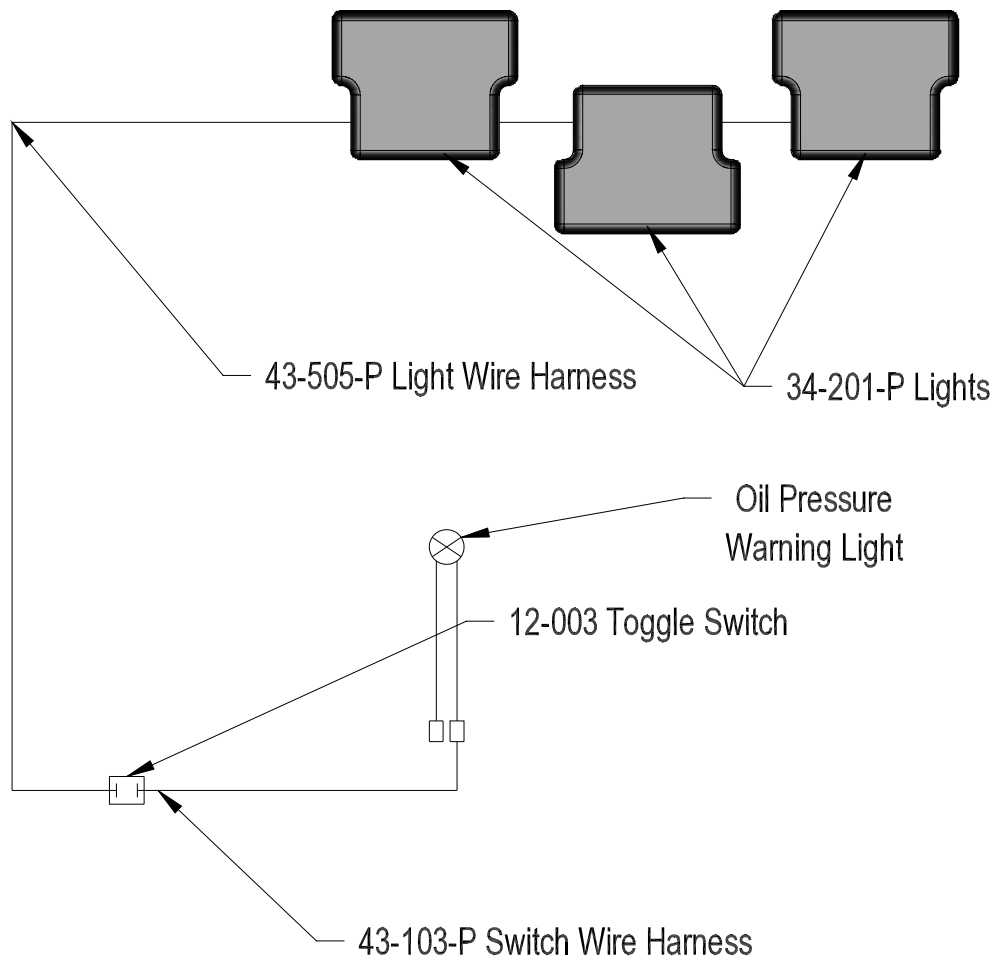
42-837 LIGHT KIT FOR 42-800 ROPS

Front Attachment



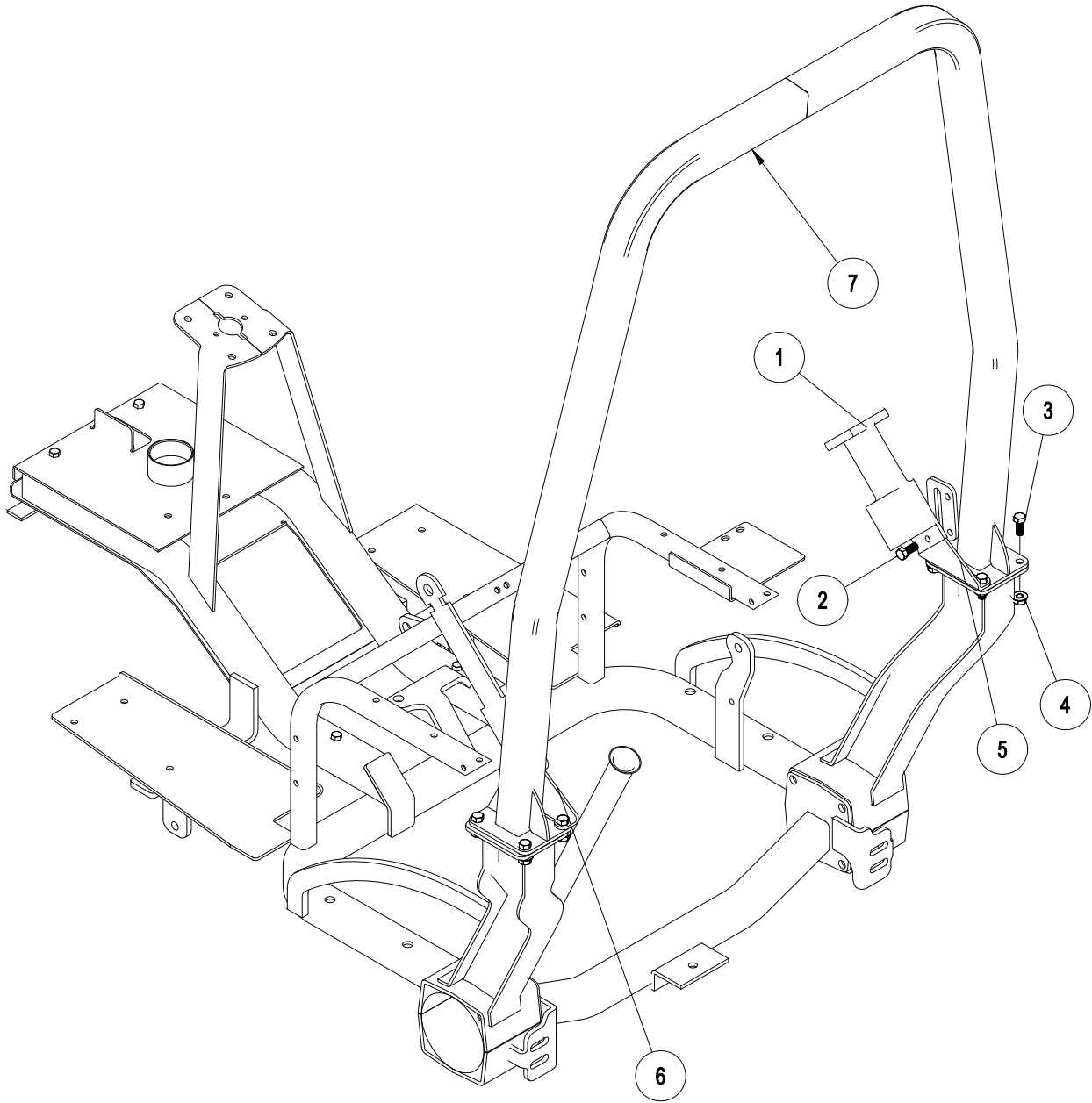
42-837 LIGHT KIT FOR 42-800 ROPS

REF#	PART#	DESCRIPTION	QUANTITY
1	17-537	Square U-bolt	2
2	42-800	ROPS	1
3	12-198	Light Bar	1
4	34-201	Light	3



42-800 ROLL OVER PROTECTION

Front Attachment



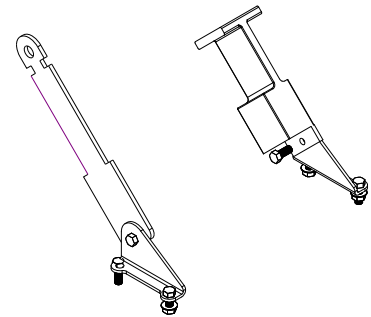
REF#	PART #	DESCRIPTION	QUANTITY
1	76-198-03	Seat belt	1
2	HB-716-14-100	Bolt $\frac{7}{16}$ - 14 x 1	2
3	HB-716-14-125	Bolt $\frac{7}{16}$ - 14 x $1\frac{1}{4}$	8
4	HNTL-716-14	Lock Nut $\frac{7}{16}$ - 14	10
5	42-802	Right Seat belt Bracket	1
6	42-803	Left Seat Belt Bracket	1
7	42-801	ROPS Bar	1

INSTALLATION INSTRUCTIONS

The Following ROP instructions apply to all Super Star Machines.

After wheels are mounted and machine is all set up.

1. Line up the mount plate on the ROPs to the square mounting plate by the seat, with the bend in the ROP bar toward the rear of the machine.
2. Place four bolts in the outside mount plate holes and tighten.
3. Place the seat belt brackets over the inside mount holes and bolt in place with the remaining four bolts. The seat belt bracket are mounted with the bends to the outside and the holes to the front
4. Mount seat belts onto seat belt bracket. The strap goes on the left side and the lock goes on the right side.
8. Tighten all hardware.



ROPS have been certified to meet OSHA 1928.52 and seat belts are certified to OSHA 1928.51.

ROPS come standard on Diesel Super star 43-000-B starting serial number 14068.

15-622 **Weather Canopy available for the 42-800 ROPs.**

ACCESSORIES

Front Mounted Implements	A
13-731 Single Bank Valve	2
43-003 40" Hydraulic Sand Plow	4
43-013 40" Hydraulic Angle Sand Plow	8
42-011 40" Manual Sand Plow(Steel & Aluminum)	12
42-136 60" Manual Sand Plow	14
42-460 40" Manual Angle Plow	16
42-490 60" Manual Angle Plow	18
42-837 Light Kit for 42-800 ROPs	20
42-800 ROPS for Super Star	22
Belly Attachments	B
42-223 Adjustable Disc Edger	2
42-750 Cart Path & Sidewalk Edger	4
42-287 Edger Kit w/ Castor Wheels	6
43-130 Weed Cultivator	8
42-008 Sand Cultivator	10
42-340 Sand Cultivator w/ Spring Tine	12
42-341 Sand Cultivatore w/ Castor Wheels	14
42-010 Construction Leveling Blade	16
42-210 Grader Blade Kit	18
42-178 Infield Scarifier(vertical blades)	20
42-179 Infield Scarifier(chisel blades)	24
42-285 Scarifier w/ Vertical Blades	28
43-011 Nail drag w/ Castor Wheels	30
Rear Attachments	C
42-391Q 72" Pro-Brush Tournament Rake	2
43-392Q 84" Pro-Brush Tournament Rake	6
42-130Q 84" Mild Steel Rake	10
42-132Q 72" Mild Steel Rake	14
13-438Q Rake with Finishing Blades	18
13-758Q Max Flex Sand Rake	20
13-740 Brush Attachment	22
13-684 Brush Attachment	24
13-298Q Fan Rake	26
13-319 Fan Rake Kit	26
26-007Q Professional Field Finisher	28
43-002Q Flex Action Field Finisher w/ Brush	30
26-008Q Flex Action Field Finisher	34
43-043 Finishing Brush	36
43-008 Drag Mat Kit	38
34-191 Box Grader	40
42-586Q Green Star RBS Main Frame	42
42-581 Green Star RBS Roller	44
42-585 Green Star RBS Brush	46
42-582 Green Star RBS Spiker	48
43-009 CoCo Mat Finisher	50
41-501 Typhoon	52
41-502 Earthway®	56
Warranty	

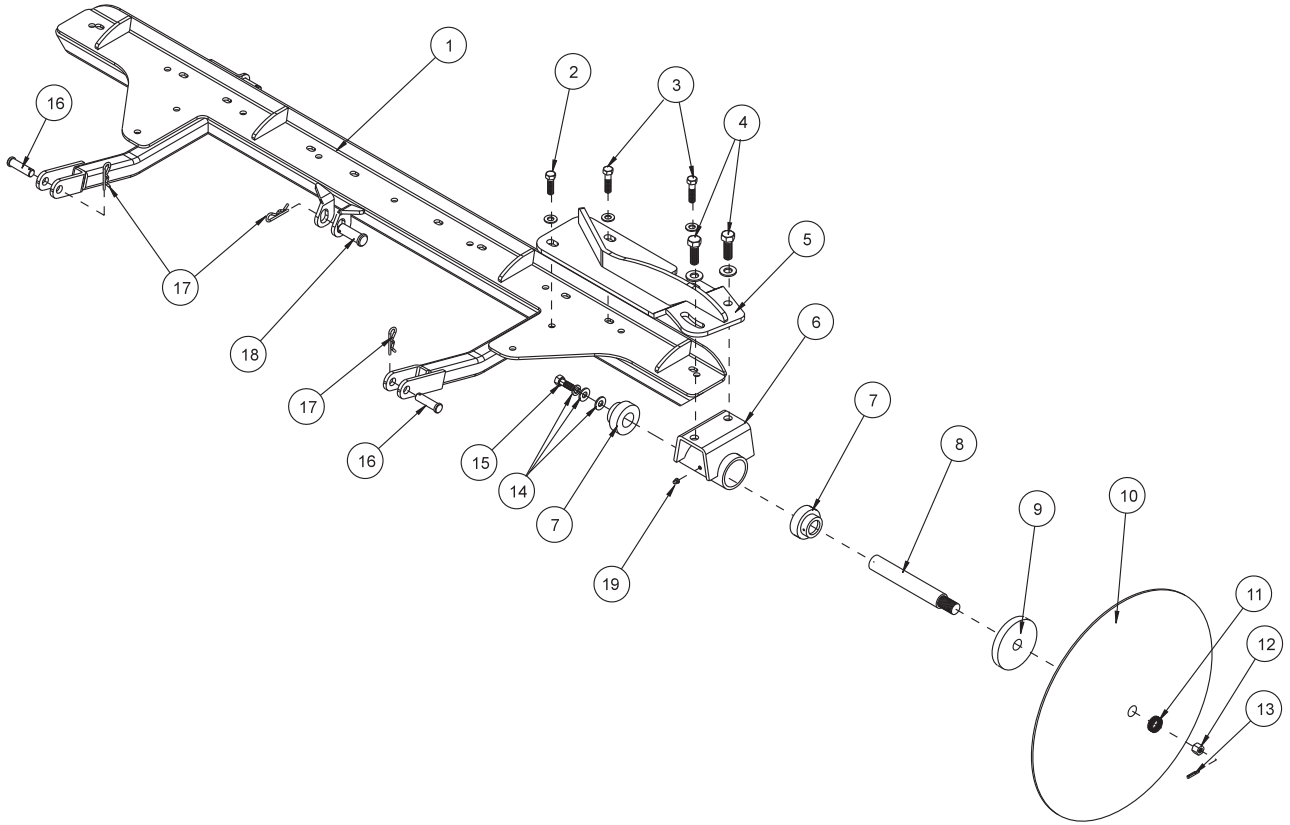
Front Attachment

Center Attachment

Rear Attachment

42-223 ADJUSTABLE DISC EDGER DRAWING

Center Attachment



42-223 ADJUSTABLE DISC EDGER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-203	Attachment Lift Assembly	1
2	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	1
	HW-38	Washer $\frac{3}{8}$	1
	HNTL-38-16	Lock Nut $\frac{3}{8}$ -16	1
3	HB-38-16-150	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{2}$	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
4	HB-12-13-150	Bolt $\frac{1}{2}$ - 13 x $1\frac{1}{2}$	2
	HW-12	Washer $\frac{1}{2}$	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
5	42-224	Edger Mount	1
6	13-203	Spindle	1
7	13-391	Bearing and Collar	2
8	13-206	Spindle Shaft	1
9	13-205	$\frac{1}{2}$ Disc Flange	1
10	13-204	Disc	1
11	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	4
12	HNA-34-16	Axle Nut $\frac{3}{4}$ - 16	1
13	HP-18-150	Cotter Pin $\frac{1}{8}$ x $1\frac{1}{2}$	1
14	HWL-38	Washer $\frac{3}{8}$	1
	HW-516	Washer $\frac{5}{16}$	1
	HW-716	Washer $\frac{7}{16}$	1
15	HB-38-16-100	Bolt $\frac{3}{8}$ -16 x 1	1
16	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
17	HHP-18	Bridge Pin $\frac{1}{8}$	3
18	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
19	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180	1

Center Attachment

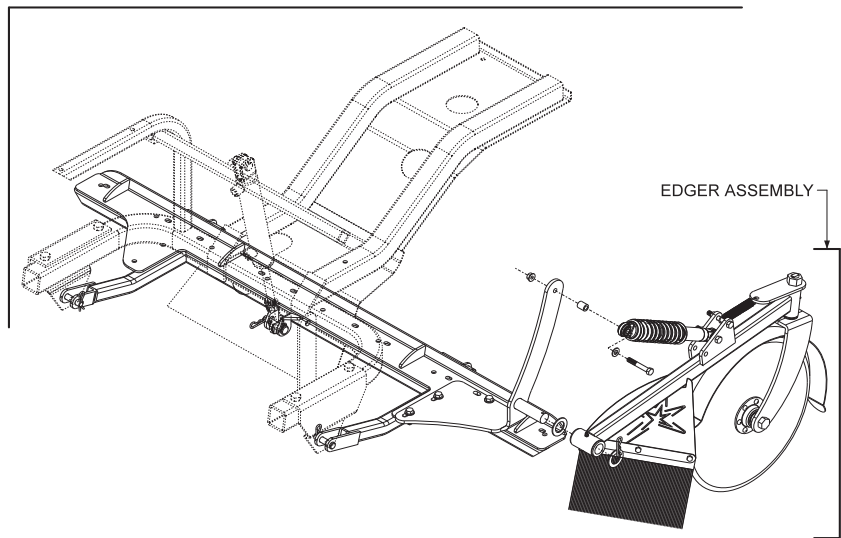
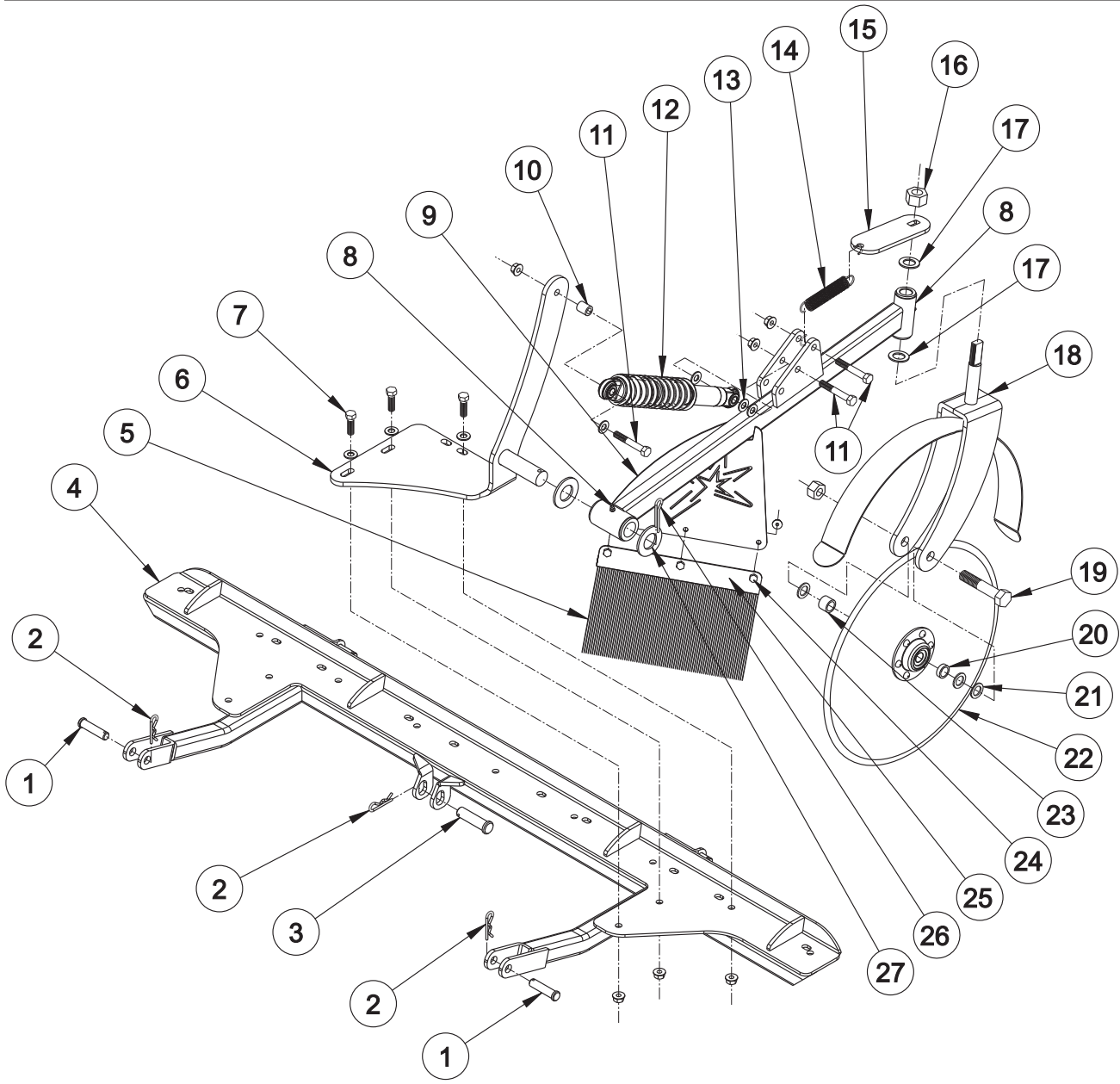
INSTALLATION INSTRUCTIONS

- For initial assembly, bolt spindle assembly (Ref 6) to the edger mount (Ref 5). Use the $\frac{1}{2}$ - 13 bolts, washers and lock nuts (Ref 4) to hold in place.
- Make sure the $\frac{1}{2}$ " disc flange (Ref 9) is on the spindle shaft (Ref 8) up to the shoulder. Then place the disc (Ref 10) onto the shaft, curved towards the spindle housing, followed by four machine bushings (Ref 11), and the axle nut (Ref 12).
- Tighten axle nut and slide in the cotter pin (Ref 13).
- The edger mount mounts onto the attachment lift assembly (Ref 1). Use the $\frac{3}{8}$ bolts, washers and lock nuts (Ref 2 and 3) with the $1\frac{1}{4}$ " bolt going into the last hole on the mount plate.
- The Edger mounts under the center of the trap rake.
- Place the handle and linkage onto the empty linkage port of the two bank valve on the machine.
- Start the engine and lower the cylinder for the attachment lift FULLY. Stop engine.
- Slide Edger under the trap rake from the right side.
- Position the lift arms on the attachment lift assembly to the lift brackets on the machine. Hold in place with $\frac{1}{2}$ x 2 clevis pin and bridge pins (Ref 16 and 17).
- Attach the cylinder to the center tab on the attachment lift assembly using the $\frac{5}{8}$ x $2\frac{1}{2}$ clevis pin and bridge pin (Ref 17 and 18).
- Start engine and test lift and Edger to make sure all works well.



42-750 CART PATH AND SIDEWALK EDGER DRAWING

Center Attachment



42-750 CART PATH AND SIDEWALK EDGER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HCP-12-200	Clevis Pin, 1/2 x 2	2
2	HHP-.177	Bridge Pin, .177 x 3.75	3
3	HCP-58-250	Clevis Pin, 5/8 x 2 1/2	1
4	42-203	Attachment Lift Assembly	1
5	42-758	Brush	1
6	42-754	Edger Mount	1
7	HB-38-16-125	Bolt, 3/8 -16 x 1 1/4	3
	HNFL-38-16	Flange Whiz-Lock Nut, 3/8-16	3
	HW-38	Flat Washer, 3/8	3
8	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180°(Part of 42-755)	2
9	42-755	Edger Arm	1
10	10-134	Spacer	1
11	HB-38-16-250	Bolt, 3/8 - 16 x 2 1/2	3
	HNFL-38-16	Flange Whiz-Lock Nut, 3/8-16	3
12	60-123	Shock Absorber	1
13	HW-38	Flat Washer, 3/8	3
14	48-109	Spring	1
15	42-757	Spring Mount	1
16	HNTL-34-16	Lock Nut, 3/4 - 16	1
17	HMB-34-10	Machine Bushing, 3/4 x 10GA	2
18	42-756	Edger Fork	1
19	HB-58-11-325	Bolt, 5/8 - 11 x 3 1/4	1
	HNCL-58-11	Center Lock Nut, 5/8-11	1
20	60-325	Spacer	1
21	HMB-58-14	Machine Bushing, 5/8 x 10GA	3
22	42-752	Edger Blade	1
23	76-298	Spacer	2
24	HB-14-20-075	Bolt, 1/4 - 20 x 3/4	3
	HNFL-14-20	Flange Whiz-Lock Nut, 1/4 - 20	3
25	42-759	Brush Holder	1
26	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
27	HMB-100-14	Machine Bushing, 1 x 14GA	2

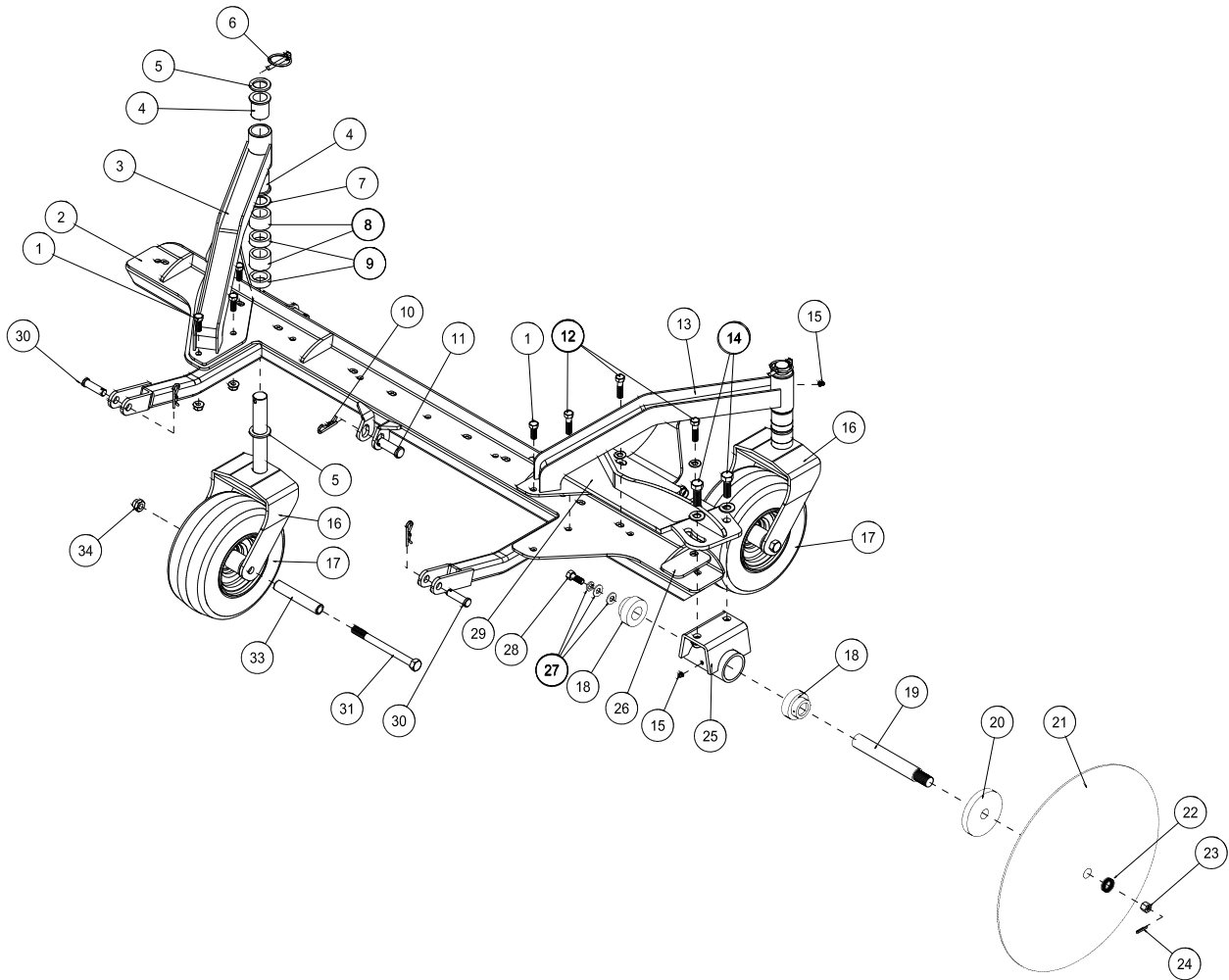
Center Attachment

INSTALLATION INSTRUCTIONS

For your convenience and ease of installation, a major set of components are pre-assembled at the factory. This is the "Edger Assembly" and includes Reference #'s 11 thru 25.

- Slide Attachment Lift Assembly (Ref 4) under machine and attach using (2) 1/2 x 2" Clevis Pins (Ref 1) & (2) Bridge Pins (Ref 2). Connect the free end of the hydraulic cylinder to the Attachment Lift Assembly (Ref 4) as illustrated using the 5/8 x 2 1/2 Clevis Pin (Ref 3) & (1) Bridge Pin (Ref 2).
- Attach the Edger Mount (Ref 6) to the Attachment Lift Assembly (Ref 4) using (3) 3/8 - 16 x 1 1/4 bolts, 3/8 Flat Washers and 3/8 -16 Whiz-Lock Nuts (Ref 7).
- Now slide (1) 1" Machine Bushing (Ref 27) on the Edger Mount's (Ref 6) pin. Next install the "Edger Assembly" (see sidebar) onto the pin. Place the second 1" Machine Bushing (Ref 27) on the pin. Secure with a 1/8 x 1 1/2 Cotter Pin (Ref 26).
- Slide (1) 3/8" Flat Washer onto (1) 3/8 - 16 x 2 1/2 bolt & insert this in the free end of the Shock Absorber (Ref 12). Next, slide the Spacer (Ref 10) onto the bolt and use (1) 3/8 -16 Whiz-Lock Nut to secure the Shock Absorber (Ref 12) to the Edger Mount (Ref 6) as illustrated.
- Grease all Grease Fittings (Ref 8) and check all fasteners for proper installation.

42-287 EDGER KIT WITH CASTOR WHEELS DRAWING



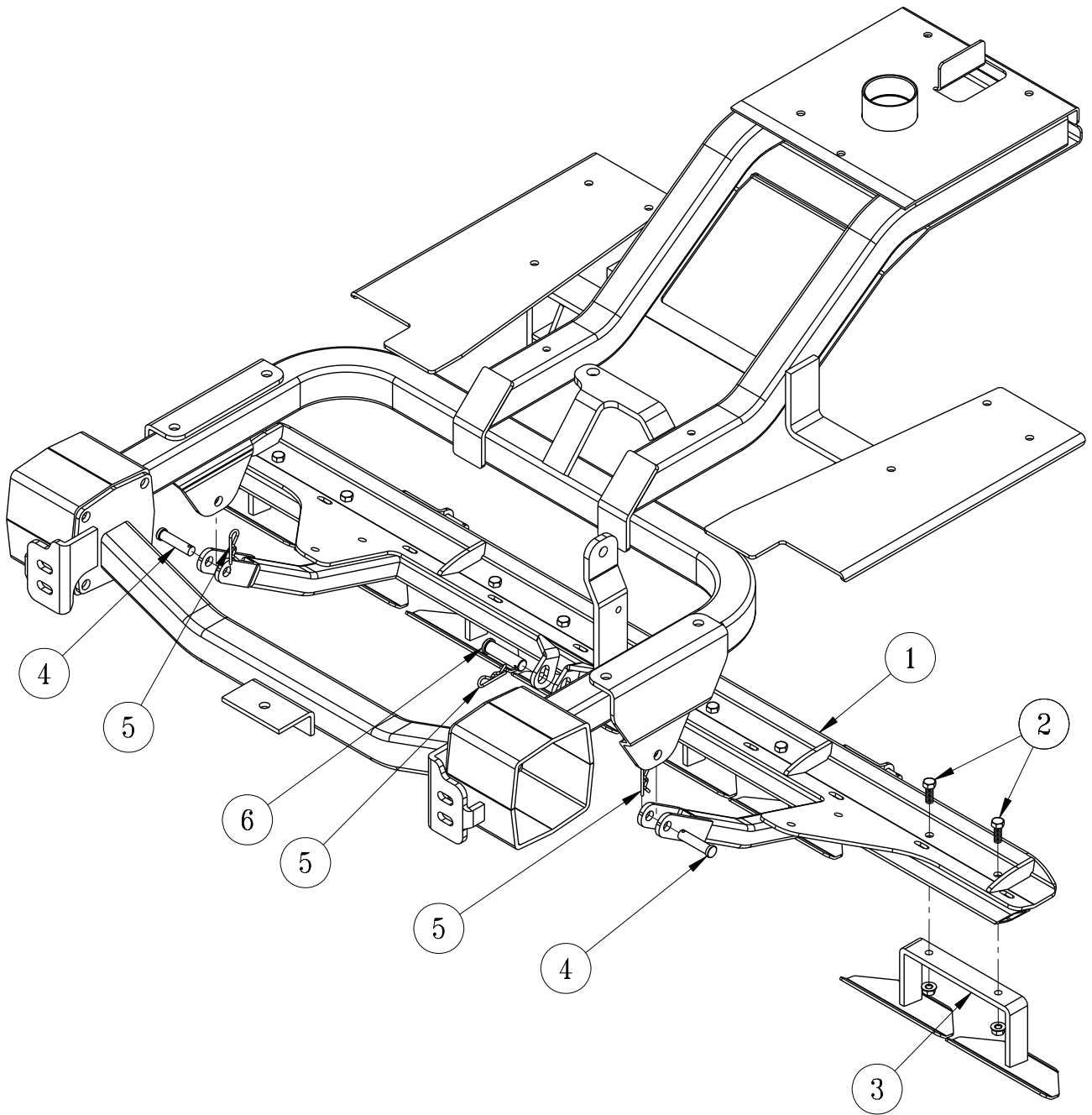
Center Attachment

42-287 EDGER KIT WITH CASTOR WHEELS PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	4
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ -16	4
2	42-203	Attachment Lift Assembly	1
3	42-293	Left Castor Bracket	1
4	18-035	Flange Bushing (part of 42-292)	2
5	HMB-100-10	Machine Bushing 1 x 10GA	4
6	42-539	Lynch Pin	2
7	HMB-100-14	Machine Bushing 1 x 14GA	2
8	29-585	1" Spacer	4
9	29-584	$\frac{1}{2}$ " Spacer	4
10	HHP-18	Bridge Pin $\frac{1}{8}$	3
11	HCP-58-250	Clevis Pin $\frac{5}{8}$ x 2 $\frac{1}{2}$	1
12	HB-38-16-150	Bolt $\frac{3}{8}$ - 16 x 1 $\frac{1}{2}$	3
	HW-38	Washer $\frac{3}{8}$	3
	HNFL-38-16	Flange Whiz Lock Nut $\frac{3}{8}$ - 16	3
13	42-292	Right Castor Mount	1
	18-035	Flange Bushing (part of 42-293)	2
14	HB-12-13-150	Bolt $\frac{1}{2}$ - 13 x 1 $\frac{1}{2}$	2
	HW-12	Washer $\frac{1}{2}$	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
15	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (part of 42-292, 42-293 and 13-203)	3
16	10-312	Castor Fork	2
17	42-202	Tire and Wheel	2
18	13-391	Bearing and Collar	2
19	13-206	Spindle Shaft	1
20	13-205	$\frac{1}{2}$ Disc Flange	1
21	13-204	Disc	1
22	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	4
23	HNA-34-16	Axle Nut $\frac{3}{4}$ - 16	1
24	HP-18-150	Cotter Pin $\frac{1}{8}$ x 1 $\frac{1}{2}$	1
25	13-203	Spindle	1
26	42-294	Edger Spacer	1
27	HWL-38	Washer $\frac{3}{8}$	1
	HW-516	Washer $\frac{5}{16}$	1
	HW-716	Washer $\frac{7}{16}$	1
28	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	1
29	42-224	Edger Mount	1
30	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
31	HB-12-13-600	Bolt $\frac{1}{2}$ - 13 x 6	2
33	33-338	Axle Bearing	2
34	HNTL-12-13	Lock Nut $\frac{1}{2}$ -13	2

43-130 WEED CULTIVATOR

Center Attachment

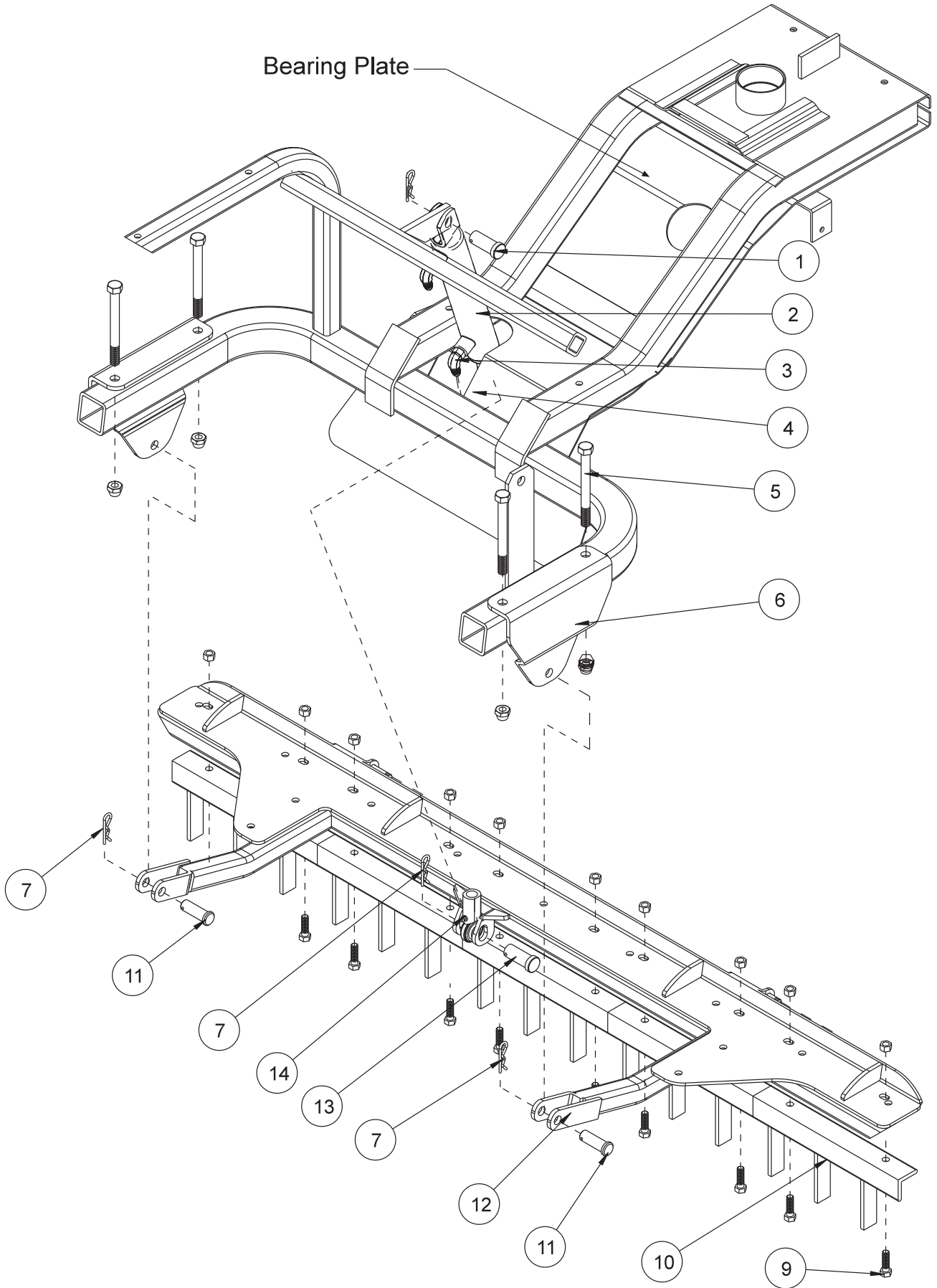


REF#	PART #	DESCRIPTION	QUANTITY
1	43-131	Attachment Lift Assembly	1
2	HB-38-16-125	Bolt, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	8
	HNFL-38-16	Flange Nut, $\frac{3}{8}$ - 16	8
3	13-096	Blade Assembly	4
4	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
5	HHP-18	Bridge Pin $\frac{1}{8}$	3
6	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1

42-008 SAND CULTIVATOR DRAWING

Bearing Plate

Center Attachment



42-008 SAND CULTIVATOR PARTSLIST

REF#	PART#	DESCRIPTION	QTY
1	HCP-58-175	Clevis Pin $\frac{5}{8}$ - $1\frac{3}{4}$	1
2		Hydraulic Cylinder	1
3	18-168	90° Elbow	2
4	42-217	Cylinder Mount	1
5	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	4
6	42-015	Attachment Mount	2
*7	HHP-18	Bridge Pin $\frac{1}{8}$	3
*9	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	10
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	10
*10	42-038	Tine Segment	5
*11	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
*12	42-203	Attachment Lift	1
*13	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
14	18-154	Rod End	1

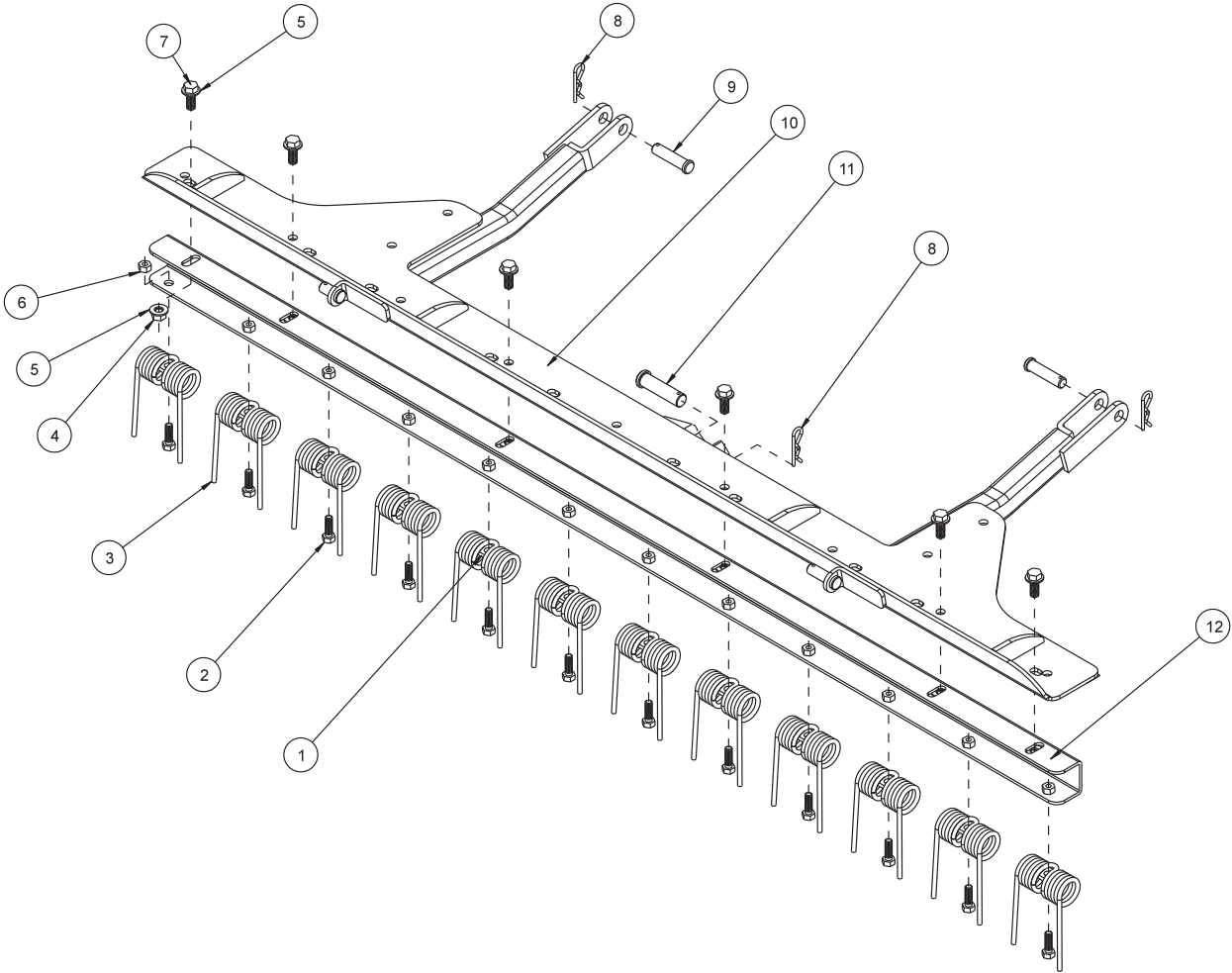
* 42-008 Sand Cultivator (all other parts reference only)

INSTALLATION INSTRUCTIONS

1. Tine segments (Ref 10) should be bolted to the attachment lift (Ref 12). Attach the attachment lift to attachment mount (Ref 6) using (Ref 11 and 7) clevis pin and bridge pin.
2. Remove the cylinder from the cylinder mount (Ref 4). Remove the cylinder mount from the machine.
- *3. Place the valve handle and linkage in the empty port on the valve.
4. Lift attachment lift up or extend cylinder so rod end (Ref 14) lines up with the holes on the center of the attachment lift. Use clevis pin and bridge pin (Ref 7 and 13) to fasten cylinder to sand cultivator.
5. Turn machine on and test for proper operation.

* For machines prior to serial numbers 4500 (3WD) and 12500 (2WD).

42-340 SAND CULTIVATOR WITH SPRING TINES DRAWING



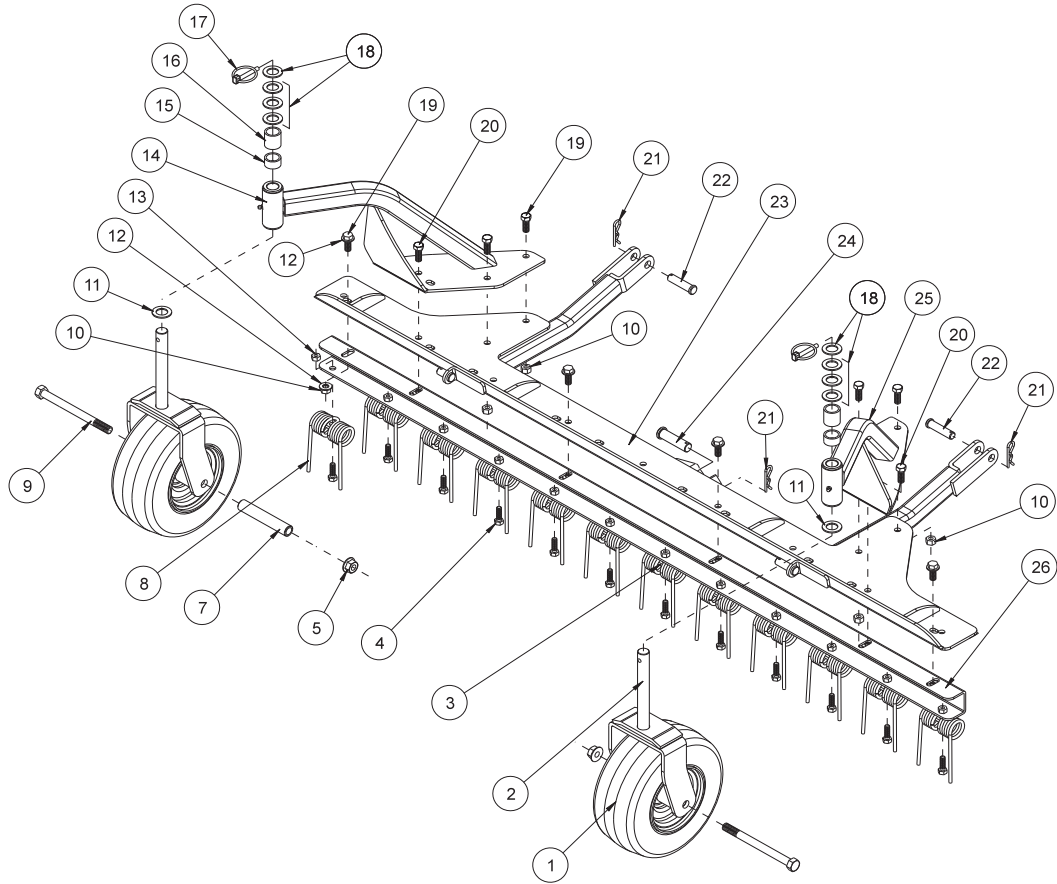
Center Attachment

42-340 SAND CULTIVATOR WITH SPRING TINES PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-177	Spring Holder	12
2	HB-516-18-100	Hex Bolt $\frac{5}{16}$ - 18 x 1	12
3	42-122	Rake Spring	12
4	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	6
5	HW-38	Flat Washer $\frac{3}{8}$	12
6	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	12
7	HB-38-16-100	Hex Bolt $\frac{3}{8}$ - 16 x 1	6
8	HHP-18	Bridge Pin $\frac{1}{8}$	3
9	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
10	42-203	Attachment Lift Bar	1
11	HCP-58-250	Clevis Pin $\frac{5}{8}$ x 2 $\frac{1}{2}$	1
12	42-343	Spring Bar	1

42-341 FIELD SCARIFIER WITH TINES AND CASTOR WHEELS DRAWING

Center Attachment

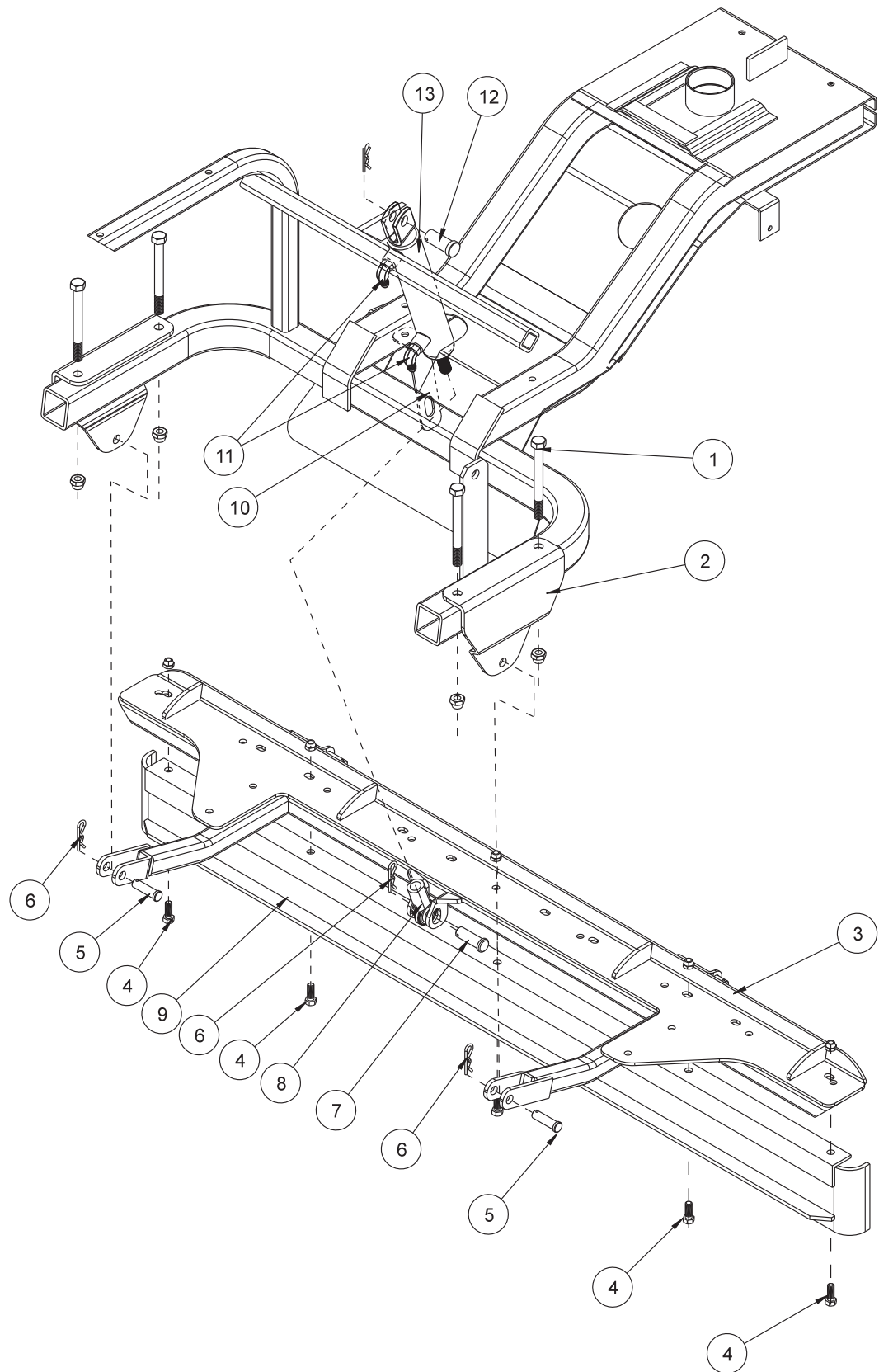


42-341 FIELD SCARIFIER WITH TINES AND CASTOR WHEELS PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-202	Tire & Wheel	2
2	42-204	Castor Fork	2
3	42-177	Spring Holder	12
4	HB-516-18-100	Hex Bolt $\frac{5}{16}$ - 18 x 1	12
5	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
7	33-338	Axle Bearing	2
8	42-122	Rake Spring	12
9	HB-12-13-600	Hex Bolt $\frac{1}{2}$ - 13 x 6	2
10	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	10
11	HMB-34-14	Machine Bushing $\frac{3}{4}$ x 14GA	2
12	HW-38	Flat Washer $\frac{3}{8}$	12
13	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	12
14	42-289	Right Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-289)	2
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (Part of 42-289)	1
15	42-215	Short Spacer	2
16	42-214	Long Spacer	2
17	42-539	Lynch Pin $\frac{1}{4}$ "	2
18	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	8
19	HB-38-16-100	Hex Bolt $\frac{3}{8}$ - 16 x 1	8
20	HB-38-16-125	Hex Bolt $\frac{3}{8}$ - 16 x 1 $\frac{1}{4}$	2
21	HHP-18	Bridge Pin $\frac{1}{8}$	3
22	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
23	42-203	Attachment Lift Bar	1
24	HCP-58-250	Clevis Pin $\frac{5}{8}$ x 2 $\frac{1}{2}$	1
25	42-288	Left Castor Wheel Bracket	1
	10-025	Flange Bushing (Part of 42-288)	2
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (Part of 42-288)	1
26	42-343	Spring Bar	1

42-010 CONSTRUCTION LEVELING BLADE DRAWING

Center Attachment



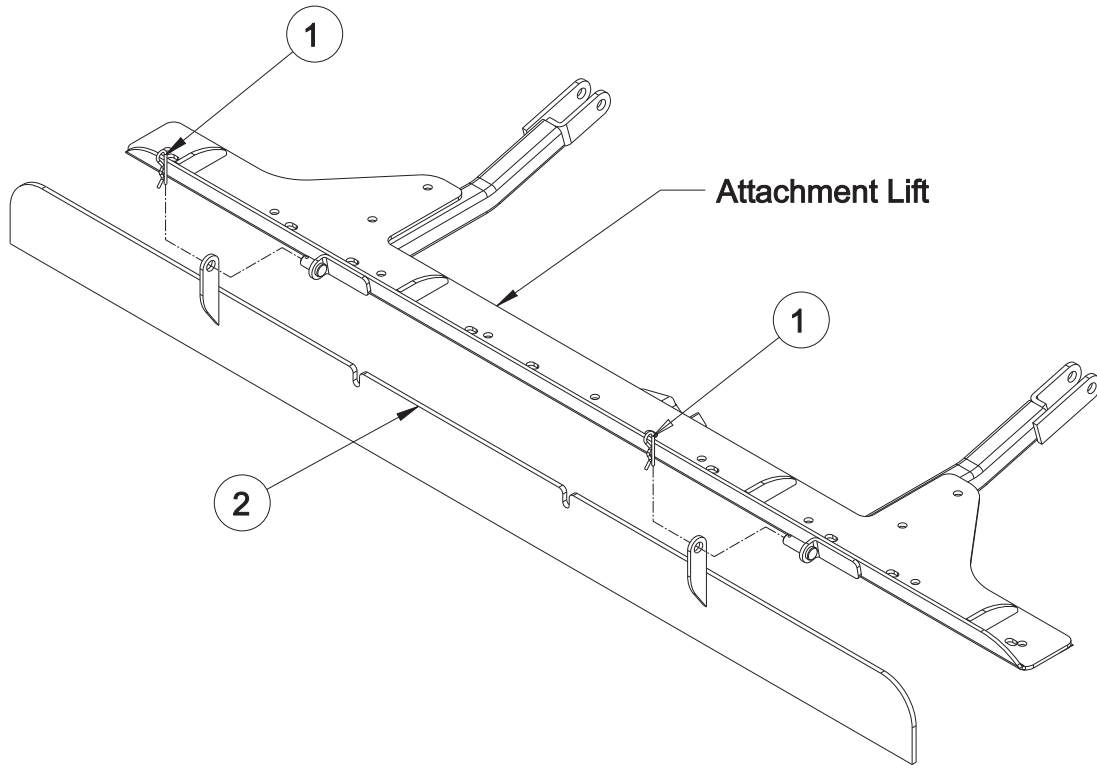
42-010 CONSTRUCTION LEVELING BLADE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	4
2	42-015	Attachment Mount	2
*3	42-203	Attachment Lift	1
*4	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	5
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	5
*5	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
*6	HHP-18	Bridge Pin $\frac{1}{8}$	3
*7	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
8	18-154	Rod End	1
*9	42-097	Leveling Blade	1
10	42-217	Cylinder Mount	1
11	18-168	90° Elbow	2
12	HCP-34-175	Clevis Pin $\frac{3}{4}$ - $1\frac{3}{4}$	1
13	10-135	Hydraulic Cylinder	1
*	42-010	Construction Leveling Blade (all other parts are reference only)	

INSTALLATION INSTRUCTIONS

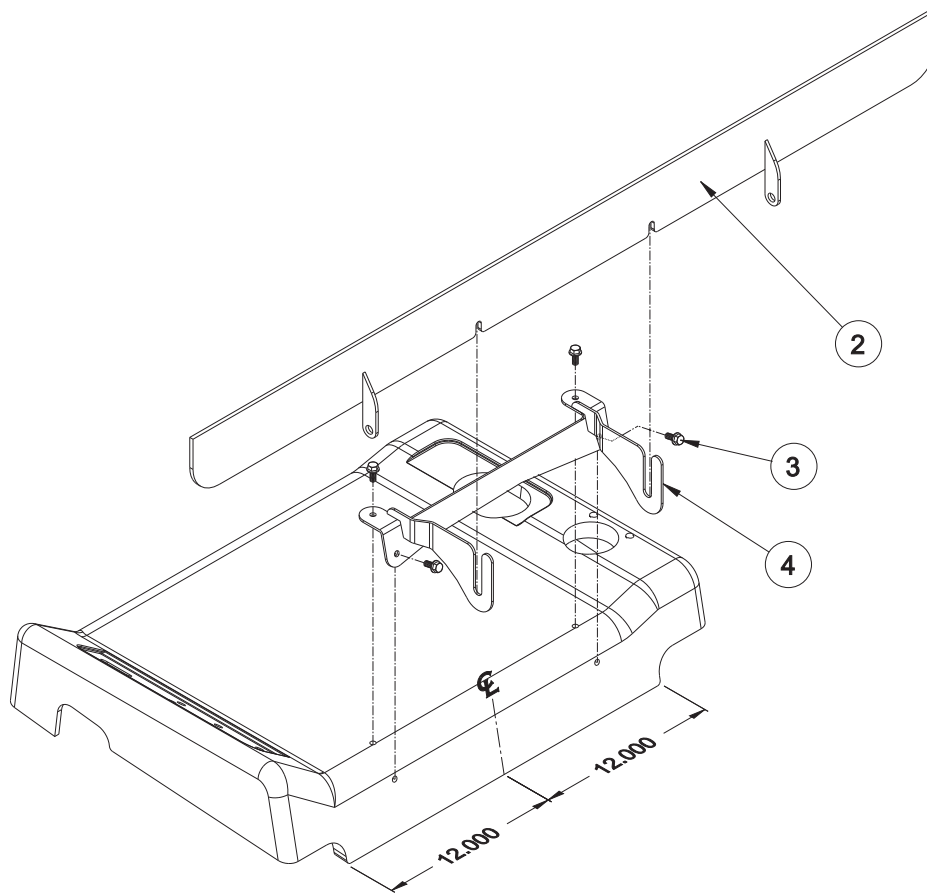
1. Remove the cylinder mount (Ref 10) from the machine.
2. Bolt leveling blade (Ref 9) to attachment lift (Ref 3) using five $\frac{3}{8}$ - 16 x 1 bolts and five $\frac{3}{8}$ - 16 lock nuts as shown on drawing.
3. Attach the attachment lift to attachment mount (Ref 3) using clevis pin and bridge pin (Ref 5 and 6).
4. Lift attachment lift up or extend cylinder so rod end (Ref 8) lines up with the holes on the center of the attachment lift. Use $\frac{5}{8}$ x $2\frac{1}{2}$ clevis pin and bridge pin (Ref 6 & 7) to fasten cylinder to cultivator.
5. Turn machine on and test for proper operation.

42-210 GRADER BLADE DRAWING



Center Attachment

42-210 GRADER BLADE MOUNT DRAWING



42-210 GRADER BLADE PARTS LIST

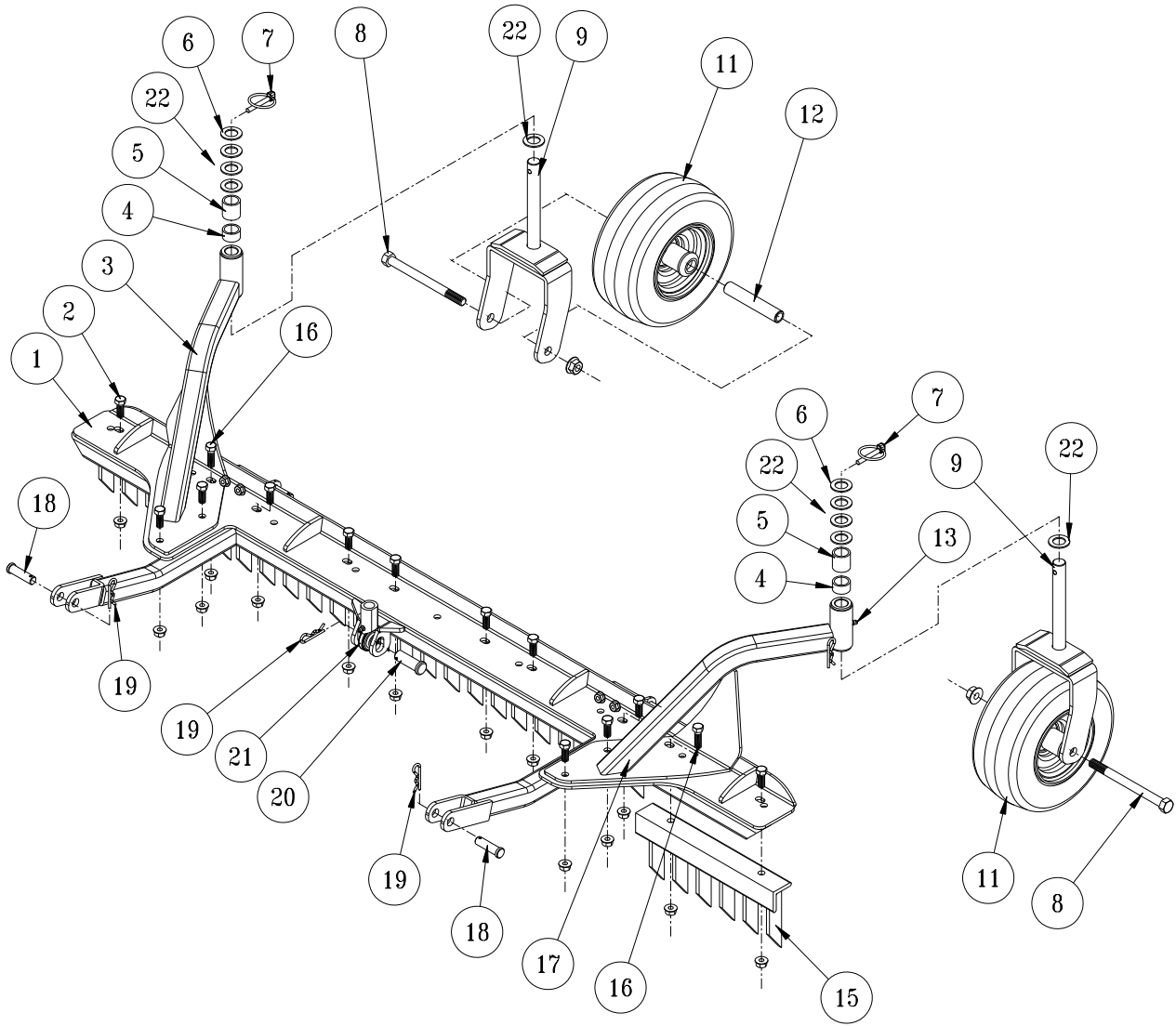
REF#	PART#	DESCRIPTION	QTY
1	HHP-18	Bridge Pin $\frac{1}{8}$	2
2	42-207	Grader Blade	1
3	HBFL-516-18-075	Flange Bolt, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	4
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18 <i>(not illustrated)</i>	4
4	42-386	Grader Blade Mount	1

42-210 GRADER BLADE INSTALLATION INSTRUCTIONS

1. Install Grader Blade (Ref 2) onto Attachment Lift by sliding tabs onto clevis pins and secure with Bridge Pins (Ref 1).
2. Install Grader Blade Mount (Ref 4) on seat panel.
3. Position the Grader Blade Mount (Ref 4) to be centered on the rear of the Seat Panel as illustrated. Mark the hole locations on the Seat Panel. Using an $\text{Ø}^{11/32}$ drill located the holes at the four marks made previously. The top two holes will be drilled through the fiberglass and the steel panel and the rear holes will be drilled through the fiberglass only.
4. Bolt the Grader Blade Mount (Ref 4) to the Seat Panel using the four $\frac{5}{16}$ -18 Flange Bolts and Flange Nuts (Ref 3).
5. The Grader Blade Mount is used for the storage of the Grader Blade when not in use. To store, turn the Grader Blade to the position illustrated in the **Grader Blade Mount Drawing** and place in the Grader Blade Mount.
6. Turn machine on and test for proper operation.

42-178 INFIELD SCARIFIER WITH VERTICAL BLADES DRAWING

Center Attachment

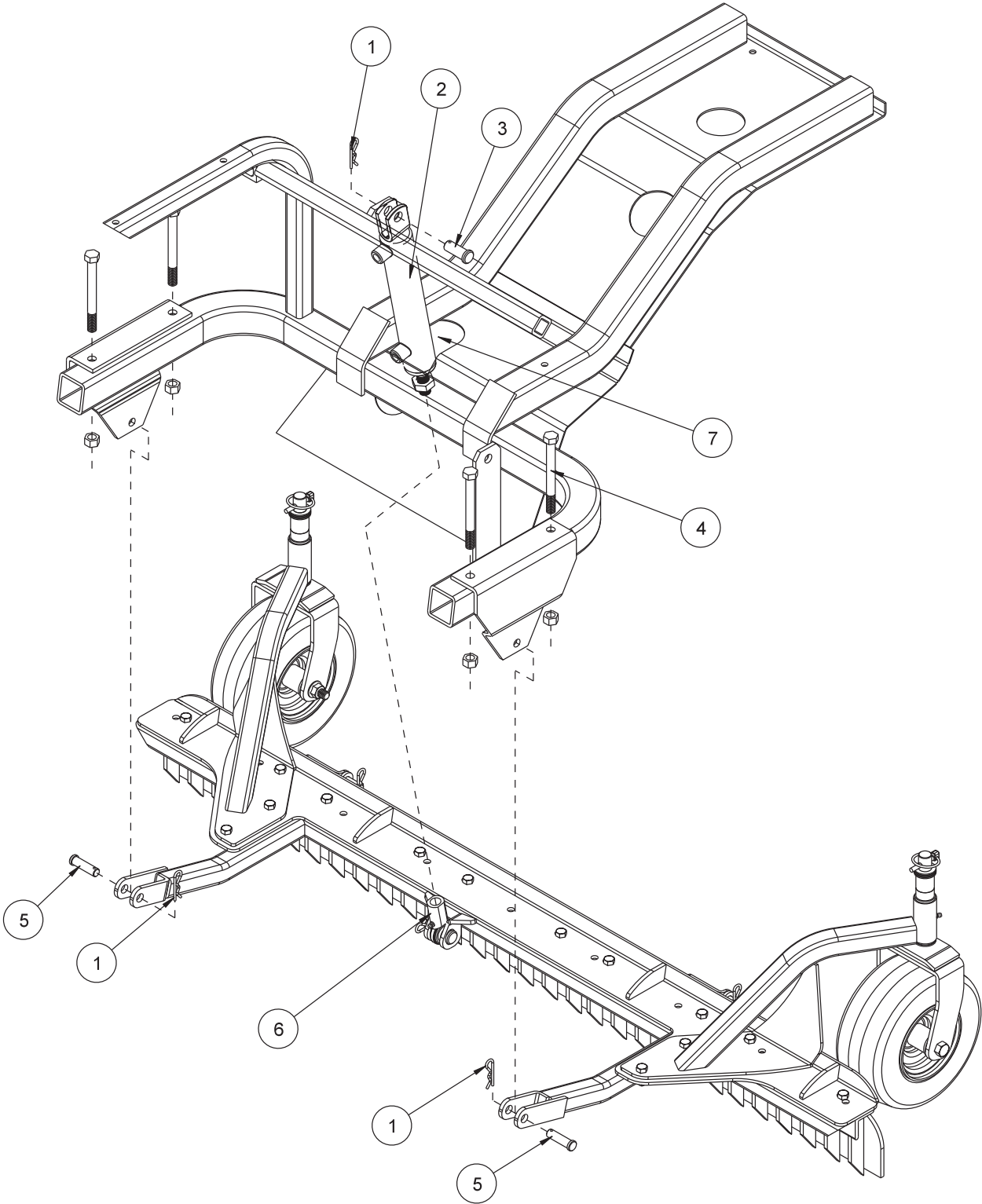


42-178 INFIELD SCARIFIER WITH VERTICAL BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-203	Attachment Lift Assembly	1
2	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	12
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	12
3	42-205	Left Castor Wheel Bracket	1
	10-025	Bushing (part of 42-205)	2
4	42-215	Short Spacer	2
5	42-214	Long Spacer	2
6	HMB-34-14	Machine Bushing $\frac{3}{4}$ x 14GA	2
7	42-539	Lynch Pin $\frac{5}{16}$	2
8	HB-12-13-600	Bolt $\frac{1}{2}$ -13 x 6	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
9	42-204	Castor Fork	2
11	42-202	Tire and Wheel	2
12	33-338	Axle Bearing	2
13	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (part of 42-205 and 42-206)	2
15	26-042	Tine Segment	5
16	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
17	42-206	Right Castor Wheel Bracket	1
	10-025	Bushing (part of 42-205)	2
18	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
19	HHP-18	Bridge Pin $\frac{1}{8}$	3
20	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
21	18-154	Rod End (part of machine)	1
22	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	8

42-178 SCARIFIER MOUNTING DRAWING

Center Attachment



42-178 SCARIFIER MOUNTING PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	3
2	10-135	Hydraulic Cylinder (part of machine)	1
3	HCP-58-175	Clevis Pin $\frac{5}{8} \times 1\frac{3}{4}$	1
4	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	4
5	HCP-12-200	Clevis Pin $\frac{1}{2}$ - 2	2
6	18-154	Rod End (part of machine)	1
7	42-217	Cylinder Mount (part of machine)	1

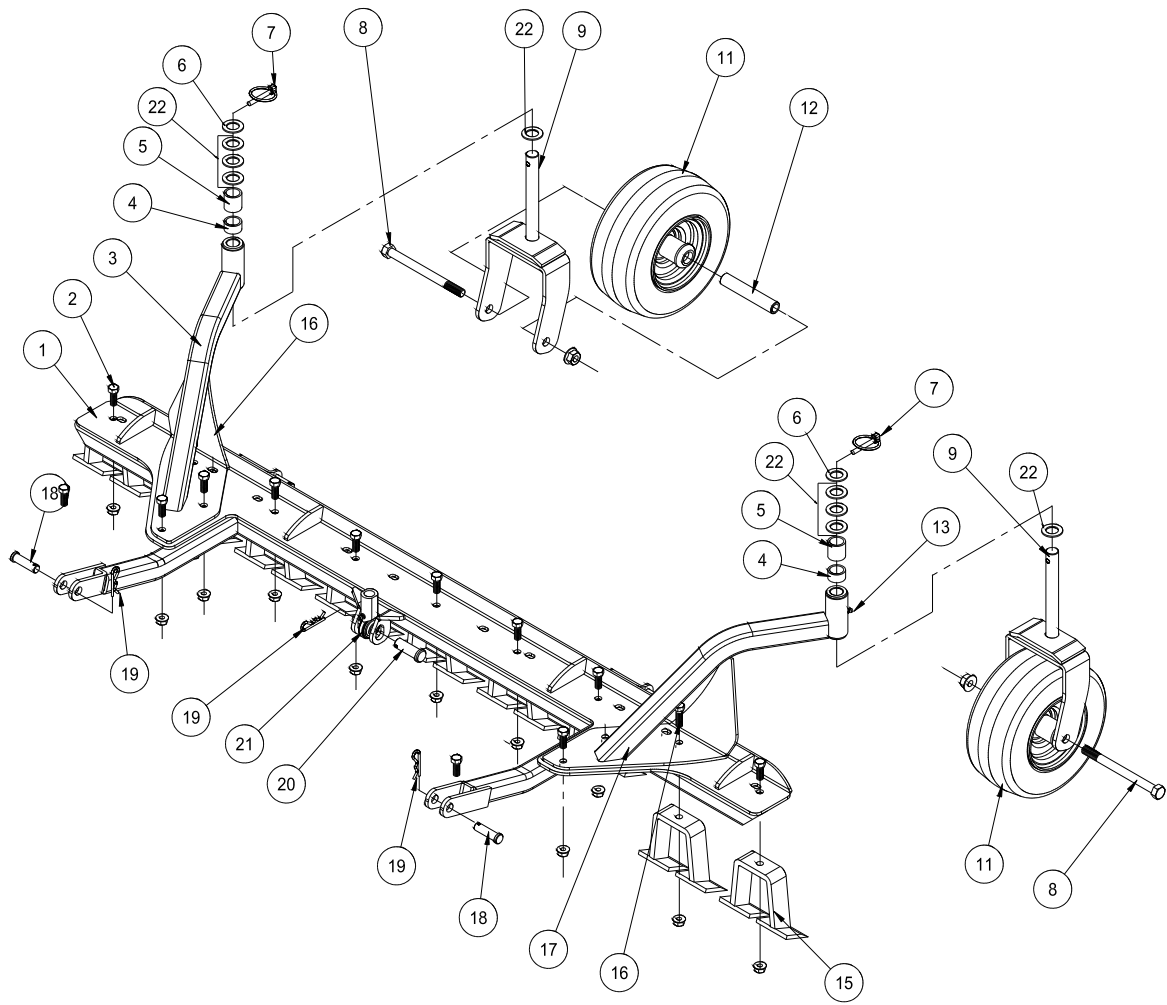
INSTALLATION INSTRUCTIONS

1. Assemble the Scarifier as shown on previous page.
2. Remove the rod end (Ref 6) on the hydraulic cylinder (Ref 2) from the cylinder mount (Ref 7). Remove the cylinder mount (Ref 7) from the machine.
- *3. Place the handle and linkage onto the empty linkage port of the two bank valve on the machine.
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the attachment lift assembly.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the attachment lift assembly and secure with a clevis pin and bridge pin.
7. Attach the arms on the attachment lift to the attachment mount on the machine and secure with clevis pin and bridge pin.
8. Turn machine on and test for proper operation.
9. Adjust castor wheels by placing the short or long spacer 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.

* For machines prior to serial numbers 4500 (3WD) and 12500 (2WD).

42-179 INFIELD SCARIFIER WITH CHISEL BLADES DRAWING

Center Attachment

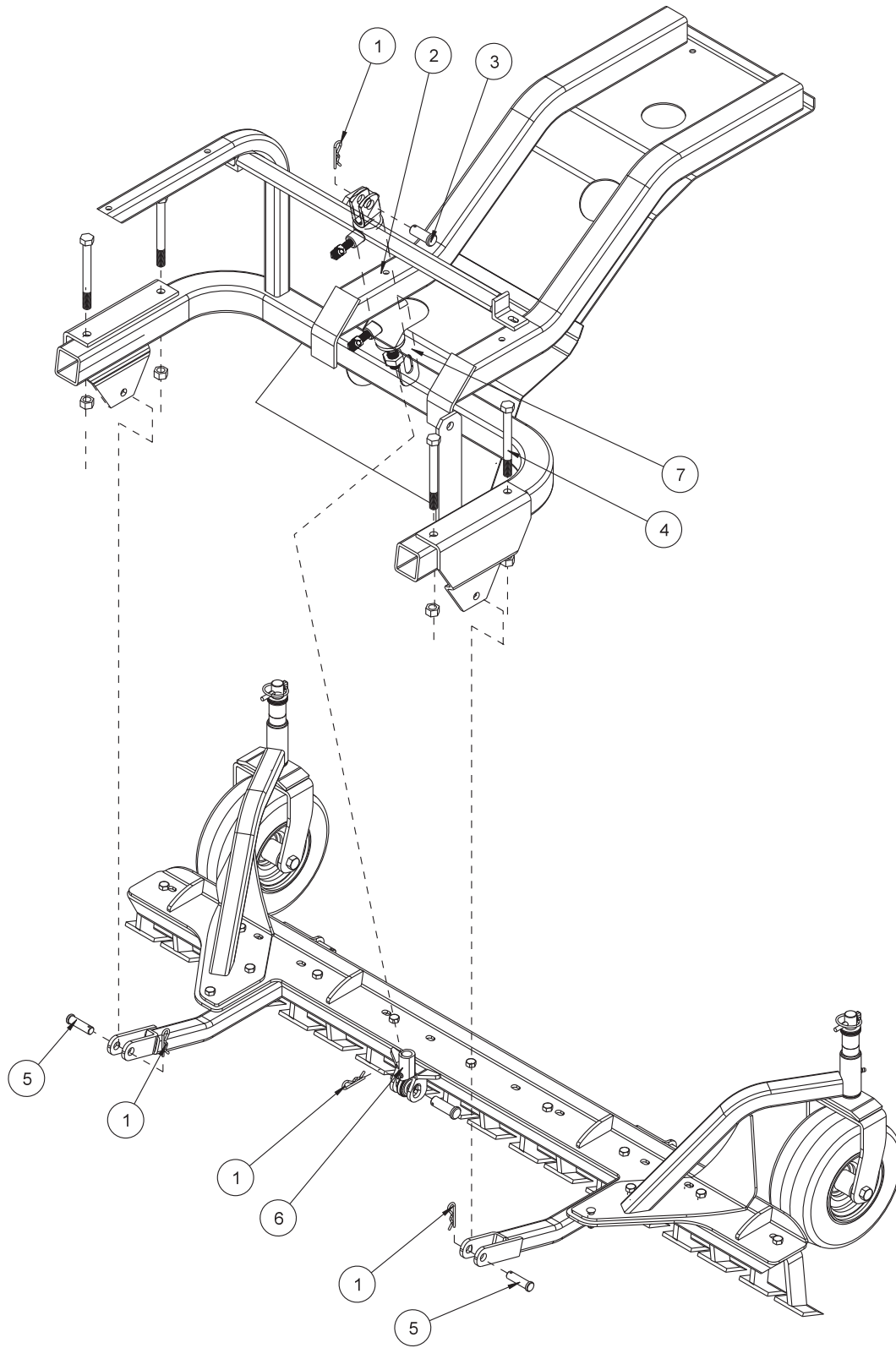


42-179 INFIELD SCARIFIER WITH CHISEL BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-203	Attachment Lift Assembly	1
2	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	11
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	11
3	42-205	Left Castor Wheel Bracket	1
	10-025	Bushing (part of 42-205)	2
4	42-215	Short Spacer	2
5	42-214	Long Spacer	2
6	HMB-34-14	Machine Bushing $\frac{3}{4}$ x 14GA	2
7	42-539	Lynch Pin $\frac{5}{16}$	2
8	HB-12-13-600	Bolt $\frac{1}{2}$ -13 x 6	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
9	42-204	Castor Fork	2
11	42-202	Tire and Wheel	2
12	33-338	Axle Bearing	2
13	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (part of 42-205 and 42-206)	2
15	13-114	Digger Blade	9
16	HB-38-16-150	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{2}$	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
17	42-206	Right Castor Wheel Bracket	1
	10-025	Bushing (part of 42-205)	2
18	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
19	HHP-18	Bridge Pin $\frac{1}{8}$	3
20	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
21	18-154	Rod End (part of machine)	1
22	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	8

42-179 SCARIFIER MOUNTING DRAWING

Center Attachment



42-179 SCARIFIER MOUNTING PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	3
2	10-135	Hydraulic Cylinder (part of machine)	1
3	HCP-58-175	Clevis Pin $\frac{5}{8} \times 1\frac{3}{4}$	1
4	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	4
5	HCP-12-200	Clevis Pin $\frac{1}{2}$ - 2	2
6	18-154	Rod End (part of machine)	1
7	42-217	Cylinder Mount (part of machine)	1

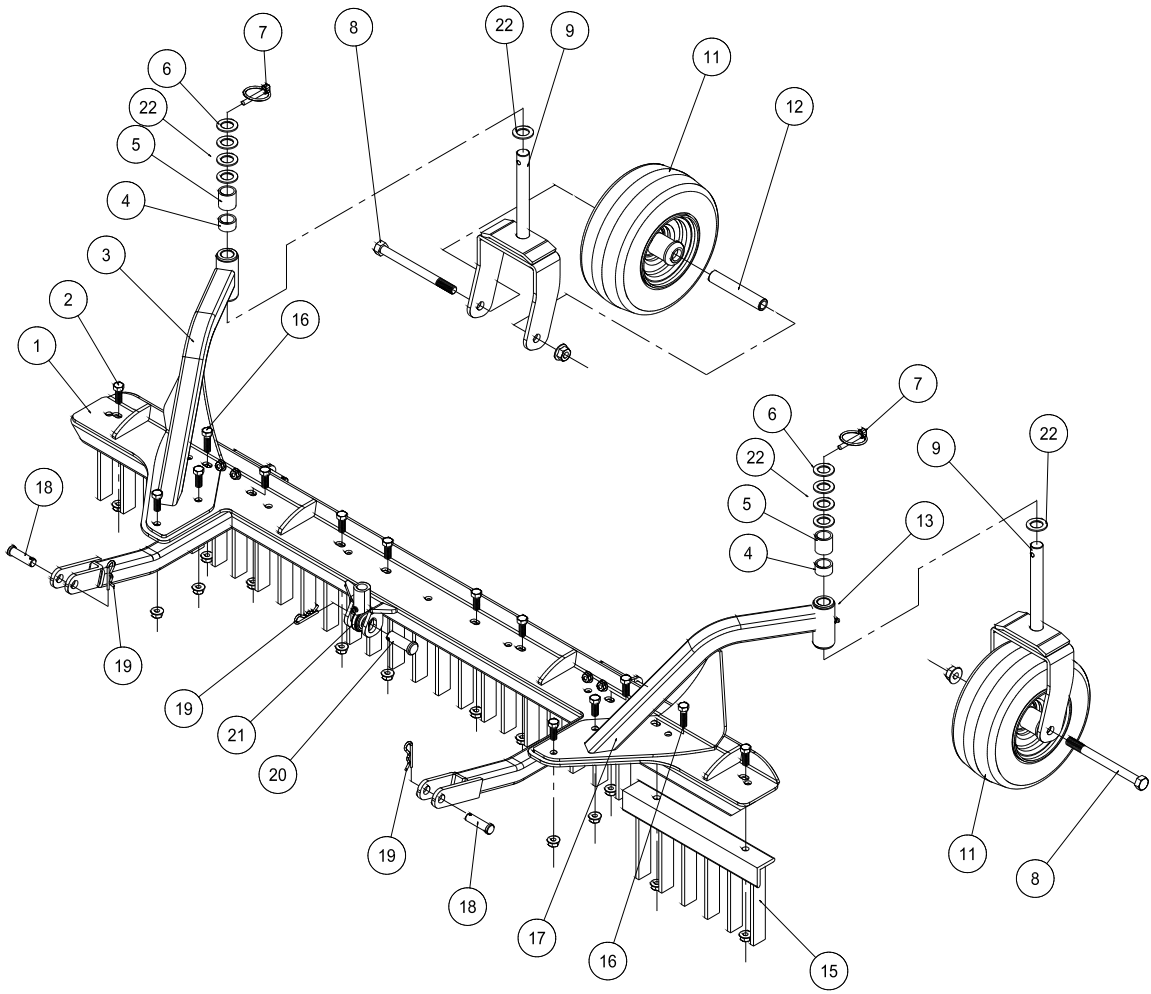
INSTALLATION INSTRUCTIONS

1. Assemble the Scarifier as shown on previous page.
2. Remove the rod end (Ref 6) on the hydraulic cylinder (Ref 2) from the cylinder mount (Ref 7). Remove the cylinder mount (Ref 7) from the machine.
- *3. Place the handle and linkage onto the empty linkage port of the two bank valve on the machine.
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the attachment lift assembly.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the attachment lift assembly and secure with a clevis pin and bridge pin.
7. Attach the arms on the attachment lift to the attachment mount on the machine and secure with clevis pin and bridge pin.
8. Turn machine on and test for proper operation.
9. Adjust castor wheels by placing the short or long spacer 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.

* For machines prior to serial numbers 4500 (3WD) and 12500 (2WD).

42-285 SCARIFIER WITH VERTICAL BLADES

Center Attachment

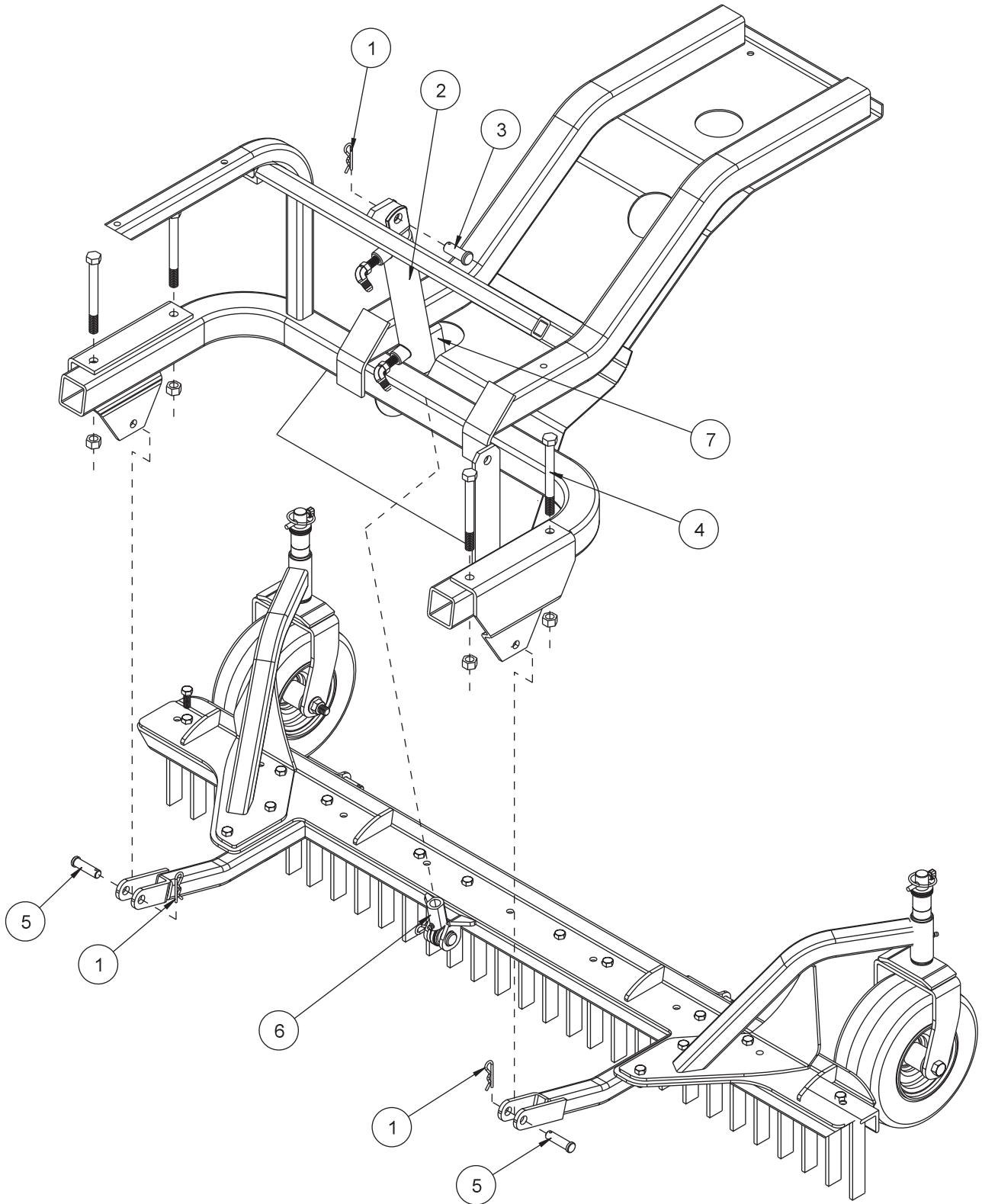


42-285 SCARIFIER WITH VERTICAL BLADES PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-203	Attachment Lift Assembly	1
2	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	12
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	12
3	42-288	Left Castor Wheel Bracket	1
	10-025	Bushing (part of 42-288)	2
4	42-215	Short Spacer	2
5	42-214	Long Spacer	2
6	HMB-34-14	Machine Bushing $\frac{3}{4}$ x 14GA	2
7	42-539	Lynch Pin $\frac{5}{16}$	2
8	HB-12-13-600	Bolt $\frac{1}{2}$ -13 x 6	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
9	42-204	Castor Fork	2
11	42-202	Tire and Wheel	2
12	33-338	Axle Bearing	2
13	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (part of 42-288 and 42-289)	2
15	42-241	Tine Segment	5
16	HB-38-16-125	Bolt $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
17	42-289	Right Castor Wheel Bracket	1
	10-025	Bushing (part of 42-289)	2
18	HCP-12-175	Clevis Pin $\frac{1}{2}$ x $1\frac{3}{4}$	2
19	HHP-18	Bridge Pin $\frac{1}{8}$	3
20	HCP-58-250	Clevis Pin $\frac{5}{8}$ x $2\frac{1}{2}$	1
21	18-154	Rod End (part of machine)	1
22	HMB-34-10	Machine Bushing $\frac{3}{4}$ x 10GA	8

42-285 SCARIFIER WITH VERTICAL BLADES MOUNTING DRAWING

Center Attachment



42-285 SCARIFIER WITH VERTICAL BLADES MOUNTING PARTS LIST

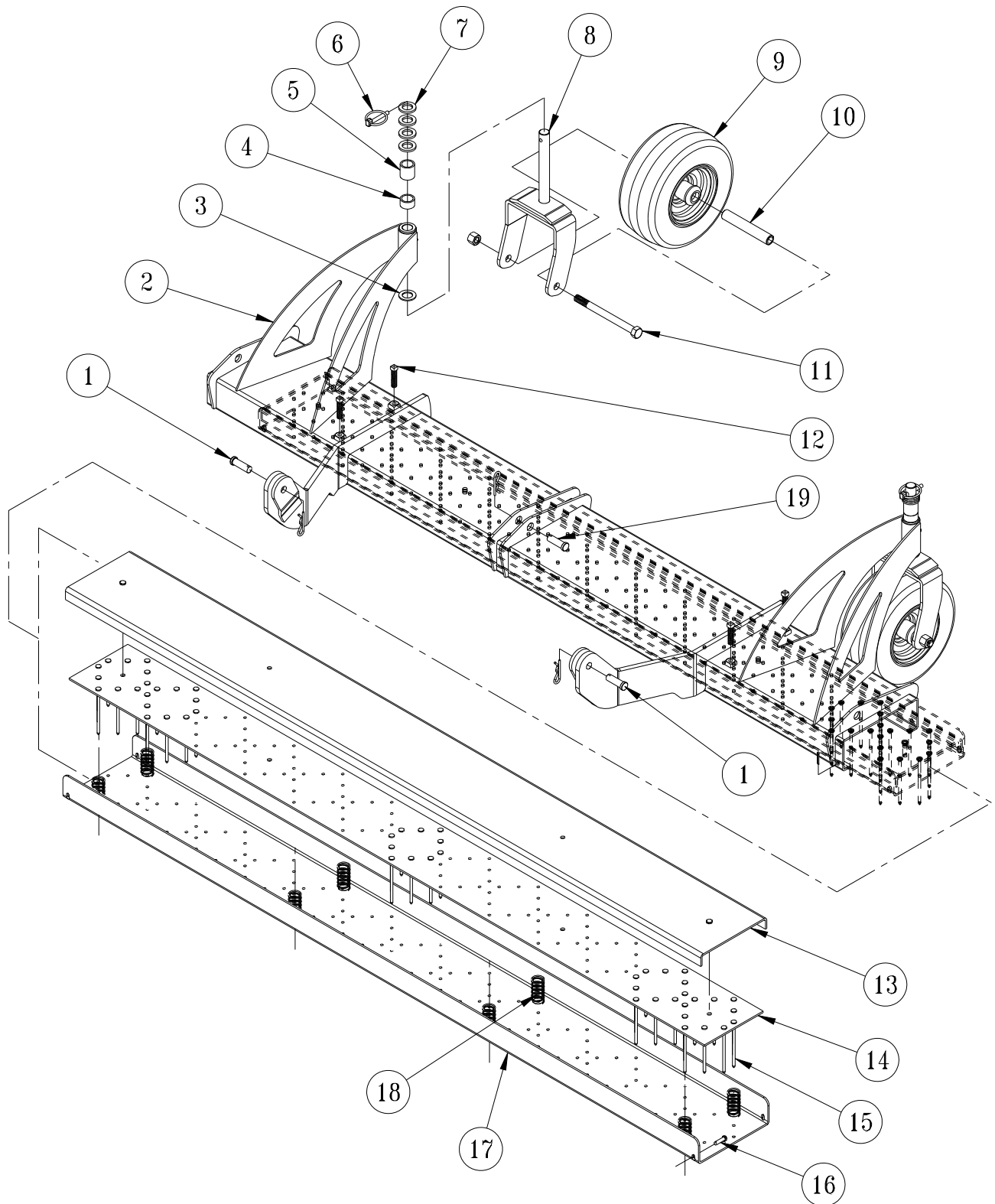
REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	3
2		Hydraulic Cylinder (part of machine)	1
3	HCP-58-175	Clevis Pin $\frac{5}{8} \times 1\frac{3}{4}$	1
4	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5 (part of machine)	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13 (part of machine)	4
5	HCP-12-175	Clevis Pin $\frac{1}{2}$ - $1\frac{3}{4}$	2
6	18-154	Rod End (part of machine)	1
7	42-217	Cylinder Mount (temporary part of machine)	1

INSTALLATION INSTRUCTIONS

1. Assemble the Scarifier as shown on previous page.
2. Disconnect the rod end (Ref 6) on the hydraulic cylinder (Ref 2) from the cylinder mount (Ref 7). Remove the cylinder mount (Ref 7) from the machine.
3. Place the handle and linkage onto the empty linkage port of the two bank valve on the machine.
4. Slide the Scarifier under the machine lining up the hydraulic cylinder and the center of the attachment lift assembly.
5. Extend hydraulic cylinder all the way down by pushing the lever forward.
6. Mount the rod end of the cylinder onto the attachment lift assembly and secure with a clevis pin and bridge pin.
7. Attach the arms on the attachment lift to the attachment mount on the machine and secure with clevis pin and bridge pin.
8. Turn machine on and test for proper operation.
9. Adjust castor wheels by placing the short or long spacer 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.

43-011 NAIL SCARIFIER WITH CASTOR WHEELS DRAWING

Center Attachment



43-011 NAIL SCARIFIER WITH CASTOR WHEELS PARTSLIST

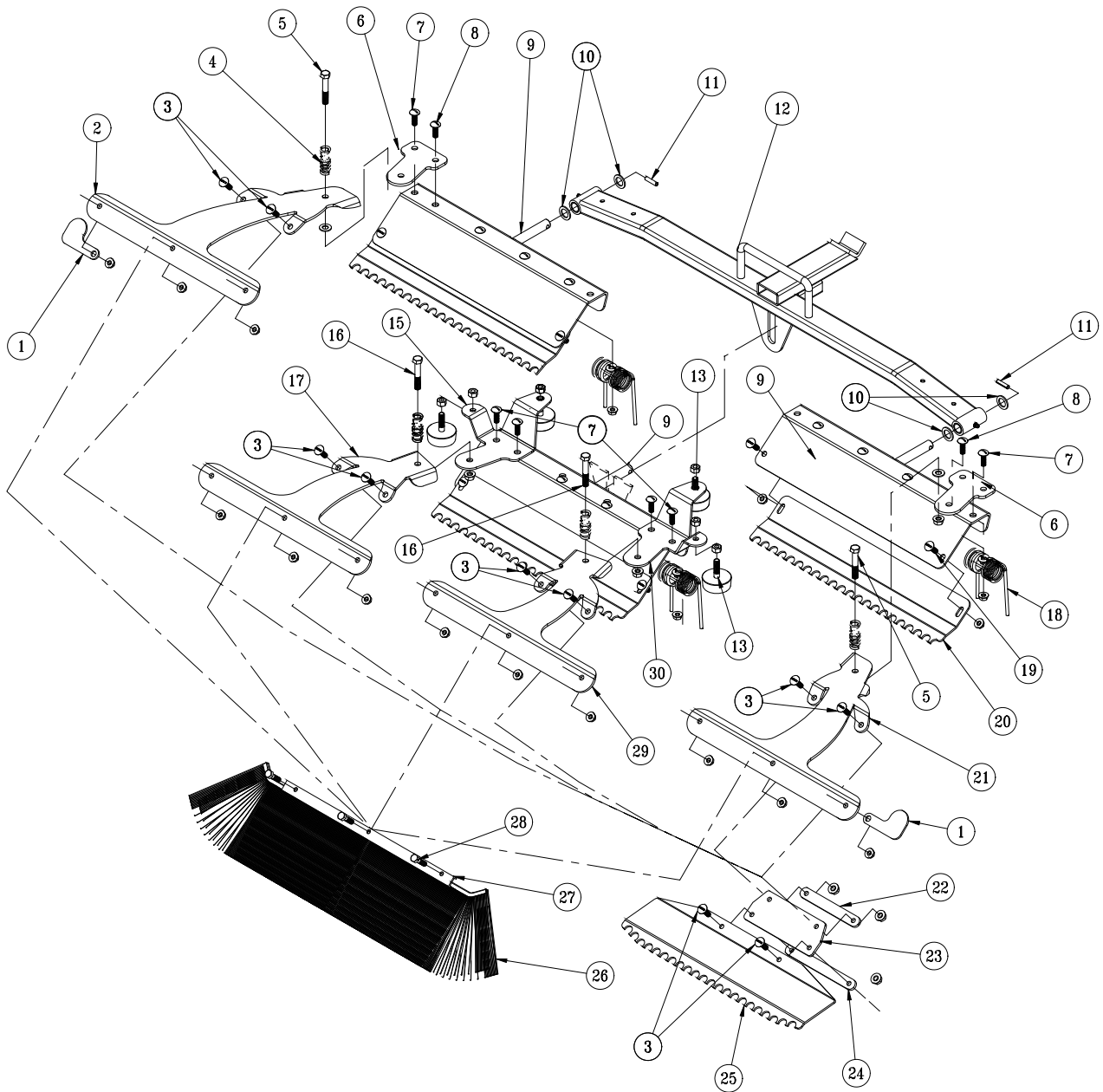
REF#	PART#	DESCRIPTION	QUANTITY
1	HCP-12-200	Clevis Pin, 1/2 x 2	2
	HHP-18	Bridge Pin, 1/8	2
2	43-171	Nail Scarifier Frame	1
	10-025	Flange Bushing (Part of 43-171)	4
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (Part of 43-171)	2
3	HMB-34-14	Machine Bushing, 3/4 x 14GA	2
4	42-215	Short Spacer	2
5	42-214	Long Spacer	2
6	42-539	Lynch Pin, 1/4"	2
7	HMB-34-10	Machine Bushing, 3/4 x 10GA	8
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, 1/2 - 13 x 6	2
	HNTL-12-13	Lock Nut, 1/2 - 13	2
12	HSSQS-38-16-150	SS Sq. Head Set Screw, 3/8 - 16 x 1 1/2	4
13	43-172	Cover	1
14	43-174	Nail Plate Cover	1
15	9028	Spiral Shank Nail, 7GA x 4"	130
16	HCP-14-075	Clevis Pin, 1/4 x 3/4	1
	HP-332-075	Cotter Pin, 3/8 x 3/4	1
17	43-173	Nail Plate	1
18	43-175	Compression Spring	8
19	HCP-58-200	Clevis Pin, 5/8 x 2	1
	HHP-18	Bridge Pin, 1/8	1

Center Attachment

ACCESSORIES

Front Mounted Implements	A
13-731 Single Bank Valve	2
43-003 40" Hydraulic Sand Plow	4
43-013 40" Hydraulic Angle Sand Plow	8
42-011 40" Manual Sand Plow(Steel & Aluminum)	12
42-136 60" Manual Sand Plow	14
42-460 40" Manual Angle Plow	16
42-490 60" Manual Angle Plow	18
42-737 Light Kit for 42-800 ROPs	20
42-800 ROPS for Super Star	22
Belly Attachments	B
42-223 Adjustable Disc Edger	2
42-750 Cart Path & Sidewalk Edger	4
42-287 Edger Kit w/ Castor Wheels	6
43-130 Weed Cultivator	8
42-008 Sand Cultivator	10
42-340 Sand Cultivator w/ Spring Tine	12
42-341 Sand Cultivatore w/ Castor Wheels	14
42-010 Construction Leveling Blade	16
42-210 Grader Blade Kit	18
42-178 Infield Scarifier(vertical blades)	20
42-179 Infield Scarifier(chisel blades)	24
42-285 Scarifier w/ Vertical Blades	28
43-011 Nail drag w/ Castor Wheels	30
Rear Attachments	C
42-391Q 72" Pro-Brush Tournament Rake	2
43-392Q 84" Pro-Brush Tournament Rake	6
42-130Q 84" Mild Steel Rake	10
42-132Q 72" Mild Steel Rake	14
13-438Q Rake with Finishing Blades	18
13-758Q Max Flex Sand Rake	20
13-740 Brush Attachment	22
13-684 Brush Attachment	24
13-298Q Fan Rake	26
13-319 Fan Rake Kit	26
26-007Q Professional Field Finisher	28
43-002Q Flex Action Field Finisher w/ Brush	30
26-008Q Flex Action Field Finisher	34
43-043 Finishing Brush	36
43-008 Drag Mat Kit	38
34-191 Box Grader	40
42-586Q Green Star RBS Main Frame	42
42-581 Green Star RBS Roller	44
42-585 Green Star RBS Brush	46
42-582 Green Star RBS Spiker	48
43-009 CoCo Mat Finisher	50
41-501 Typhoon	52
41-502 Earthway®	56
Warranty	

42-3910 72"(183CM) ProBRUSH TOURNAMENT RAKE DRAWING



Rear Attachment



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, $\frac{5}{16}$ - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HW-38	Flat Washer, $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, $\frac{5}{16}$ - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, $\frac{5}{16}$ - 18 x 1 $\frac{1}{4}$	12
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	12
9	42-140	Outside Rake	3
10	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	4
11	HRP-14-100	Roll Pin $\frac{1}{4}$ x 1	2
12	43-154	Draw Bar	1
13	50-081	Rubber Bumper	2
14	50-081	Rubber Bumper	2
	HNFL-38-16	Flange Whiz-Loc Nut $\frac{3}{8}$ - 16	4
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 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, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	6
	HNFL-516-18	Flange Whiz-Loc Nut $\frac{5}{16}$ - 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, $\frac{5}{16}$ - 18 x 1 $\frac{1}{4}$	12
	HNFL-516-18	Flange Whiz-Loc Nut $\frac{5}{16}$ - 18	12
29	42-453	Inside Brush Arm, RH	1
30	42-398	Brush Arm Mount, RH	1

42-3910 72"(183CM) ProBRUSH TOURNAMENT RAKE DRAWING

Fig.1

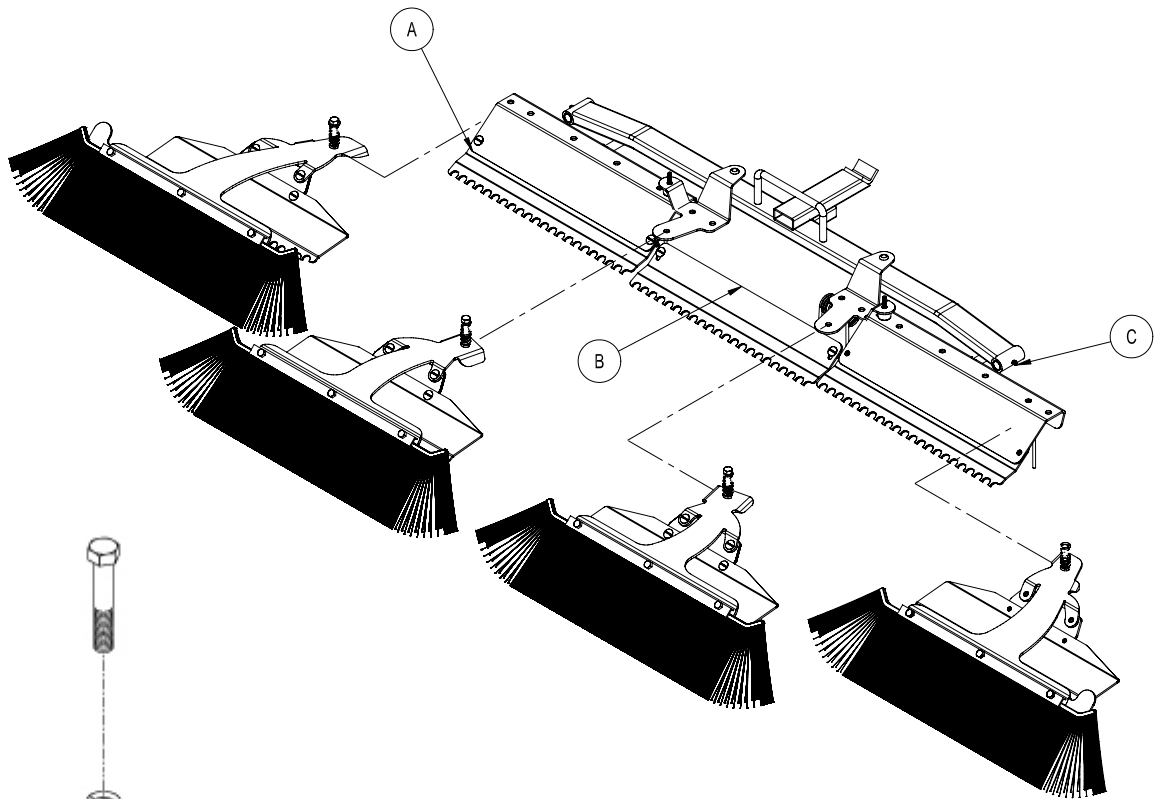


Fig.2

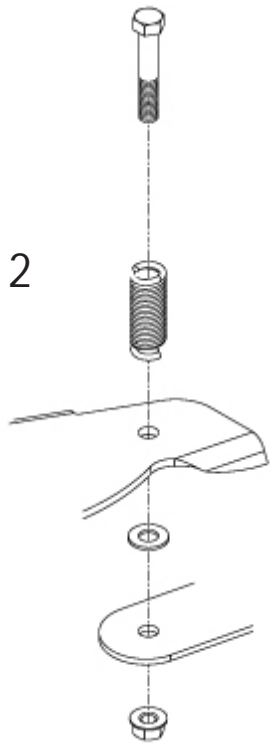


Fig. 3

Rear Attachment



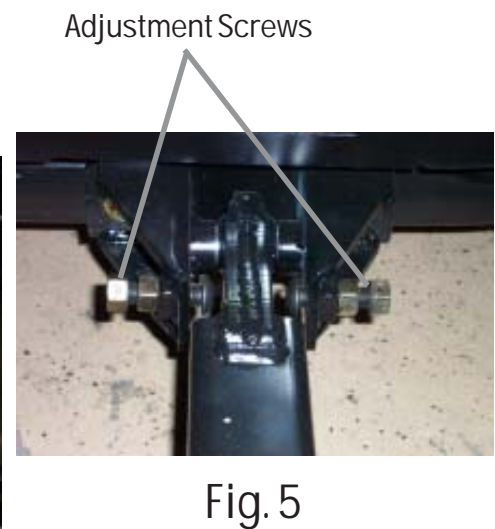
PROBRUSH TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your PROBRUSH TOURNAMENT RAKE comes mostly assembled.

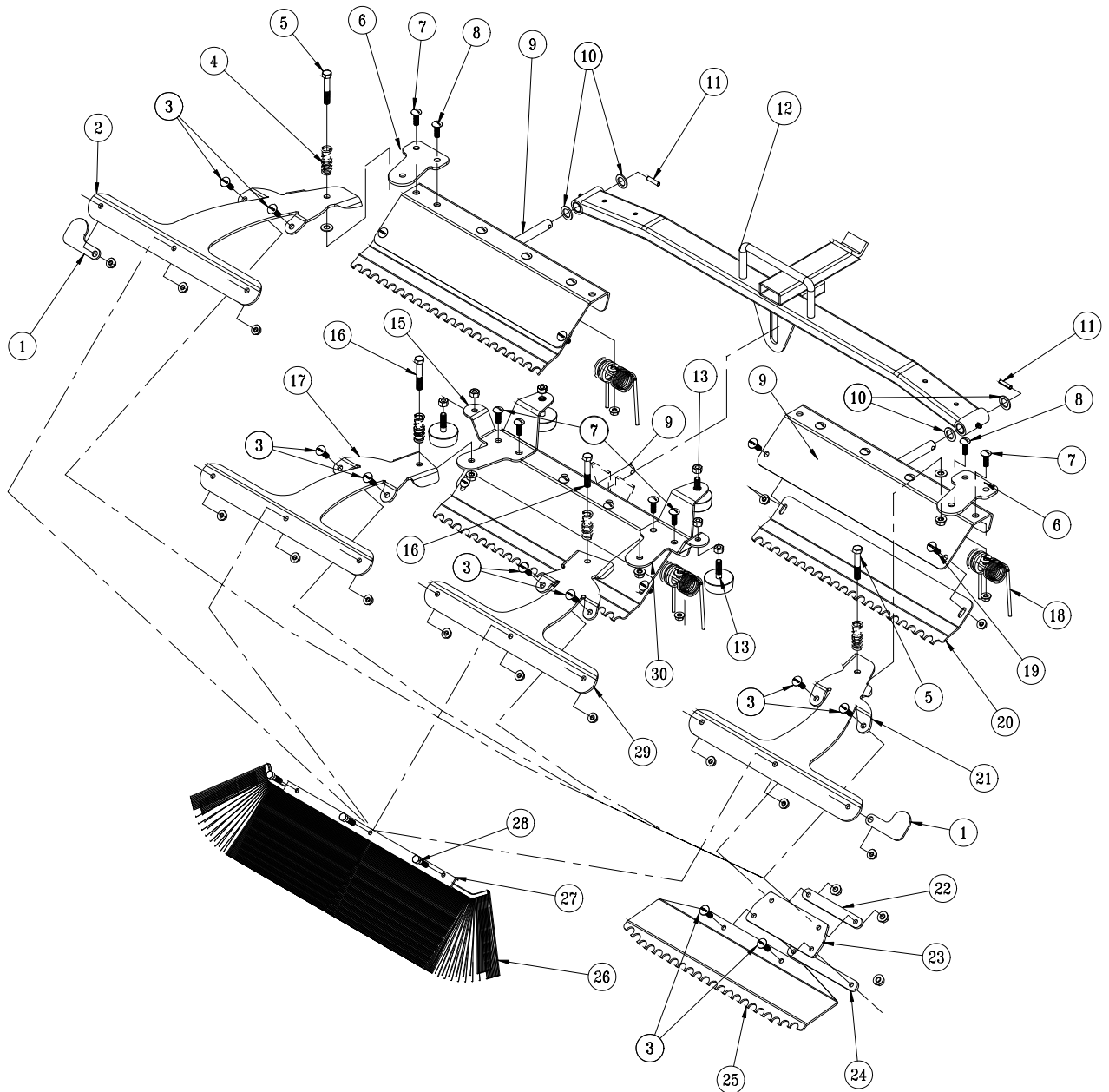
1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are mounted on the outside (RH & LH) have flat washers that are between the Brush Arms (Refs 2 & 21) and the Brush Arm Mount (Ref 6).
2. Also please note the placement of the Brush/Finish Blade Assemblies 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 $\frac{1}{4}$ " Pin (Ref 11) and the Center Assembly with the $\frac{1}{4}$ " x $1\frac{3}{4}$ " Bolt and Lock Nut (Ref 13).
4. Mount the Brush/Finish Blade Assemblies to the Brush Arm Mounts (Refs 6, 30 & 15) as illustrated using the $\frac{3}{8}$ " x $2\frac{1}{2}$ " Bolts and Lock Nuts. Assemble with the Springs (Ref 4) as shown in Fig. 2. Please note that the $\frac{3}{8}$ " 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.



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



Rear Attachment



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, $\frac{5}{16}$ - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HW-38	Flat Washer, $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, $\frac{5}{16}$ - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, $\frac{5}{16}$ - 18 x 1 $\frac{1}{4}$	12
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	12
9	42-102	84" Outside Rake	3
10	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	4
11	HRP-14-100	Roll Pin $\frac{1}{4}$ x 1	2
12	43-144	84" Draw Bar	1
13	50-081	Rubber Bumper	2
14	50-081	Rubber Bumper	2
	HNFL-38-16	Flange Whiz-Loc Nut, $\frac{3}{8}$ - 16	4
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 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, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	6
	HNFL-516-18	Flange Whiz-Loc Nut $\frac{5}{16}$ - 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, $\frac{5}{16}$ - 18 x 1 $\frac{1}{4}$	12
	HNFL-516-18	Flange Whiz-Loc Nut $\frac{5}{16}$ - 18	12
29	42-453	Inside Brush Arm, RH	1
30	42-398	Brush Arm Mount, RH	1



42-3920 84"(213CM) ProBRUSH TOURNAMENT RAKE DRAWING

Fig.1

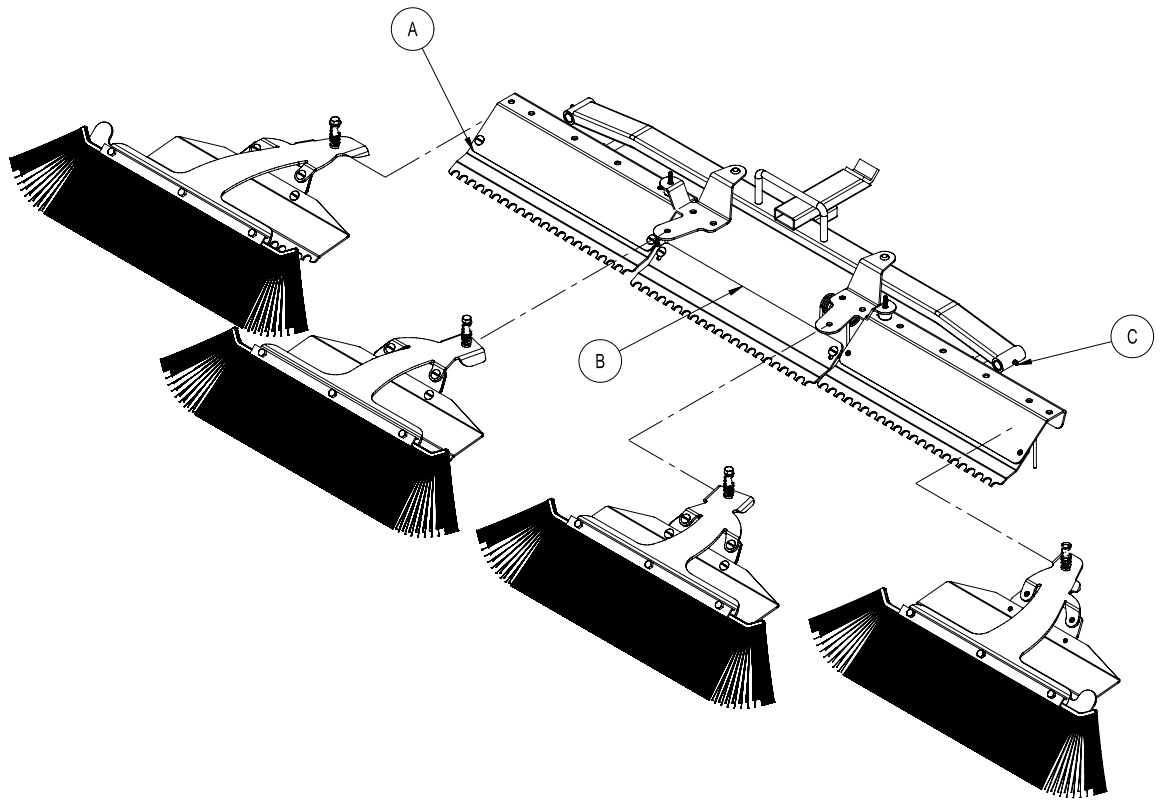


Fig.2

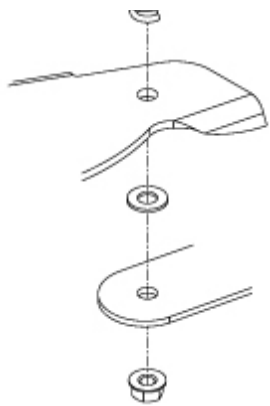


Fig.3

Rear Attachment



PROBRUSH TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your PROBRUSH TOURNAMENT RAKE comes mostly assembled.

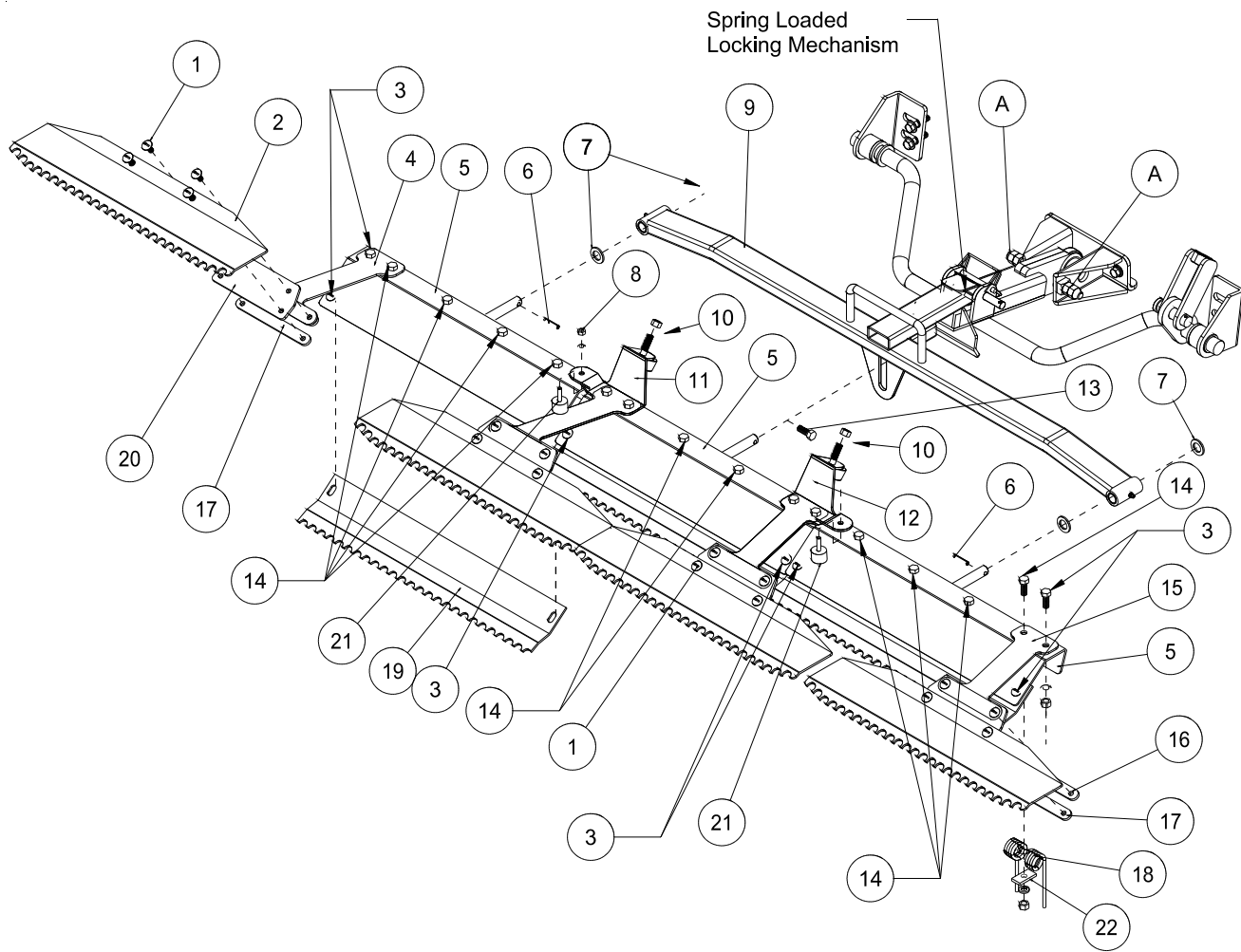
1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are mounted on the outside (RH & LH) have flat washers that are between the Brush Arms (Refs 2 & 21) and the Brush Arm Mount (Ref 6).
2. Also please note the placement of the Brush/Finish Blade Assemblies 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 $\frac{1}{4}$ " Pin (Ref 11) and the Center Assembly with the $\frac{1}{4}$ " x $1\frac{3}{4}$ " Bolt and Lock Nut (Ref 13).
4. Mount the Brush/Finish Blade Assemblies to the Brush Arm Mounts (Refs 6, 30 & 15) as illustrated using the $\frac{3}{8}$ x $2\frac{1}{2}$ Bolts and Lock Nuts. Assemble with the Springs (Ref 4) as shown in Fig. 2. Please note that the $\frac{3}{8}$ " 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.



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

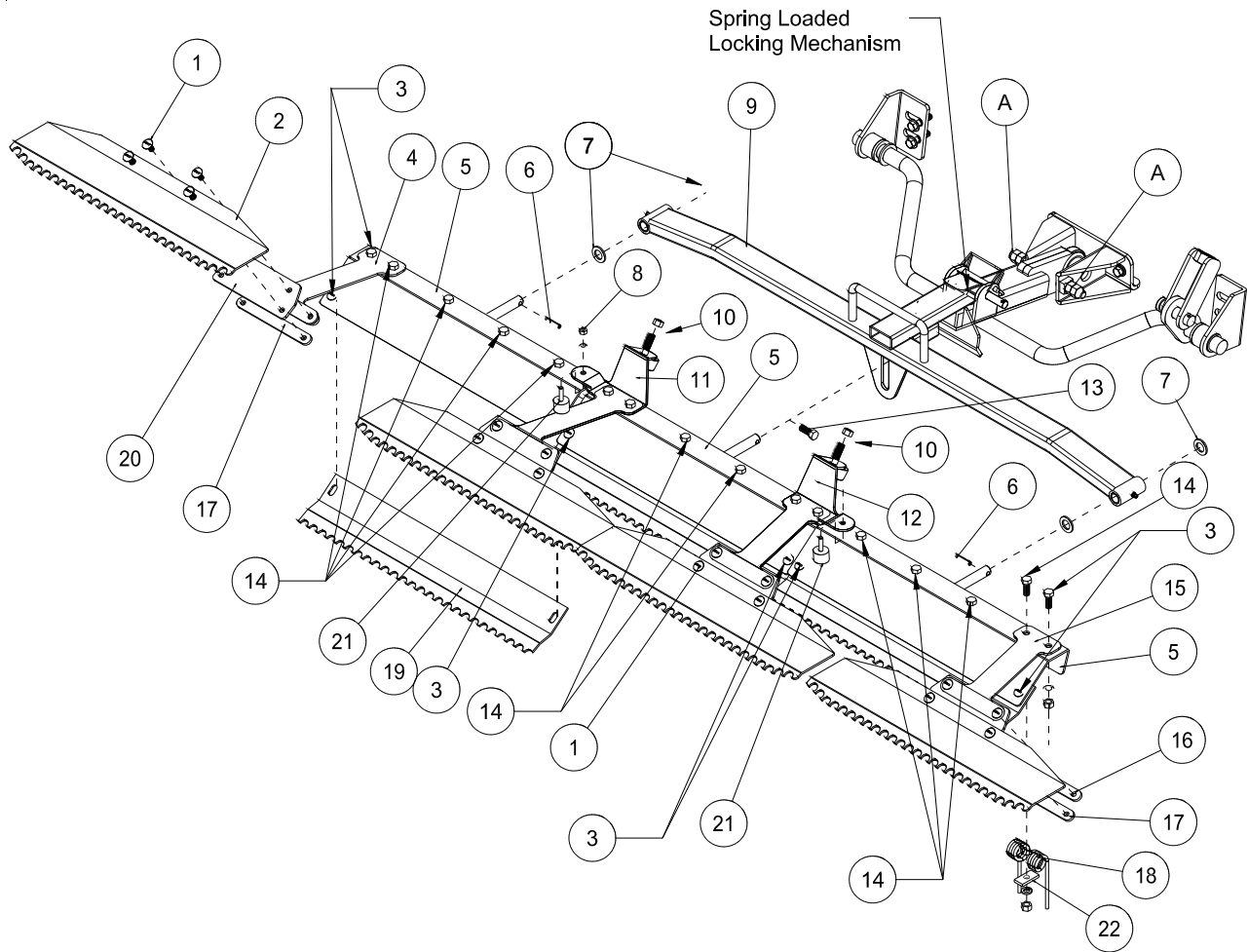


Rear Attachment

42-1300 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 Loc-Nut $5/16$ - 18	16
2	42-135	Finishing Blades	4
3	HSTP-516-18-075	Phillips Machine Screw $5/16$ - 18 x $3/4$	6
	HNFL-516-18	Flange Loc-Nut $5/16$ - 18	6
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	42-116	Rubber Grommet	2
11	42-110	Left Inside Mount	1
12	42-108	Inside Trowel Mount	1
13	HB-14-20-150	Bolt $1/4$ - 20 x $1\frac{1}{2}$	1
	HNTL-14-20	Lock Nut $1/4$ - 20	1
14	HSTP-516-18-125	Phillips Machine Screw $5/16$ - 18 x $1\frac{1}{4}$	12
	HNFL-516-18	Flange 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	HSTP-38-16-125	Phillips Machine Screw $5/16$ - 18 x $1\frac{1}{4}$	4
	HNFL-516-18	Flange Loc-Nut $5/16$ - 18	4
22	15-013	Rubber Bumper	2
23	42-177	Spring Holder	12

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



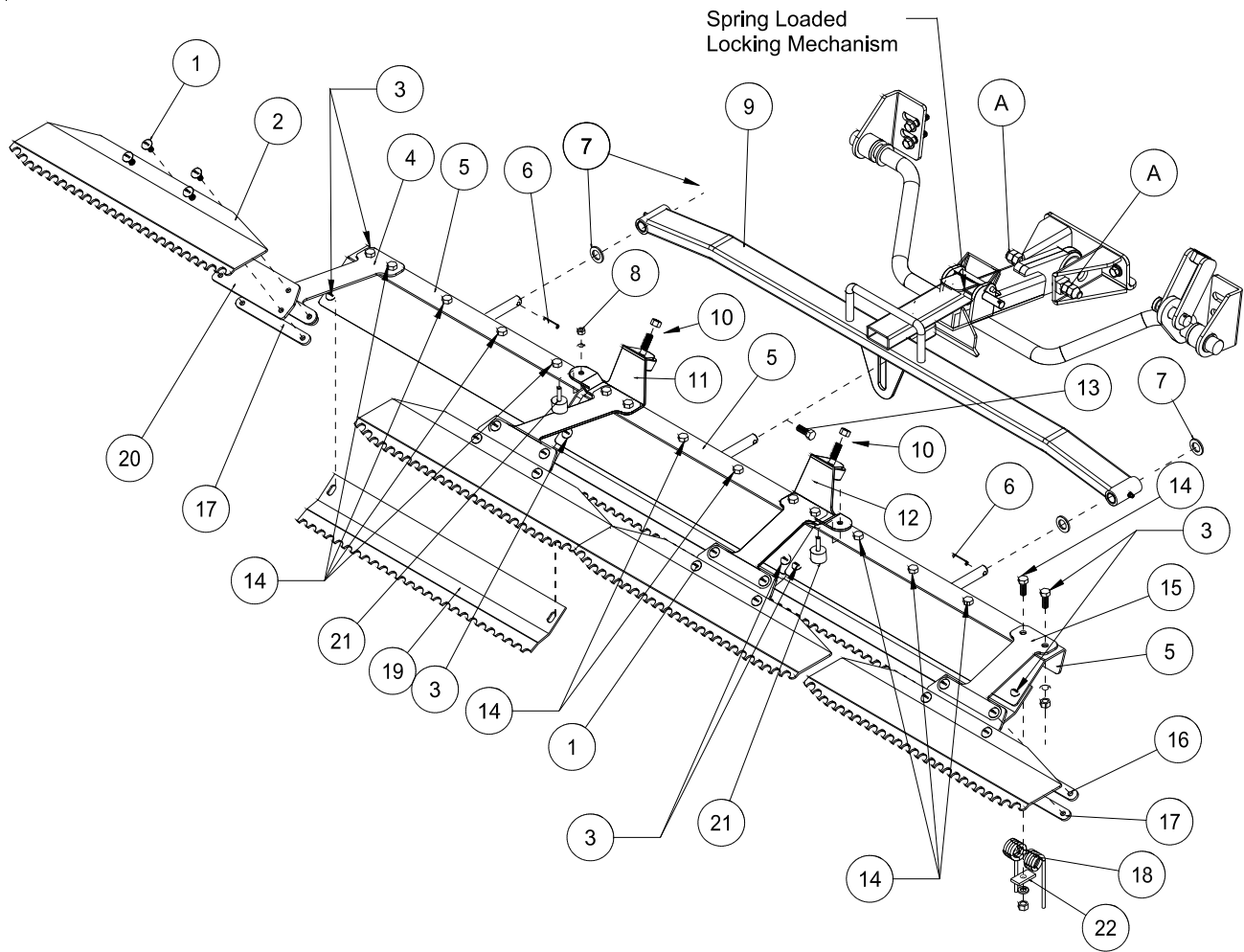
Rear Attachment

RAKE ASSEMBLY INSTRUCTIONS

1. 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 22) 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 1¹/₄" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the 1¹/₄" truss head screws (Ref 21) 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 1¹/₂ bolts and 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 bolts (Ref A) on the side of hitch, adjust the 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

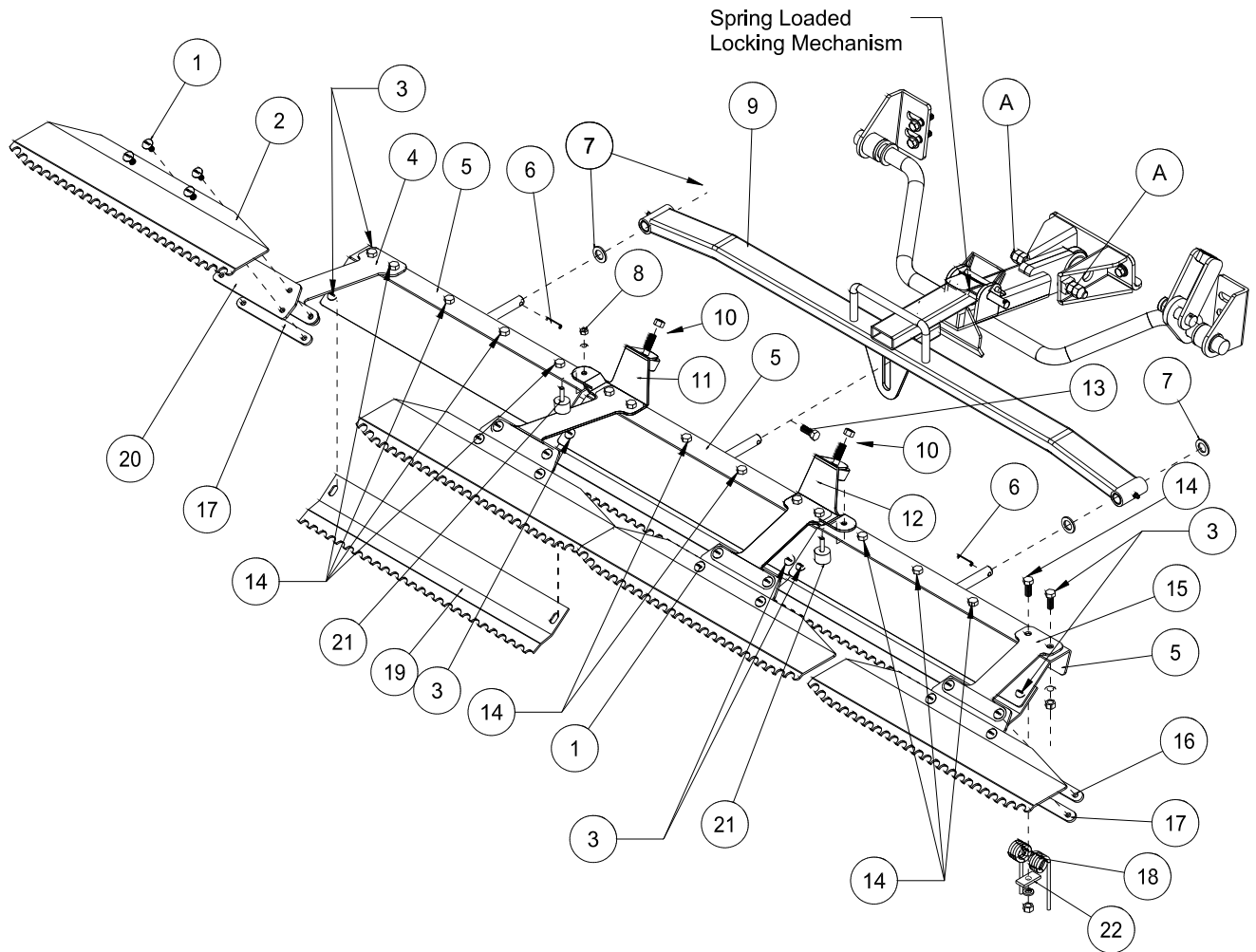


Rear Attachment

42-1320 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 Loc-Nut $5/16$ - 18	16
2	42-170	Finishing Blades	4
3	HSTP-516-18-075	Phillips Machine Screw $5/16$ - 18 x $3/4$	6
	HNFL-516-18	Flange Loc-Nut $5/16$ - 18	6
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
10	42-116	Rubber Grommet	2
11	42-110	Left Inside Mount	1
12	42-108	Inside Trowel Mount	1
13	HB-14-20-150	Bolt $1/4$ - 20 x $1\frac{1}{2}$	1
	HNTL-14-20	Lock Nut $1/4$ - 20	1
14	HSTP-516-18-125	Phillips Machine Screw $5/16$ - 18 x $1\frac{1}{4}$	12
	HNFL-516-18	Flange 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	HSTP-38-16-125	Phillips Machine Screw $5/16$ - 18 x $1\frac{1}{4}$	4
	HNFL-516-18	Flange Loc-Nut $5/16$ - 18	4
22	15-013	Rubber Bumper	2
23	42-177	Spring Holder	12

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



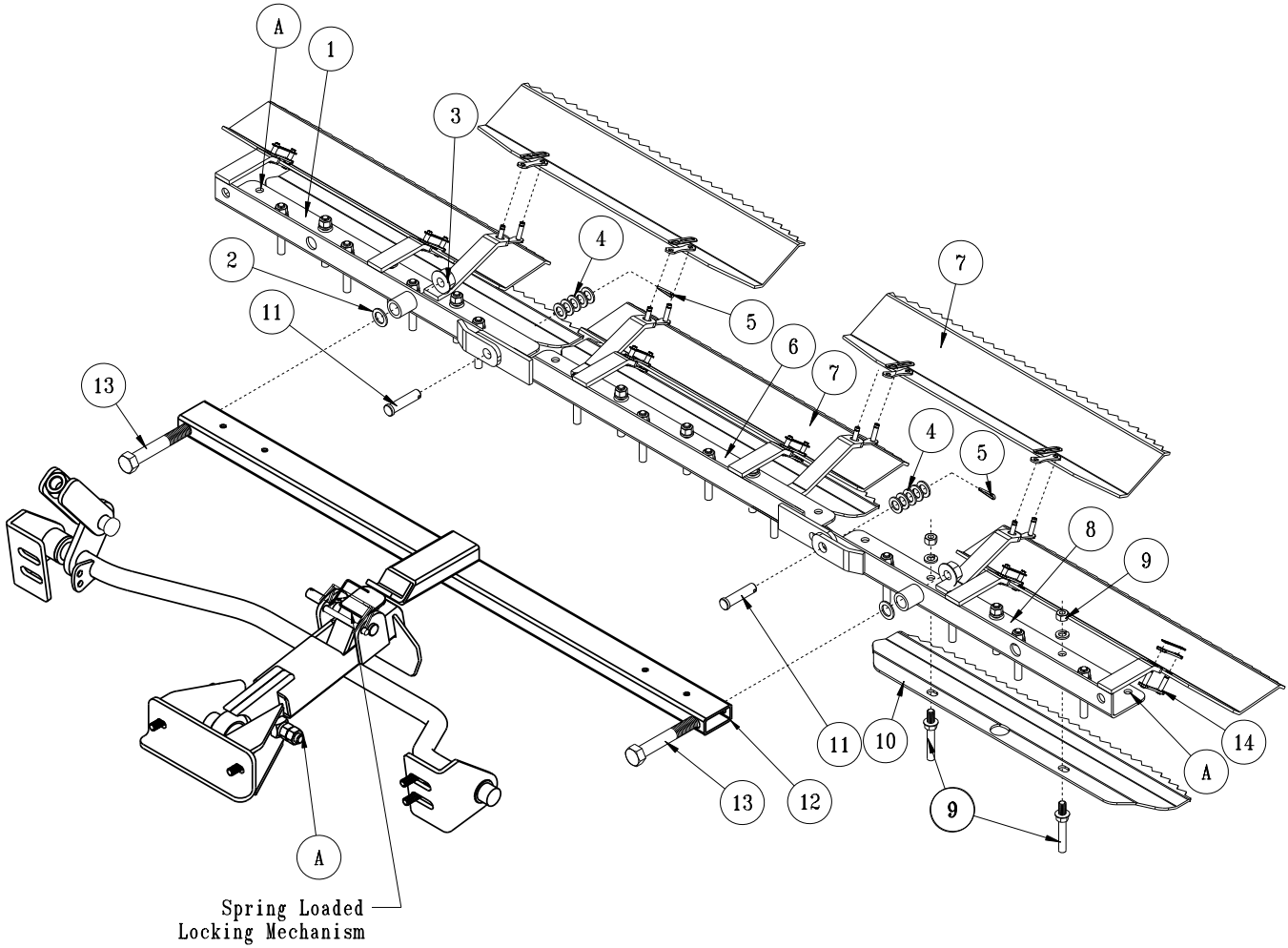
Rear Attachment

RAKE ASSEMBLY INSTRUCTIONS

1. 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 22) 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 1¹/₄" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the 1¹/₄" truss head screws (Ref 21) 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 1¹/₂ bolts and 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 bolts (Ref A) on the side of hitch, adjust the 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.

13-4380 RAKE ASSEMBLY WITH FINISHING BLADES DRAWING



Rear Attachment

13-438Q RAKE ASSEMBLY WITH FINISHING BLADES PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-441	Right Rake	1
2	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	2
3	HNCL-58-11	Lock Nut $\frac{5}{8}$ - 11	2
4	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14GA	10
5	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	2
6	13-753	Center Rake	1
7	13-443	Finishing Blade	5
8	13-439	Left Rake	1
9*		Rake teeth	25
10	13-442	Groomer Blade	3
11	HCP-12-150	Clevis Pin $\frac{1}{2}$ - $1\frac{1}{2}$	2
12	43-145	Drawbar	1
13	HB-58-11-400	Bolt $\frac{5}{8}$ - 11 x 4	2
14	13-417	Connector Link	10
*	13-090	Rake Teeth Kit (25 Studs and Hardware)	1

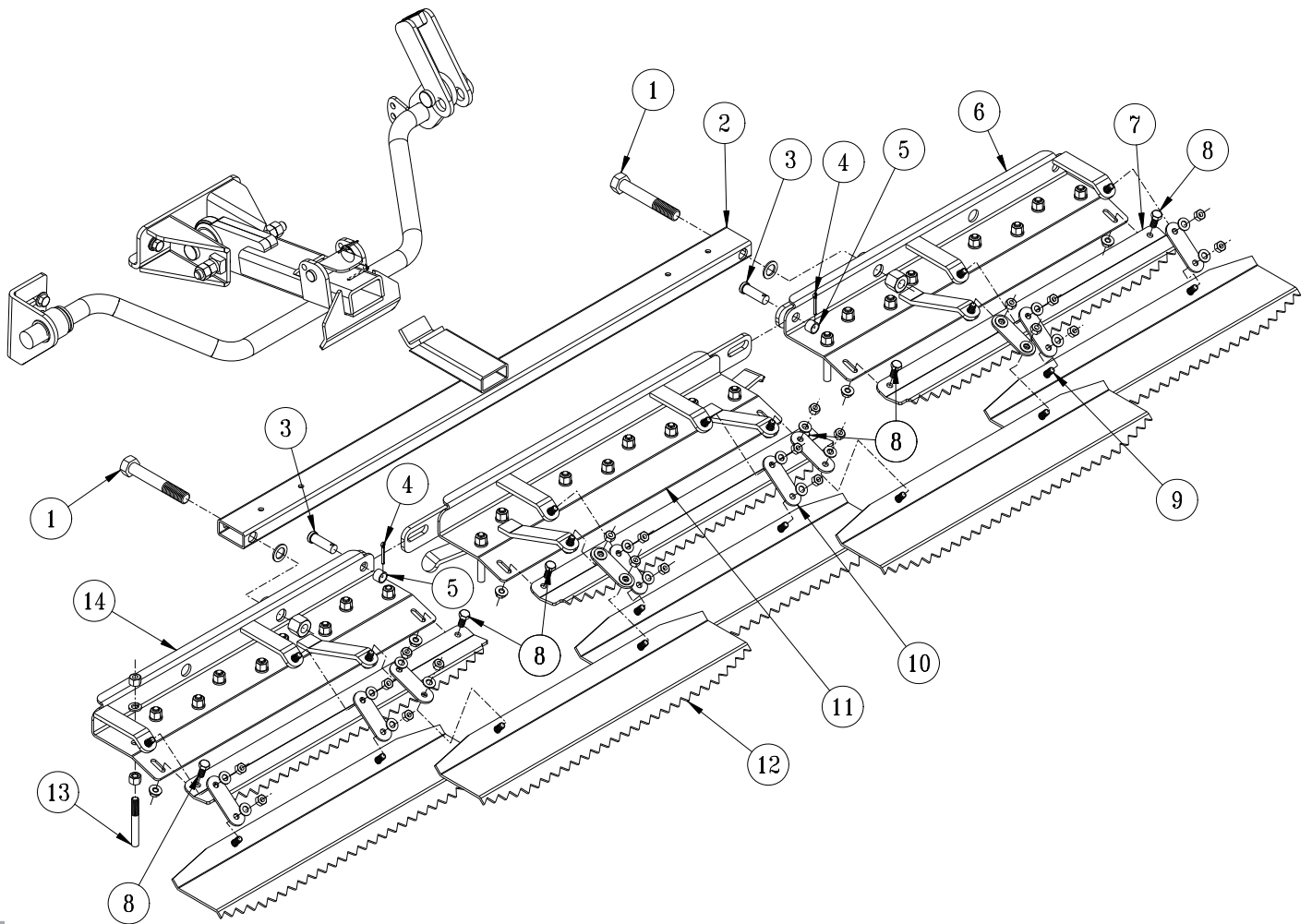
INSTALLATION INSTRUCTIONS

1. Bolt rake teeth (Ref 9) to frames, keeping all the same length. **Leave the two outside holes on right and left rake open (Ref A).**
2. Lay out rake frames (Ref 1,6 and 8). Connect them using clevis pin, machine bushing and cotter pin (Ref 11, 4 and 5).
3. Attach drawbar to left and right frames using bolt, machine bushing, and nut (Ref 13, 2 and 3).
4. Attach five finishing blades (Ref 7) to the tabs of the rake frames using master link (Ref 14). Blades may be mounted with saw tooth up or down, depending on the desired finish of the sand trap.
5. Attach the rake lift to the trap rake quick hitch, by sliding the the hitch into the spring loaded locking mechanism.
6. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
7. Repeat steps on left side.
8. 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.
9. **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.

GROOMER BLADES - GOLF COURSE USE ONLY.

1. Place the three groomer blades (Ref 10) under the three rake assemblies (Ref 1, 6 and 8) .
2. Center blades below rear most row of rake teeth. The blade is designed to miss the outside two "teeth" and fit around the center 'tooth'.
3. Remove the two 'teeth' that line up with slots of each groomer blade. Move blade up and into position and reattach 'teeth'. Blade thickness should be accounted for by shortening the 'teeth' an equal length.

13-758 MAX FLEX SAND RAKE



Rear Attachment

13-758 MAXFLEX SANDRAKE

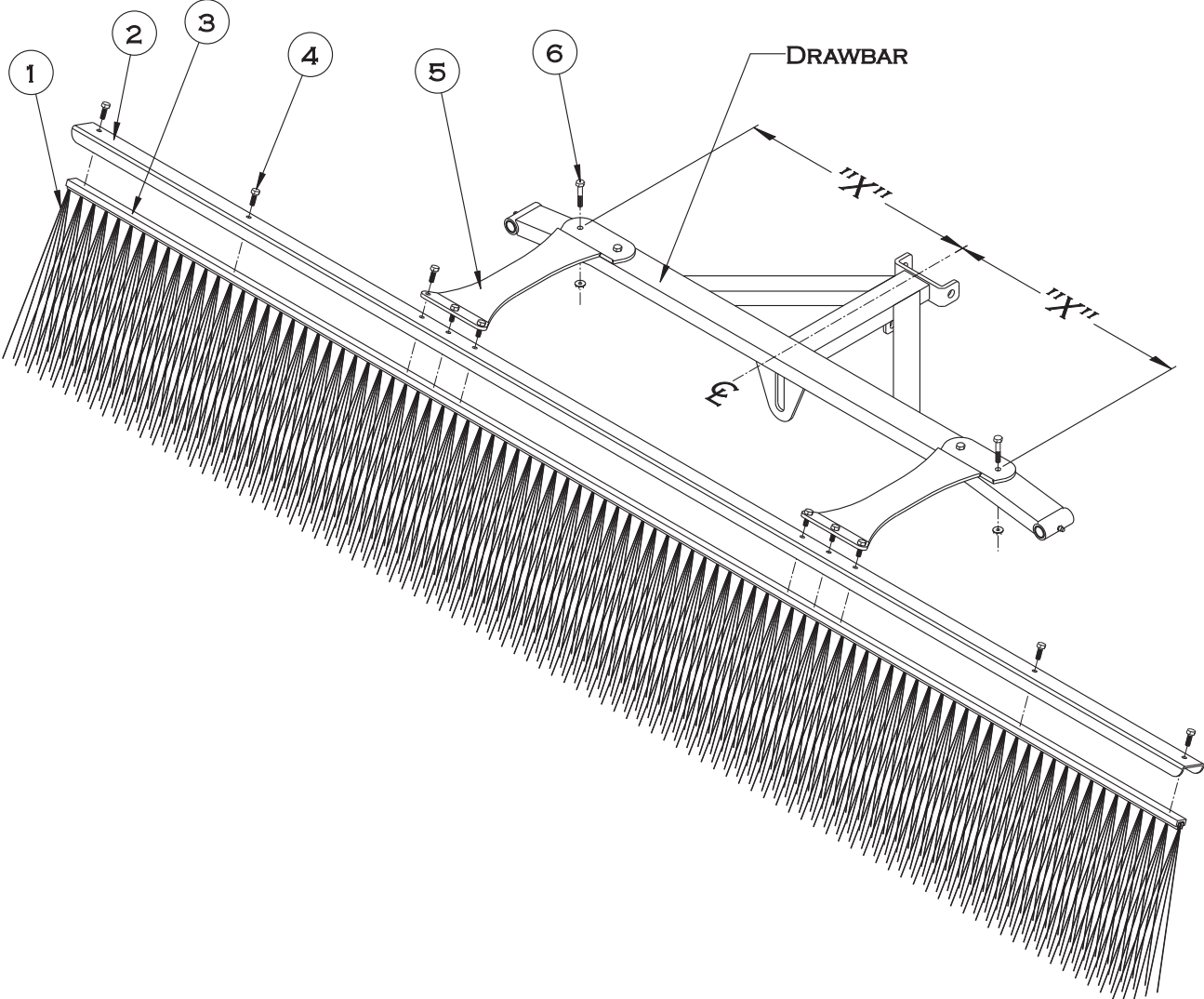
REF#	PART#	DESCRIPTION	QUANTITY
1	HB-58-11-400	Bolt, $\frac{5}{8}$ - 11 x 4	2
	HMB-58-14	Machine Bushing, $\frac{5}{8}$ x 14GA	2
	HNCL-58-11	Lock Nut, $\frac{5}{8}$ - 11	2
2	43-145	Drawbar	1
3	HCP-12-150	Clevis Pin, $\frac{1}{2}$ - $1\frac{1}{2}$	2
4	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	2
5	76-275	Spacer	2
6	13-762	Right Rake	1
7	13-759	Grooming Blade	3
8	HB-516-18-075	Bolt, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	6
	HNFL-516-18	Flange Lock Nut, $\frac{5}{16}$ - 18	6
9	HBFL-516-18-100	Flange Lock Bolt, $\frac{5}{16}$ - 18 x 1	20
	HNTL-516-18	Nylon Lock Nut, $\frac{5}{16}$ - 18	20
	HW-516	Flat Washer, $\frac{5}{16}$	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. 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 Drawbar (Ref 2) using $\frac{5}{8}$ Bolt, Machine Bushing, and Center 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 Lock 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 Bolt, Flat Washer and Nylon Lock Nut (Ref 9).
- NOTE: Attach Straps using hardware as illustrated, placing Flat Washer on Strap then secure with Lock Nut. Attaching with the Flange 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 the drawbar 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.

13-740 SANDRAKE BRUSH KIT DRAWING

For use with 42-130



Rear Attachment

13-740 SAND RAKE BRUSH KIT PARTS LIST

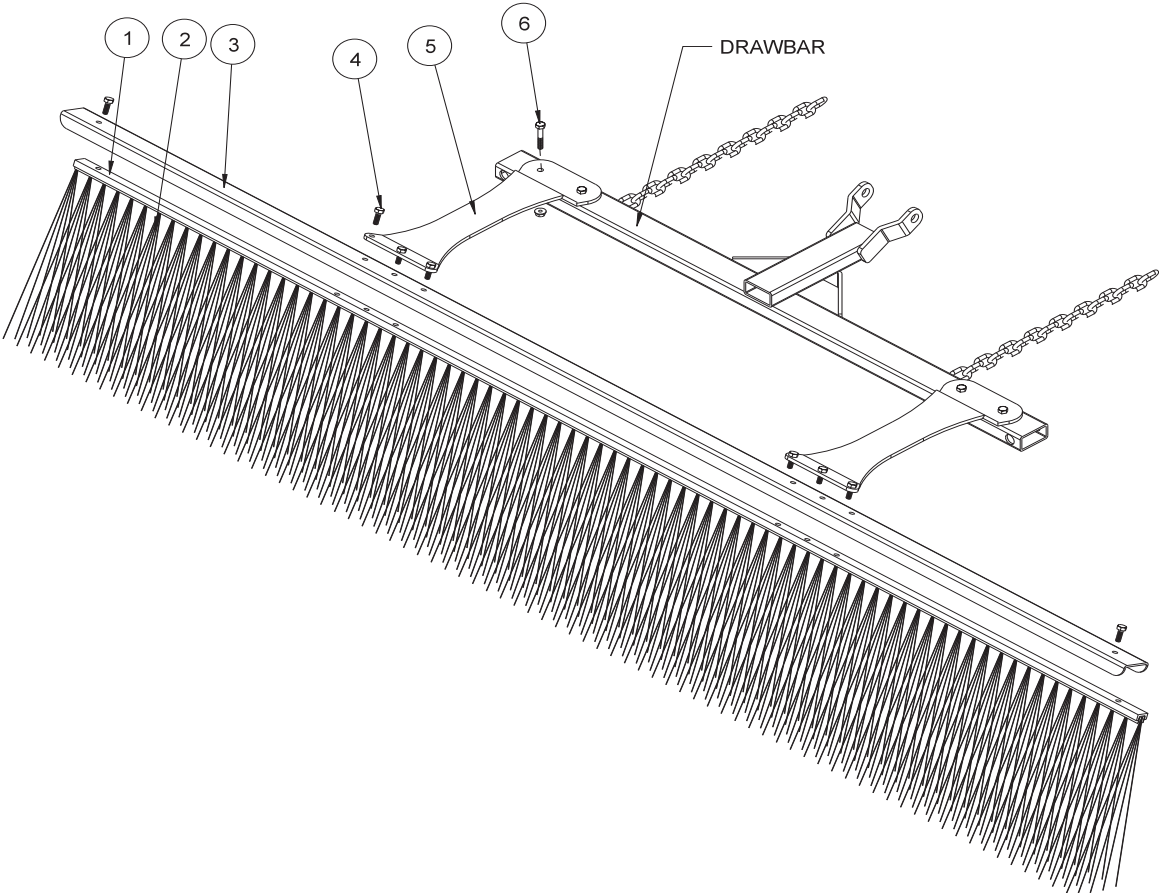
REF#	PART#	DESCRIPTION	QUANTITY
1	13-738	Brush, 89 x 11	1
2	13-737	Brush Channel	1
3	13-739	Brush Track	1
4	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	10
	HNFL-14-20	Flange Whiz-Lock Nut $\frac{1}{4}$ - 20	10
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{2}$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

INSTALLATION INSTRUCTIONS

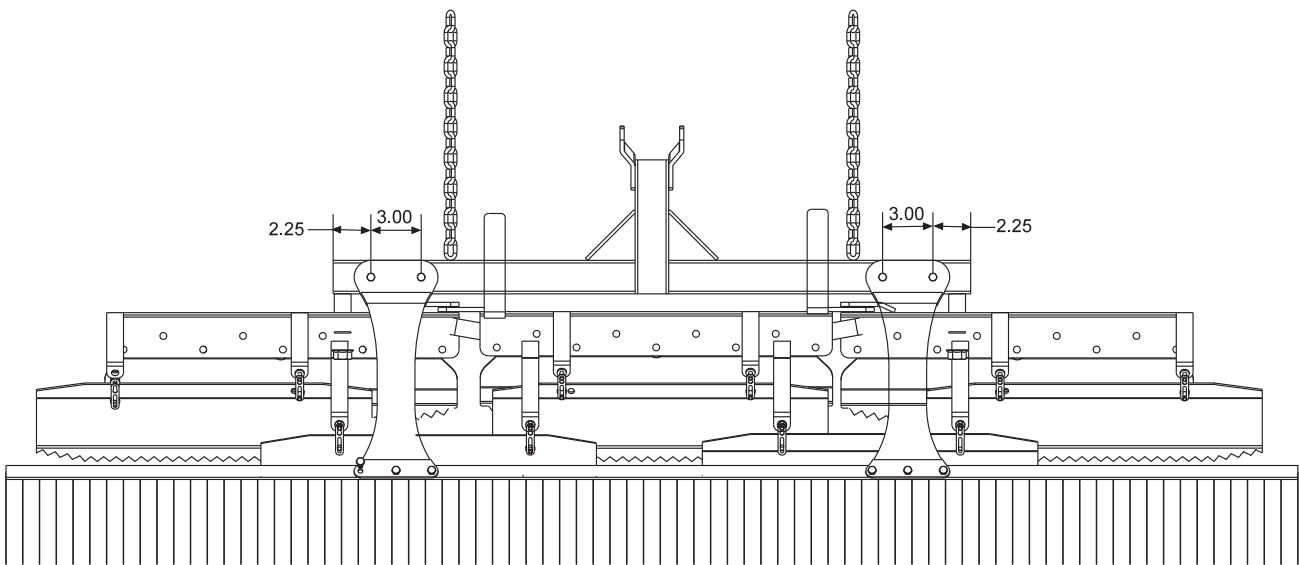
1. Place the Brush(Ref 1) into the Brush Track(Ref 3). Place the Brush Channel(Ref 2) between the brush track and the mounting brackets. Now bolt the Mounting Brackets(Ref 5) to the brush track using the $\frac{3}{4}$ " bolts and flange whiz-lock nuts(Ref 4).
2. To mount the Brush Assembly(Refs 1-5) to the Rake Drawbar, first align the Mounting Brackets so the Brush Assembly is centered ("X" measurements are equal) on the Rake Drawbar. Mark the locations for the four holes that will need to be drilled. *Note: To fit the curve of the Rake Drawbar, a small amount of twist will need to be put in the Mounting Brackets. This can be done by clamping the Mouning Brackets to the Drawbar.*
3. Mount the Brush Assembly to the Rake Drawbar using the four $1\frac{1}{2}$ " bolts and flange whiz-lock nuts(Ref 6).

13-684 SANDRAKE BRUSH KIT DRAWING

For use with 13-438



HOLE LOCATION



Rear Attachment

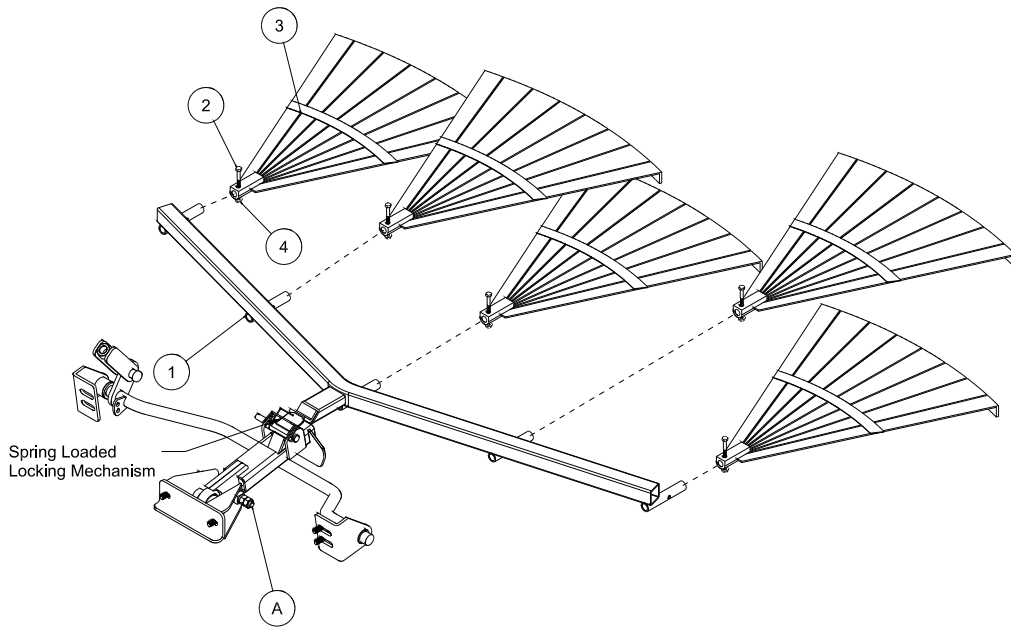
13-684 SAND RAKE BRUSH KIT PARTS LIST

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	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	8
	HNFL-14-20	Flange Whiz-Lock Nut $\frac{1}{4}$ - 20	8
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{2}$	4
	HNFL-14-20	Flange Whiz-Lock Nuts $\frac{1}{4}$ - 20	4

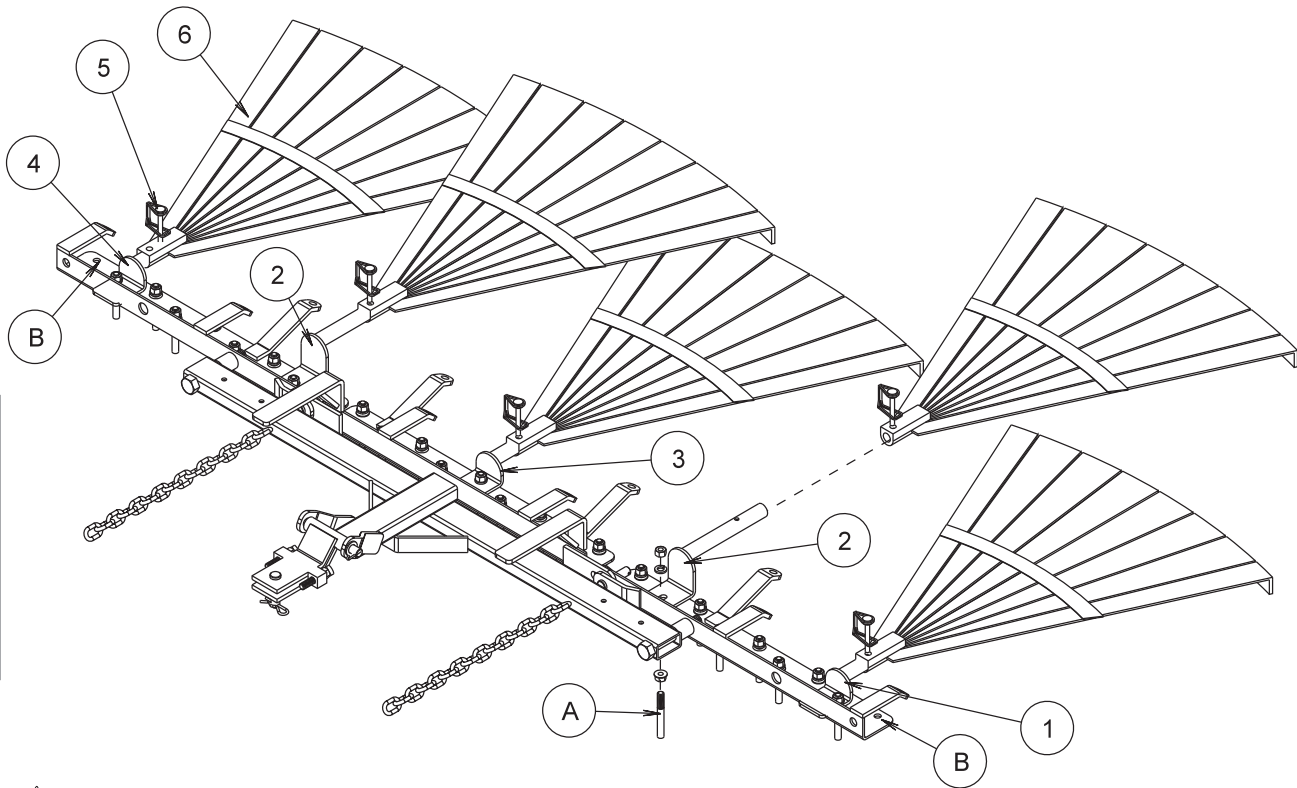
INSTALLATION INSTRUCTIONS

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 bolt the mounting brackets (Ref 5) to the brush track using the $\frac{3}{4}$ " bolts and flange whiz-lock nuts (Ref 3).
2. Two holes need to be drilled into the drawbar of the rake to install the brush. Drill two .281 holes $2\frac{1}{4}$ " in from each end and 3" apart (see drawing).
3. Mount the brush assembly to the drawbar using four $\frac{3}{4}$ " bolts and flange whiz-lock nuts (Ref 5).

13-2980 FAN RAKE ATTACHMENT DRAWING



13-319-KFAN RAKE KIT DRAWING



Rear Attachment

13-298Q FAN RAKE ATTACHMENT PARTS LIST

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

INSTALLATION INSTRUCTIONS

1. Assemble the five rakes (Ref 3) to the frame using the bolt and center 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 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.

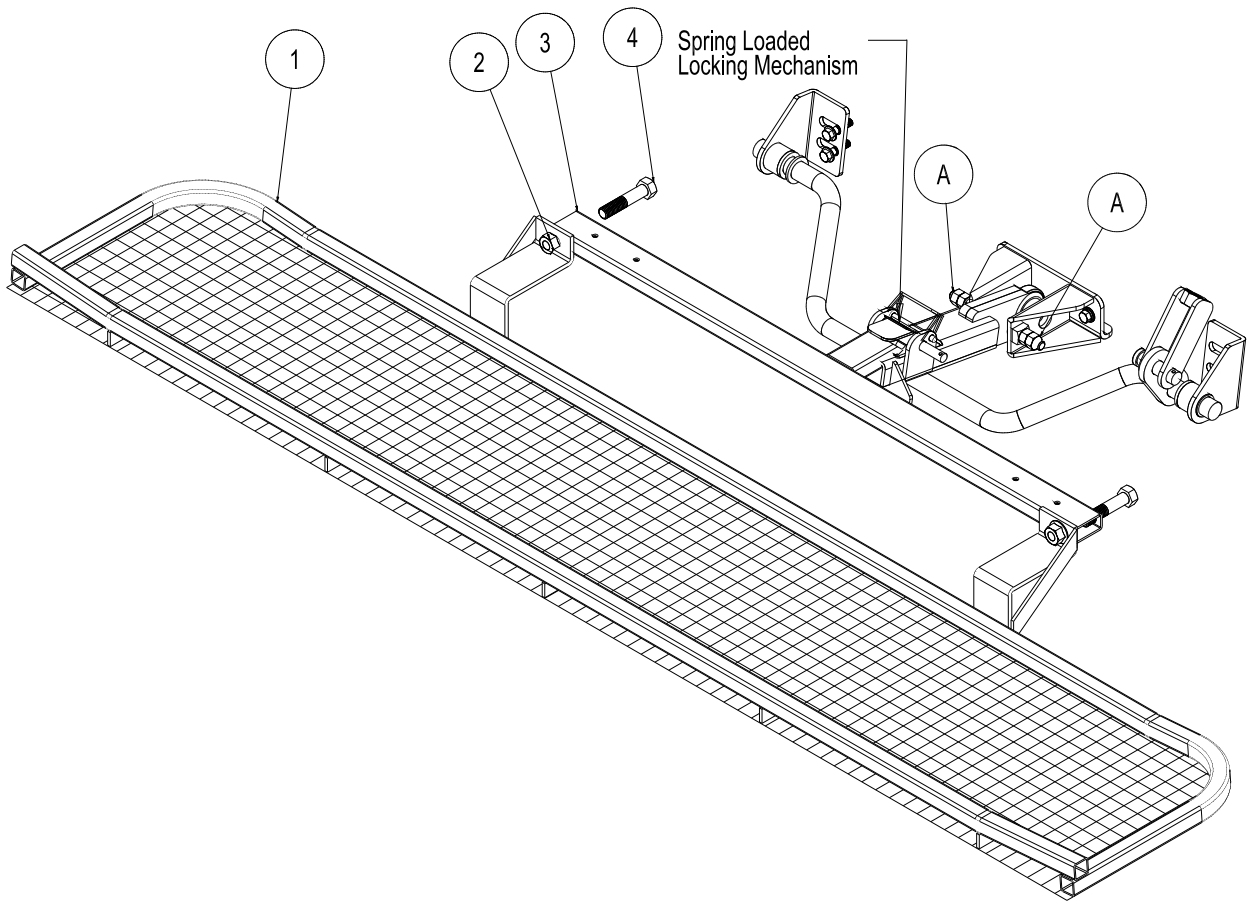
13-319-K FAN RAKE KIT PARTS LIST

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

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).

26-0070 PROFESSIONAL INFIELD FINISHER DRAWING



Rear Attachment

26-0070 PROFESSIONAL INFIELD FINISHER PARTS LIST

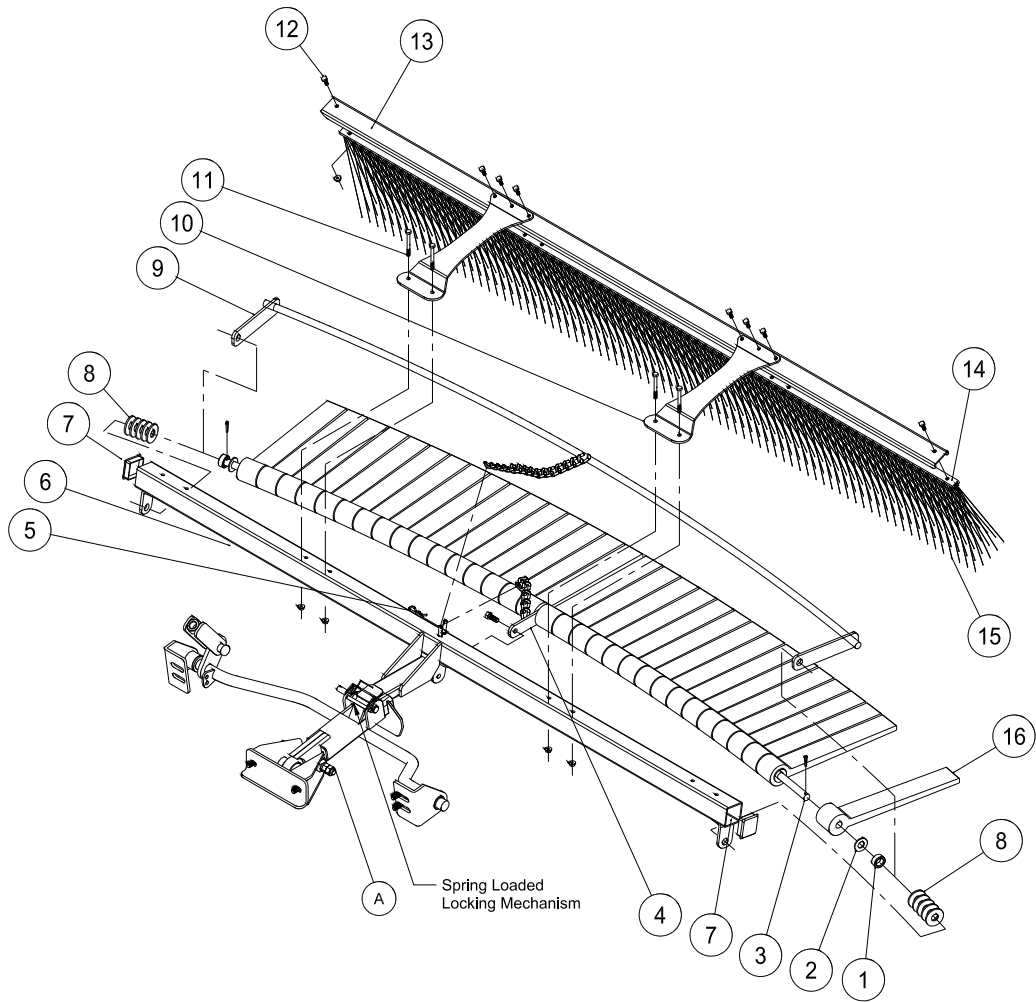
REF#	PART#	DESCRIPTION	QUANTITY
1	26-045	Leveling Screen	1
2	HNCL-58-11	Center Lock Nut $\frac{5}{8}$ - 11	2
3	43-152	Drawbar	1
4	HB-58-11-300	Bolt $\frac{5}{8}$ - 11 x 3	2

INSTALLATION INSTRUCTIONS

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

1. Attach leveling screen (Ref 1) to drawbar (Ref 3) using two bolts (Ref 4) and center lock nuts (Ref 2).
2. Mount Professional Field Finisher to the hitch on the trap rake by sliding the drawbar into the quick hitch locking mechanism.
3. When Professional Field Finisher is attached, adjust 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.

43-0020 FLEXACTION FIELD FINISHER WITH BRUSH DRAWING

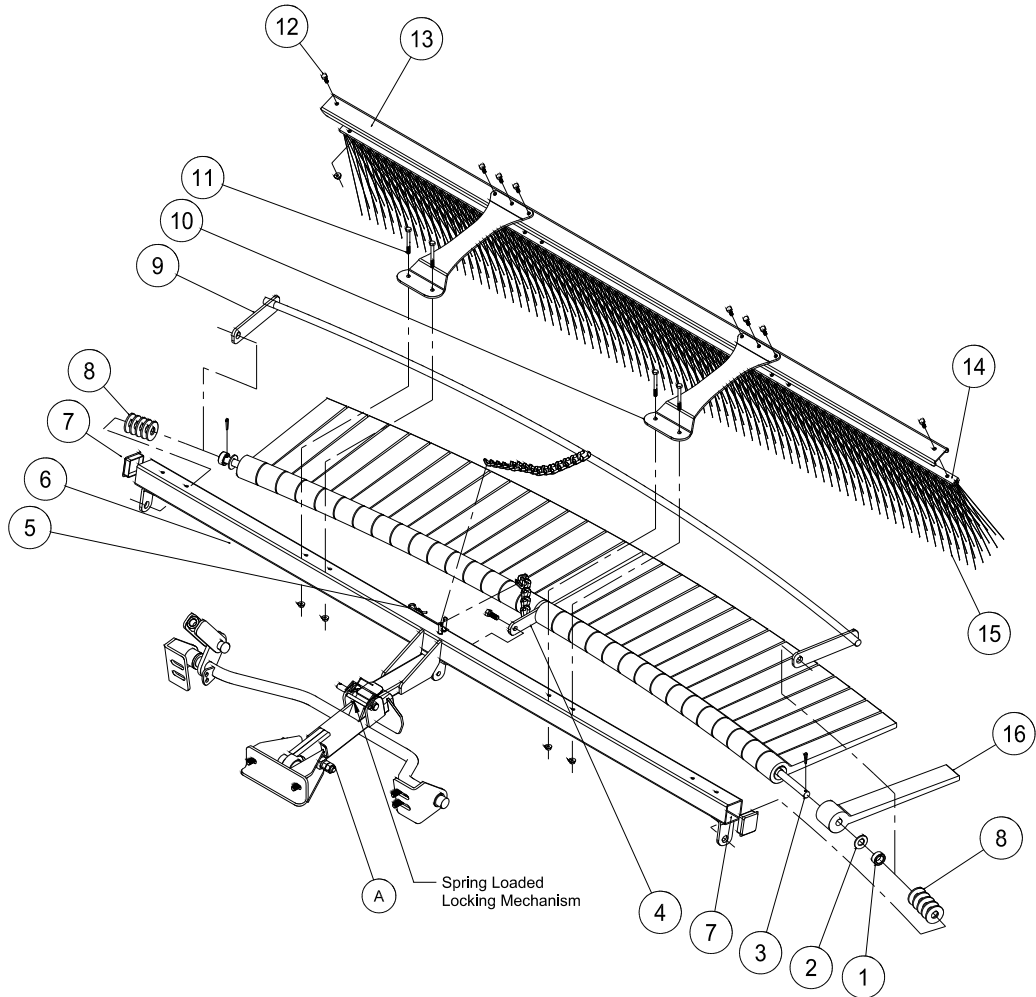


Rear Attachment

43-002Q FLEX ACTION FIELD FINISHER WITH BRUSH PARTS LIST

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	Bolt 3/8-16 x 1	1
	HNCL-38-16	Center 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	43-041	Mount Bracket	2
11	HB-14-20-250	Bolt, 1/4-20 x 2 1/2	4
	HNFL-14-20	Flange Whiz-Lock Nut, 1/4-20	4
12	HB-14-20-075	Bolt, 1/4-20 x 3/4	8
	HNFL-14-20	Flange Whiz-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

43-002 QFLEXACTION FIELD FINISHER WITH BRUSH DRAWING



Rear Attachment

43-0020 FLEXACTION 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 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 $\frac{1}{8}$ x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with $\frac{3}{8}$ -16 x 1 bolt and $\frac{3}{8}$ -16 center 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.

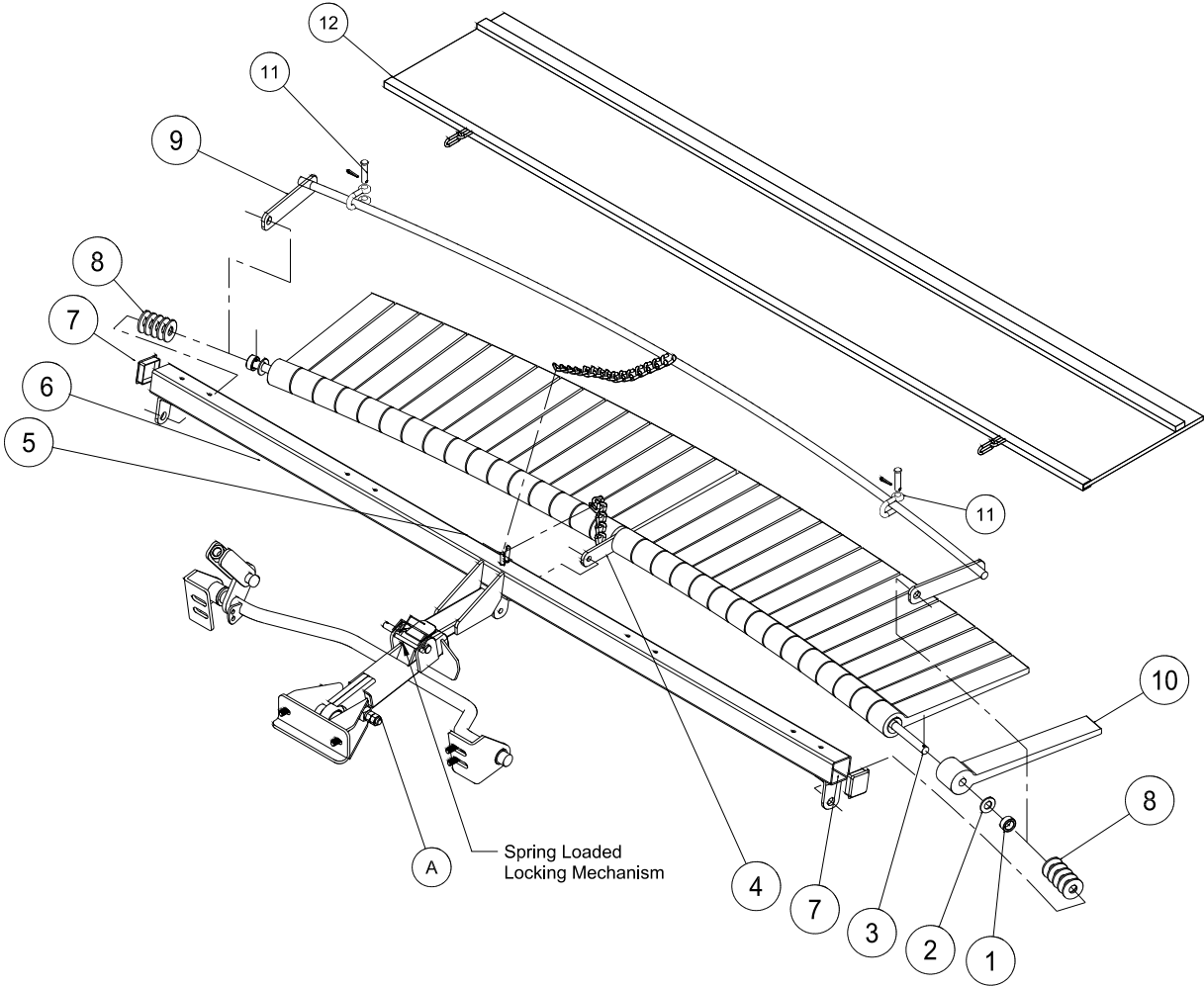
OPERATING INSTRUCTIONS

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.

BRUSH ASSEMBLY

1. Place the brush (Ref 15) into the brush track (Ref 14). Place the brush channel (Ref 13) between the brush track and the mounting brackets. Now bolt the mounting brackets (Ref 10) to the brush track using the $\frac{1}{4}$ -20 x $\frac{3}{4}$ bolts and $\frac{1}{4}$ -20 flange whiz-lock nuts (Ref 12).
2. Mount the brush assembly to the frame using the (4) $\frac{1}{4}$ -20 x 2 $\frac{1}{2}$ bolts and $\frac{1}{4}$ -20 flange whiz-lock nuts (Ref 11).

26-0080 FLEX ACTION FIELD FINISHER DRAWING



Rear Attachment

26-0080 FLEX ACTION FIELD FINISHER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	11-040	Spacer $\frac{3}{4}$ "	2
2	HW-58	Washer $\frac{5}{8}$	32
3	26-049	Mounting Bar	1
4	26-048	Flail Bar Strap	1
	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	1
	HNCL-38-16	Center Lock Nut $\frac{3}{8}$ - 16	1
5	HHP-18	Bridge Pin $\frac{1}{8}$	2
6	43-146	Frame	1
7	18-297	Cap Plug	2
8	HMB-58-14	Machine Bushing $\frac{5}{8}$ 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

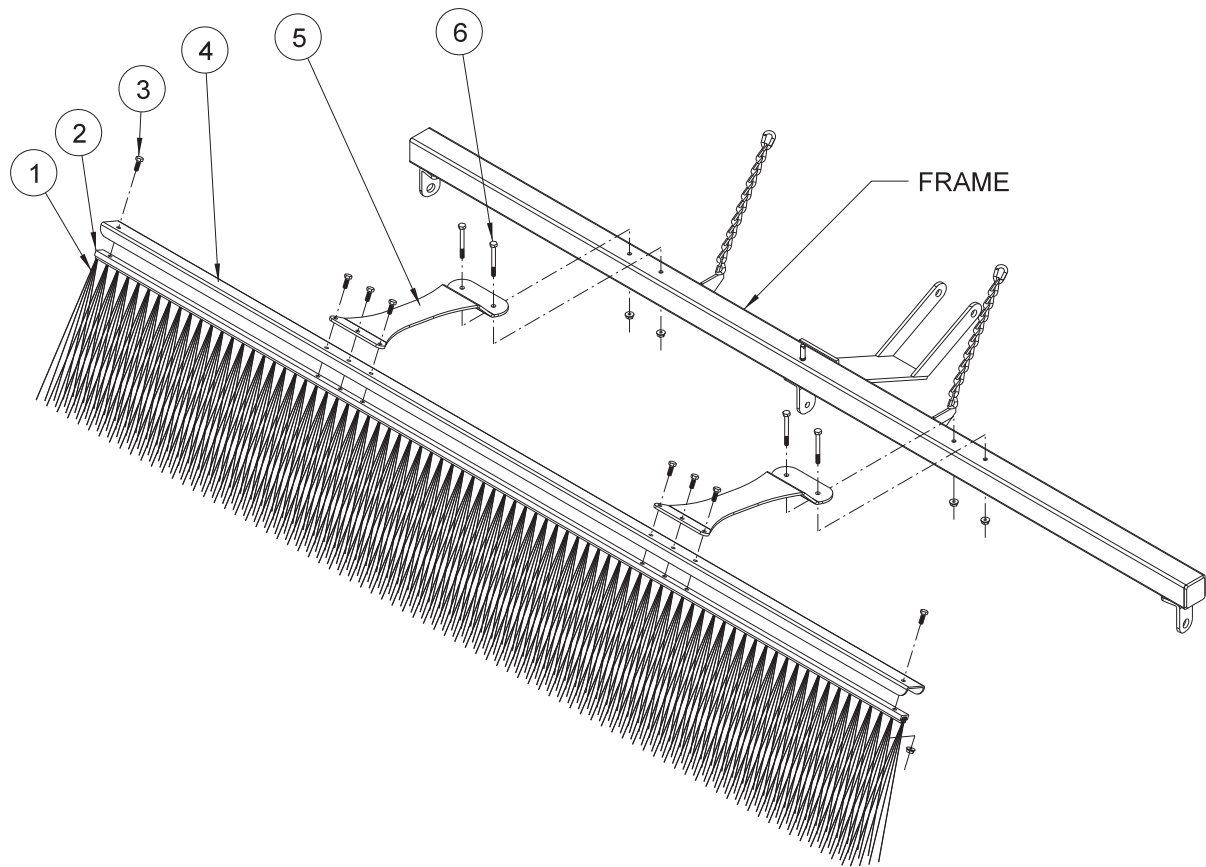
INSTALLATION INSTRUCTIONS

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 $\frac{1}{8}$ x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with $\frac{3}{8}$ -16 x 1 bolt and $\frac{3}{8}$ -16 center 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.

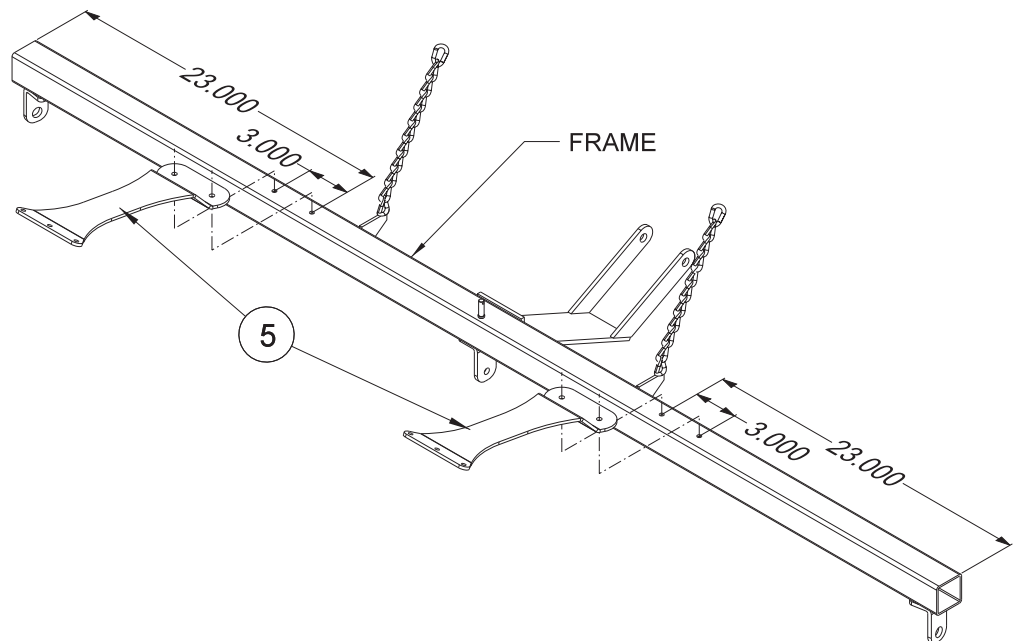
OPERATING INSTRUCTIONS

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



HOLE LOCATION



Rear Attachment

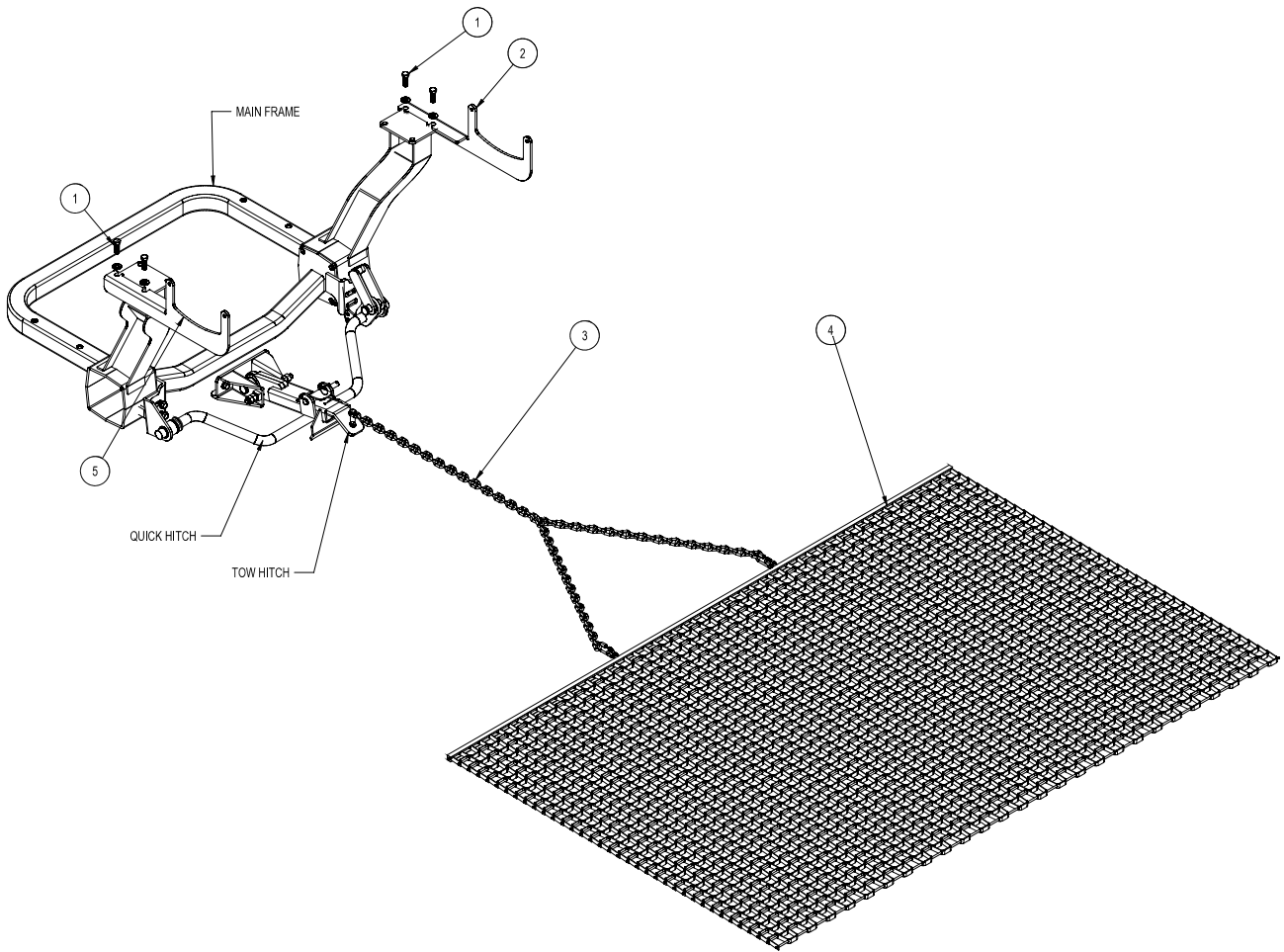
43-043 FINISHING BRUSH KIT PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-682	Brush, 77 x 11	1
2	13-683	Brush Track	1
3	HB-14-20-075	Bolt, 1/4 - 20 x 3/4	8
	HNFL-14-20	Flange Whiz-Lock Nut, 1/4 - 20	8
4	13-688	Brush Channel	1
5	43-041	Mount Bracket	2
6	HB-14-20-250	Bolt, 1/4 - 20 x 2 1/2	4
	HNFL-14-20	Flange Whiz-Lock Nut, 1/4 - 20	4

INSTALLATION INSTRUCTIONS

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 bolt the mounting brackets (Ref 5) to the brush track using the 1/4 - 20 x 3/4" bolts and 1/4 - 20 flange whiz-lock nuts (Ref 3).
3. Four holes need to be drilled into the frame of the Flex Action Finisher to mount the brush. Drill two $\text{Ø}^{9/32}$ holes 23" in from each end and 3" apart (see Reference drawing).
4. Mount the brush assembly to the frame using the four 1/4 - 20 x 2 1/2" bolts and 1/4 - 20 flange whiz-lock nuts (Ref 5).

43-008 DRAG MAT DRAWING



Rear Attachment

43-008 DRAG MAT PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-716-14-125	Bolt, 7/16 - 14 x 1-1/4	4
	HW-716	Washer, 7/16	4
	HNTL-716-14	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

INSTRUCTIONS

1. The Drag Mat Kit can be installed on all Super Star with or without the optional Roll Bars.

2. **WITH ROLL BARS:** If your machine is equipped with Roll Bars, remove the outside two bolts from the roll bar mounts. Install the flat washers and secure right and left carrier mounts (see picture. Tighten all hardware.

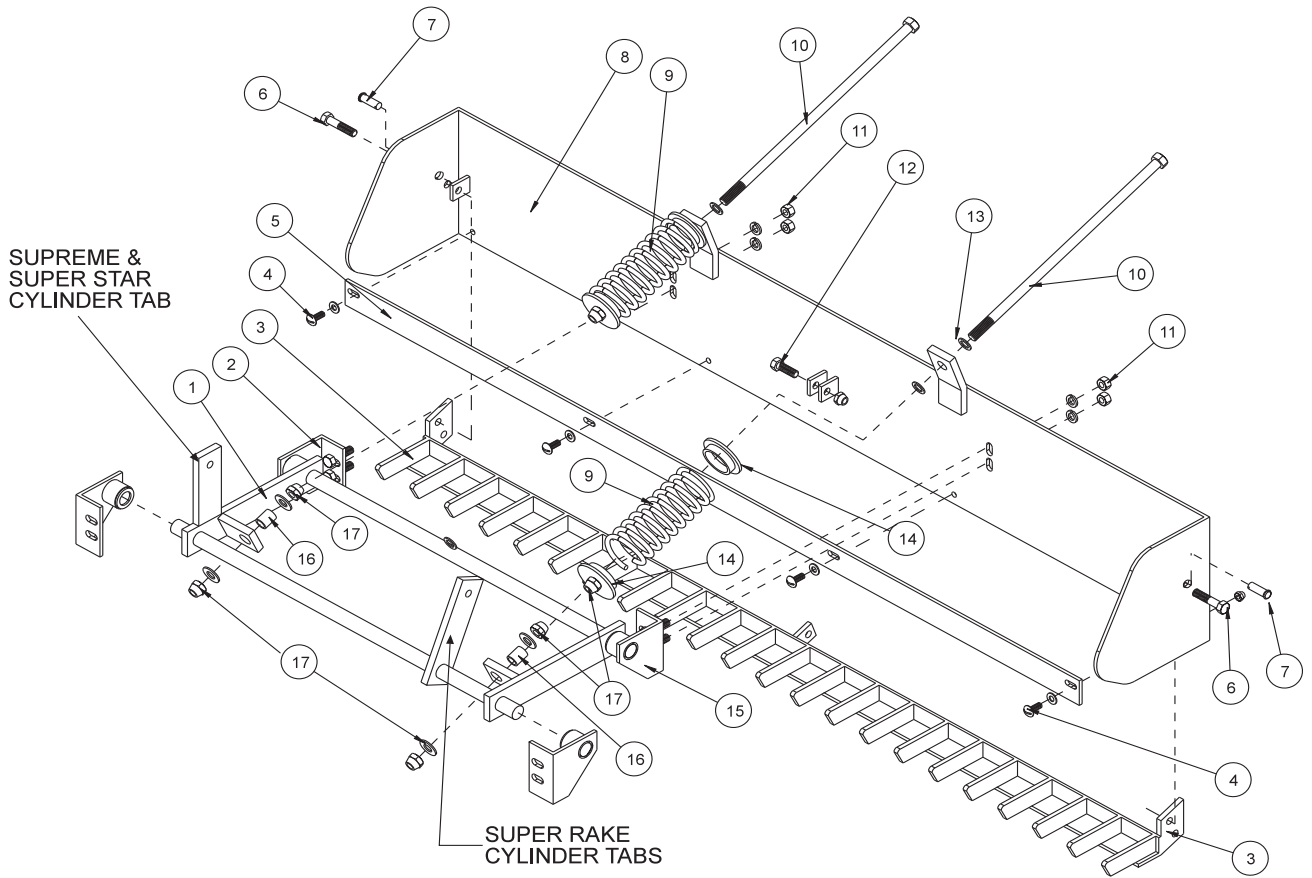


3. **WITHOUT ROLL BARS:** If your machine is not equipped with a roll bar the carrier brackets will bolt directly onto the roll bar support plates (see picture). Using the hardware provided, tighten the right and left carrier mounts to roll bar plates.



4. Install the tow hitch insert into the quick hitch. This is where the tow chain on the drag mat attaches to the machine.

34-191 BOX GRADER DRAWING



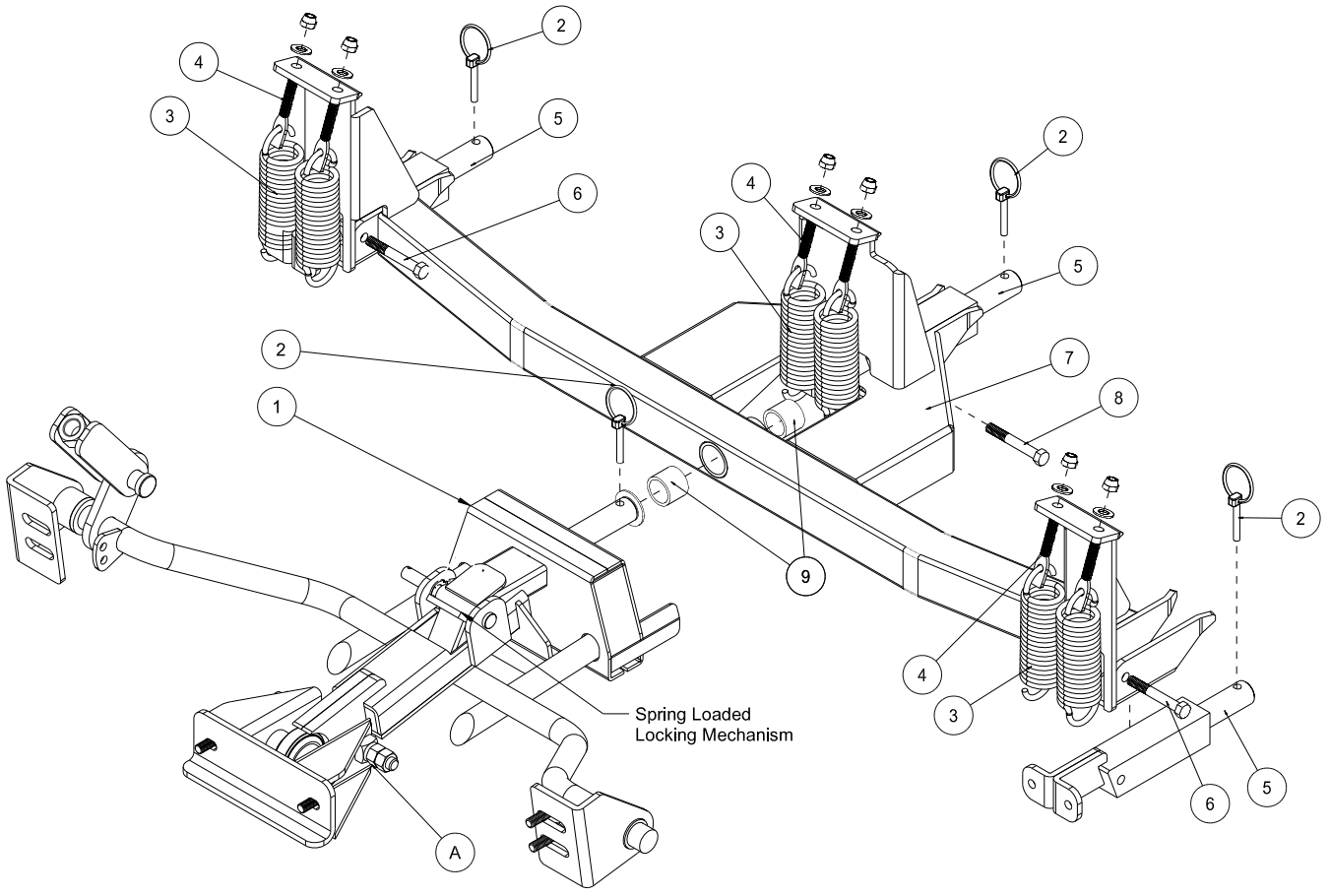
Rear Attachment



34-191 BOX GRADER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	34-221	Lift Assembly	1
2	34-220	Right Pivot Bracket	2
	33-086	Bushing	2
3	34-217	Break Up Bar	1
4	HB-38-16-100	Bolt, $\frac{3}{8}$ - 16 x 1	4
	HW-38	Washer $\frac{3}{8}$	4
	HNCL-38-16	Center Lock Nut $\frac{3}{8}$ - 16	4
5	34-218	Cutter Blade	1
6	HB-12-13-250	Bolt $\frac{1}{2}$ - 13 x 2 $\frac{1}{2}$	2
	HNCL-12-13	Center Lock Nut $\frac{1}{2}$ - 13	2
7	HCP-12-150	Clevis Pin $\frac{1}{2}$ x 1 $\frac{1}{2}$	2
	HHP-18	Bridge Pin $\frac{1}{8}$	2
8	34-216	Blade Assembly	1
9	13-276	Compression Spring	2
10	34-214	Spring Rod	2
11	HB-12-13-125	Bolt $\frac{1}{2}$ - 13 x 1 $\frac{1}{4}$	4
	HW-12	Washer $\frac{1}{2}$	4
	HWL-12	Lockwasher $\frac{1}{2}$	4
	HN-12-13	Nut $\frac{1}{2}$ -13	4
12	HB-12-13-150	Bolt $\frac{1}{2}$ - 13 x 1 $\frac{1}{2}$	1
	HNCL-12-13	Center Lock Nut $\frac{1}{2}$ - 13	1
13	HMB-58-14	Machine Bushing $\frac{5}{8}$ - 14GA	4
14	13-277	Spring Pad	4
15	34-219	Left Pivot Bracket	2
	33-086	Bushing	2
16	34-215	Spacer	2
17	HNCL-58-11	Center Lock Nut $\frac{5}{8}$ - 11	6
	HW-58	Washer $\frac{5}{8}$	4

42-586Q GREEN STAR RBS MAIN FRAME DRAWING

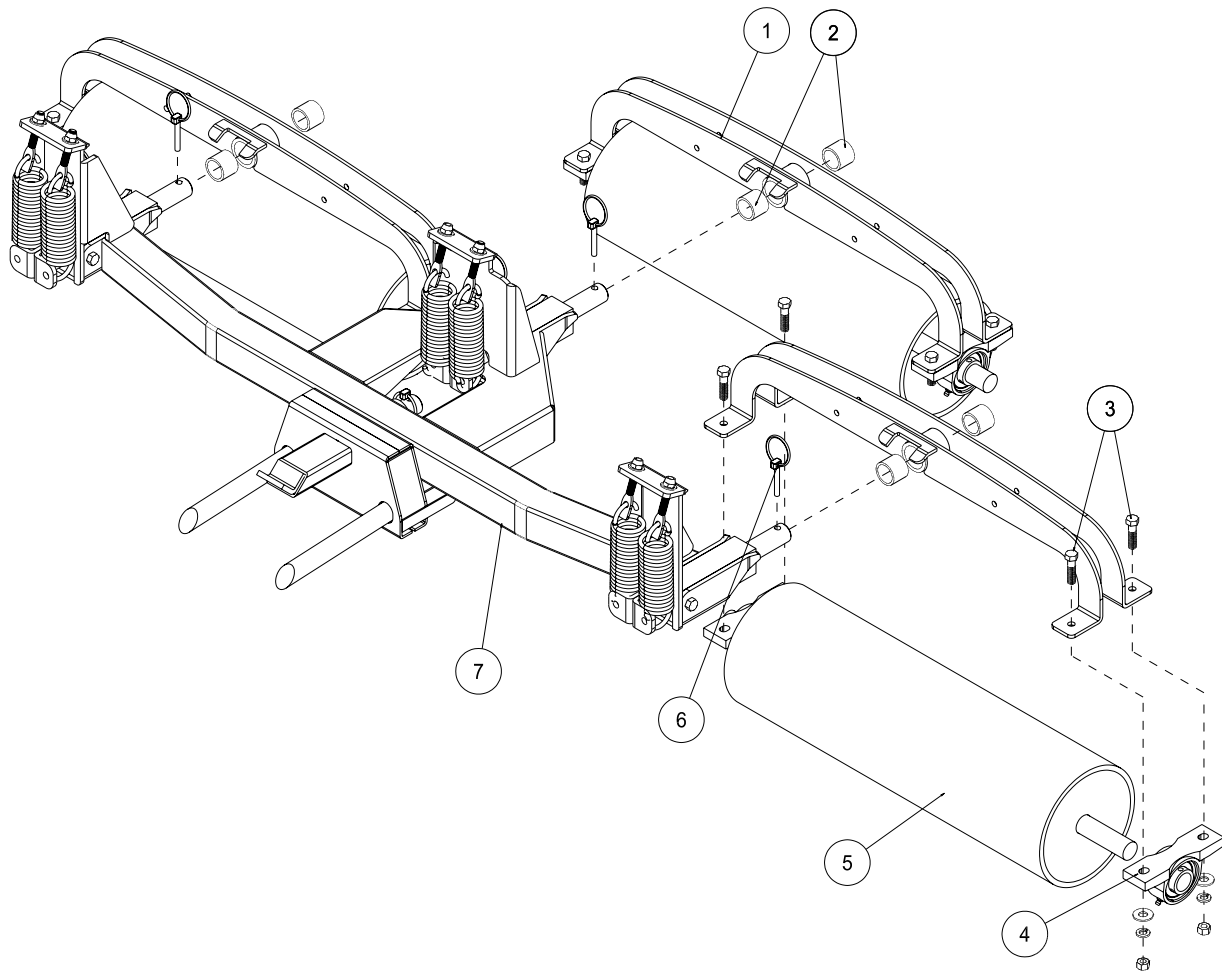


Rear Attachment

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 Bolt	6
	HNTL-38-16	Lock Nut ³ / ₈ - 16	6
5	42-576	Spring Tower	3
6	HB-38-16-275	Bolt ³ / ₈ - 16 x 2 ³ / ₄	2
	HNHL-38-16	Lock Nut ³ / ₈ - 16	2
7	42-577	Frame	1
8	HB-38-16-250	Bolt ³ / ₈ - 16 x 2 ¹ / ₂	1
	HNCL-38-16	Center 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



Rear Attachment

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	Bolt ³ / ₈ - 16 x 1 ¹ / ₂	12
	HWL-38	Lock Washer ³ / ₈	12
	HW-38	Washer ³ / ₈	12
	HN-38-16	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.

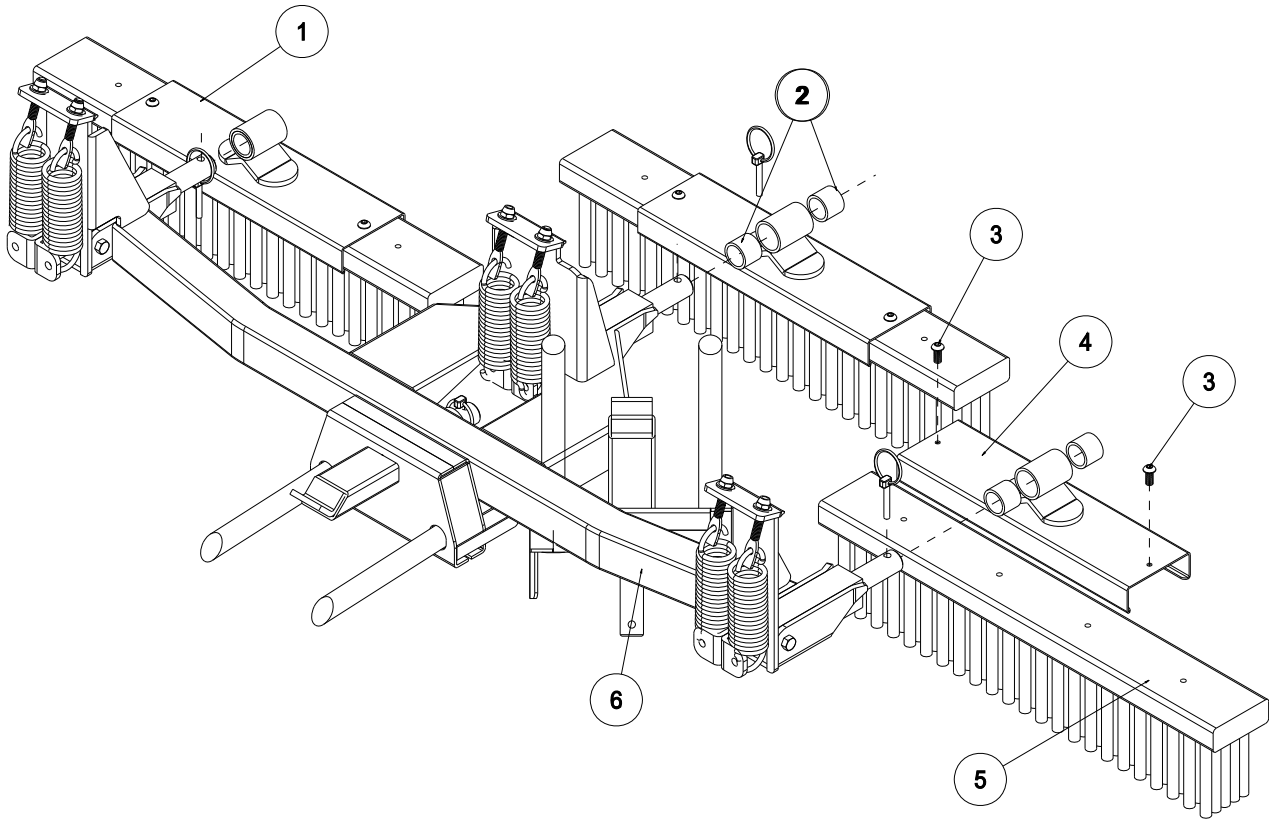
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

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



Rear Attachment

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

REF#	PART#	DESCRIPTION	QUANTITY
1	42-539	Lynch Pin $\frac{5}{16}$ (part of main frame)	4
2	18-295	Oilite Bushing (part of 42-579)	6
3	HSPP-516-18-075	Phillip Head Screw $\frac{5}{16}$ - 18 x $\frac{3}{4}$	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.

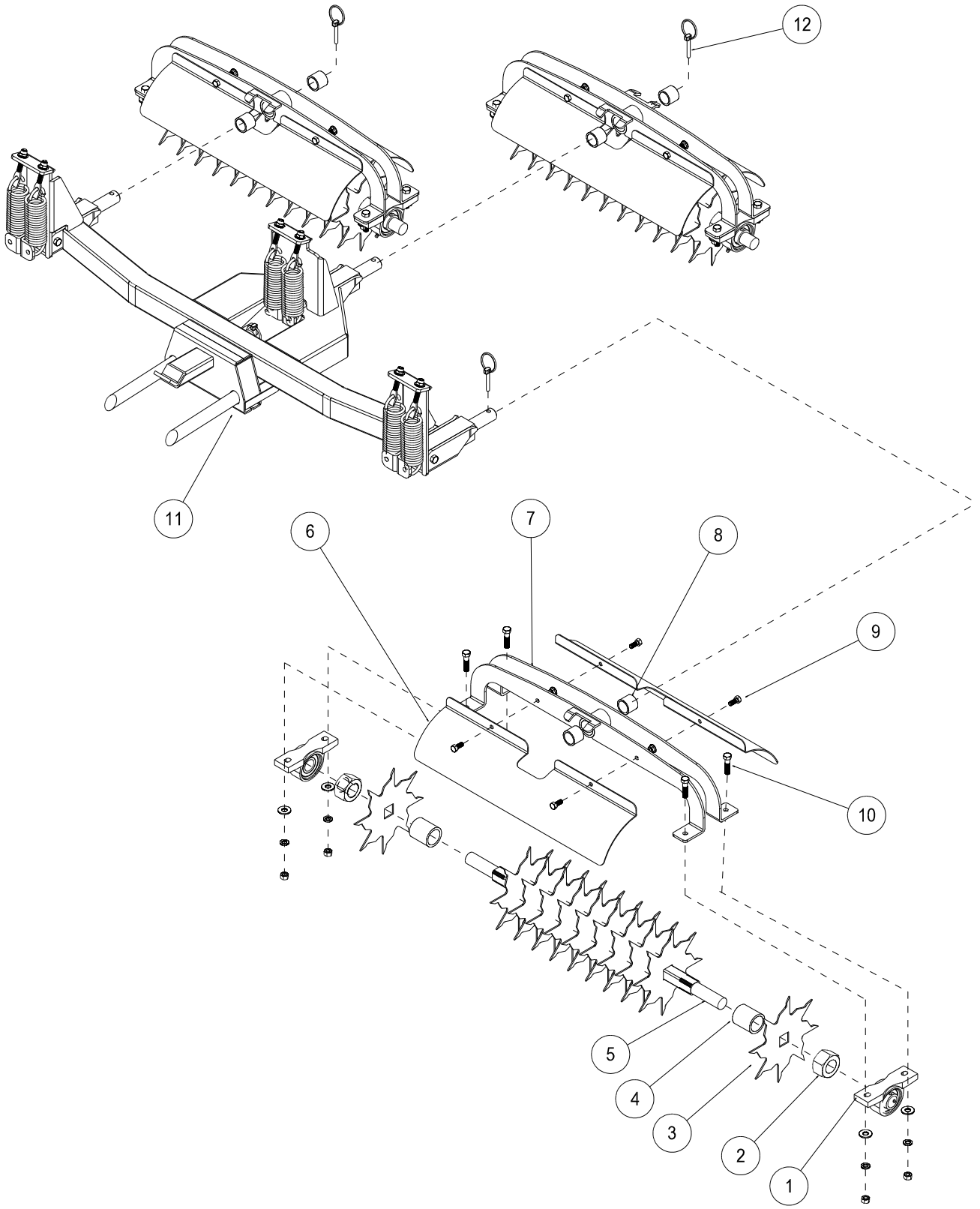
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

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



Rear Attachment



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	Bolt ⁵ / ₁₆ - 18 x ³ / ₄	12
	HNTL-516-18	Lock Nut ⁵ / ₁₆ - 18	12
10	HB-38-16-150	Bolt ³ / ₈ - 16 x 1 ¹ / ₂	12
	HWL-38	Lock Washer ³ / ₈	12
	HW-38	Washer ³ / ₈	12
	HN-38-16	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

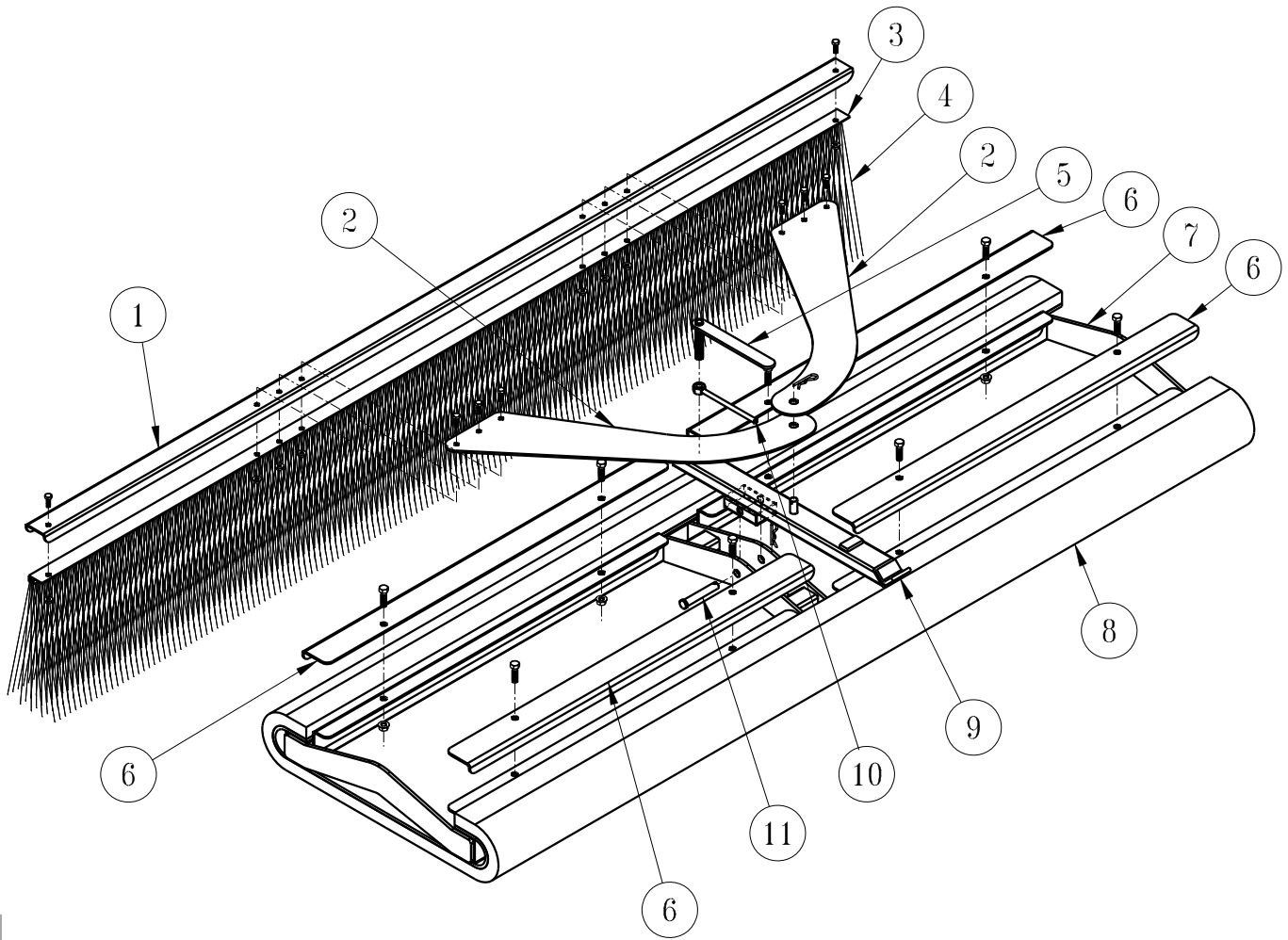
Make sure the spiker system has been installed and adjusted properly for your model of bunker rake. Always transport in fully raised position. Always remove flag pole before spiking green. Do not stop on green while spiking. Do not spike up steep slopes or loss of traction may result. Do not turn while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



Rear Attachment



72" COCO MAT FINISHER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	13-688	Brush Channel	1
	HB-14-20-075	Hex Bolt, $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HNFL-14-20	Flange Lock Nut, $\frac{1}{4}$ - 20	2
2	43-168	Brush Mount Arm	2
	HB-14-20-075	Hex Bolt, $\frac{1}{4}$ - 20 x $\frac{3}{4}$	6
	HNFL-14-20	Flange Lock Nut, $\frac{1}{4}$ - 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, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	8
	HNFL-38-16	Flange Lock Nut, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	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, $\frac{1}{8}$	1
10	43-163	Lock Handle	1
11	HCP-12-300	Clevis Pin, $\frac{1}{2}$ x 3	1
	HHP-18	Bridge Pin, $\frac{1}{8}$	1

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

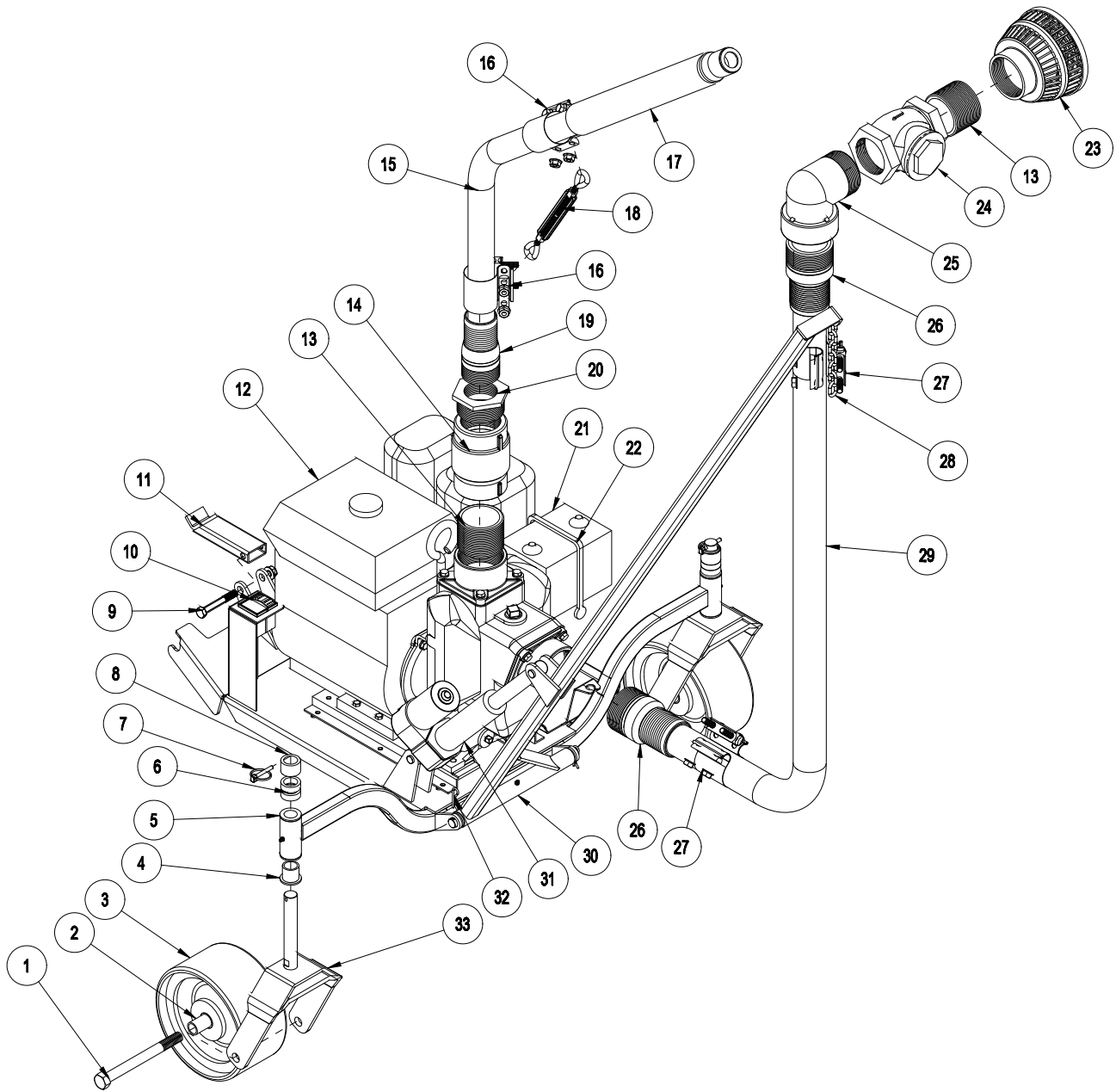
1. Start by mounting the Drawbar (Ref 9) to the Frame (Ref 7) using the Clevis Pin and Bridge Pin (Ref 11). Position the Drawbar, using either set of holes, as illustrated.
2. Next, mount the Brush assembly (Ref 1, 3 & 4) to the Brush Mount Arms (Ref 2), as illustrated, using the (6) $\frac{1}{4}$ - 20 x $\frac{3}{4}$ Hex Bolts and $\frac{1}{4}$ - 20 Flange Lock Nuts. Secure fasteners tight.
3. The holes on each of the Brush Mount Arms will line up. Mount to the pin on the Drawbar (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 Drawbar (Ref 9), continuing until the threaded rod is through the Drawbar 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 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.

41-501 TYPHOON DRAWING

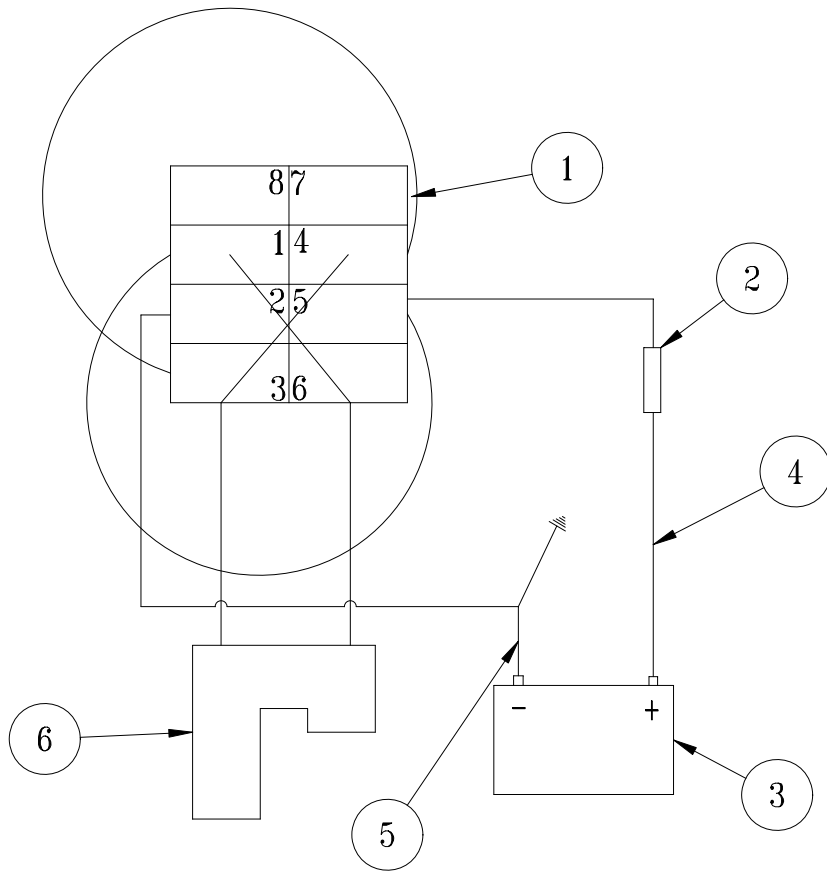


Rear Attachment

41-501 TYPHOON PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-34-10-800	Bolt, $\frac{3}{4}$ - 10 x 8	2
	HNTL-34-10	Lock Nut, $\frac{3}{4}$ - 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 $\frac{1}{2}$ "	4
7	42-539	Lynch Pin	2
8	29-585	Adjustment Spacer, 1"	2
9	HB-12-13-350	Bolt, $\frac{1}{2}$ - 13 x $3\frac{1}{2}$	1
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 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 Palte, 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, $\frac{1}{4}$ - 28 x 180°	1
31	16-754	Actuator with 8" Stroke	1
	HCP-12-225	Clevis Pin, $\frac{1}{2}$ x $2\frac{1}{4}$	2
	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	2
32	41-523	Pivot Rod	1
	HHP-18	Bridge Pin, $\frac{1}{8}$	2
33	72-134	Castor Fork	2

41-501 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

Rear Attachment



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.

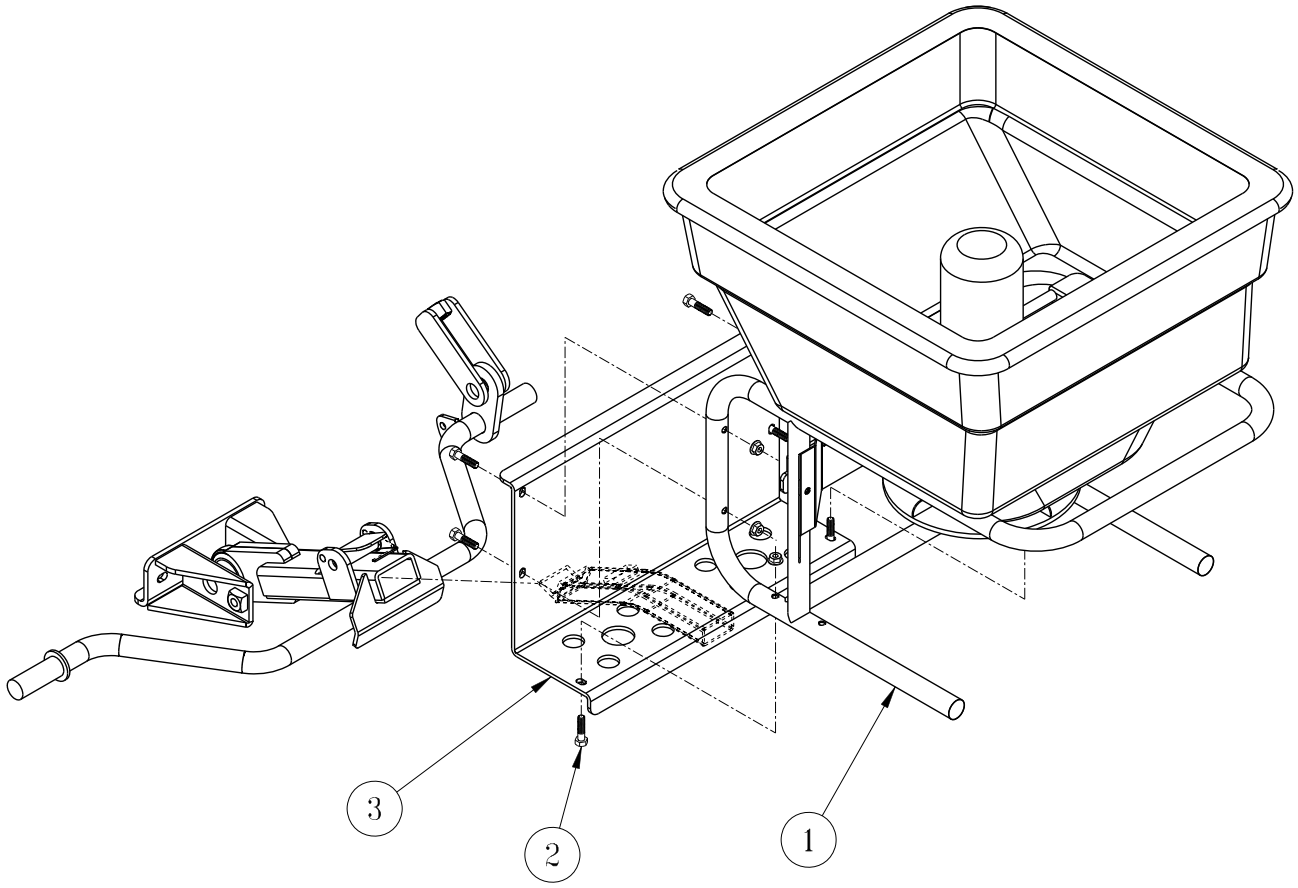
1. You must prime pump before starting the engine. To do so, insert garden hose in Discharge Tube and fill system to full. Full is when you see water in both suction hoses.
2. Fill engine up with 4-stroke motor oil as advised in the engine manual.
3. Install a U-1 300 Amp Battery into the battery box 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.



DO NOT RUN THE PUMP DRY!

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

41-502 12V BROADCAST SPREADER DRAWING



Rear Attachment

41-502 12V BROADCAST SPREADER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	41-533	12V Earthway Spreader, Model M40	1
2	HB-516-18-125	Hex Bolt, $\frac{5}{16}$ - 18 x $1\frac{1}{4}$	6
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18	6
3	41-534	Spreader Mount	1

INSTALLATION INSTRUCTIONS

The 12 Volt Broadcast Spreader is great option for your seeding and fertilizing needs.

1. Using the six(6) $\frac{5}{16}$ - 18 x $1\frac{1}{4}$ Hex Bolts and Whiz-Loc nuts (Ref 2) mount the Spreader (Ref 1) to the Spreader Mount (Ref 3). Tighten all hardware.
2. Connect to the Quick Hitch Receiver on your **SMITHCO** machine.
3. Connect the wires to the battery according to the directions given in the Earthway Spreader manual.
4. Refer to the manual that came with the Earthway Spreader for operation instructions and to determine your desire spreading rate.

For replacement parts for the Spreader, refer to the Earthway Spreader manual.

The Smithco Commercial Products Two-Year Limited Warranty

Smithco, Inc. (Smithco) warrants your 2007 or newer Smithco Commercial Product ("Product") purchased after January 1, 2007, to be free from defects in materials or workmanship for the period of time listed below. Where a warrantable condition exists, Smithco will repair the Product at no cost to you including diagnosis, labor (at the Smithco standard labor rate, subject to the Smithco flat rate schedule), and parts.

Warranty Duration is:

- (1) Two years, 1500 operational hours* from the date of delivery to the original purchaser or three years from the date of original manufacturer of the product, whichever occurs first. (*Products equipped with hour meter).
- (2) Products used in rental situations are covered for 90 days from date of delivery to original user/ renter.

Owner Responsibilities:

As the Product owner, you are responsible for required maintenance and adjustments stated in your Owner's Manual. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim. **You are particularly responsible to train all present and future operators of this product on the safe operation of this product at your location.**

Instructions for Obtaining Warranty Service:

You are responsible for notifying the Authorized Smithco Products Distributor from whom you purchased the Product as soon as you believe a warrantable condition exists and not later than 30 days from discovery of the condition.

If you need help locating an Authorized Smithco Distributor, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Smithco Product Support Department
200 W Poplar PO Box 487
Cameron, Wisconsin 54822

Telephone: 1-800-891-9435

E-Mail: ProductSupport@smithco.com

Maintenance Parts:

Parts scheduled for replacement as required maintenance ("Maintenance Parts"), are warranted for the period of time up to the scheduled replacement time for that part.

Items/Conditions Not Covered:



Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. The items/conditions listed below are not covered by this warranty:



Product failures which result from the use of non-Smithco replacement parts, or from installation and use of add-on, modified, or unapproved accessories are not covered.



Product failures which result from failure to perform required maintenance and/or adjustments are not covered.



Product failures that result from operating the Product in an abusive, negligent or reckless manner are not covered.



This warranty does not apply to parts subject to consumption through use, unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to: blades, tines, teeth, scarifiers, rakes, plates, wear plates, castor wheels, tires, batteries, filters, belts, nozzles, etc.



This warranty does not apply to failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, or chemicals, etc.



This warranty does not apply to normal “wear and tear” items. Normal “Wear and Tear” includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.



Smithco may require the return of failed parts or components in order to determine the validity of any warranty claim.



Smithco will not be obligated to replace components of other manufacturers if inspection by the original component manufacturer indicates that failure was due to normal wear and tear, expected consumption through use or improper care or service.

Other Legal Disclaimers:

The above remedy for product defects through repair or replacement by an authorized Smithco distributor or dealer is the purchaser’s sole remedy for any defect. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

THERE ARE NO OTHER EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH ABOVE. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE LIMITED TO THE DURATION OF THE LIMITED WARRANTIES CONTAINED HEREIN.

Some states may not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

THE SMITHCO COMPANY IS NOT LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF THE PRODUCT, INCLUDING ANY COST OR EXPENSE OF PROVIDING A SUBSTITUTE PRODUCT OR SERVICE DURING PERIODS OF MALFUNCTION OR NON-USE.

Some states may not allow the exclusion of indirect, incidental or consequential damages, so the above exclusion may not apply to you.

Smithco neither assumes, nor authorizes any person to assume for it, any other liability in connection with the sale or use of this product.

SMITHCO, INC.

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