

Parts & Service



Super Star 2 Wheel Drive  
42-001-E  
SN:13915

April 2015

**Product Support:**

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Reference

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

Read this manual and all other manuals pertaining to the Bunker Rake carefully as they contain 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.

<p><b>WARNING</b></p> <p><b>CALIFORNIA</b>  <b>Proposition 65 Warning</b>  <b>Engine exhaust and some of its constituents</b>  <b>are known to the State of California to</b>  <b>cause cancer, birth defects, and other</b>  <b>reproductive harm.</b></p>
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All **Smithco** machines have a Serial Number and Model Number. Both numbers are needed when ordering parts. Refer to engine manual for placement of engine serial number.

For product and accessory information, help finding a dealer, or to register your product please contact us at [www.Smithco.com](http://www.Smithco.com).

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

For easy access record your Serial and Model numbers here.

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

## 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 DIMENSIONS

Length	64" (1.63 m)
Width	57" (1.45 m)
Height	47" (1.19 m)
Wheel Base	41" (1.04 m)
Weight	939 lbs. ( 426 kg)

## SOUND LEVEL

At Ear Level	84 dB
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## ENGINE

Make	Briggs and Stratton Vanguard
Model#	305447
Type / Spec#	0230 G1
Horsepower	16 hp (12 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 5 psi (.34 bar)  
 Front tire fluid filled to 80 lbs. total 45.5 pints of windshield washer fluid or equivalent.  
 42-158 OPTIONAL Turf Tires

## 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 four grease fittings. One is located on the shift idler arm, one on the rod end of the attachment lift cylinder and one is located on the steering chain tensioner and steering u-joint. Access to the steering chain tensioner is available through the plugs located on the right side of the nose cone.

2WD Super Stars have a spring loaded wheel bearing protector on the front wheels. Check front wheel grease at the beginning of every season. To check lubrication level, try rocking or pushing on the edge of the piston. If the piston moves, no grease is needed. If piston does not move, add grease until piston moves outward about 1/8 inch.

### 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.

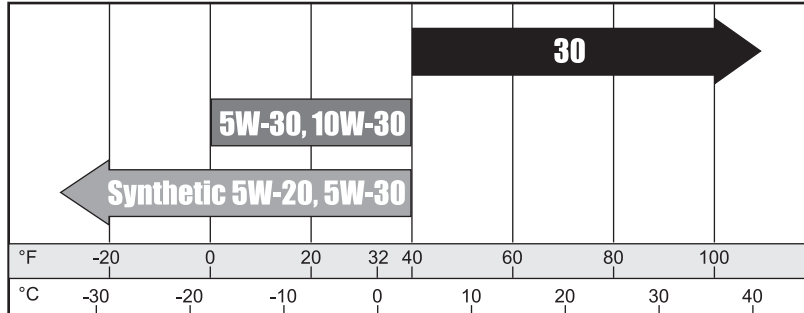
## TIRE PRESSURE

Caution must be used when inflating a low tire to recommended pressure. Over inflating can cause tires to explode. Tires should be 5 psi (0.34 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 40 oil. Use no special additives with recommended oils. Do not mix oil with gasoline. Engine oil drain valve located on engine for your convenience.

### SAE VISCOSITY GRADES



A quick twist and pull motion to open, push to close. Allows a quick and easy way to change oil without the mess



Engine Oil Drain Valve

### Starting Temperature Range Anticipated Before Next Oil Change

Air cooled engine run hotter than automotive engines. Use of multi-viscosity oils (10W-40, 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 40 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 50 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 40W 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 8 hours and every 250 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



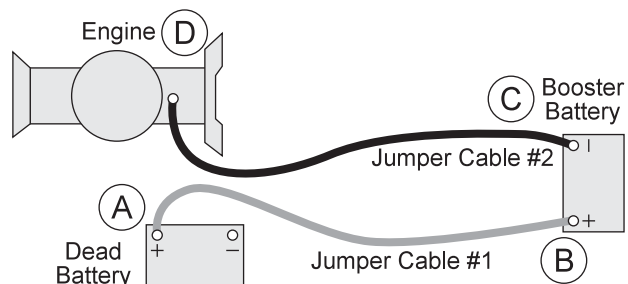
**WARNING**

**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.
Before each use daily	Check the engine oil level. Clean area around muffler and controls. Check the hydraulic fluid level. Check the tire pressure. Check condition of hydraulic hoses and fittings. Inspect and clean the machine.
After the first 50 hours	Change Hydraulic Oil Filter.
Every 100 hours	Clean or change air filter. <sup>1</sup> Clean pre-cleaner. <sup>1</sup> Change engine oil and filter. Replace spark plug . Lubricate machine. Clean or change remote air cleaner. Check the battery fluid level and cable connections.. Check muffler and spark arrestor. Check belt tension .
Every 250 hours	Check engine valve clearance and adjust if necessary. Check idle speed. Clean battery terminals. Change hydraulic oil filter. Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm))
Every 500 hours or yearly	Change fuel filter. Change hydraulic oil and filter. Clean oil cooler fins. <sup>1</sup> Clean air cooling system. <sup>1</sup> Check safety filter in remote air cleaner.

<sup>1</sup> In dusty conditions or when airborne debris is present, clean more often.



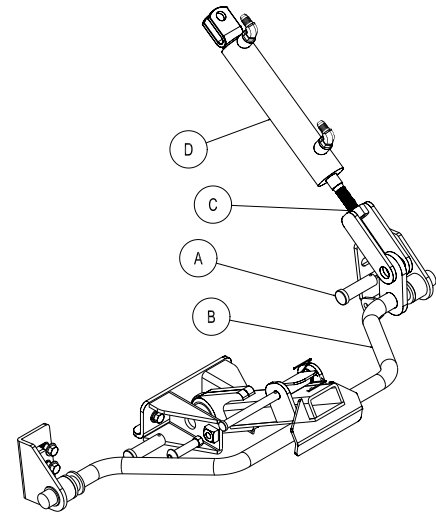


## RAKE LIFT CYLINDER

Completely lower Rake Lift. Remove the clevis pin (A). Twist lift linkage (C) so clevis pin end of cylinder extension lines up with holes in attachment lift arm. Replace clevis and cotter pins. Raise and lower Rake Lift to check for proper clearance.

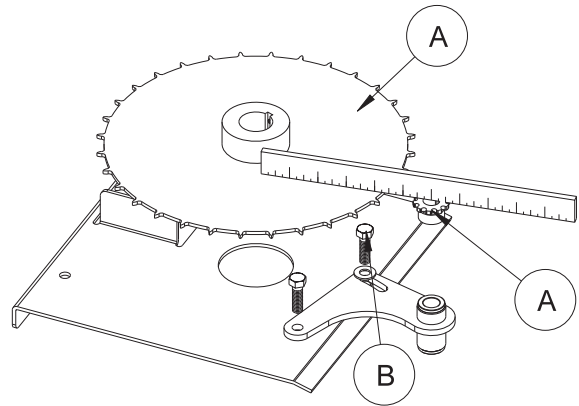


**When the rear rake attachment is lowered while the machine is in forward motion, the forward speed of the machine will slow drastically. Operator should be prepared for a rapid change in speed.**



## STEERING CHAIN ADJUSTMENT

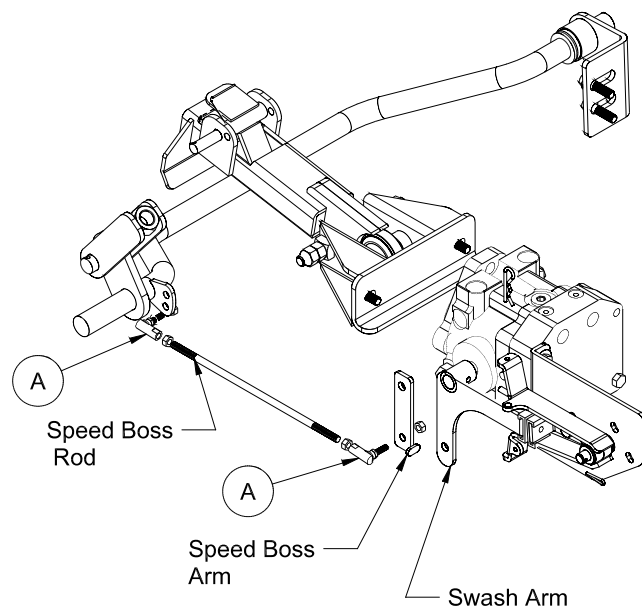
You will have to remove the nose cone assembly to get at steering sprockets. Steering Sprockets (A) should be level with each other. Check with straight edge. Make any adjustments. Adjust the chain tensioner bolt (B) so that the chain is snug. Tighten all nuts and bolts in place.



# 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.

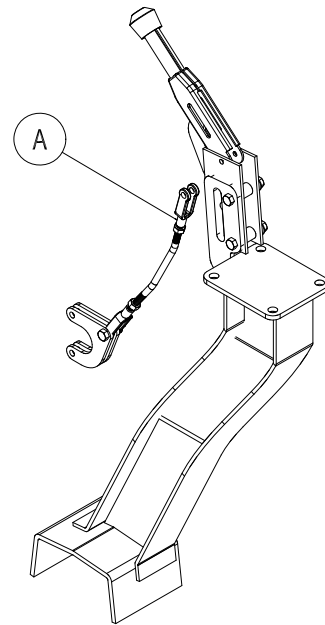


## ADJUSTMENTS (CONTINUED)

### 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 dis-engage and pull back to engage.

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.



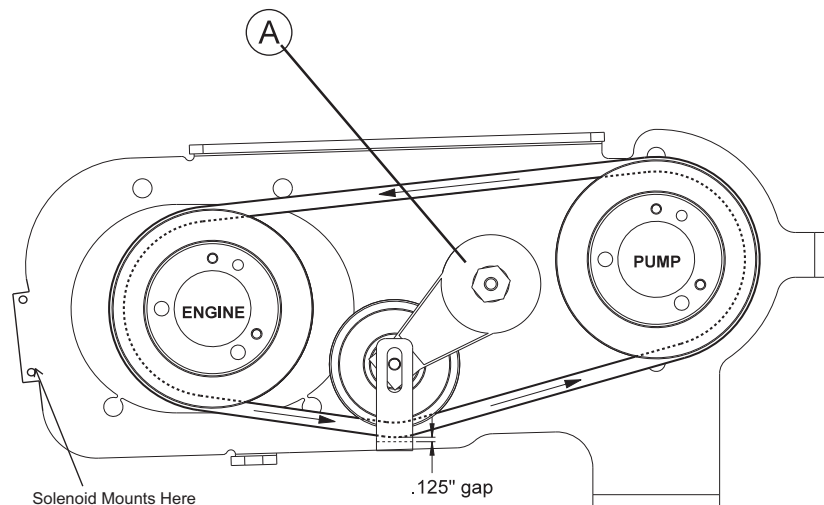
### DRUM BRAKE ADJUSTMENT

The brake can be adjusted through the access hole in the backing plate. Remove the rubber plug from the backing plate. Using a drum brake adjusting tool, or a suitable flat blade screw driver, rotate the adjusting star towards the axle shaft to expand the shoes, one click at a time. Expand the shoes until slight contact is made with the drum. It is highly recommended that you adjust 1 click at a time with the maximum adjustment being 2 clicks. Rotate the drum back and forth to insure the brake is not rubbing excessively, if so back off the adjuster star. Slight rubbing is acceptable as the brake is used it will seat in. Test after each adjustment.



### 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.

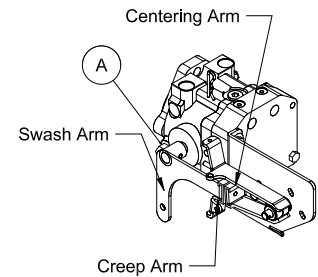


Belt Routing

### 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 hydrostat pump there is a "creep arm" or a ball bearing inside a centering arm. Loosen bolt (A).
3. With engine running adjust the creep arm in the 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.



## STORAGE

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

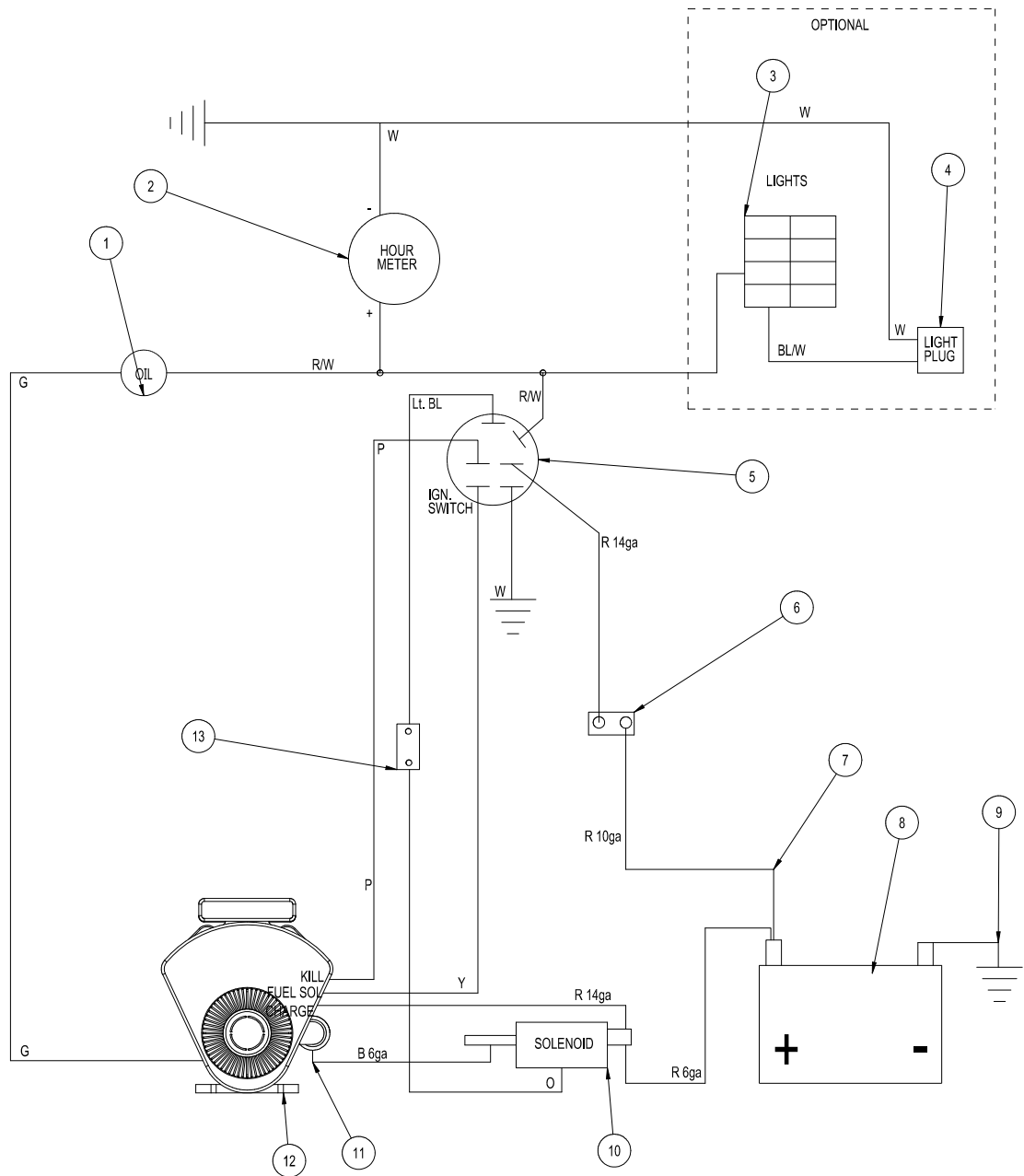
1. Before storing clean machine thoroughly.
2. Check bolts and nuts, tighten as necessary.
3. Make all repairs that are needed and remove any debris.
4. Remove the battery, adjust the electrolyte level and recharge it. Store the battery in a dry, dark place.
5. Store in a clean and dry area, but NOT 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 DRAWING

## Color Code Chart

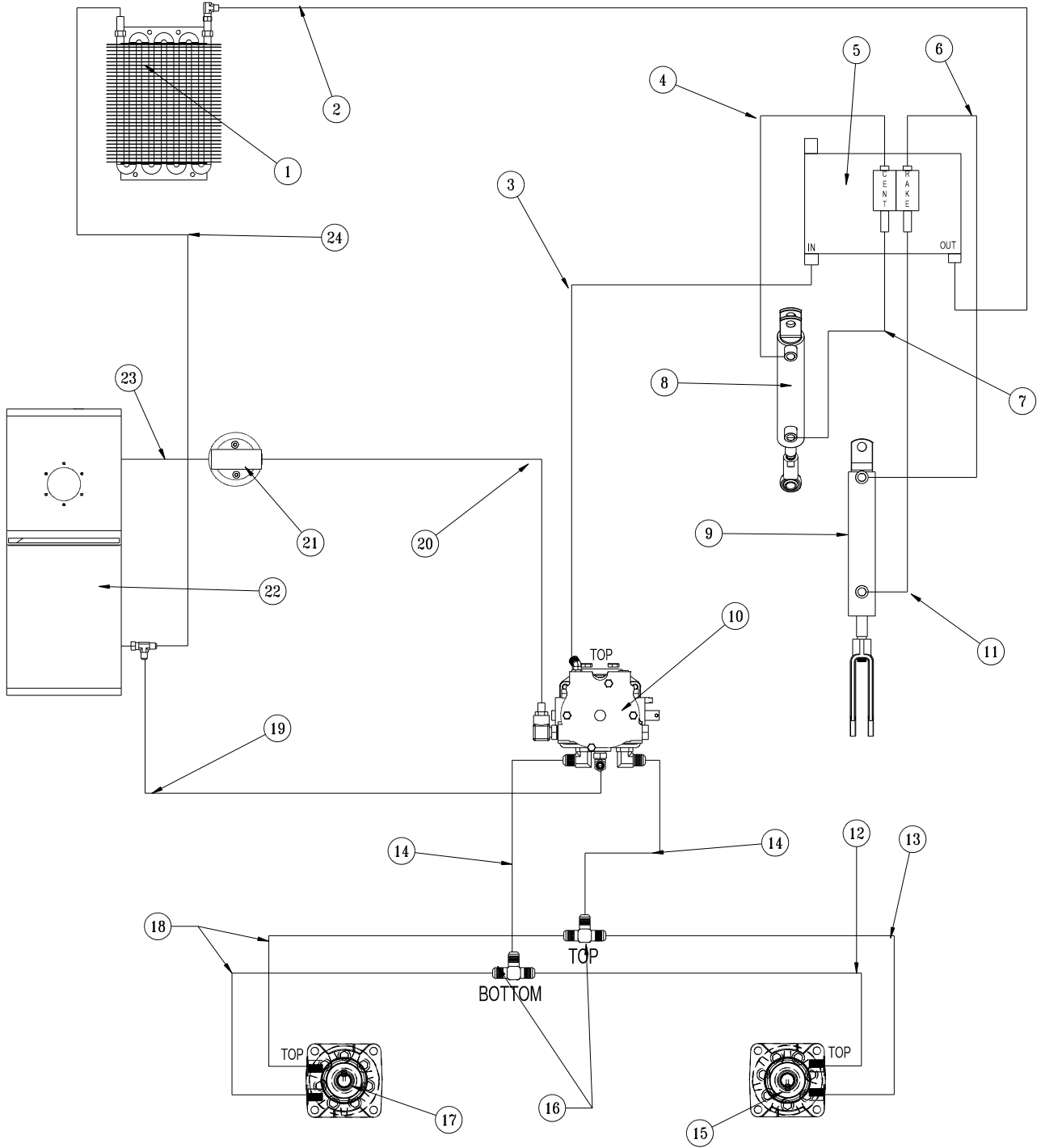
Bl	Blue
Br	Brown
Y	Yellow
Grn	Green
O	Orange
R	Red
B	Black
P	Purple
W	White

Diagrams



## WIRING PARTSLIST

REF #	PART #	DESCRIPTION	QUANTITY
1	50-359	Warning Indicator Lights	1
2	12-017	Hour Meter	1
3	15-725	Mount Panel End	1
	15-727	Rocker Switch, no light	1
	15-782	Non-Lighted Switch	1
4	34-201	Lights (Optional)	3
	43-505	Lights Wire Harness	1
5	13-488	Ignition Switch	1
6	8975	Circuit Breaker, 30AMP	1
	8977	Breaker Boot	1
7	75-518	Red Battery Cable	1
8		Battery (not included)	1
9	76-327	Black Battery Cable	1
10	13-750	Starter Solenoid w/ Connector	1
11	22-017	Starter Cable	1
12	15-165	16hp Briggs & Stratton	1
13	14-292	Seat Switch	1
	43-236	Wire Harness	1





## HYDRAULIC PARTSLIST

REF #	PART #	DESCRIPTION	QUANTITY
1	34-105	Oil Cooler	1
2	43-255	Hydraulic Hose	1
3	42-841	Hydraulic Hose	1
4	43-253	Hydraulic Hose	1
5	13-729	2 - Bank Hydraulic Valve	1
	78-454	Offset Valve Handle	2
6	43-251	Hydraulic Hose	1
7	43-254	Hydraulic Hose	1
8	10-554	Hydraulic Cylinder (center lift)	1
	18-154	Rod End	1
	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
9	43-150	Hydraulic Cylinder (rear rake)	1
	43-138	Lift Linkage	1
10	42-797	Variable Pump	1
11	43-252	Hydraulic Hose	1
12	43-238	RH Upper Hydraulic Tube	1
13	43-237	RH Lower Hydraulic Tube	1
14	43-263	Hydraulic Hose	2
15	43-242	RH Brake Wheel Motor	1
16	18-170	Tee	2
17	43-241	LH Brake Wheel Motor	1
18	43-095	Hydraulic Tube	2
19	43-262	Hydraulic Hose	1
20	8832-24	$\frac{3}{4}$ " Suction Hose	1
	18-116	Hose Clamp	2
21	23-006	Oil Filter	1
	23-031	Replacement Filter Only	
22	42-005	Oil Tank	1
	13-747	Filler Breather	1
23	8832-38	$\frac{3}{4}$ " Suction Hose	1
	18-116	Hose Clamp	2
24	43-261	Hydraulic Hose	1

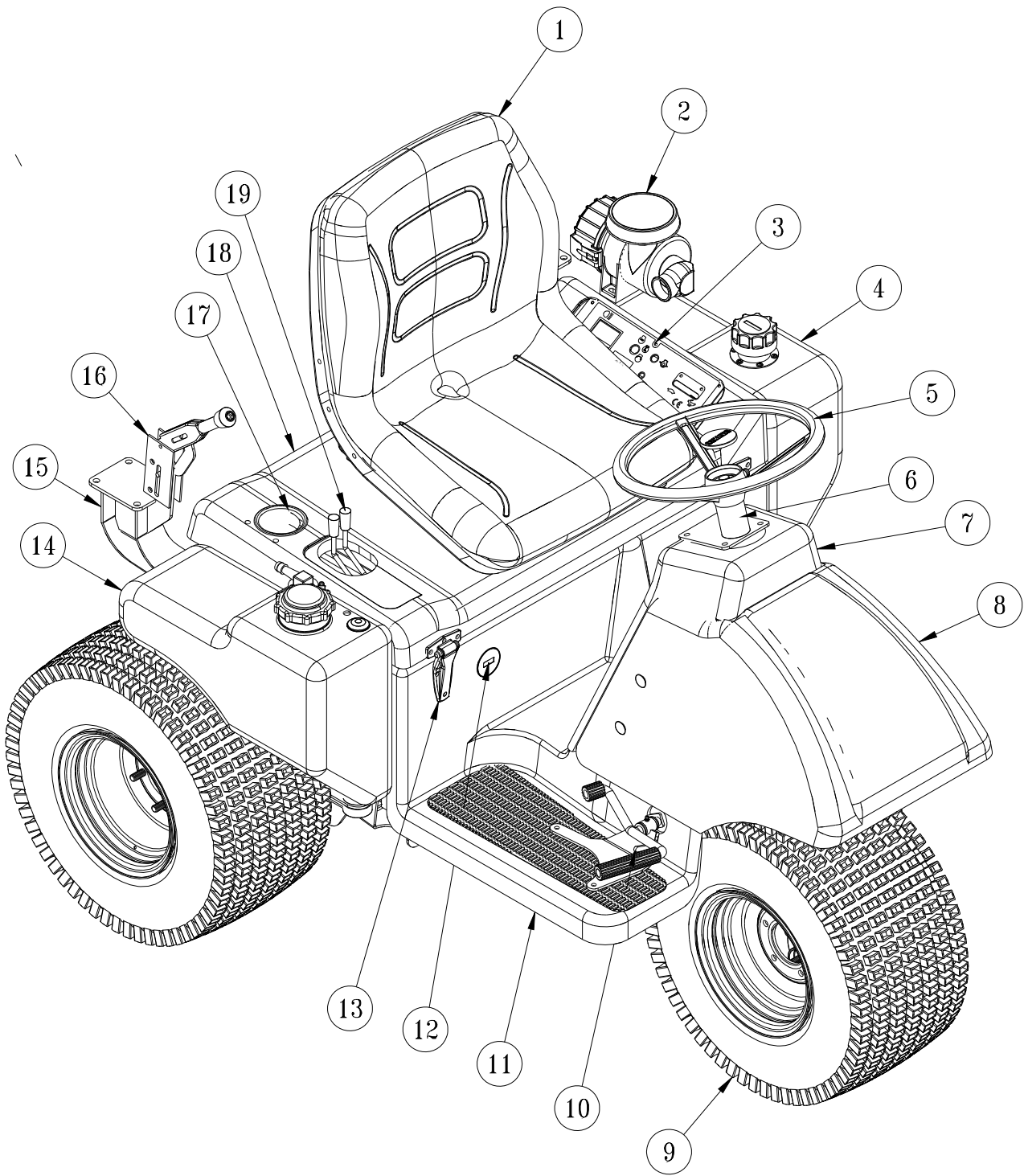
8837                      Hydraulic Motor Oil 10W40                      48 pint

### HYDRAULIC PRESSURES

Pump Displacement	.913 in <sup>3</sup> /rev	Charge Pump Displacement	.33 in <sup>3</sup> /rev
Pump Input Speed (up to)	3600 rpm	Max. Inlet Vacuum	5 in. Hg
Max. Operating Pressure	3000 peak psi	Max. Case Pressure	25 psi
Implement Setting	700-1000 psi	Relief Valve Pressure (set at)	3000 psi
13-729 Hydraulic Valve (2 bank)	900 psi		

# MAIN FRAME COMMON DRAWING

Parts

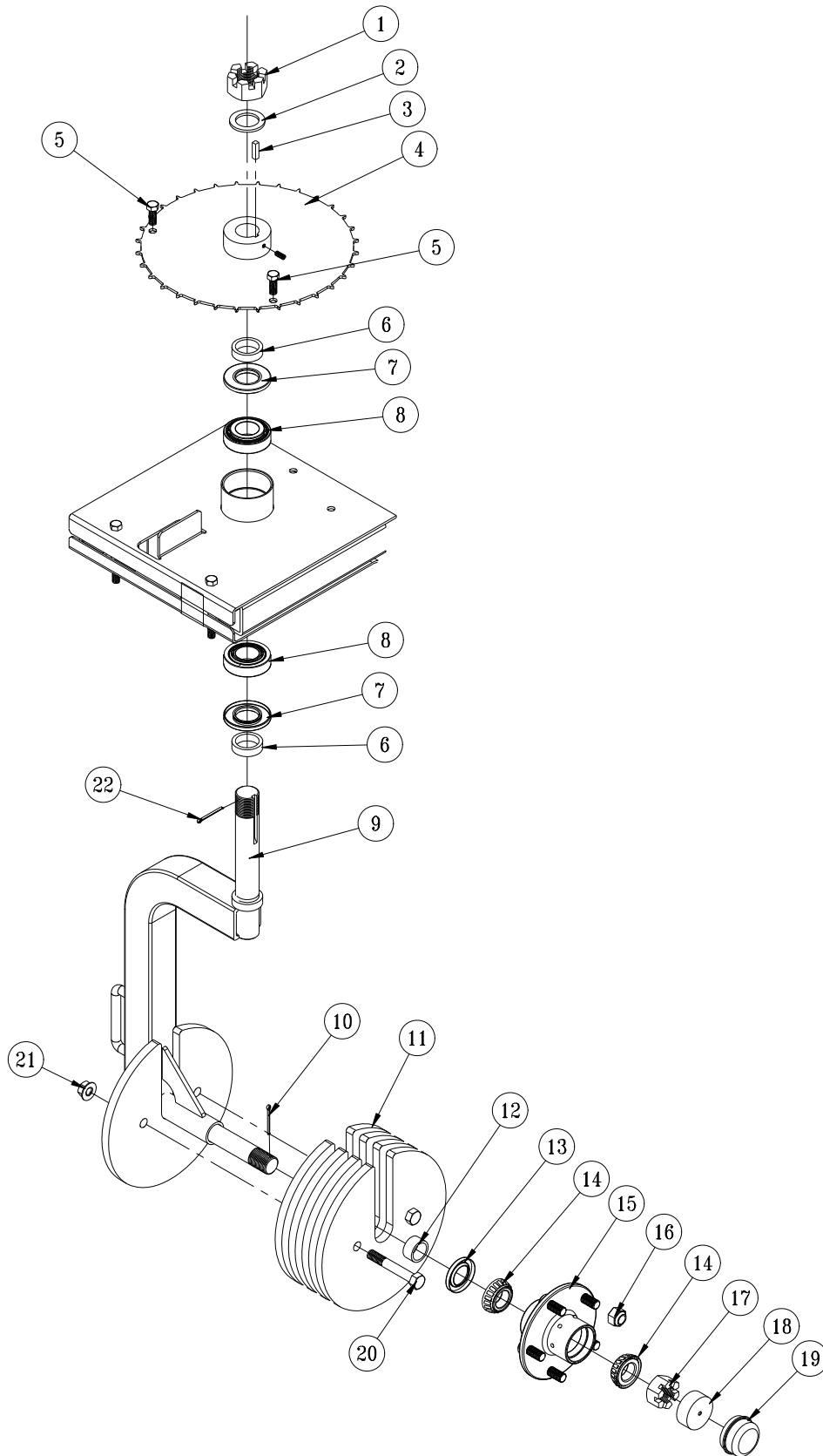


# MAIN BODY PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	14-269	Adjustable Low Back Seat	1
2	42-834	Air Cleaner	1
	42-834-01	Band	1
	42-834-02	Hood	1
3	43-244	Control Panel	1
	43-234	Decal, Dash Panel	1
4	42-005	Oil Tank	1
	13-586-03	Filler Neck	1
5	20-057	Steering Wheel	1
	20-129	Center Cap	1
6	42-844	Steering Post	1
7	42-846	Console (Fiberglass)	1
8	42-471	Nose Cone (Fiberglass)	1
	18-436	Hole Plug	1
	8803-49	Black Trim	1
	HSTP-14-20-100	Truss Head Screw, 1/4 - 20	6
	HNTL-14-20	Lock Nut, 1/4 - 20	6
9	45-021	Knobby Tire & Wheel	3
	45-021-01	Tire 22 x 11 - 10 Knobby Type	3
	45-021-02	Wheel	3
10	42-850	Foot Pedal	1
11	42-780	Floor Panel (Fiberglass)	1
	42-767	Right Floor Mat	1
	42-768	Left Floor Mat	1
12	12-017	Hour Meter	1
13	27-055	Hinge	2
14	42-833	Fuel Tank	1
	42-814-02	Cap	1
	42-814-01	Tether	1
15	42-845	Main Frame	1
16	60-106	Park Brake Lever	1
17	42-786	Plastic Cup Holder	1
18	43-266	Seat Panel (Fiberglass)	1
	42-765	Decal, Lift Control	1
	8803-17	Trim w/ Black Lace	1
19	13-729	2 Bank Valve	1
	78-454	Offset Valve Handle	2
*		Front tire and wheel are fluid filled to 80 lbs. total.	
	8839	Windshield Washer Fluid or Equivalent	43.5 pints
Optional	42-158	Turf Tires	3
	42-158-01	Tire 23 x 10.50 x 12	
	42-158-02	Wheel	



# FRONT FORK DRAWING



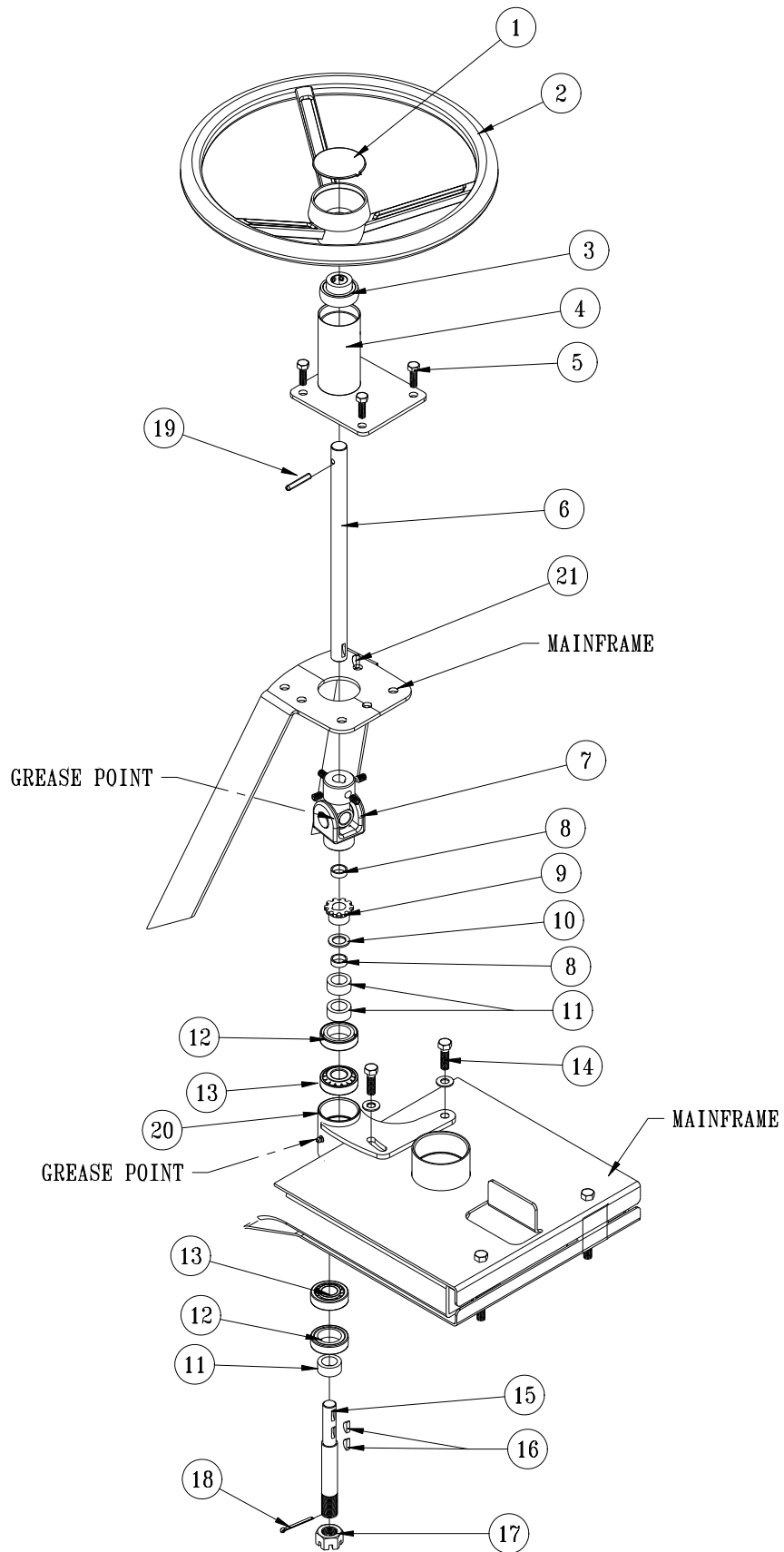
Parts

## FRONT FORK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HNA-114-12	Axle Nut, 1 <sup>1</sup> / <sub>4</sub> - 12	1
2	HMB-114-10	Machine Bushing 1 <sup>1</sup> / <sub>4</sub> x 10GA	1
3	HKSQ-14-100	Square Key, 1/4 x 1	1
4	42-295	Steering Sprocket	1
	8834-37.5	Roller Chain	1
	18-114	Master Link	1
5	HB-38-16-100	Bolt, 3/8 - 16 x 1	2
	HNFL-38-16	Flange Lock Nut, 3/8 - 16	2
6	20-141	Spacer	1
7	20-142	Oil Seal	2
8	20-143	Bearing	2
9	42-827	Front Fork	1
10	HP-18-150	Cotter Pin 1/8 x 1 <sup>1</sup> / <sub>2</sub>	1
11	42-826	Weight - Front Fork	4
12	11-042	Spacer	1
13*	11-041	Seal	1
14*	11-043	Bearing	2
15	80-019	Hub (includes * items)	1
16*	27-022-02	Stud, 1/2 - 20	5
17	HNAR-100-14	Axle Nut, 1 - 14	1
	HP-18-150	Cotter Pin 1/8 x 1 <sup>1</sup> / <sub>2</sub>	1
18	42-817	Wheel Bearing PRotector	1
19*	80-167	Dust Cap	1
20	HB-12-13-350	Bolt , 1/2 - 13 x 3 <sup>1</sup> / <sub>2</sub>	2
21	HNTL-12-13	Lock Nut, 1/2 - 13	2
22	HP-18-200	Cotter Pin 1/8 x 2	1

# STEERING DRAWING

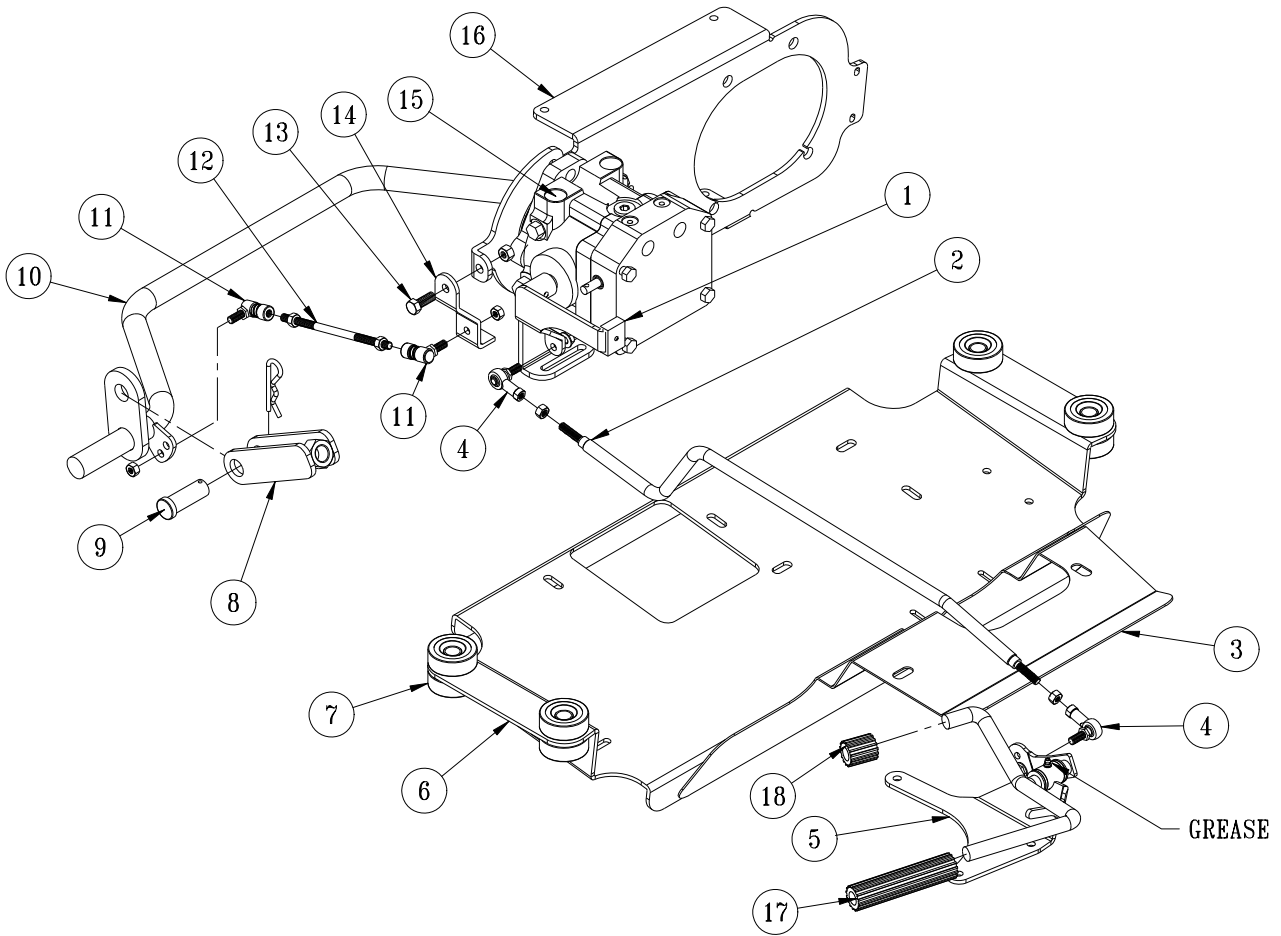
Parts



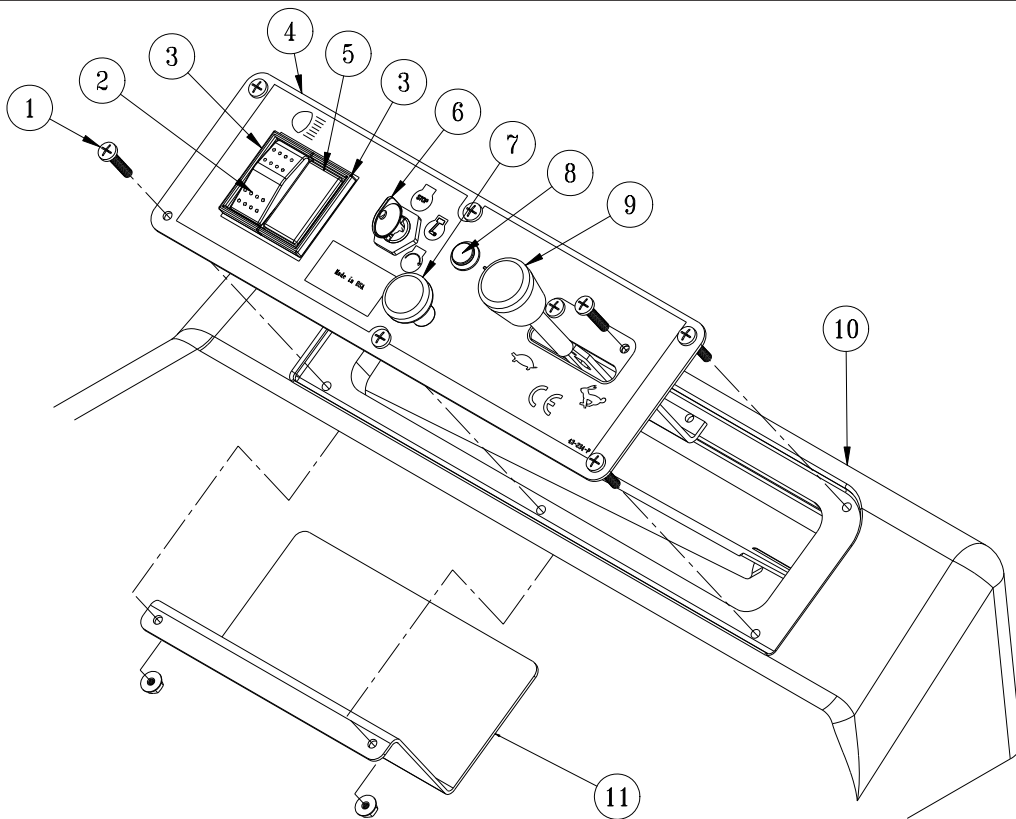
## STEERING PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	20-129	Center Cap	1
	27-077	Decal, Smithco Round	1
2	20-057	Steering Wheel	1
3	45-155	Flange Bearing Insert	1
4	42-844	Steering Post	1
5	HB-516-18-100	Bolt, $\frac{5}{16}$ - 18 x 1	4
	HNFL-516-18	Flange Lock Nut, $\frac{5}{16}$ - 18	4
6	42-376	Top Steering Shaft	1
7	60-300	U-Joint	1
	HG-14-28-90	Grease Fitting, $\frac{1}{4}$ - 28 x 90°	1
8	60-325	Spacer	2
9	60-298	Sprocket	1
10	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	1
11	11-040	Spacer	3
12	11-039	Oil Seal	2
13	11-038	Bearing with Race	2
14	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
15	13-005	Bottom Steering Shaft	1
16	HWK-316-063	Woodruff Key, $\frac{3}{16}$ x $\frac{5}{8}$	2
17	HNA-34-16	Axle Nut, $\frac{3}{4}$ - 16	1
18	HP-18-150	Cotter Pin, $\frac{1}{8}$ x 1 $\frac{1}{2}$	1
19	HRP-14-150	Roll Pin, $\frac{1}{4}$ x 1 $\frac{1}{2}$	1
20	13-744	Chain Tensioner	1
	HG-14-28-180	Grease Fitting, $\frac{1}{4}$ - 28 x 180°	1
21	HWK-316-075	Woodruff Key, $\frac{3}{16}$ x $\frac{3}{4}$	1

# LINKAGE DRAWING



# CONTROL PANEL DRAWING





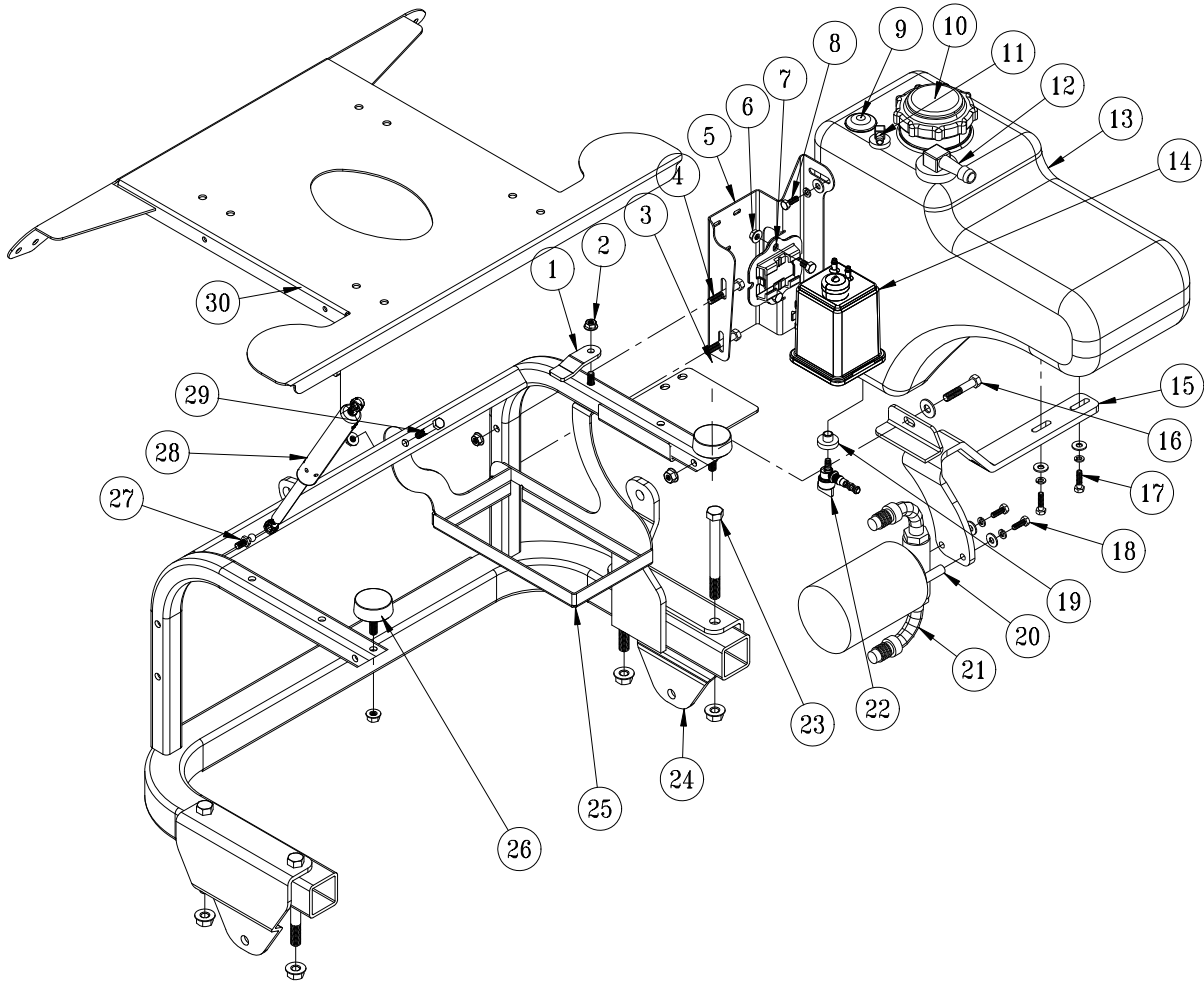
## LINKAGE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	43-268	Swash Arm	1
	HRP-14-100	Roll Pin, 1/4 x 1	1
2	43-274	Control Link	1
	HN-516-24	Hex Nut, 5/16 - 24	2
3	42-590	Mud Guard	1
4	18-441	Ball Joint, 5/16 - 24	2
	HN-516-24	Nut, 5/16 - 24	2
	HW-516	Flat Washer, 5/16	2
5	42-850	Foot Pedal	1
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180° (comes with 42-813)	1
	HB-516-18-150	Bolt, 5/16 - 18 x 1 1/2	3
	HW-516	Washer, 5/16	3
	HNFL-516-18	Flange Whiz Lock Nut, 5/16 - 18	3
6	42-269	Engine Plate	1
7	60-107	Rubber Insulator	8
	60-168	Spacer	4
8	43-138	Lift Linkage	1
9	HCP-34-200	Clevis Pin, 3/4 x 2	1
	HHP-177	Bridge Pin, .177	1
10	43-137	Lift Bar	1
11	18-387	Spring Loaded Ball Joint, 5/16 - 24	2
	HN-516-24	Nut, 5/16 - 24	2
12	43-147	Speed Boss Rod	1
	HN-516-24	Hex Nut, 5/16 - 24	2
13	HB-38-16-100	Hex Bolt, 3/8 - 16	1
	HNTL-38-16	Lock Nut, 3/8 - 16	1
14	43-267	Speed Boss Arm	1
15	42-797	Variable Pump	1
16	42-354	Pump Mount	1
17	76-299	Pedal Pad Long	1
18	42-791	Pedal Pad Short	1

## CONTROL PANEL PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HSM-10-32-100	Machine Screw, 10-32 x 1	8
	HNFL-10-32	Flange Lock Nut, 10-32	8
2	15-782	Non-Lighted Switch	1
	15-727	Rocker, No Light	1
3	15-725	Mount Panel End	2
4	43-244	Control Panel	1
	43-234	Decal, Dash Panel	1
5	15-730	Mount Panel Plug	1
6	13-488	Key Switch (B&S 692318)	1
	76-310	Key Set	1
7	11-086	Choke	1
8	50-359	Warning Light	1
9	45-118	Throttle Cable	1
10	43-266	Seat Panel (Fiberglass)	1
11	43-243	Wire Guard	1

# GAS TANK DRAWING



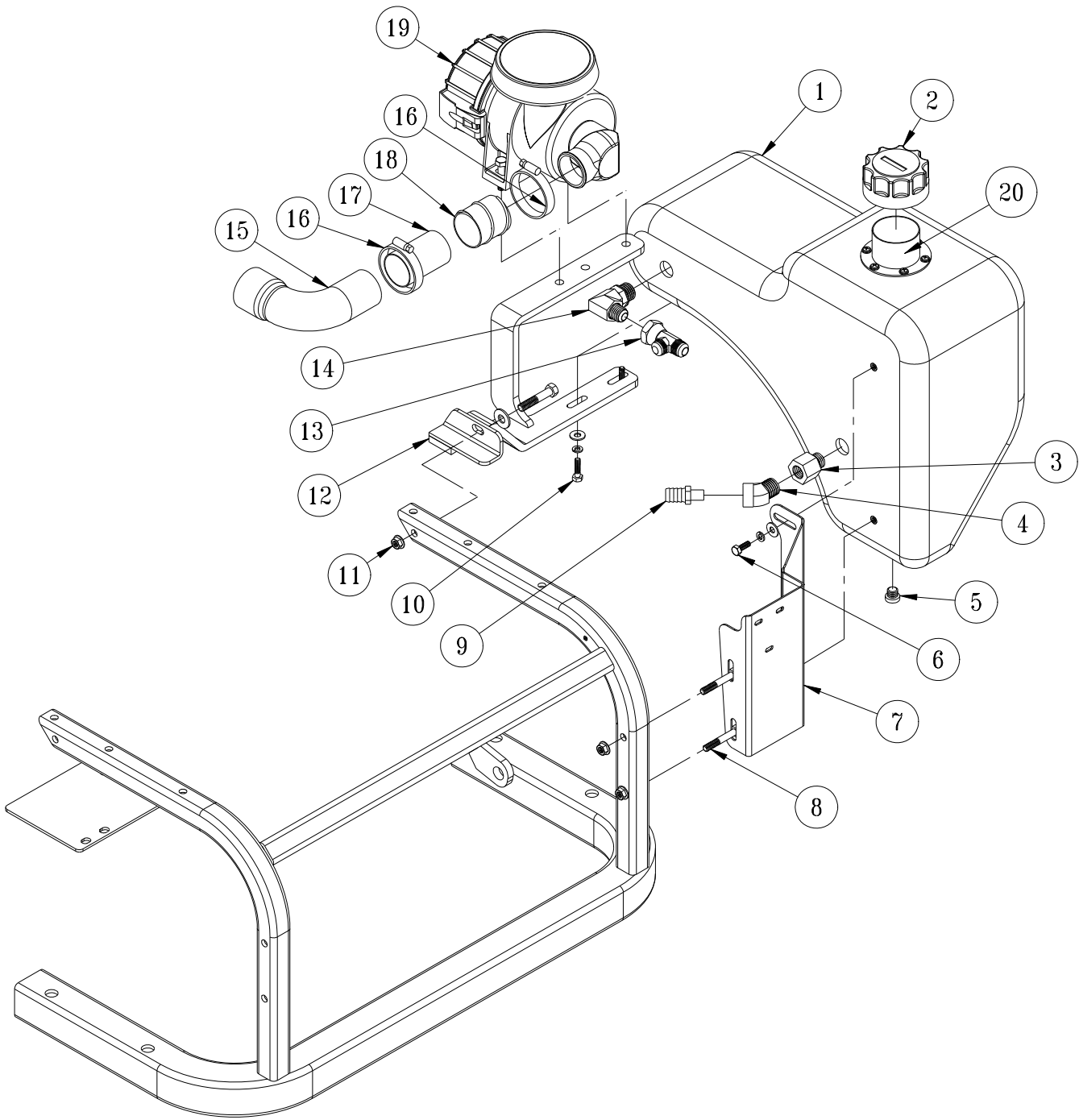
Parts

# GAS TANK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-248	Battery Hold-down	1
	15-020	Grip	1
2	HB-516-18-225	Bolt <sup>5</sup> / <sub>16</sub> - 18 x 2 <sup>1</sup> / <sub>4</sub>	1
	HW-516	Washer <sup>5</sup> / <sub>16</sub>	3
	HNFL-516-18	Flange Whiz Lock Nut <sup>5</sup> / <sub>16</sub> - 18	1
3	HB-38-16-125	Hex Bolt, <sup>3</sup> / <sub>8</sub> - 16 x 1 <sup>1</sup> / <sub>4</sub>	1
	HNFL-38-16	Flange Lock Nut, <sup>3</sup> / <sub>8</sub> - 16	1
4	HB-516-18-225	Bolt <sup>5</sup> / <sub>16</sub> - 18 x 2 <sup>1</sup> / <sub>4</sub>	2
	HNFL-516-18	Flange Lock Nut <sup>5</sup> / <sub>16</sub> - 18	2
5	43-245	Fuel Tank Bracket	1
6	HB-516-18-050	Hex Bolt <sup>5</sup> / <sub>16</sub> - 18 x <sup>1</sup> / <sub>2</sub>	2
	HNFL-516-18	Flange Lock Nut, <sup>5</sup> / <sub>16</sub> - 18	2
7	8-688	Carb Canister Clip Mount	1
8	HB-14-20-075	Bolt <sup>1</sup> / <sub>4</sub> - 20 x <sup>3</sup> / <sub>4</sub>	2
	HW-14	Washer <sup>1</sup> / <sub>4</sub>	2
	HWL-14	Lock Washer <sup>1</sup> / <sub>4</sub>	2
9*	42-814-03	Fuel Level Gauge	1
10*	42-814-02	Cap	1
*	42-814-01	Tether	1
11*	42-814-04	Top Draw	1
	8800-20	Hose (goes to carb canister)	1
	18-186	Hose Clamp	1
12*	42-814-05	Vent Check Valve	1
	8800-60	Fuel hose (goes to fuel pump on engine)	1
	18-186	Hose Clamp	1
13*	42-833	Gas Tank (includes all * items)	1
14	8-689	Carb Canister	1
	8-693	Hose Connector (comes with engine)	1
	9025-36	3/16 Fuel Hose (goes to engine)	1
	18-186	Hose Clamp	1
15	42-770	Right Tank Support	1
16	HB-38-16-200	Bolt <sup>3</sup> / <sub>8</sub> - 16 x 2	1
	HW-38	Washer <sup>3</sup> / <sub>8</sub>	2
	HNFL-38-16	Flange Whiz Lock Nut <sup>3</sup> / <sub>8</sub> - 16	1
17	HB-14-20-100	Bolt <sup>1</sup> / <sub>4</sub> - 20 x 1	2
	HW-14	Washer <sup>1</sup> / <sub>4</sub>	2
	HW-516	Washer <sup>5</sup> / <sub>16</sub>	2
	HWL-14	Lock Washer <sup>1</sup> / <sub>4</sub>	2
18	HB-14-20-075	Bolt <sup>1</sup> / <sub>4</sub> - 20 x <sup>3</sup> / <sub>4</sub>	2
	HWL-14	Lockwasher <sup>1</sup> / <sub>4</sub>	2
	HW-14	Washer <sup>1</sup> / <sub>4</sub>	2
19*	26-054	Rubber Grommet	1
20	23-006	Oil Filter	1
	23-031	Replacement Filter	1
21	34-123	Elbow	2
22*	26-055	Fuel Tank Drain	1
23	HB-12-13-500	Bolt <sup>1</sup> / <sub>2</sub> - 13 x 5	4
	HNFL-12-13	Flange Whiz Lock Nut <sup>1</sup> / <sub>2</sub> - 13	4
24	42-015	Attachment Mount	2
25	42-273	Battery Box	1
26	50-081	Rubber Bumper	2
	HNFL-38-16	Flange Whiz Lock Nut <sup>3</sup> / <sub>8</sub> - 16	2
27	26-034	Ball Stud	2
28	13-569	Gas Shock	1
29	HB-516-18-200	Bolt <sup>5</sup> / <sub>16</sub> - 18 x 1	1
	HNFL-516-18	Flange Whiz Lock Nut <sup>5</sup> / <sub>16</sub> - 18	1
30	42-772	Seat Mount	1

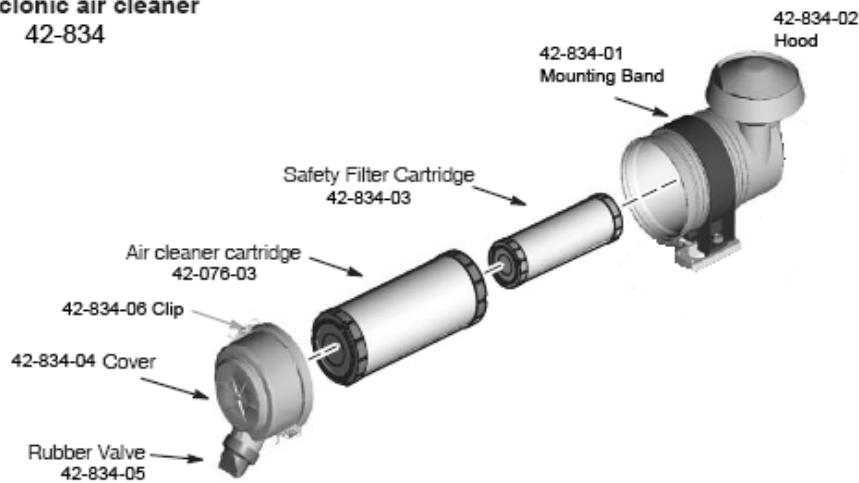
# OIL TANK DRAWING

Parts

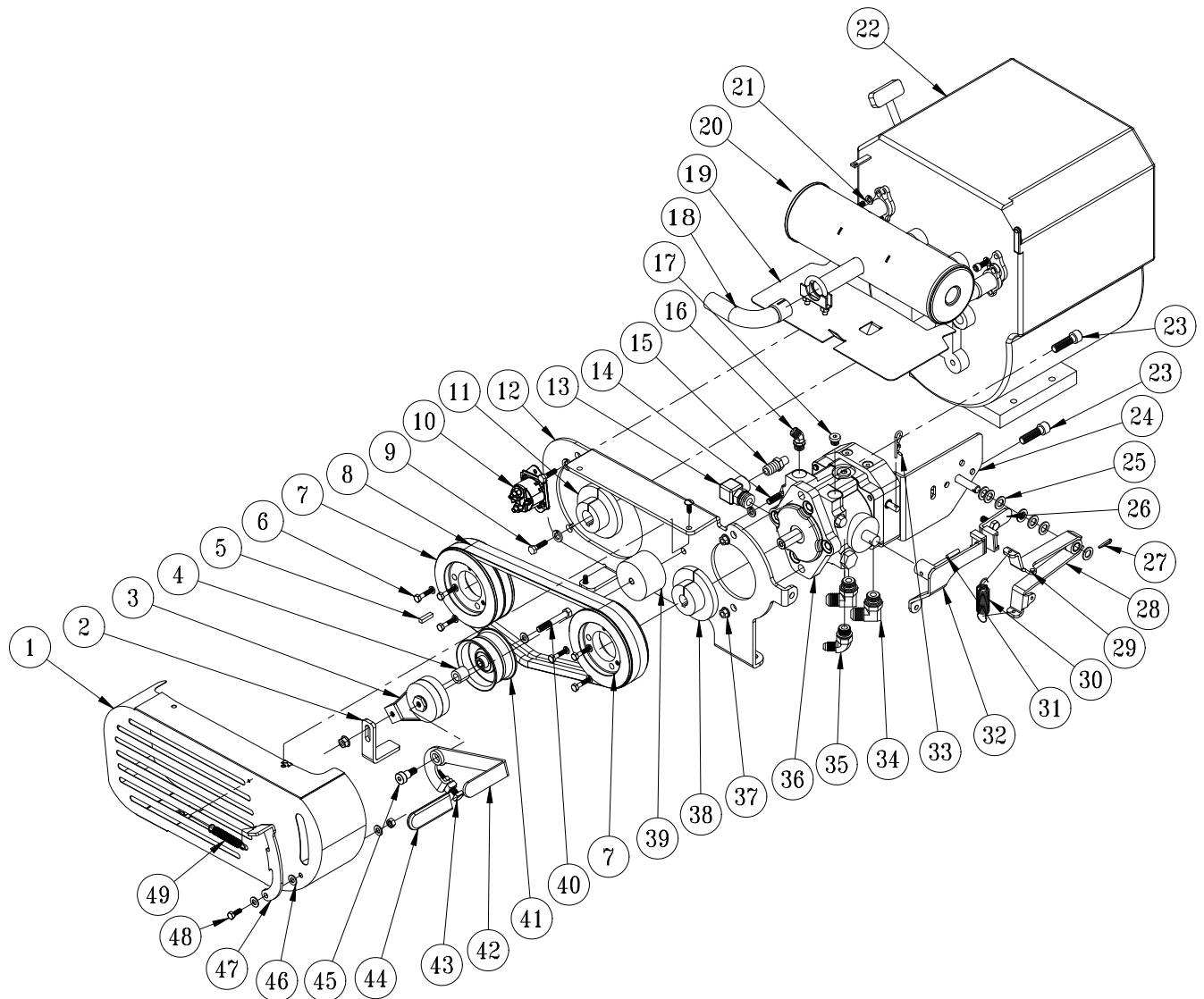


REF#	PART#	DESCRIPTION	QUANTITY
1	42-005	Oil Tank	1
2	13-747	Filler Breather	1
	13-586-01	Cap Gasket	1
	13-586-02	Bottom Gasket	1
3	18-240	Adapter	1
4	18-072	45° Elbow	1
5	23-126	#6 Plug	1
6	HB-14-20-075	Bolt 1/4 - 20 x 3/4	2
	HW-14	Washer 1/4	2
	HWL-14	Lock Washer 1/4	2
7	43-246	Oil Tank Bracket	1
8	HB-516-18-225	Bolt 5/16 - 18 x 2 1/4	2
	HNFL-516-18	Flange Whiz Lock Nut 5/16 - 18	2
9	18-133	Barb Fitting	1
10	HB-14-20-100	Bolt 1/4 - 20 x 1	2
	HW-14	Washer 1/4	2
	HWL-14	Lock Washer 1/4	2
11	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
12	42-769	Oil Tank Support	1
13	18-337	Tee	1
14	23-189	90° Elbow	1
15	27-113	Rubber Elbow	1
16	18-370	Hose Clamp	2
17	42-776	Hose Sleeve	1
18	8959-27	Flex Hose	1
19	42-834	Remote Air Cleaner	1
20	13-586-03	Neck	1
	HSM-8-32-050	Machine Screw #8 - 32 x 1/2	6
	HWS-8	Star Washer #8	6

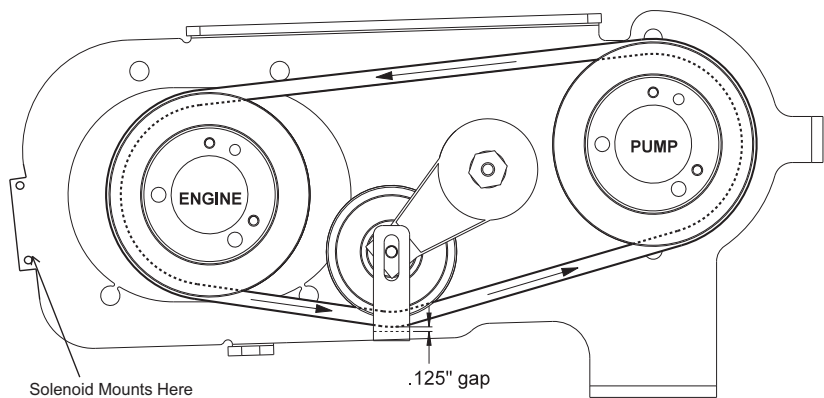
Cyclonic air cleaner  
42-834



# PUMP AND ENGINE DRAWING



Parts



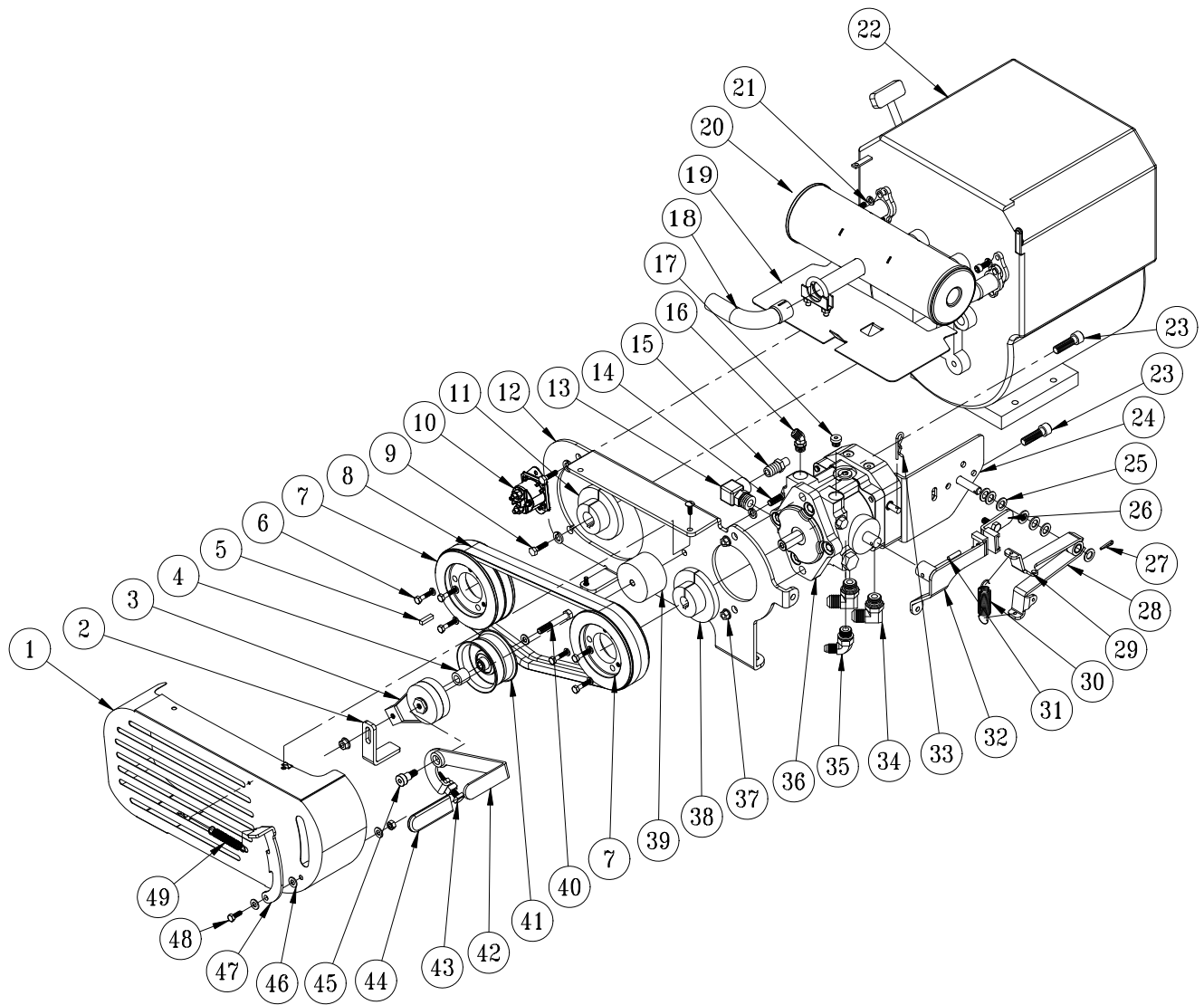
Belt Routing

## PUMP AND ENGINE PARTS LIST

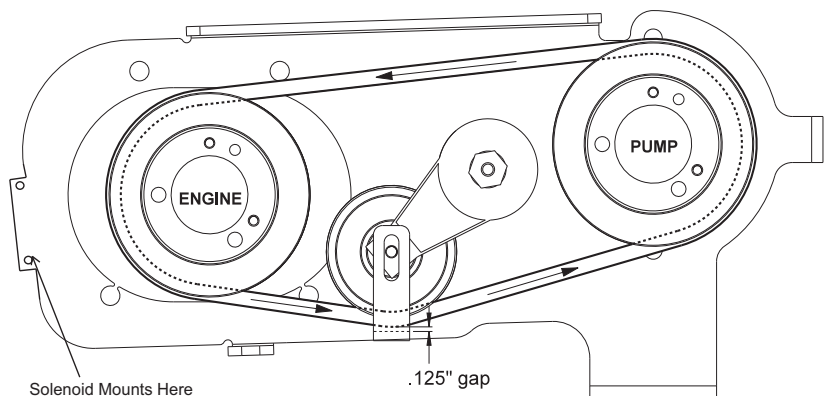
REF#	PART#	DESCRIPTION	QUANTITY
1	42-353	Belt Guard	1
	78-274	Cage Nut	3
	HB-14-20-075	Hex Bolt, $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HWL-14	Lock Washer, $\frac{1}{4}$	2
2	42-357	Belt Stop	1
3	42-327	Tensioner	1
4	16-990	Spacer	1
5	HKSQ-14-100	Machine Key $\frac{1}{4}$ x $\frac{1}{4}$ x 1	1
6	HB-14-20-125	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	13-750	Solenoid	1
11	42-245	Hub 1"	1
12	42-354	Pump Mount	1
13	23-130	Elbow 90°	1
14	HB-38-16-250	Hex Bolt, $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	1
	HWL-38	Lock Washer, $\frac{3}{8}$	1
15	18-133	Barb Fitting	1
16	18-168	Elbow 90°	1
17	23-126	Plug	1
18	45-162	Tailpipe	1
	45-161	Muffler Clamp	1
19	42-601	Heat Shield	1
	18-222	Hose Clamp	2
20	45-158	Muffler	1
21	HSSHSM-8-1.25-20	Metric Cap Screw M8 - 1.25 x 20	4
	HWLM-8	Lockwasher M8	4
22	15-165	Engine B&S 16 HP	1
	13-491	Oil Switch	1
	18-462	Oil Drain Valve	1
23	HSSH-12-13-175	Socket Screw $\frac{1}{2}$ - 13 x $1\frac{3}{4}$	2
24	42-279	Filter Mount	1
	HW-38	Washer $\frac{3}{8}$	2
25	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14 GA	7
26	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
27	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
28	42-606	Bottom Centering Arm	1
	18-234	Bushing (part of 42-312)	1
29	42-607	Top Centering Arm	1
	18-234	Bushing (part of 42-311)	1
30	42-832	Spring	1
31	HRP-14-100	Roll Pin $\frac{1}{4}$ x 1	1

(Continued on next page)

# PUMP AND ENGINE DRAWING



Parts

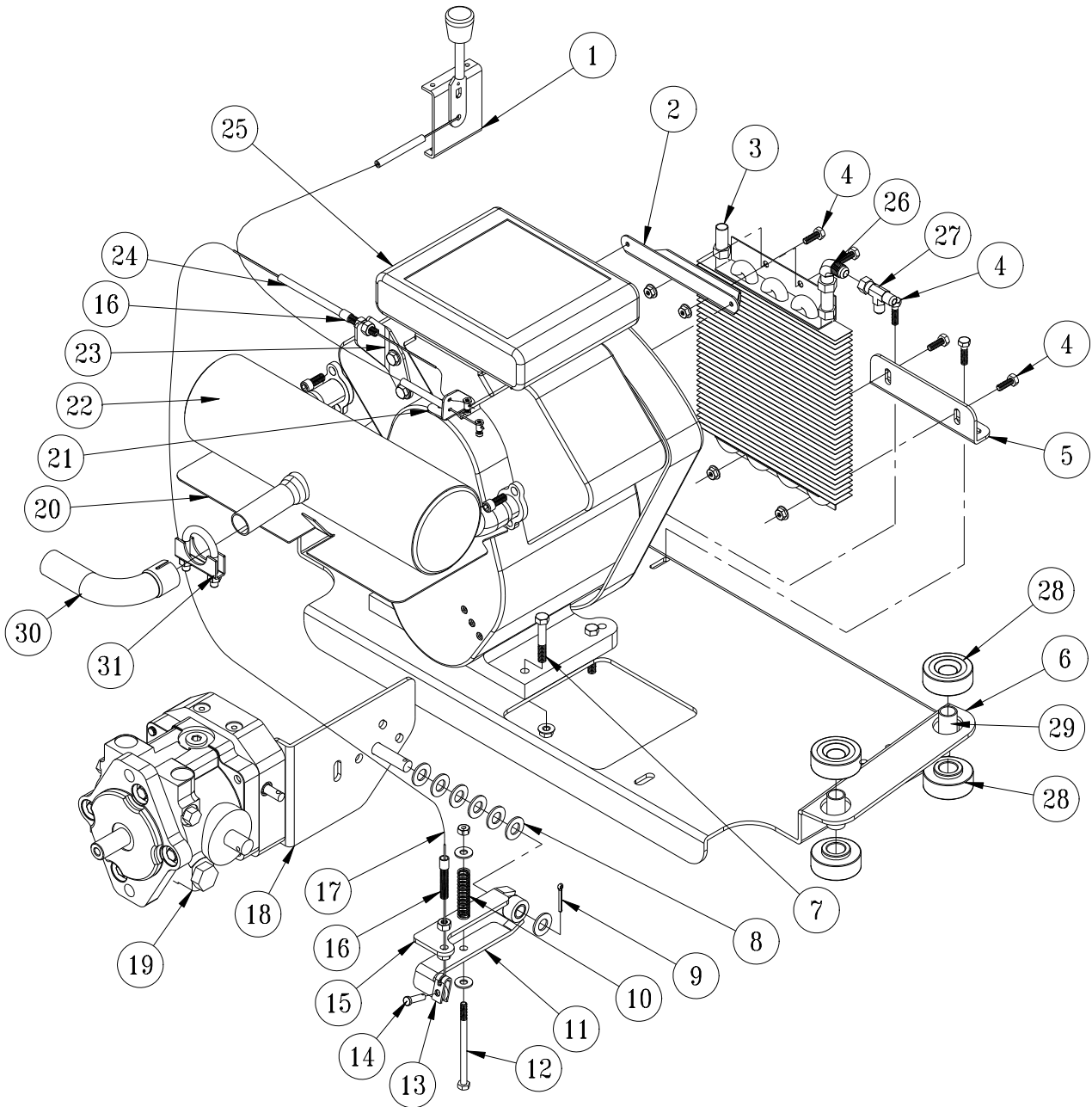


Belt Routing



## PUMP AND ENGINE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
32	43-268	Swash Arm	1
	8946-1	Wear Strip	1
	HRS-316-050	Rivet	1
33	HHP-18	Bridge Pin $\frac{1}{8}$	1
34	18-174	Elbow 90°	2
35	18-185	Elbow	1
36	42-797	Variable Pump	1
37	HNFL-12-13	Flange Whiz Lock Nut $\frac{1}{2}$ -13	2
38	42-246	Hub $\frac{3}{4}$	1
	HWK-316-075	Woodruff Key	1
39	42-361	Tensioner Spacer	1
40	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
41	42-358	Idler Pulley	1
	42-338	Oilite Bushing	1
42	42-355	Clutch Handle	1
43	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
44	15-020	Grip	1
45	42-352	Hex Socket Head shoulder Screw	1
46	HW-38	Flat Washer, $\frac{3}{8}$	3
47	42-356	Lock Handle	1
48	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
49	16-046	Spring	1

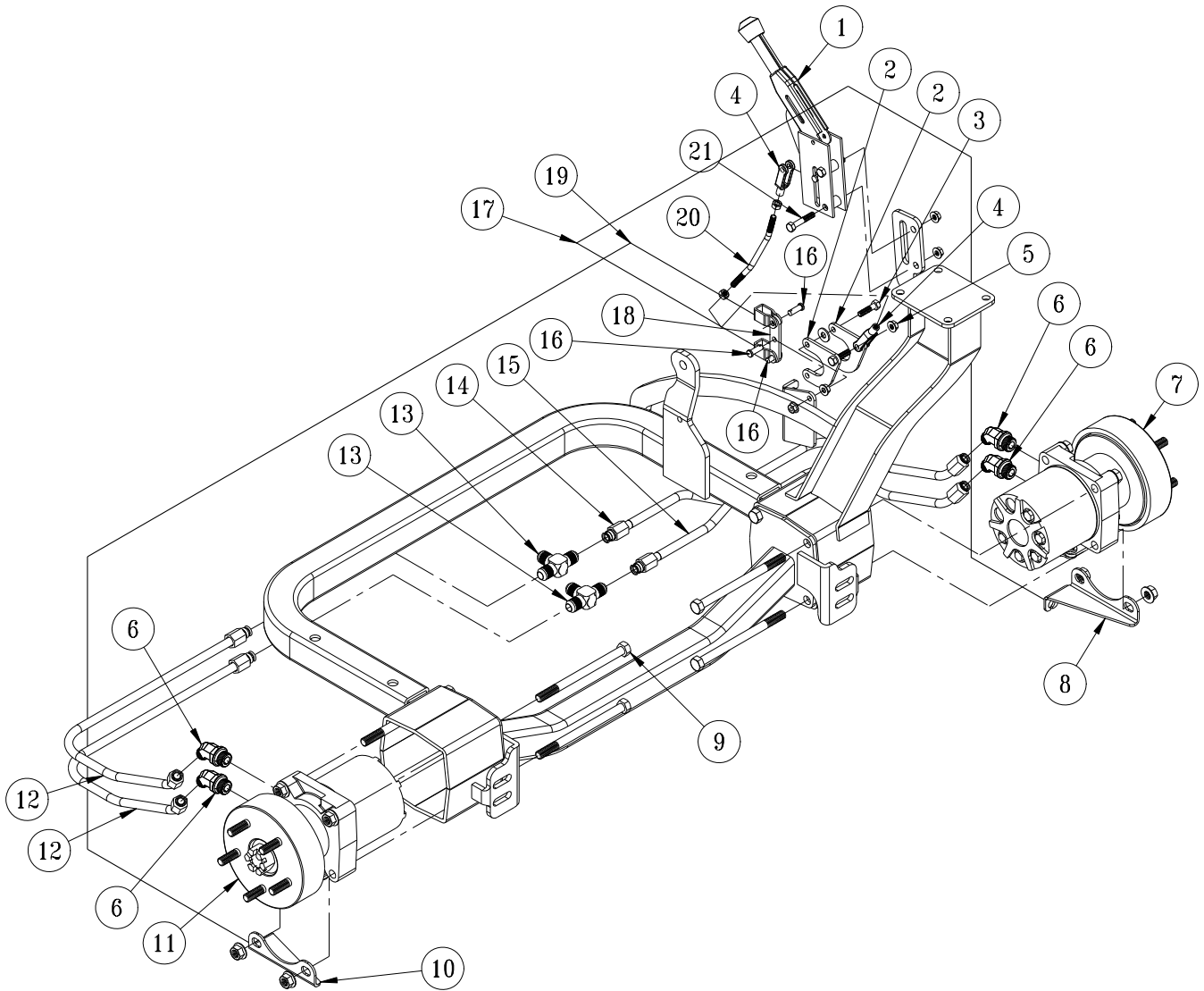


Parts

REF #	PART #	DESCRIPTION	QUANTITY
1	45-118	Throttle	1
3	34-105	Oil Cooler	1
2	43-272	Upper Cooler Mount	1
4	HB-14-20-075	Hex Bolt, $\frac{1}{4}$ - 20 x $\frac{3}{4}$	6
	HNFL-14-20	Flange Whiz Lock Nut, $\frac{1}{4}$ - 20	6
5	42-275	Bottom Cooler Bracket	1
6	42-269	Engine Plate	1
7	HB-516-18-225	Hex Bolt, $\frac{5}{16}$ - 18 x $2\frac{1}{4}$	4
	HNFL-516-18	Flange Whiz Lock Nut, $\frac{5}{16}$ - 18	4
8	HMB-12-14	Machine Bushing, $\frac{1}{2}$ x 14 GA	7
9	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	1
10	42-832	Compression Spring	1
11	42-607	Bottom Centering Arm	1
	18-234	Bushing (part of 42-607)	1
12	HB-14-20-400	Hex Bolt, $\frac{1}{4}$ - 20 x 4	1
	HW-14	Washer, $\frac{1}{4}$	2
	HNTL-14-20	Lock Nut, $\frac{1}{4}$ - 20	1
13	17-153	Clevis	1
14	HCP-14-075	Clevis Pin, $\frac{1}{4}$	1
	HP-332-075	Cotter Pin, $\frac{3}{32}$ x $\frac{3}{4}$	1
15	42-606	Top Centering Arm	1
	18-234	Bushing (part of 42-606)	1
16	17-624	Conduit w/ Retainer	2
	HN-516-24	Hex Nut, $\frac{5}{16}$ - 24	4
17	17-151	Cable	1
18	42-279	Filter Mount	1
19	42-797	Variable Pump	1
20	42-601	Heat Shield	1
	18-222	Hose Clamp	2
21	45-111	Throttle Adapter	1
	21-161	Wire Block	2
22	45-158	Muffler	1
23	45-077	Throttle Bracket	1
24	17-624	Conduit	1
25	15-165	Engine B&S, 16HP	1
26	18-202	90° JIC Elbow	1
28	60-107	Rubber Bushing	8
29	60-168	Spacer	4
30	45-162	Tailpipe	1
31	45-161	Clamp	1

# REAR AXLE DRAWING

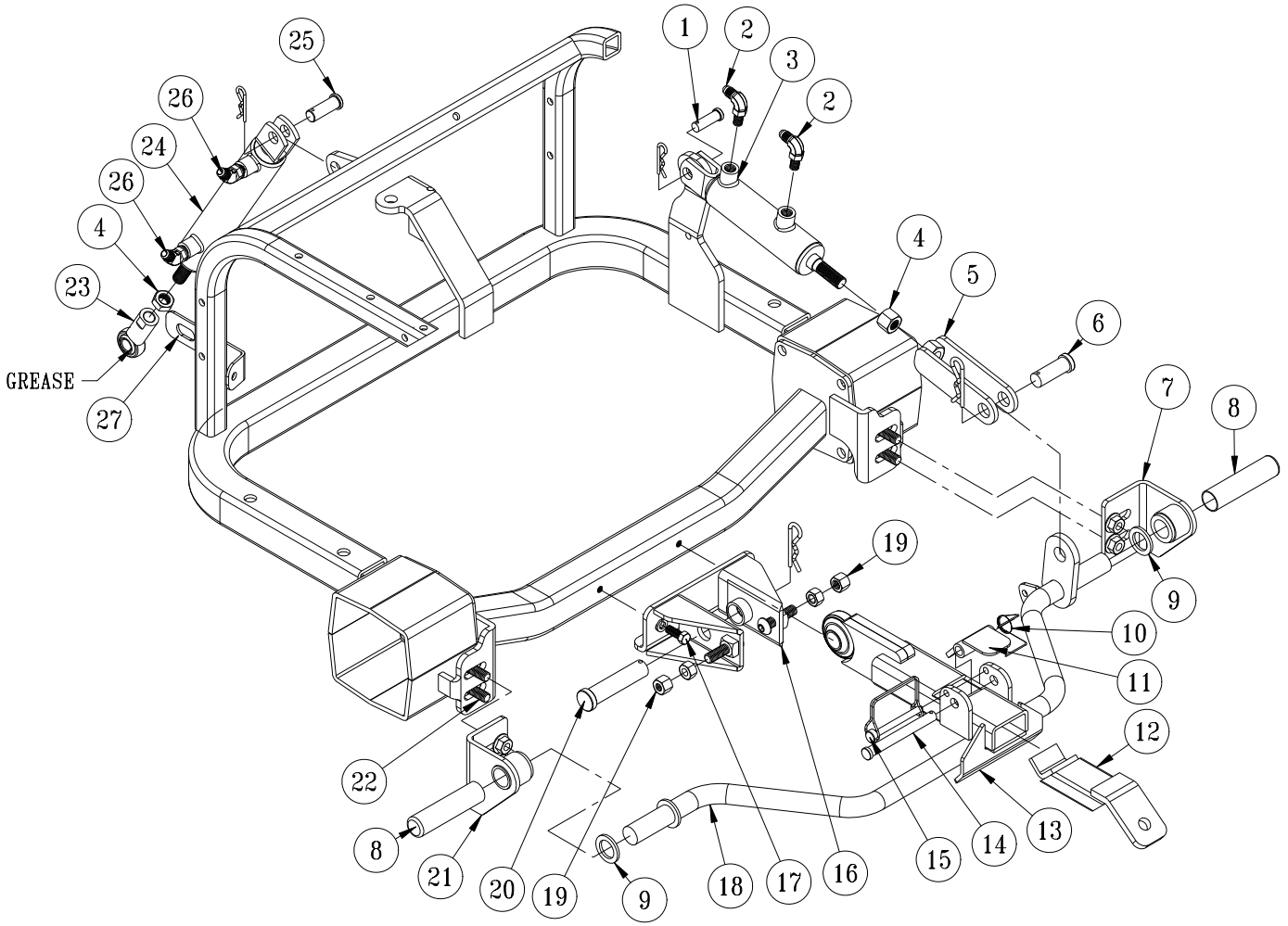
Parts



## REAR AXLE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	60-106	Brake Lever	1
2	43-271	Brake Relay Mount	2
3	HB-516-18-150	Hex Bolt, $\frac{5}{16}$ - 18 x $1\frac{1}{2}$	1
	HNFL-516-18	Flange Whiz Lock Nut, $\frac{5}{16}$ - 18	2
	HW-516	Flat Washer, $\frac{5}{16}$	4
4	11-100	Linkage Yoke	2
5	HB-516-18-150	Hex Bolt, $\frac{5}{16}$ - 18 x $1\frac{1}{2}$	1
	HNFL-516-18	Flange Whiz Lock Nut $\frac{5}{16}$ - 18	1
6	18-383	45° Adapters	4
7	43-242	RH Wheel Motor w/Brake	1
	HNL-12-20	Lug Nut $\frac{1}{2}$ - 20	5
8	45-079	RH Brake Cable Mount	1
9	HB-12-13-700	Hex Bolt, $\frac{1}{2}$ - 13 x 7	8
	HNFL-12-13	Flange Lock Nut, $\frac{1}{2}$ - 13	8
10	45-080	LH Brake Cable Mount	1
11	43-241	LH Wheel Motor w/Brake	1
	HNL-12-20	Lug Nut $\frac{1}{2}$ - 20	5
12	43-095	LH Hydraulic Line	2
13	18-170	Tee	2
14	42-238	RH Lower Hydraulic Line	1
15	42-237	RH Upper Hydraulic line	1
16	HCP-516-100	Clevis Pin, $\frac{5}{16}$ x 1	3
	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	3
17	43-240	RH Brake Cable	1
18	45-075	Equalizer Link	1
19	43-239	LH Brake Cable	1
20	43-235	Park Brake Link	1
	HN-516-18	Hex Nut, $\frac{5}{16}$ - 18	2
21	HB-516-18-175	Hex Bolt, $\frac{5}{16}$ - 18 x $1\frac{3}{4}$	2
	HNFL-516-18	Flange Whiz Lock Nut, $\frac{5}{16}$ - 18	2

# RAKELIFT DRAWING

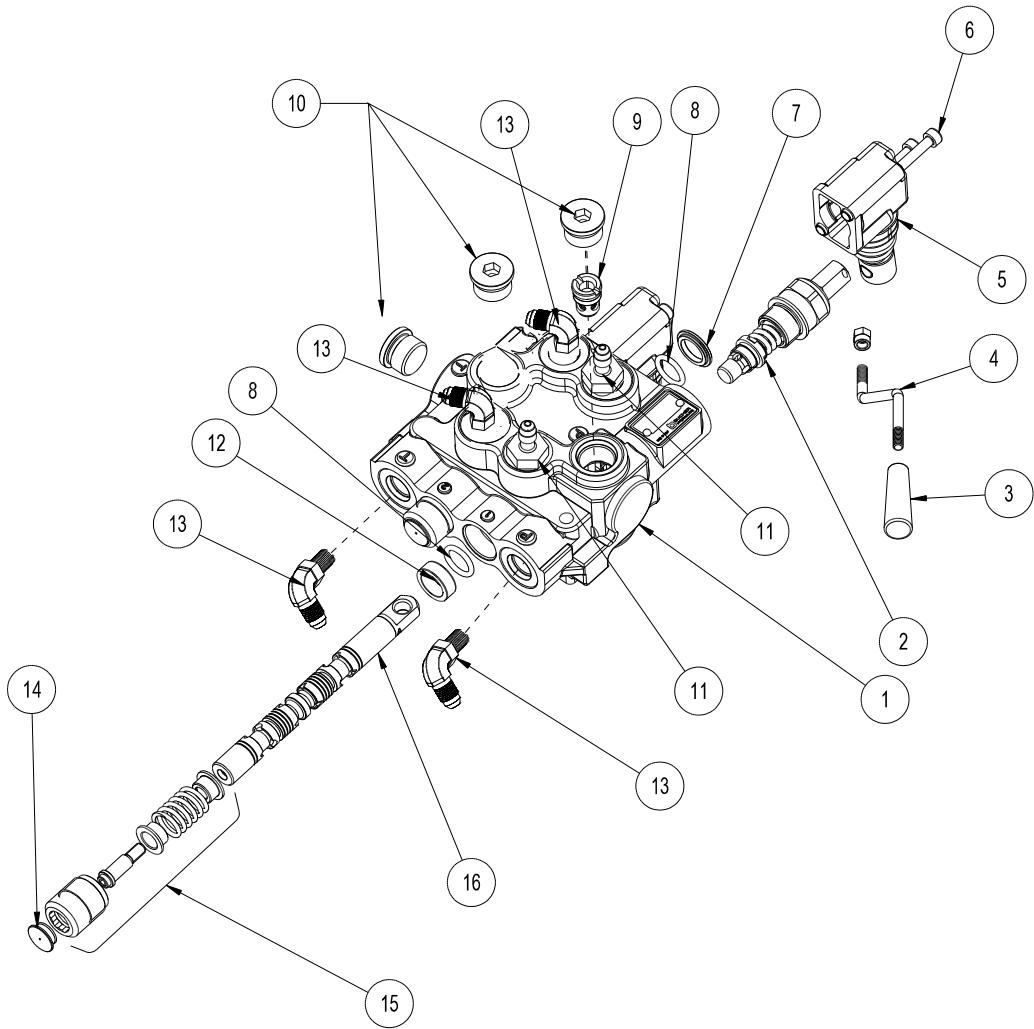


## RAKE LIFT PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HCP-12-150	Clevis Pin, 1/2 x 1 1/2	1
	HHP-18	Bridge Pin, 1/8	1
2	18-168	90° Elbow	2
3	43-150	Hydraulic Cylinder(rear rake lift)	1
4	HNJ-58-18	Jam Nut, 5/8 - 18	2
5	43-138	Lift Linkage	1
6	HCP-34-200	Clevis Pin 3/4 x 2	1
	HHP-.177	Bridge Pin	1
7	34-220	Pivot Bracket - RH	1
	33-086	Flange Bushing	1
8	15-019	Rubber Grip	2
9	HMB-100-10	Machine Bushing, 1 x 10GA	2
10	43-136	Torsion Spring	1
11	43-139	Lock	1
12	43-143	Towing Hitch	1
13	43-141	Lift Arm	1
14	HCP-12-450	Clevis Pin 1/2 - 4 1/2	1
	HHP-18	Bridge Pin, 1/8	1
15	25-382	Lock Pin	1
16	43-140	Frame Mount	1
17	HB-38-24-100	Bolt, 3/8 - 24 x1	2
	HWL-38	Lock Washer, 3/8	2
18	43-137	Lift Bar	1
19	HSSHB-12-13-200	Button Socket Head Cap Screw	2
	HN-12-13	Nut, 1/2 - 13	2
	HNCL-12-13	Center Lock Nut, 1/2 - 13	2
20	HCP-78-350	Clevis Pin, 7/8 x 3 1/2	1
	HHP-.177	Bridge Pin	1
21	34-219	Pivot Bracket - LH	1
	33-086	Flange Bushing	1
22	HB-12-13-150	Hex Bolt, 1/2 - 13 x 1 1/2	4
	HW-12	Flat Washer, 1/2	4
	HNFL-12-13	Flange Lock Nut, 1/2 - 13	4
23	18-154	Rod End	1
	HG-14-28-180	Grease Fitting, 1/4 - 28 x 180°	1
24	10-554	Hydraulic Cylinder(belly lift)	1
25	HCP-58-175	Clevis Pin, 5/8 x 1 3/4	1
	HHP-18	Bridge Pin, 1/8	1
26	18-188	45° Elbow	2
27	42-217	Cylinder Mount	1



# 13-729 2-BANK HYDRAULIC VALVE DRAWING



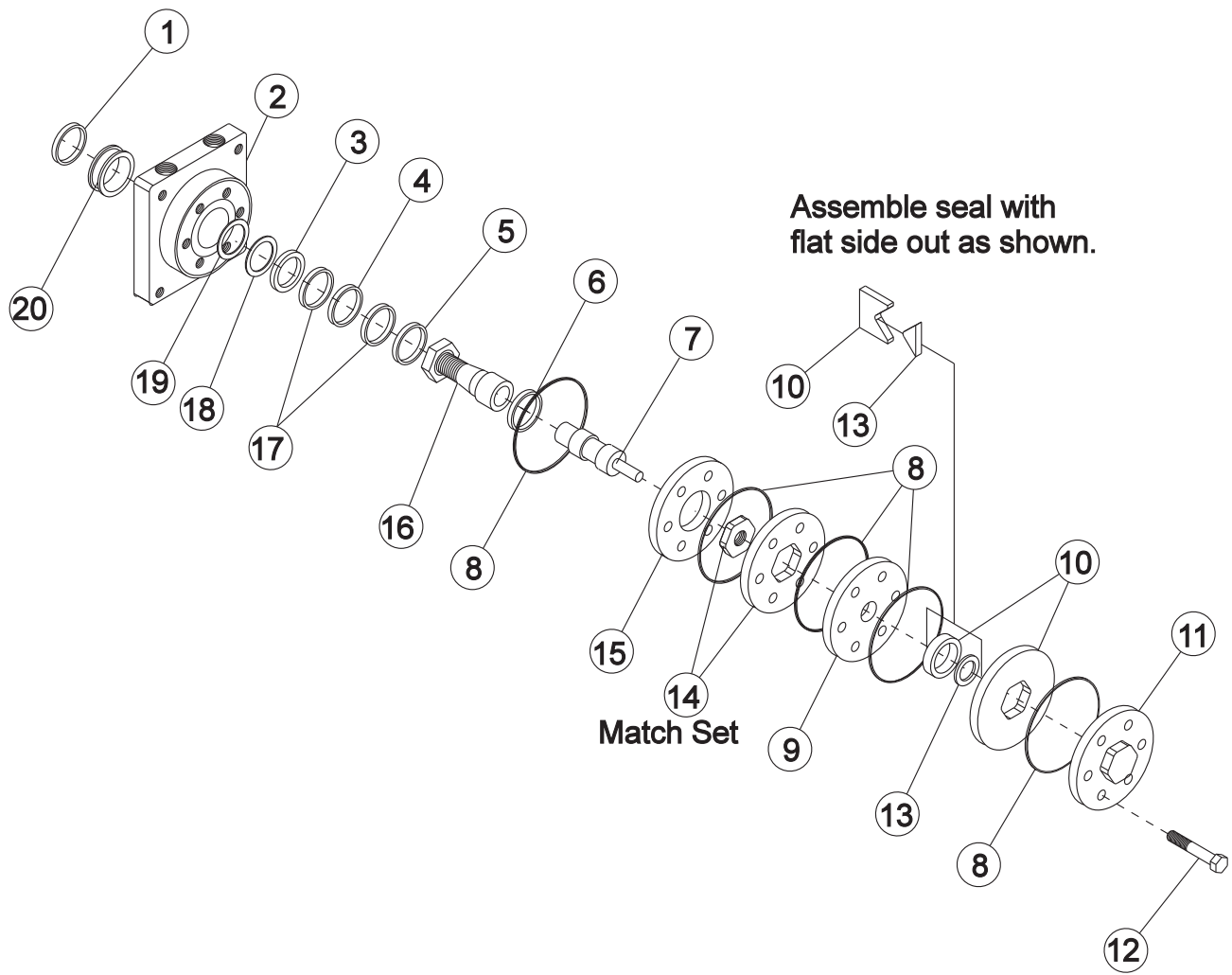
Parts



## 13-729 2-BANK HYDRAULIC VALVE PARTSLIST

REF #	PART #	DESCRIPTION	QUANTITY
1*	78-415-01	Body (complete with spacer and check valve)	1
2*	78-415-02	Spool HDM10	1
3	78-417-01	Tapered Knob	2
4	78-454	Bent Handle	2
5*	78-415-09	Lever Group HDS11	2
6*	78-415-10	Metric Socket Screw M5 x .8 x 45	4
7*	78-415-04	Flanged Washer HDM10	2
8*	78-415-03	O-Ring Seal	4
9*	78-415-12	Check Valve Assembly HDM12	1
10*	78-415-13	<sup>3</sup> / <sub>4</sub> - 16 SAE 8 Screw Plug	3
11	18-169	Adapter	2
12*	78-415-05	Spacer	2
13	18-168	Elbow 3/8 Straight Thread	4
14*	78-415-08	Plug	2
15*	78-415-11	Positioner	2
16*	78-415-06	A Type Spool HDS11	2
* *	13-729 78-415-03	2 – Bank Hydraulic Valve (includes all * items) Seal Kit	

# REAR WHEEL MOTOR (7.5 C.I.) DRAWING

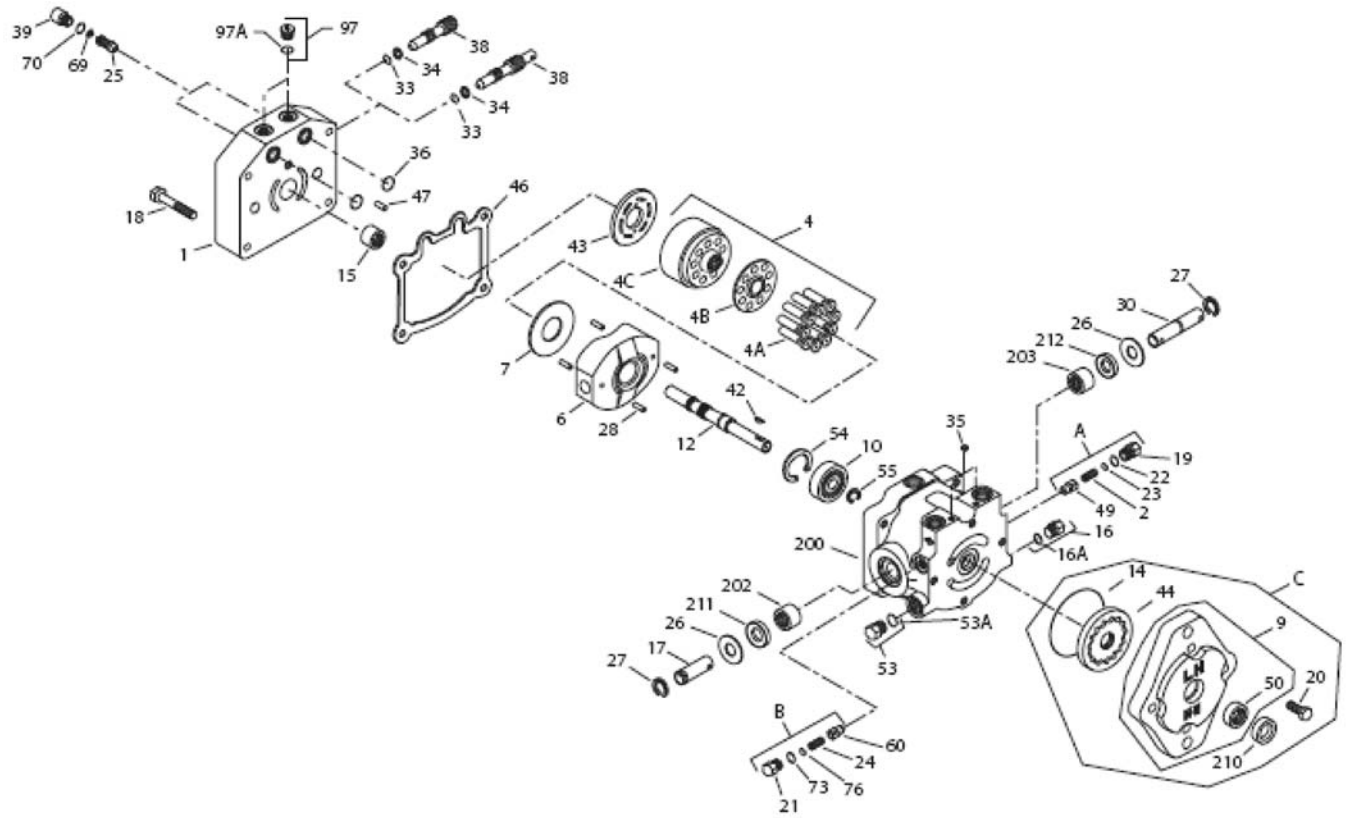


Parts

## REAR WHEEL MOTOR (7.5 C.I.) PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1*		Water & Dirt Seal	1
2		Service Housing Assembly	1
3*		Inner Seal	1
4	13-032-27	Thrust Bearing	1
5	13-032-28	Inner Bearing	1
6	13-032-29	Thrust Bearing	1
7	13-615-03	Drive Link	1
8*		Ring Seal	5
9	13-032-31	Manifold	1
10	13-032-32	Commutator Assembly (matched set)	1
11		End Cover	1
12	13-615-01	Bolt	7
13*		Commutator Seal (matches with #10)	1
14	13-615-02	Rotor Set (matched set)	1
15	13-032-35	Plate Wear	1
16	13-615-04	Coupling Shaft	1
	HWK-516-100	Woodruff Key <sup>5</sup> / <sub>16</sub> X 1	1
	14-265	Nut 1 - 20	1
17	13-032-37	Thrust Washer	2
18*		Backup Washer	1
19*		Backup Washer	1
20	13-032-38	Outer Bearing	1
*	14-080	Seal Kit	1

# 42-797 VARIABLE PUMP DRAWING



Note: Item 200 includes items 202, 203 and 204

Parts

## 42-797 VARIABLE PUMP PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	10-117-01	End cap	1
2	14-263	Implement relief spring	1
4	42-003-16	Cylinder block kit	1
4A		Piston assembly	9
4B		Slipper retainer	1
4C		Cylinder block	1
6		Swashplate	1
7	14-114	Thrust plate	1
9		Charge pump housing assembly	1
10	42-003-10	Ball bearing	1
12		Shaft	1
14		O-ring	1
15	14-217	Roller bearing	1
16		Plug	1
16A		O-ring	1
17	14-212	Trunnion shaft	1
18	42-003-11	Screw	4
19	13-110-10	Plug	1
20		Screw	4
21	13-110-10	Plug	1
22		O ring	1
23	34-109-03	Shim kit	1
24	14-234	Charge relief spring	1
25	10-117-04	Check valve poppet	2
26	42-003-05	Washer	2
27	14-105	Retaining ring	2
28	14-216	Spring coiled pin	4
30	14-220	Trunnion shaft	1
33	14-226	O-ring	1
34	14-130	Back up ring	1
35	13-110-05	Pipe plug	2
36		O-ring	2
38	13-110-01	Bypass valve	1
39	10-117-03	Plug	2
42		O-ring	2
43	34-109-01	Valve plate	1
44	42-003-08	Gerotor assembly	1
46	14-107	Gasket	1
47	14-215	Pin	1
49	34-109-02	Charge relief cone	1
50	42-003-07	Needle bearing	1
53	42-159-05	Plug	1
53A		O-ring	1
54	14-132	Retaining ring	1
55	42-003-09	Retaining ring	1
60	34-109-02	Poppet	1
69		Spring	2
70		O-ring	2
73		O-ring	1
76	34-109-03	Shim kit	1
97	42-003-03	Plug assembly	2
97A		O-ring	2
200		Housing assembly	1
202	14-069	Needle bearing	1
203	14-069	Needle bearing	1
210	14-054	Lip seal	1
211	14-014	Lip seal	1
212	14-014	Lip seal	1
A	13-110-17	Relief valve kit	1
B	14-214	Relief valve kit	1
C	42-003-14	Charge pump kit	1

## DECAL LIST

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

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
25-373	Decal, Smithco Star	1	Nose Cone
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	3	Wheels
25-372	Decal, Smithco	1	Rear
25-370	Decal, DBA	1	Seat Console
25-361	Decal, Technical Assistance	1	Main Frame
27-077	Decal, Smithco Round	1	Steering Cap
43-110	Decal, Super Star	1	Nose Cone
42-765	Decal, Lift Control	1	Right Body Top
43-234	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	
42-834-03	Safety Filter Element Fender Mounted	
50-403	Fuel Filter	
13-531	Engine Oil Filter	Briggs and Stratton# 492932
18-462	Oil Drain Valve	

### SEAL KITS

42-797	Variable Pump with Relief	
14-098	Seal Kit	
43-241 & 43-242	Rear Brake Wheel Motor	
14-080	Seal Kit	
13-729	2-BankHydraulic Valve	
78-415-03	Seal Kit	
10-554	Hydraulic Cylinder (Attachment Lift Cylinder)	
14-529	Seal Kit	
43-150	Hydraulic Cylinder ( for Rake Lift)	
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))
42-158	Turf Tires
42-158-01	Tire 23 x 10.50 x 12
42-158-02	Wheel

# ACCESSORIES

<b>Front Mounted Implements</b> .....	<b>A</b>
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
<b>Belly Attachments</b> .....	<b>B</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
<b>Rear Attachments</b> .....	<b>C</b>
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

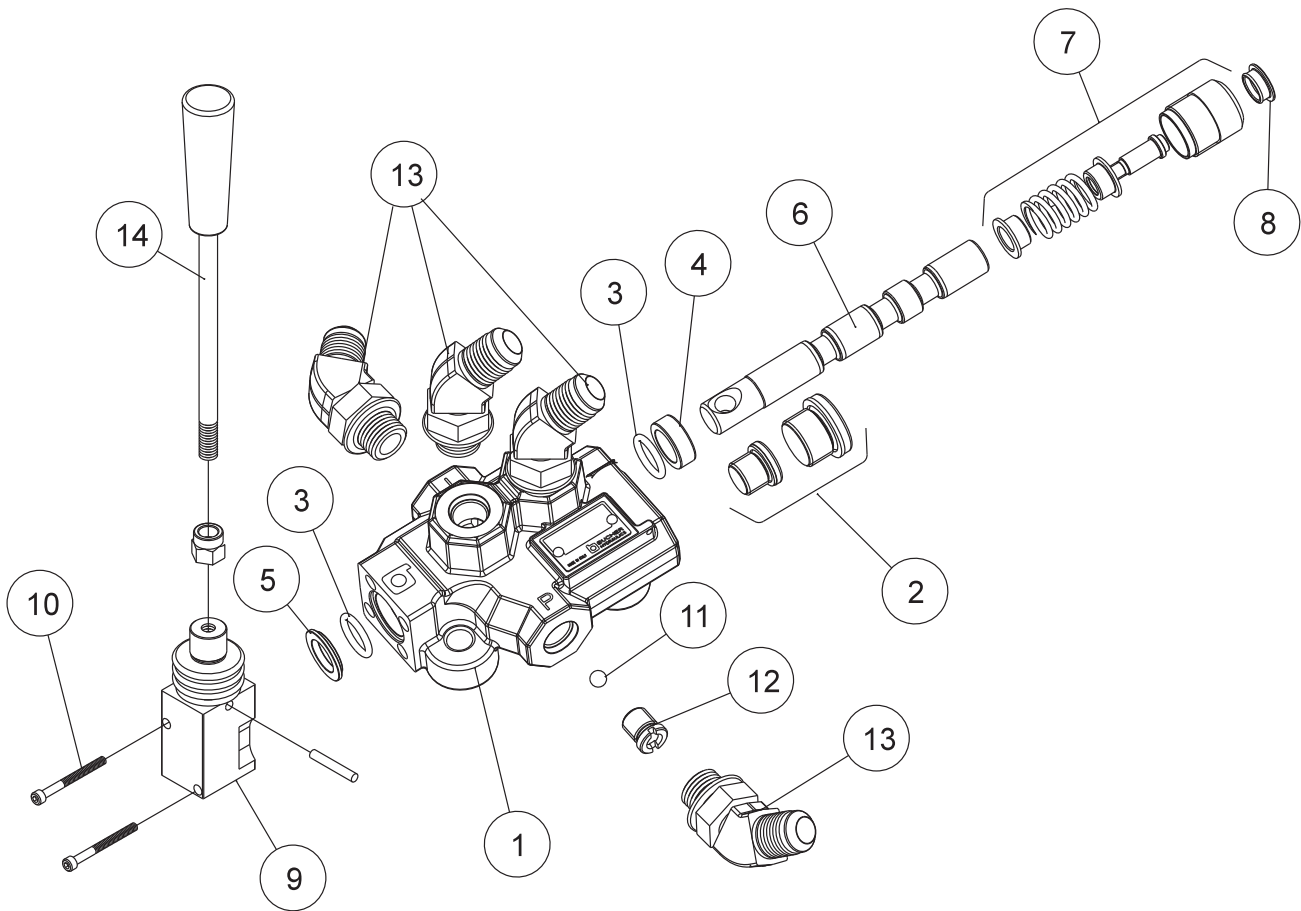
Center Attachment

Rear Attachment



# 13-731 SINGLE BANK HYDRAULIC VALVE DRAWING

Front Attachment

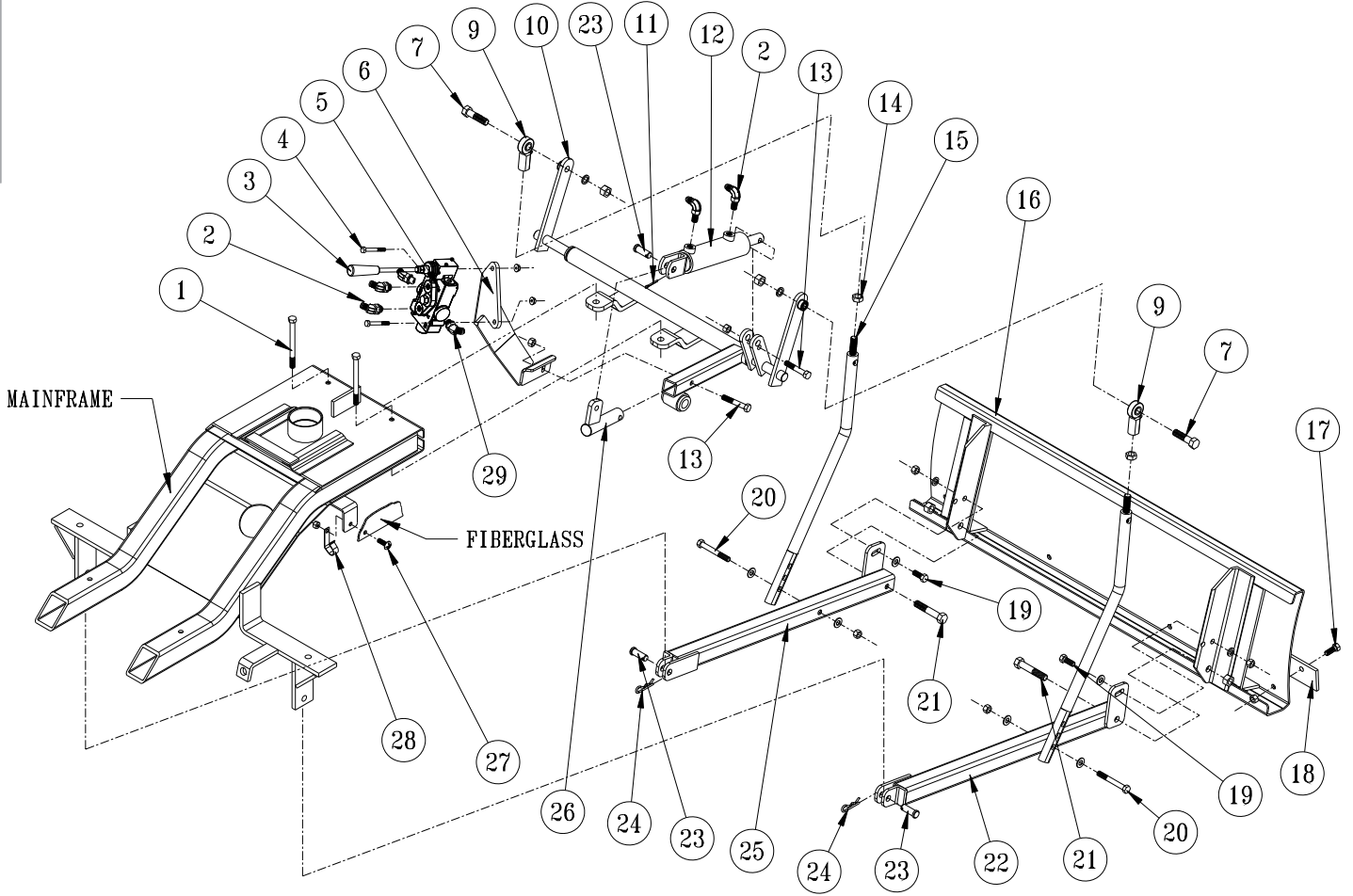


## 13-731 SINGLE BANK HYDRAULIC VALVE PARTSLIST

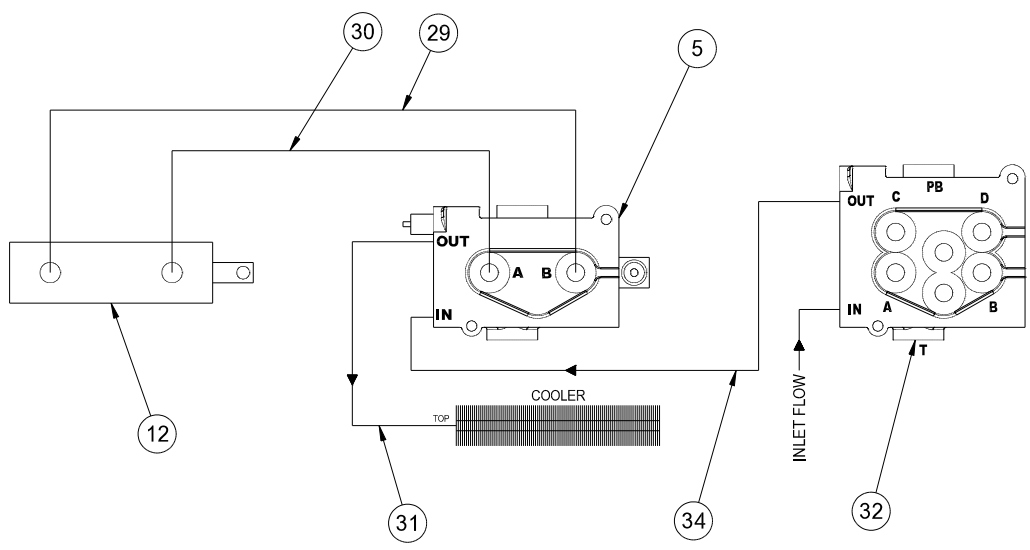
REF #	PART #	DESCRIPTION	QUANTITY
1*	13-731-01	Actuator Housing Assembly	1
2*	13-731-02	Valve Plug	1
3*†	78-415-03	O-Ring Seal	2
4*†	78-415-05	Spacer	3
5*	78-415-04	Flanged Washer HDM10	3
6*	13-731-03	Spool	1
7*	78-415-11	Positioner	1
8*	78-415-08	Plug	3
9*	78-415-09	Lever Group HDS11	3
10*	78-415-10	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

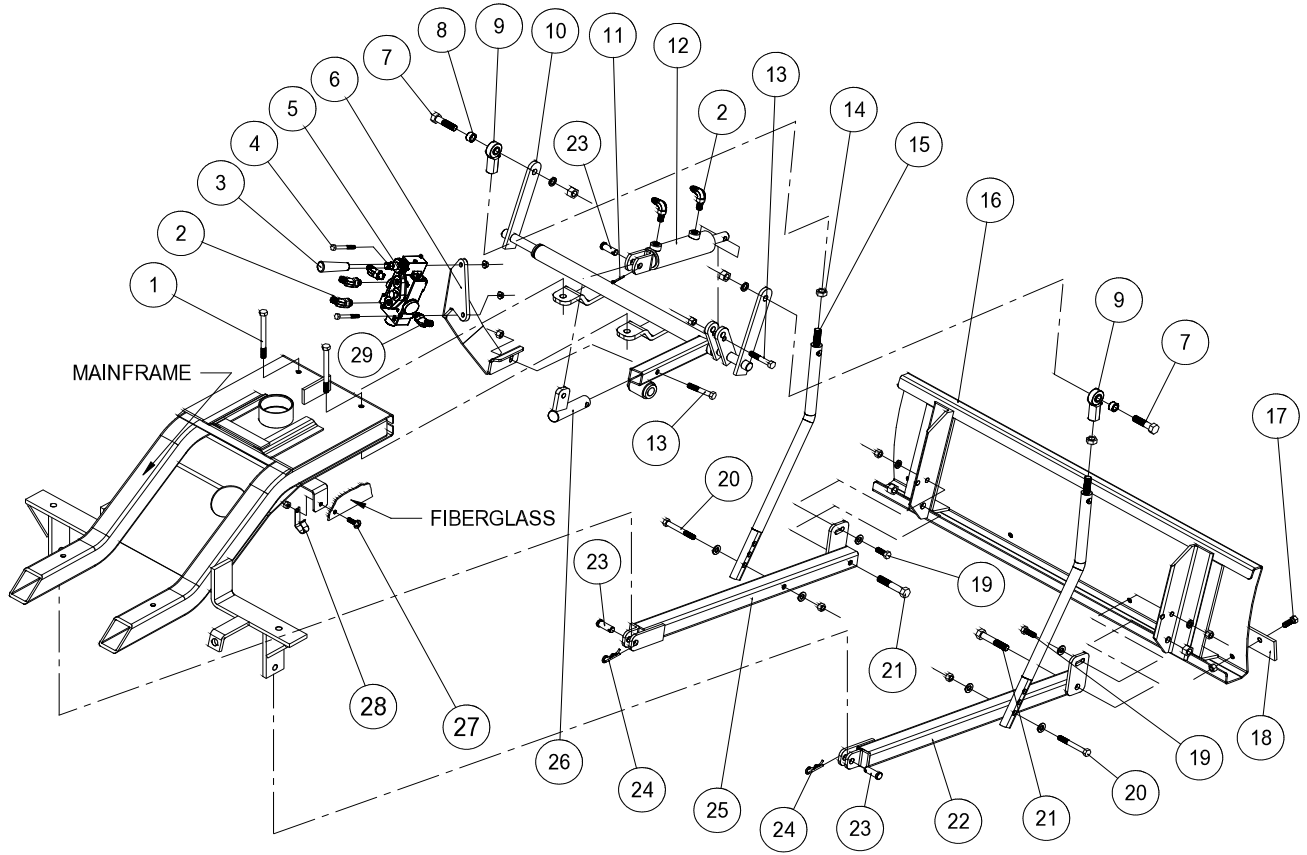


## 43-003 HYDRAULIC SAND PLOW PARTS LIST

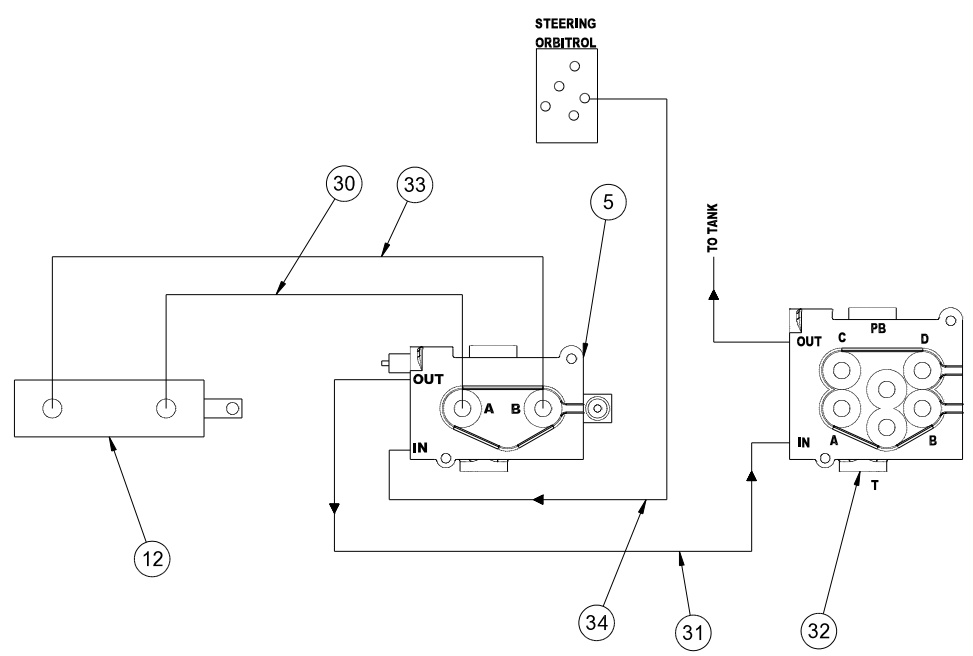
REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-350	Bolt, $\frac{3}{8}$ - 16 x $3\frac{1}{2}$ (Part of machine)	2
	HW-38	Washer, $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
2	18-188	45° Elbow	6
3	78-417	Straight Handle Kit	1
4	HB-14-20-200	Bolt, $\frac{1}{4}$ - 20x 2	2
	HNFL-14-20	Flange Whiz-Lock 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
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
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-12-13-300	Bolt, $\frac{1}{2}$ - 13 x 3	2
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 13	2
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

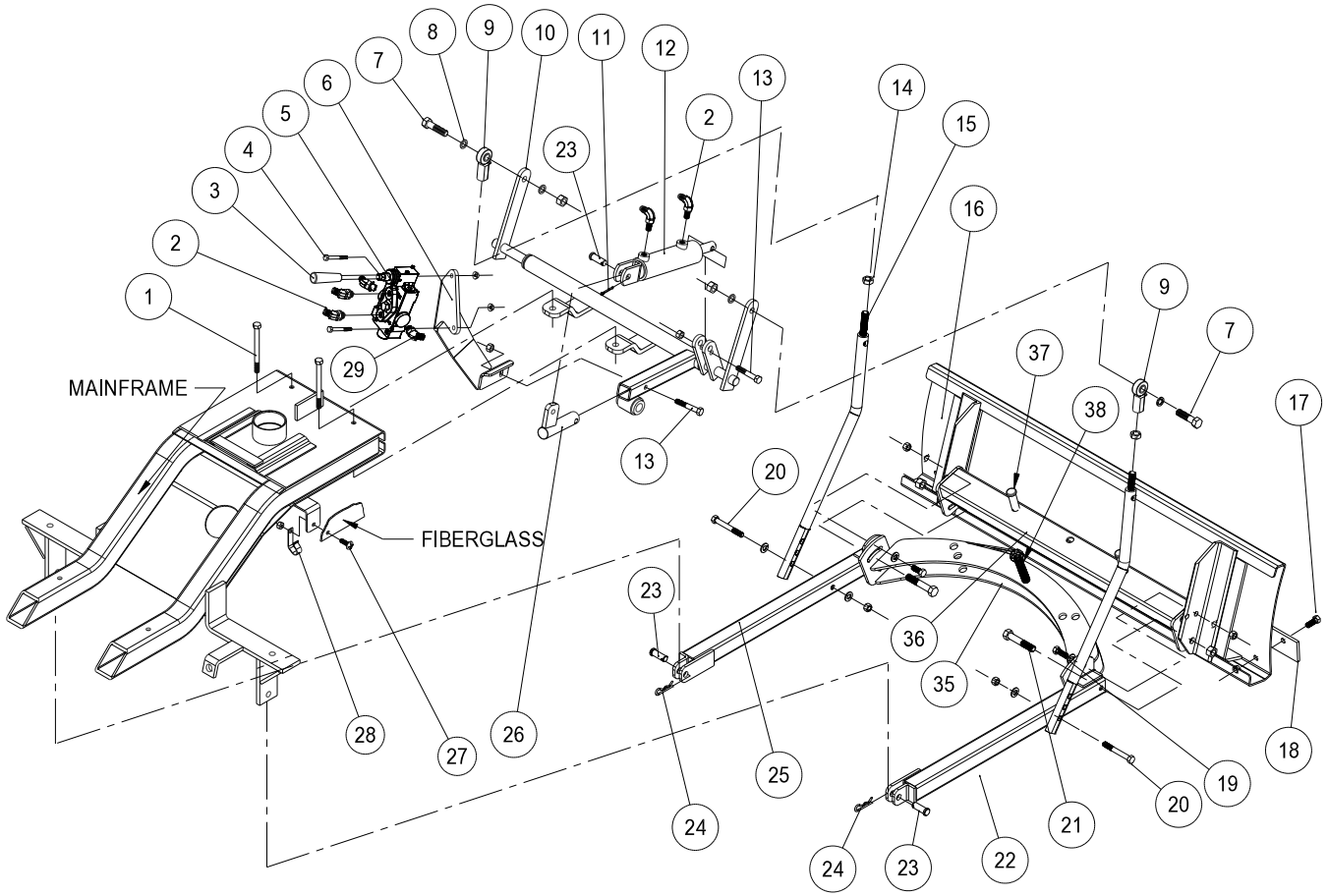


## 43-003 HYDRAULIC SAND PLOW INSTRUCTIONS

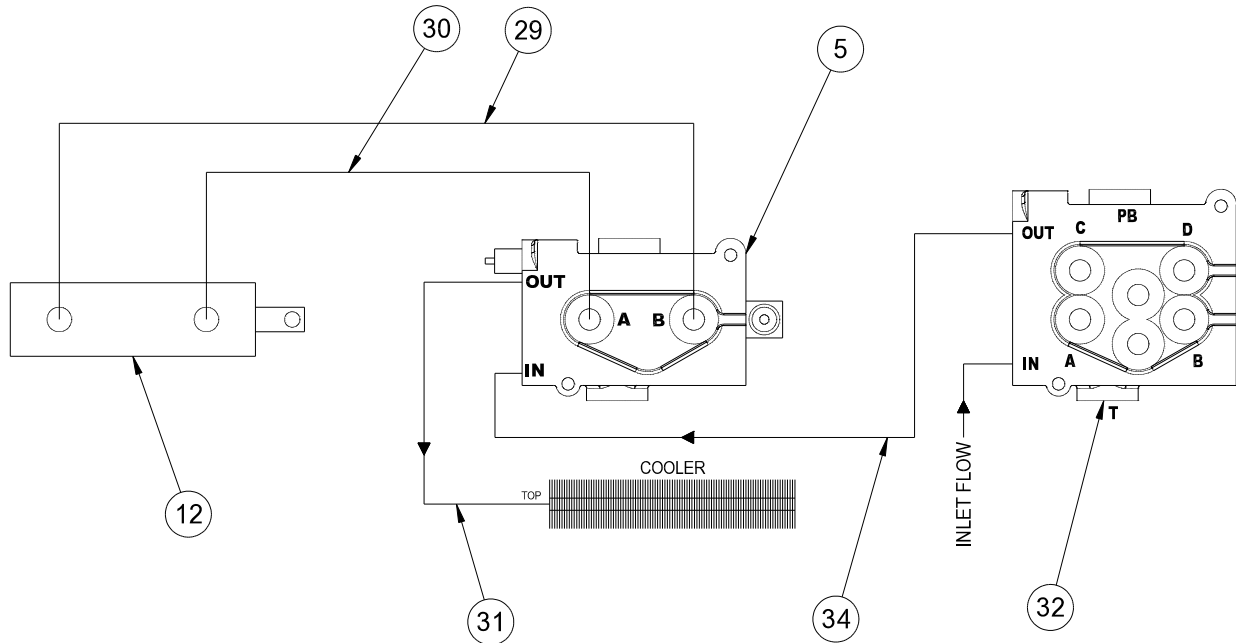
1. Assemble Pusher Bars (Ref # 22 and 25) to Plow Blade (Ref # 16) using one  $\frac{3}{8}$ -16 x 1 Bolt (Ref # 19) and one  $\frac{3}{8}$ -16 x 3 Bolt (Ref #21) per Pusher Bar. There are 2 holes to bolt (Ref # 19) hardware in. Using hole closest to the blade will result in a shallow cut, whereas using 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 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



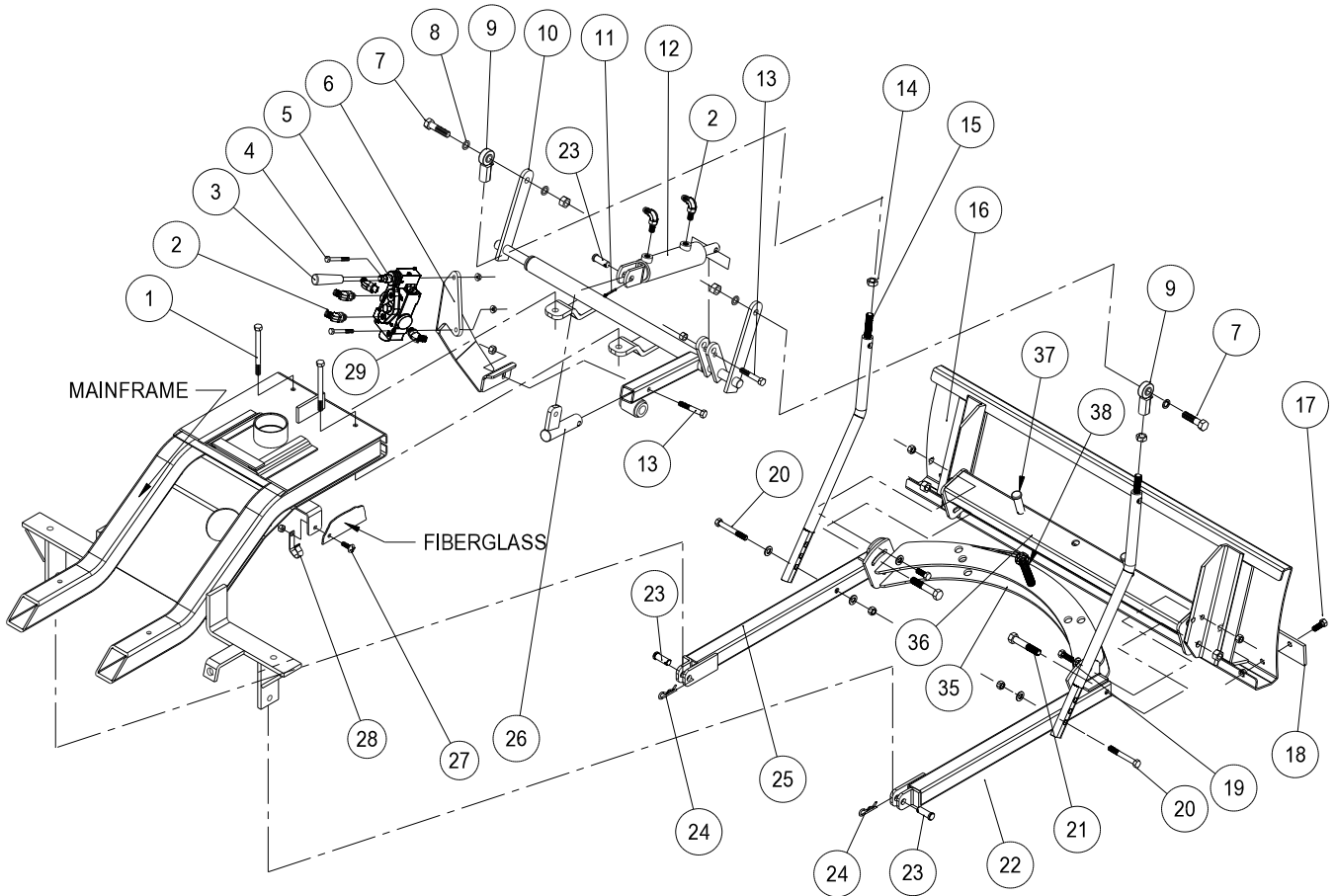
## 43-013 HYDRAULIC ANGLE SAND PLOW PARTS LIST

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, 57½"	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

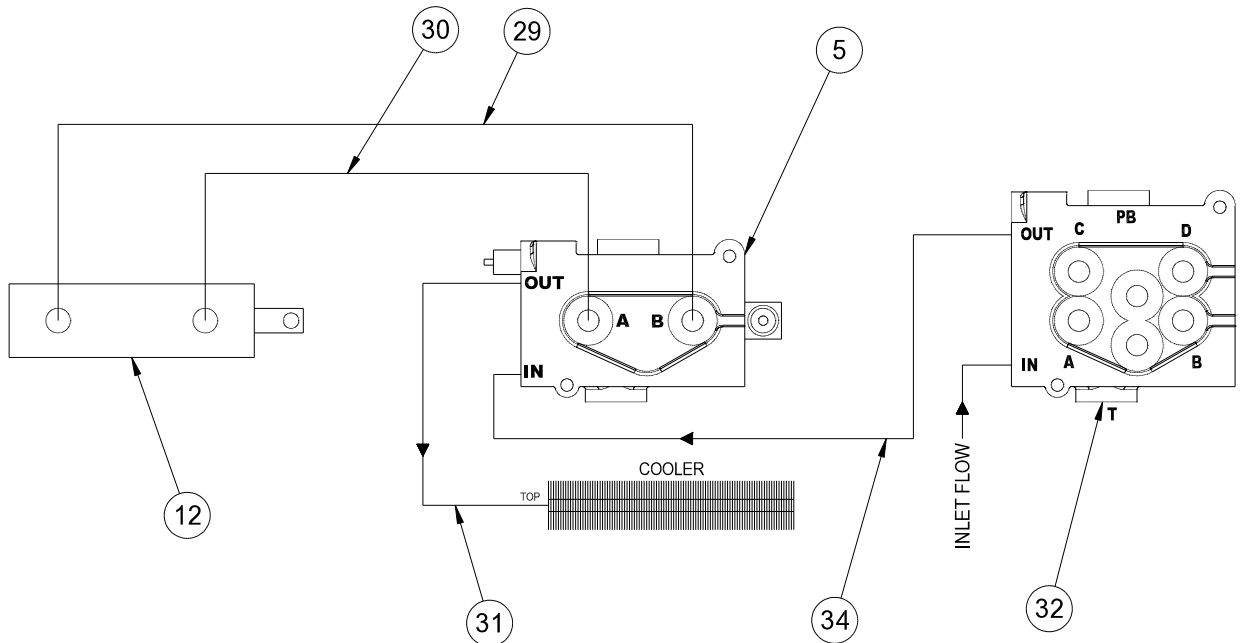


# 43-013 HYDRAULIC ANGLE SAND FLOW DRAWING

Front Attachment



# HYDRAULIC VALVE PLUMBING DRAWING



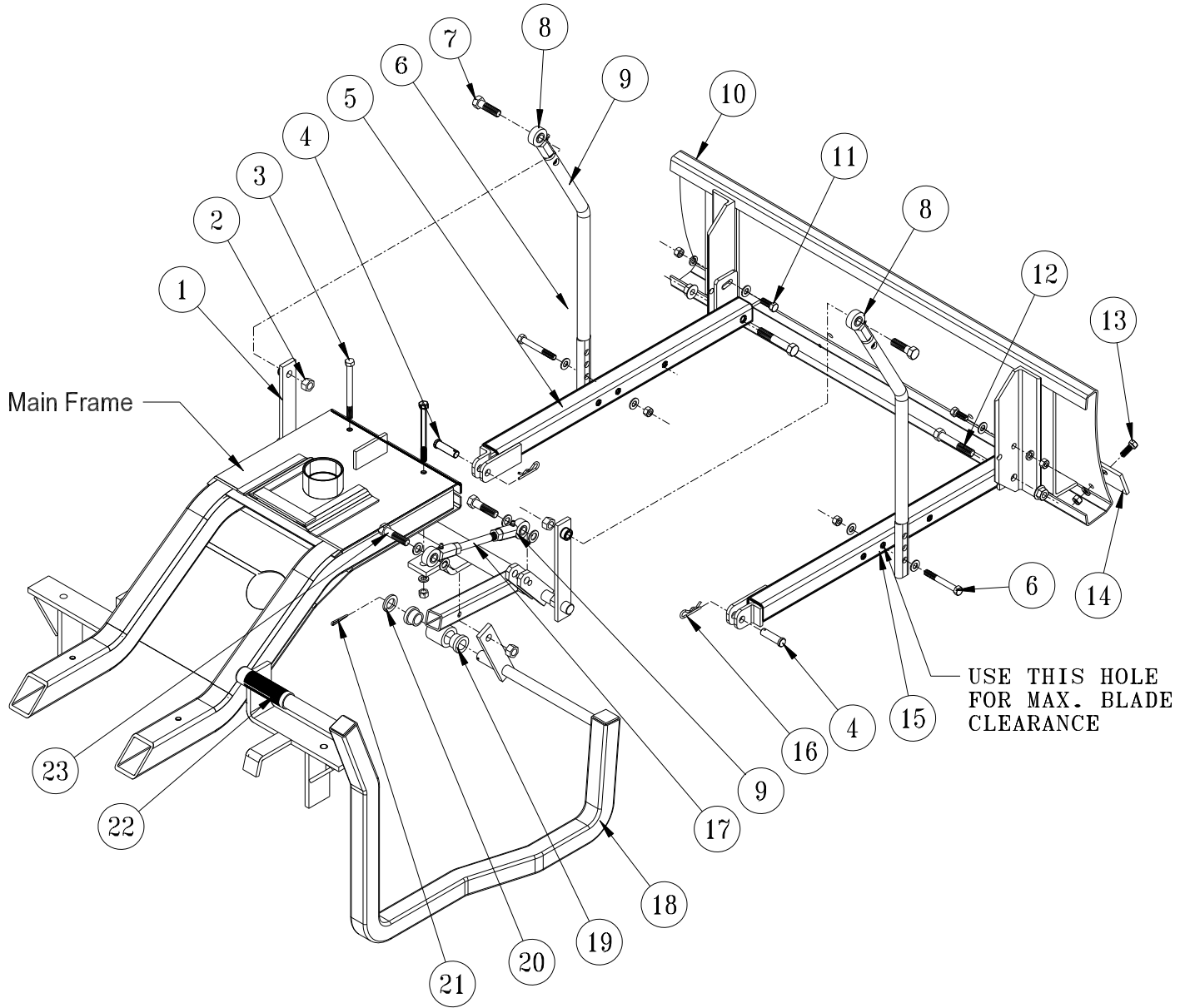
## 43-013 HYDRAULIC ANGLE SAND PLOW INSTRUCTIONS

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 57 $\frac{1}{2}$ " 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 57 $\frac{1}{2}$ " 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 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.

# 42-011-AB ALUMINUM SAND PLOW DRAWING

# 42-011-SB STEEL SAND PLOW DRAWING

Front Attachment



## 42-011 SAND PLOW PARTS LIST

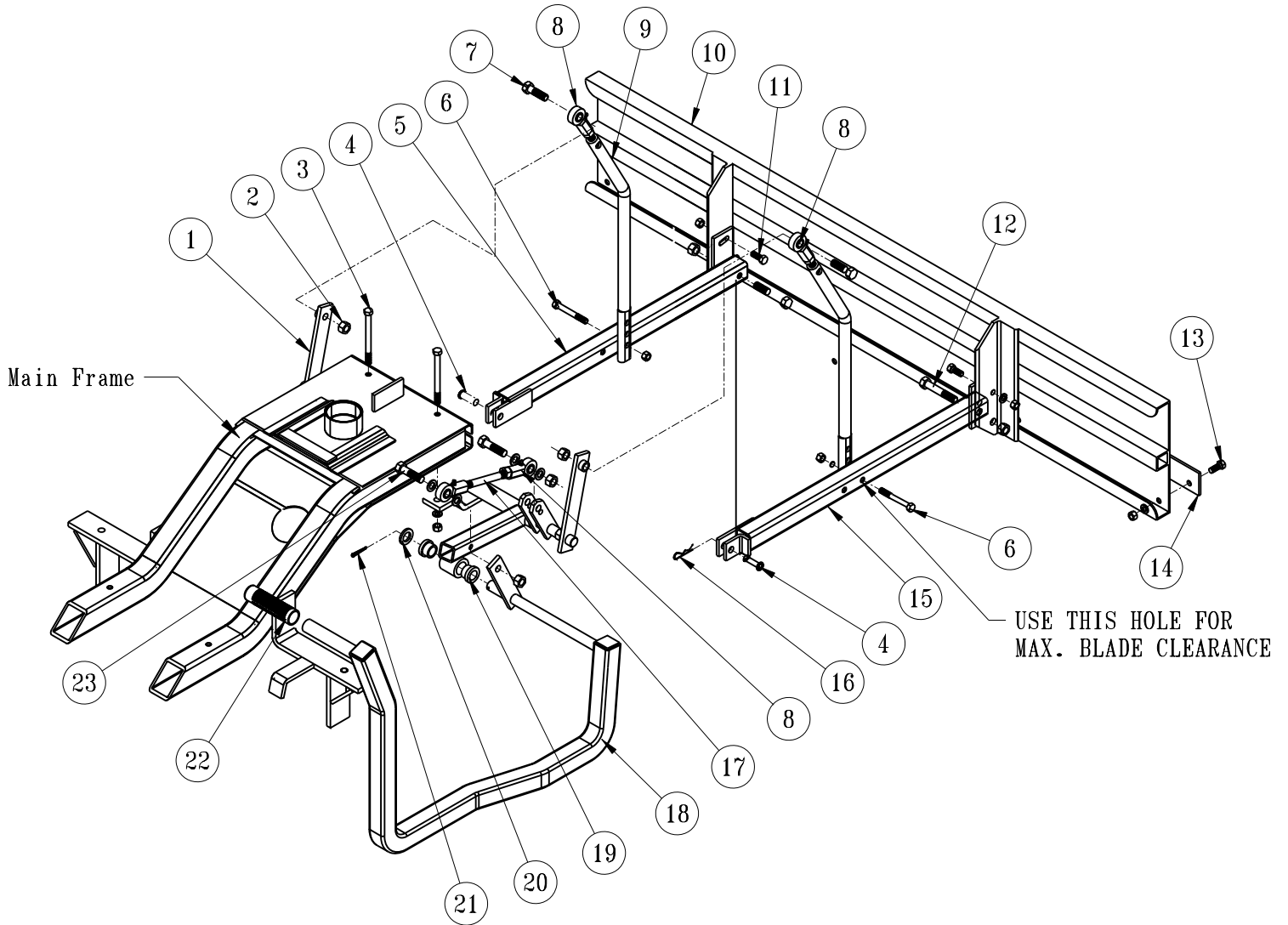
REF#	PART#	DESCRIPTION	QUANTITY
1	42-346	Lift Assembly	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-38-16-350	Bolt 3/8 - 16 x 3 1/2 (part of main frame)	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
4	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
5	27-049	Left Pusher Bar	1
6	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	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	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
9	27-073	Lift Rod	2
10	27-017	Aluminum Sand Plow Blade	1
	13-352	Steel Sand Plow Blade	1
11	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
12	HB-12-13-300	Bolt 1/2 - 13 x 3	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
13	HB-38-16-100	Bolt 3/8 - 16 x 1	4
	HNFL-38-16	Flange Whiz Lock Nut 3/8 - 16	4
14	13-167	Wear Blade	1
15	27-050	Right Pusher Bar	1
16	HHP-18	Bridge Pin 1/8	2
17	42-348	Rod	1
18	42-347	Lift Handle (includes Ref# 20)	1
19	18-221	Flange Bushing	2
20	HMB-34-14	Machine Bushing 3/4 - 14GA	1
21	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
22	15-019	Grip	1
23	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.
- 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

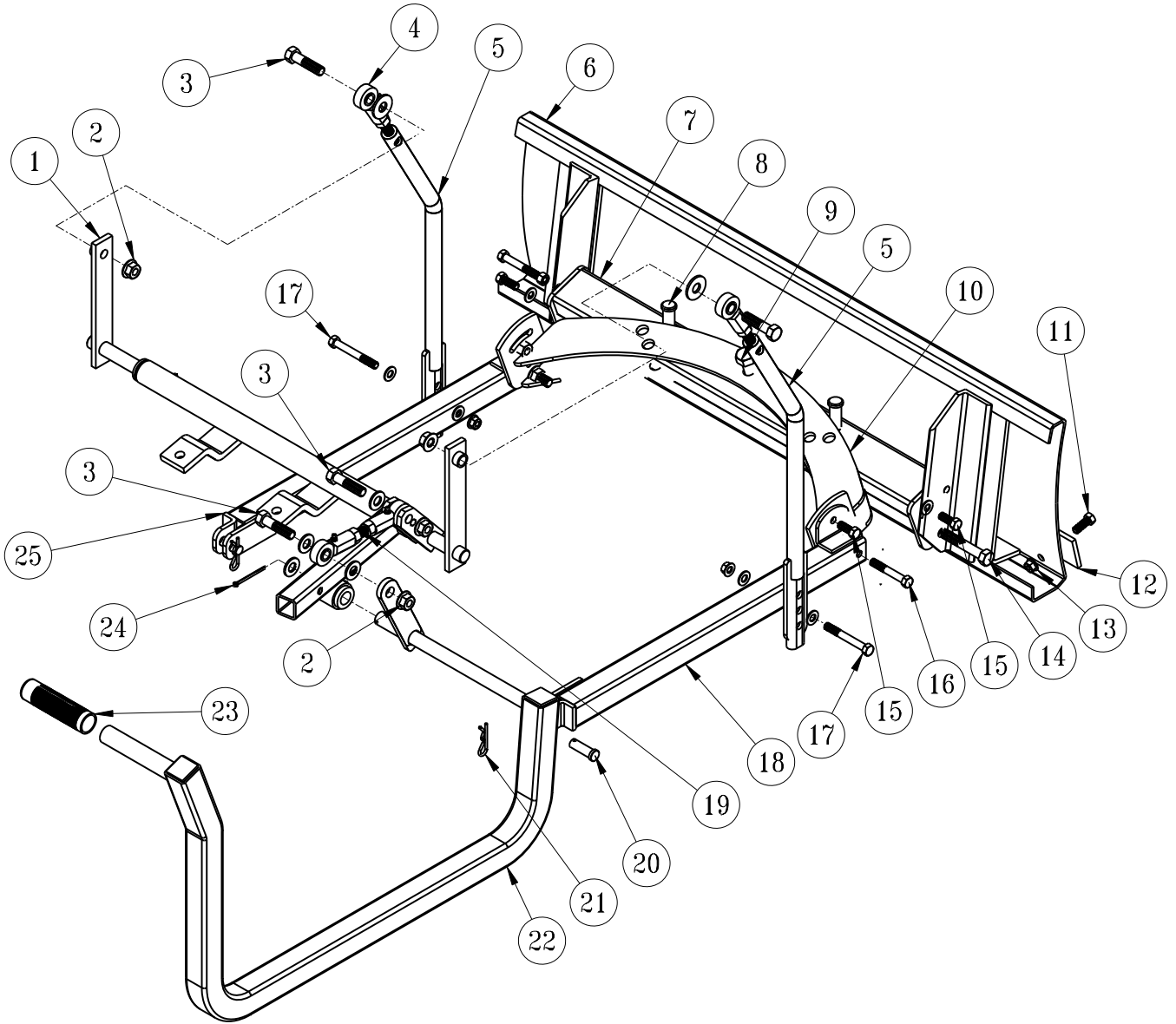
REF#	PART#	DESCRIPTION	QUANTITY
1	42-092	Lift Assembly (includes Ref# 20)	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-38-16-350	Bolt 3/8 - 16 x 3 1/2 (part of main frame)	2
	HWL-38	Lock Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	2
4	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
5	27-049	Left Pusher Bar	1
6	HB-38-16-300	Bolt 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	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
9	27-073	Lift Rod	2
10	35-011	Aluminum Plow Blade 60"	1
11	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
12	HB-12-13-300	Bolt 1/2 - 13 x 3	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
13	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
14	35-012	Wear Blade	1
15	27-050	Right Pusher Bar	1
16	HHP-18	Bridge Pin 1/8	2
17	42-348	Threaded Rod	1
18	42-347	Lift Handle	1
19	18-221	Flange Bushing	2
20	HMB-34-14	Machine Bushing 3/4 - 14GA	1
21	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
22	15-019	Grip	1
23	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.
- 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 the 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



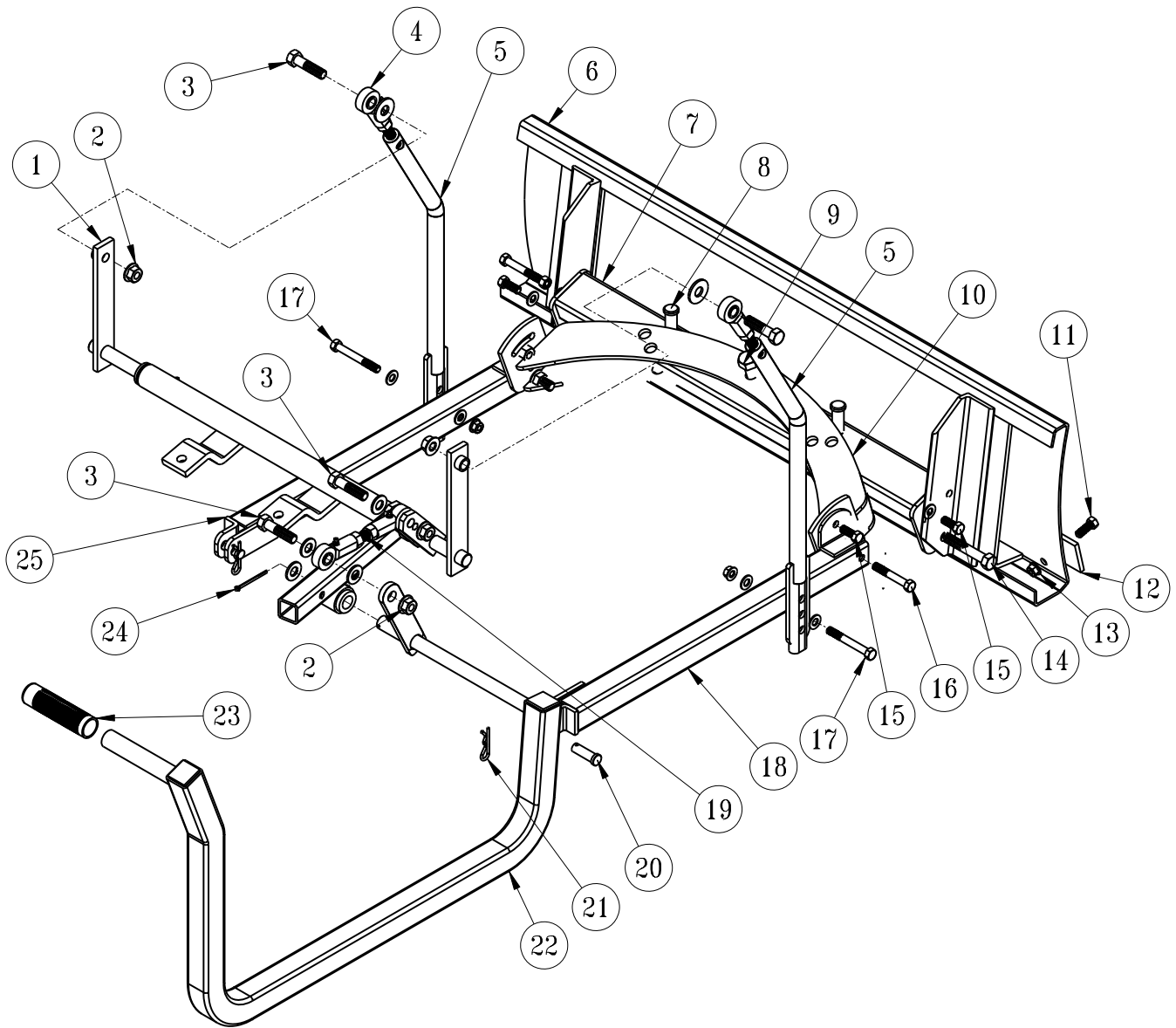
## 40" ANGLE PLOW PARTSLIST

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	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
5	27-073	Lift Rod	2
6	27-017	Aluminum Sand Plow Blade	1
7	42-495	Pivot Frame	1
8	HCP-58-250	Clevis Pin 5/8 x 2 1/2	2
	HHP-18	Bridge Pin 1/8	2
9	HB-58-11-300	Bolt 5/8 - 11 x 3	1
	HNTL-58-11	Lock Nut 5/8 - 11	1
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-12-13-200	Bolt 1/2 - 13 x 2	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
15	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
16	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Lock Nut 3/8 - 16	2
17	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
18	42-458	Right Pusher Bar	1
19	42-348	Rod	1
20	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
21	HHP-18	Bridge Pin 1/8	2
22	42-347	Lift Handle	1
	18-221	Flange Bushing	2
23	15-019	Grip	1
24	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
	HMB-34-14	Machine Bushing 3/4 - 14GA	1
25	42-459	Left Pusher Bar	1



# 42-490 60" ANGLE PLOW

Front Attachment



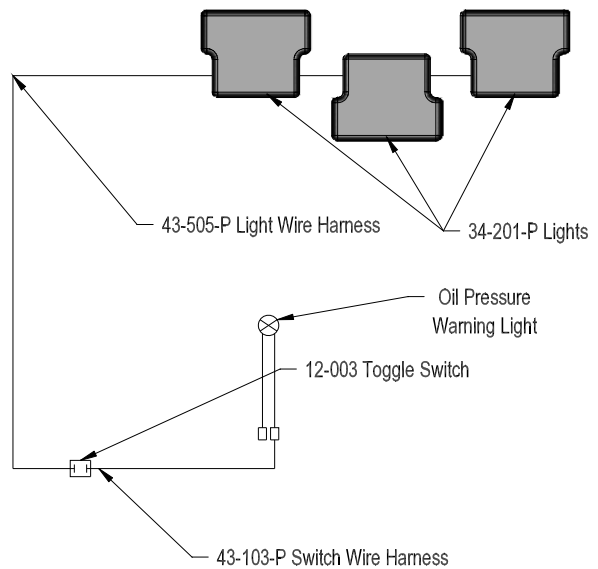
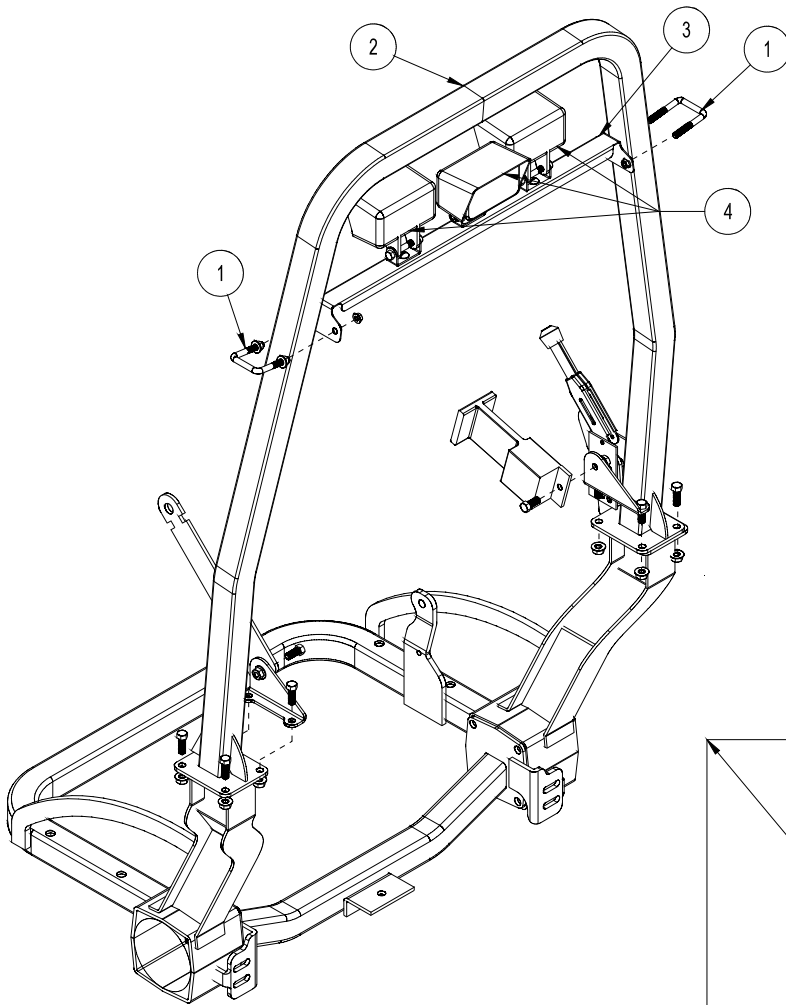
## 60" ANGLE PLOW PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-346	Lift Assembly	1
2	HNTL-12-13	Lock Nut 1/2 - 13	4
3	HB-12-13-200	Bolt 1/2 - 13 x 2	4
	HMB-12-14	Machine Bushing 1/2 x 14GA	8
4	80-006	Rod End	4
	HNJ-12-20	Jam Nut 1/2 - 20	4
5	27-073	Lift Rod	2
6	35-012	Aluminum Sand Plow Blade	1
7	42-495	Pivot Frame	1
8	HCP-58-250	Clevis Pin 5/8 x 2 1/2	2
	HHP-18	Bridge Pin 1/8	2
9	HB-58-11-300	Bolt 5/8 - 11 x 3	1
	HNTL-58-11	Lock Nut 5/8 - 11	1
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-12-13-200	Bolt 1/2 - 13 x 2	2
	HNTL-12-13	Lock Nut 1/2 - 13	2
15	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
16	HB-38-16-250	Bolt 3/8 - 16 x 2 1/2	2
	HNTL-38-16	Lock Nut 3/8 - 16	2
17	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
18	42-458	Right Pusher Bar	1
19	42-348	Rod	1
20	HCP-12-150	Clevis Pin 1/2 x 1 1/2	2
21	HHP-18	Bridge Pin 1/8	2
22	42-347	Lift Handle	1
	18-221	Flange Bushing	2
23	15-019	Grip	1
24	HP-18-150	Cotter Pin 1/8 x 1 1/2	1
	HMB-34-14	Machine Bushing 3/4 - 14GA	1
25	42-459	Left Pusher Bar	1

# 42-837 LIGHT KIT FOR MACHINES WITH TOGGLE SWITCH

Front Attachment

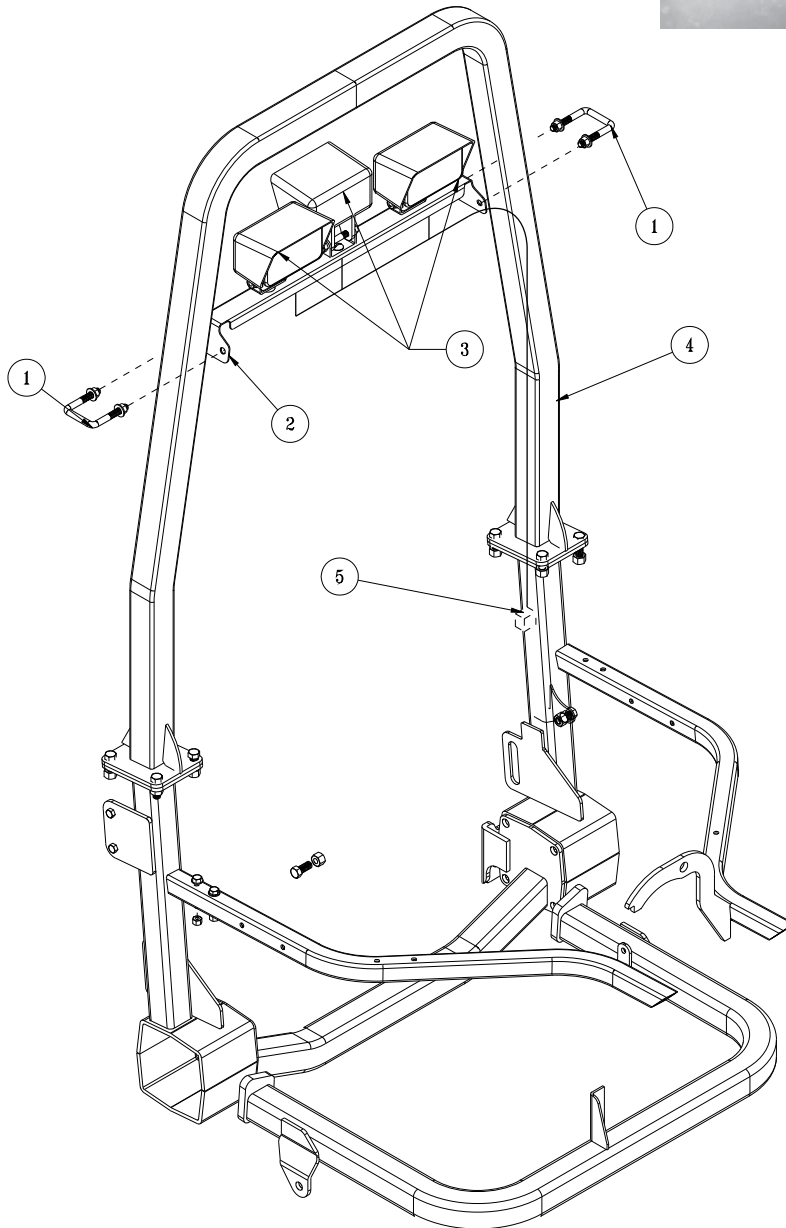
REF#	PART#	DESCRIPTION	QUANTITY
1	17-537	Square U-bolt	2
2	42-800	ROPS	1
3	12-198	Light Bar	1
4	34-201	Light	3
A	12-003 15-472	Toggle Switch Switch Boot	
	43-103	Wire Harness Toggle Light Switch	



## 42-837 LIGHT KIT FOR MACHINES WITH ROCKER SWITCHES

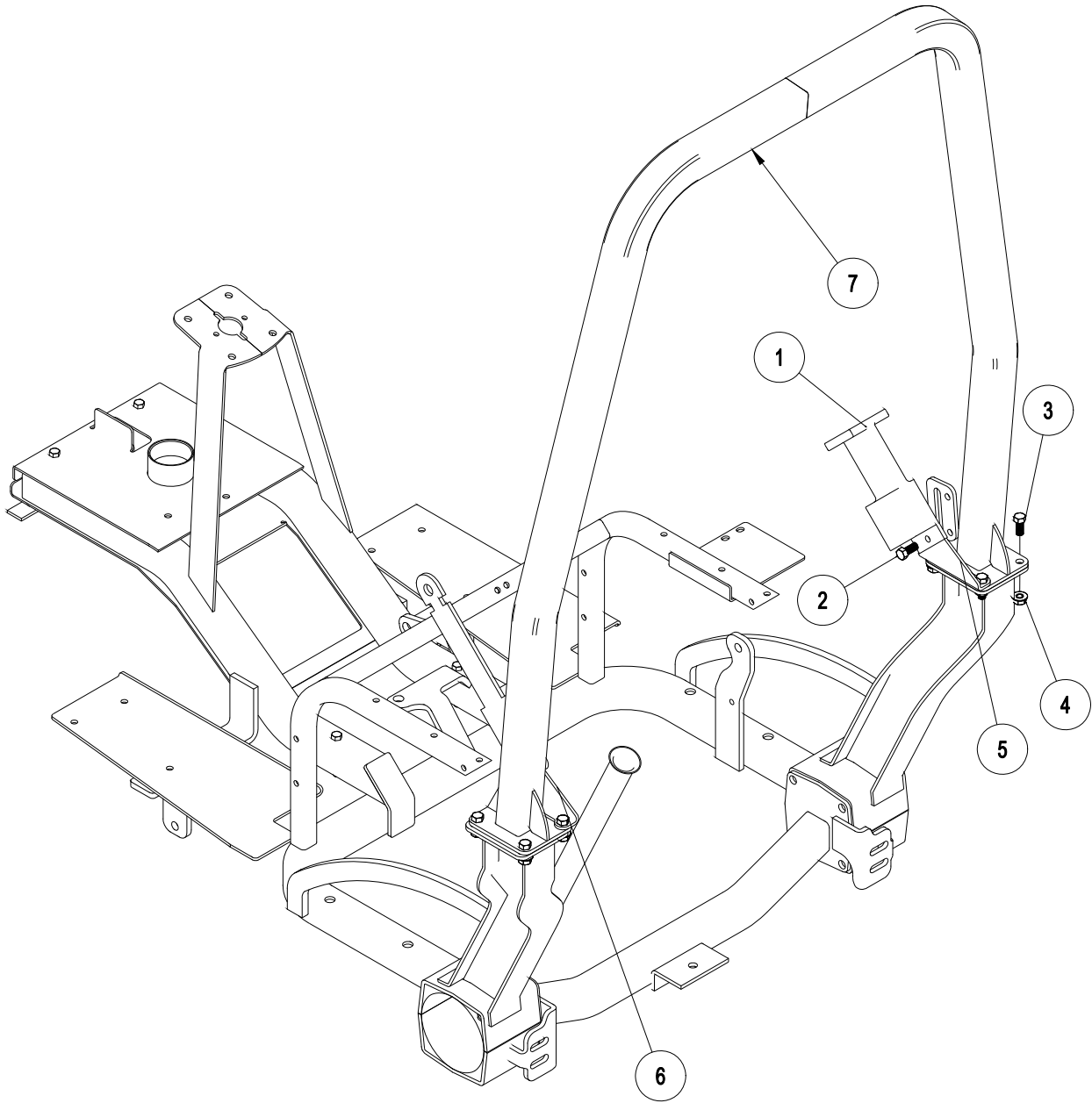
REF#	PART#	DESCRIPTION	QUANTITY
1	17-537	Square U-bolt	2
2	12-198	Light Bar	1
3	34-201	Light	3
4	42-800	ROPS	1
5	45-505	Light Wire Harness (plugs into switch wire harness)	1

Front Attachment



# 42-800 ROLL OVER PROTECTION

Front Attachment



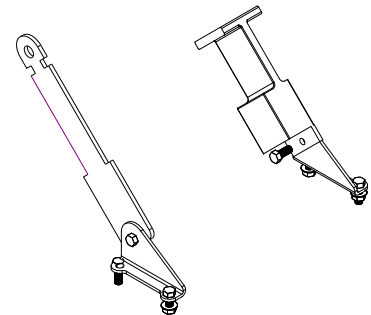
REF#	PART #	DESCRIPTION	QUANTITY
1	76-198-03	Seat belt	1
2	HB-716-14-100	Bolt $\frac{7}{16}$ - 14 x 1	2
3	HB-716-14-125	Bolt $\frac{7}{16}$ - 14 x $1\frac{1}{4}$	8
4	HNTL-716-14	Lock Nut $\frac{7}{16}$ - 14	10
5	42-802	Right Seat belt Bracket	1
6	42-803	Left Seat Belt Bracket	1
7	42-801	ROPS Bar	1

## 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

<b>Front Mounted Implements</b> .....	<b>A</b>
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
<b>Belly Attachments</b> .....	<b>B</b>
<b>42-223 Adjustable Disc Edger</b> .....	<b>2</b>
<b>42-750 Cart Path &amp; Sidewalk Edger</b> .....	<b>4</b>
<b>42-287 Edger Kit w/ Castor Wheels</b> .....	<b>6</b>
<b>43-130 Weed Cultivator</b> .....	<b>8</b>
<b>42-008 Sand Cultivator</b> .....	<b>10</b>
<b>42-340 Sand Cultivator w/ Spring Tine</b> .....	<b>12</b>
<b>42-341 Sand Cultivatore w/ Castor Wheels</b> .....	<b>14</b>
<b>42-010 Construction Leveling Blade</b> .....	<b>16</b>
<b>42-210 Grader Blade Kit</b> .....	<b>18</b>
<b>42-178 Infield Scarifier(vertical blades)</b> .....	<b>20</b>
<b>42-179 Infield Scarifier(chisel blades)</b> .....	<b>24</b>
<b>42-285 Scarifier w/ Vertical Blades</b> .....	<b>28</b>
<b>43-011 Nail drag w/ Castor Wheels</b> .....	<b>30</b>
<b>Rear Attachments</b> .....	<b>C</b>
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 .....	

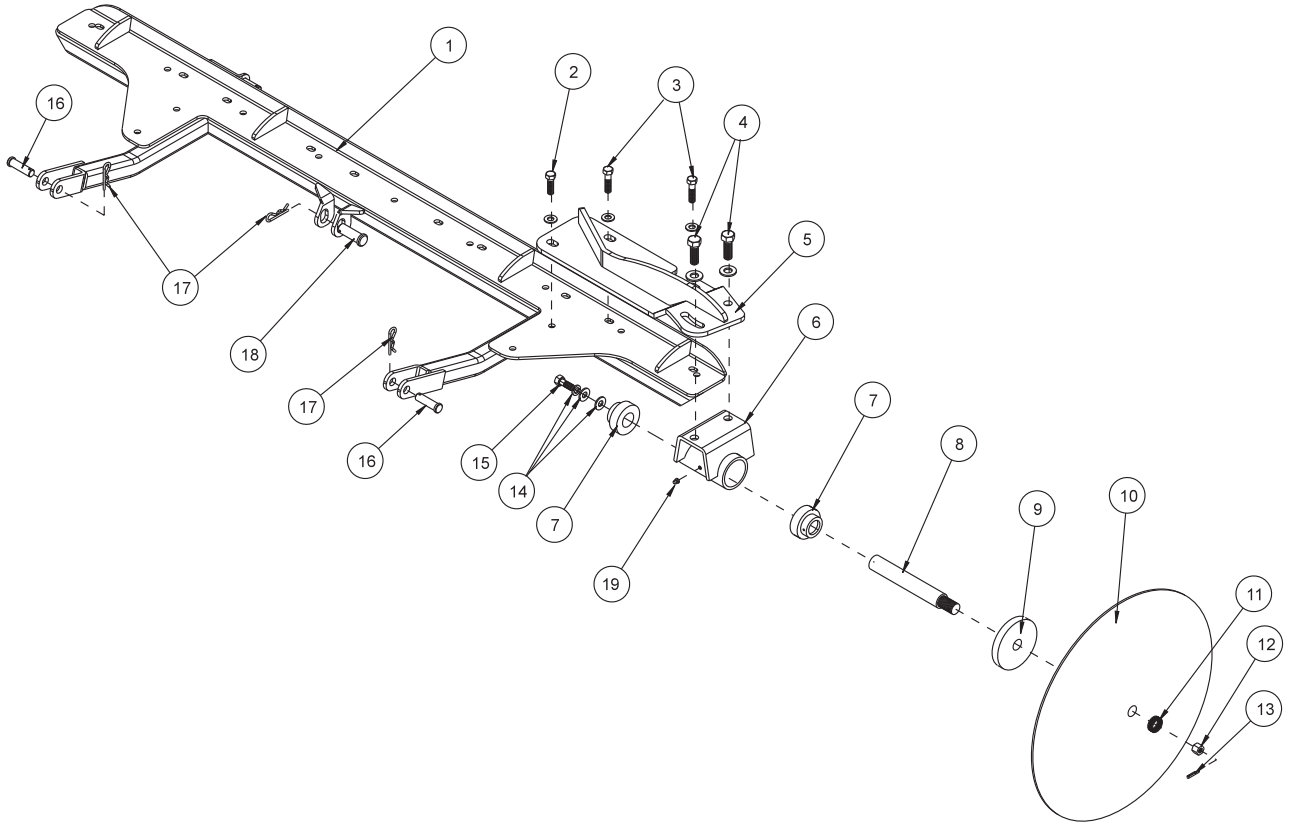
Front Attachment

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

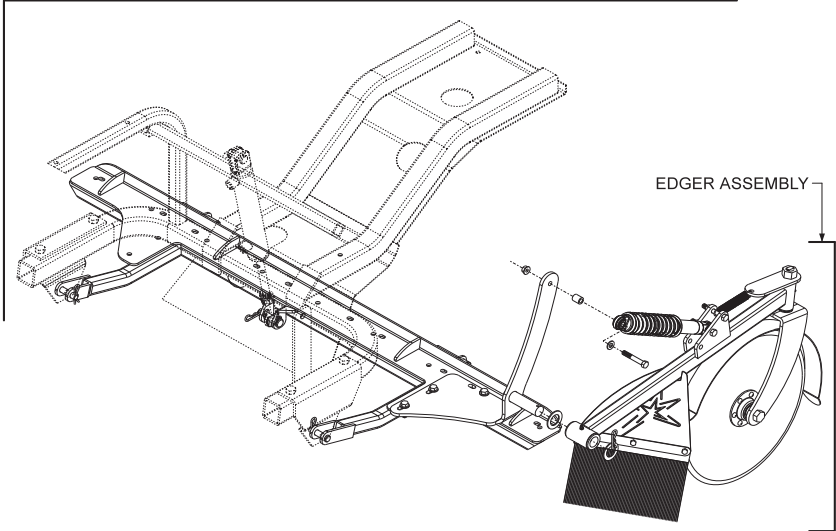
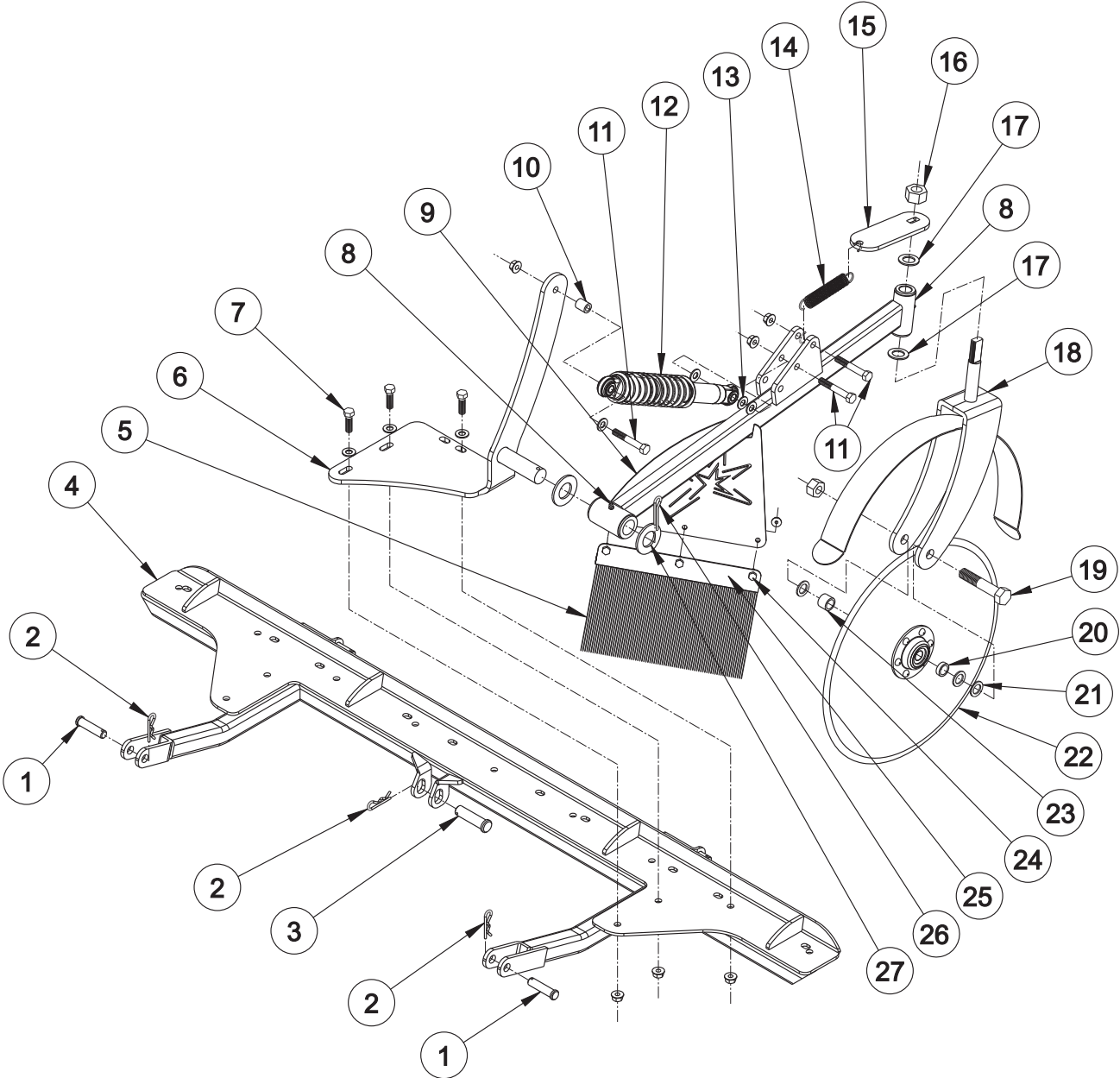
## INSTALLATION INSTRUCTIONS

- 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

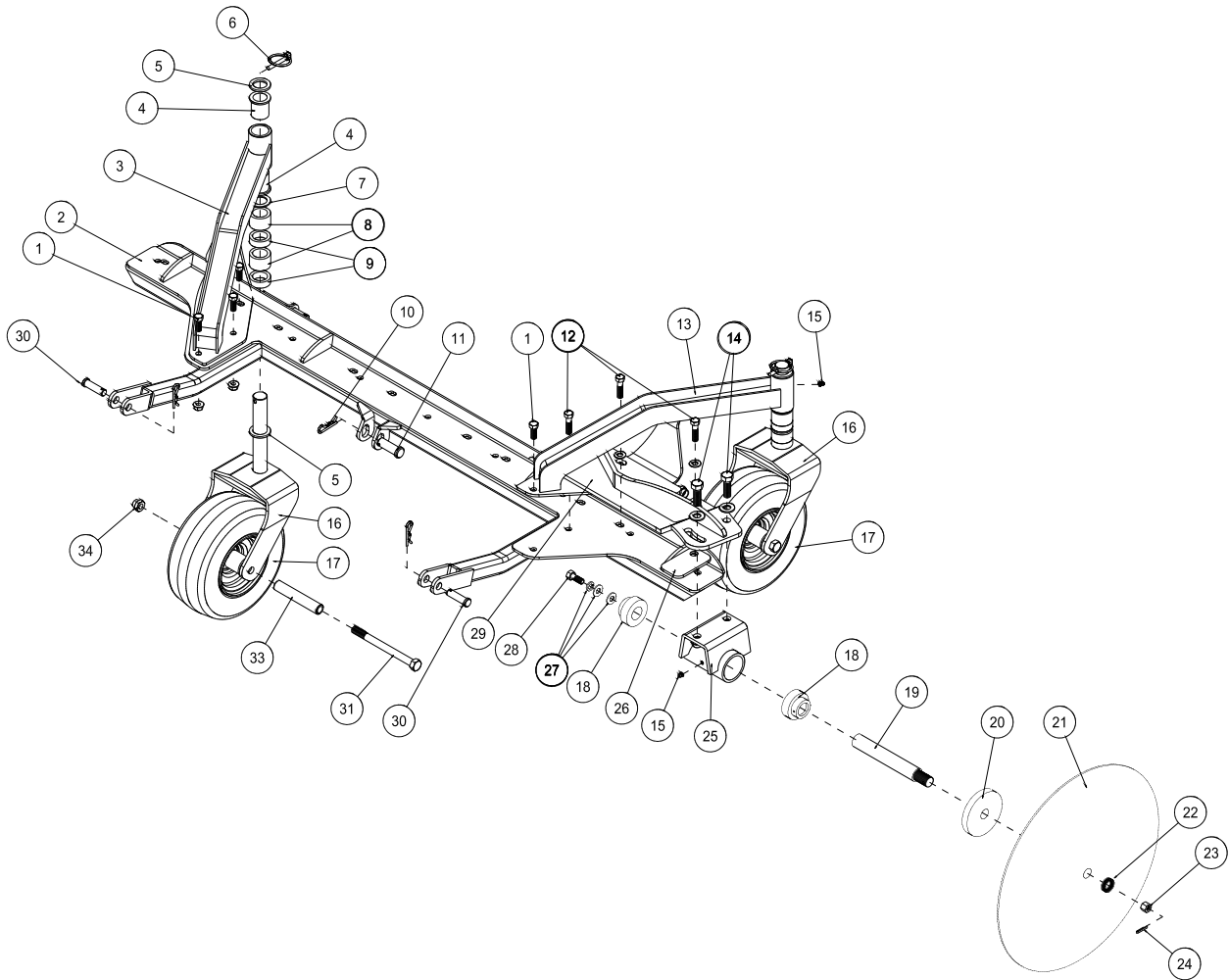
Center Attachment

## 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



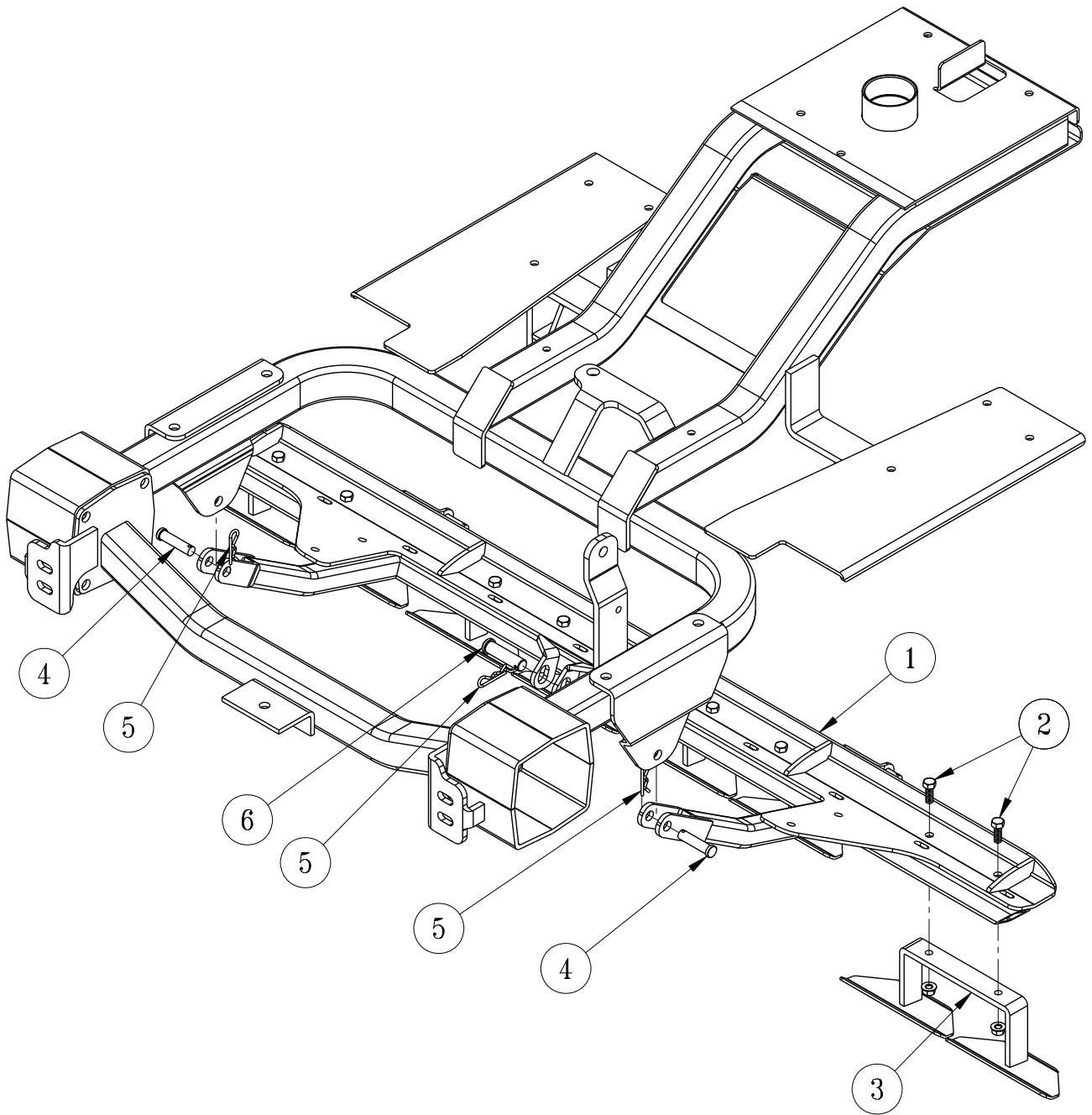
Center Attachment

## 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

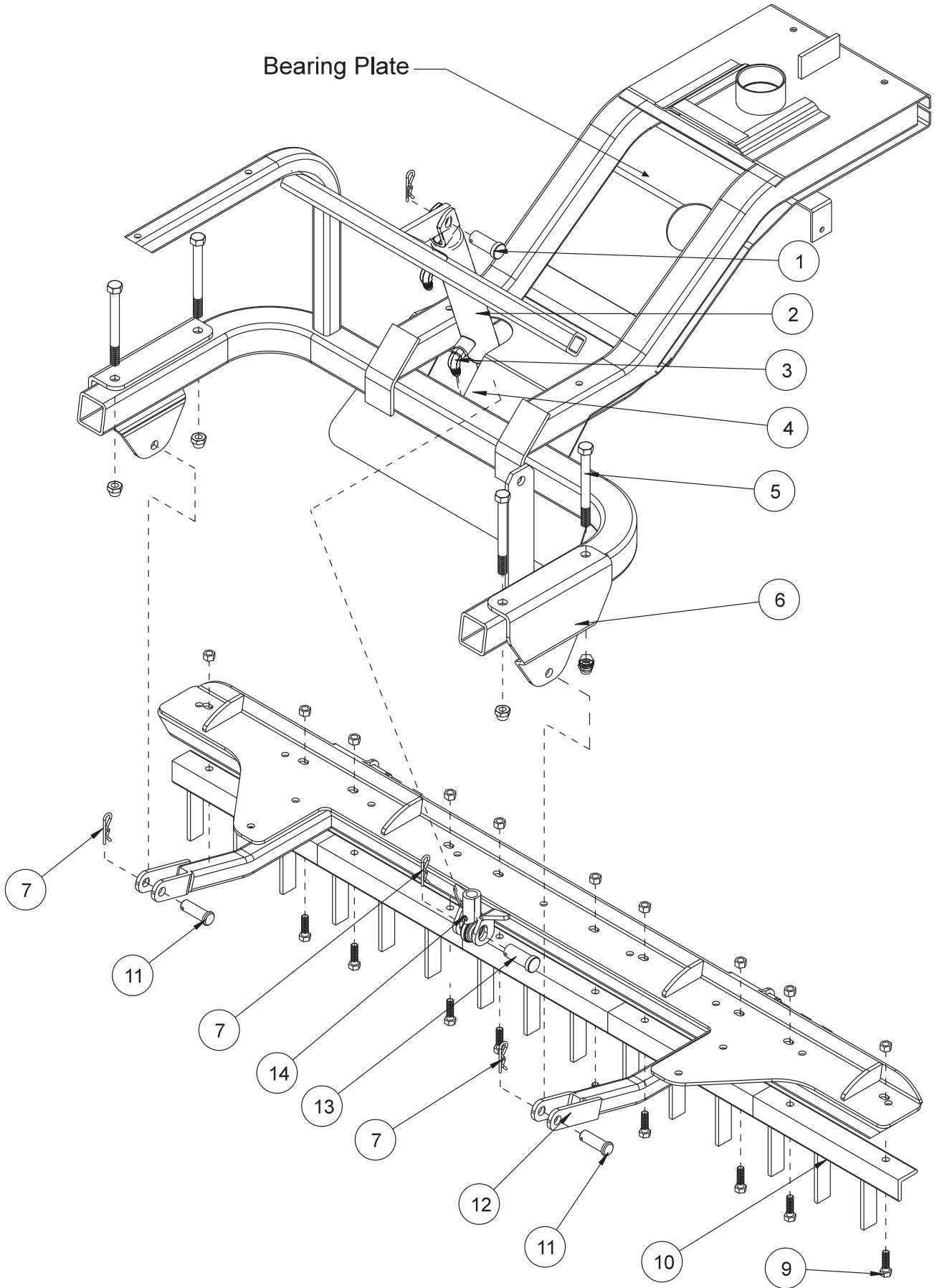


REF#	PART #	DESCRIPTION	QUANTITY
1	43-131	Attachment Lift Assembly	1
2	HB-38-16-125	Bolt, $\frac{3}{8}$ - 16 x $1\frac{1}{4}$	8
	HNFL-38-16	Flange Nut, $\frac{3}{8}$ - 16	8
3	13-096	Blade Assembly	4
4	HCP-12-200	Clevis Pin $\frac{1}{2}$ x 2	2
5	HHP-18	Bridge Pin $\frac{1}{8}$	3
6	HCP-58-250	Clevis Pin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

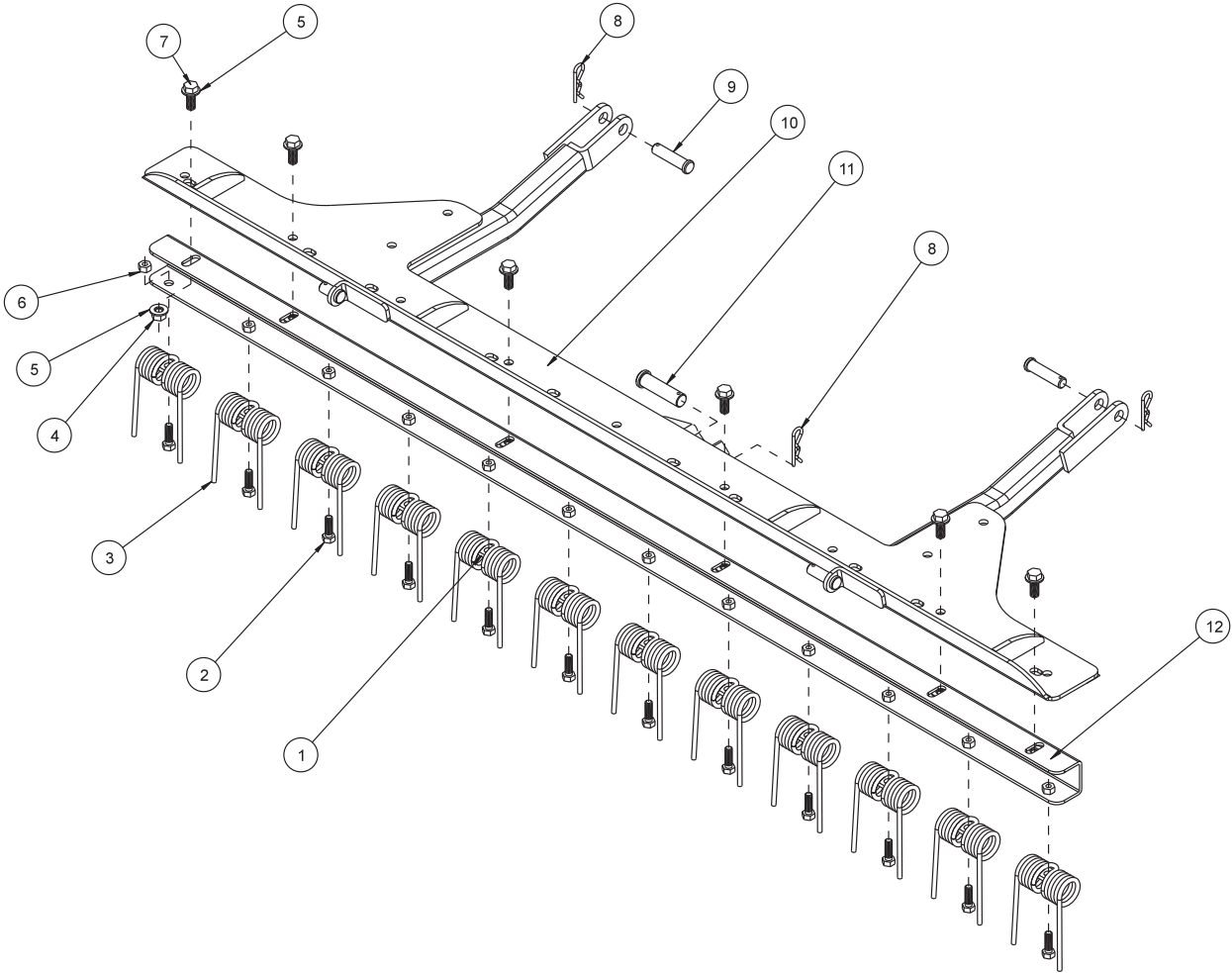
\*            42-008            Sand Cultivator (all other parts reference only)

## 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



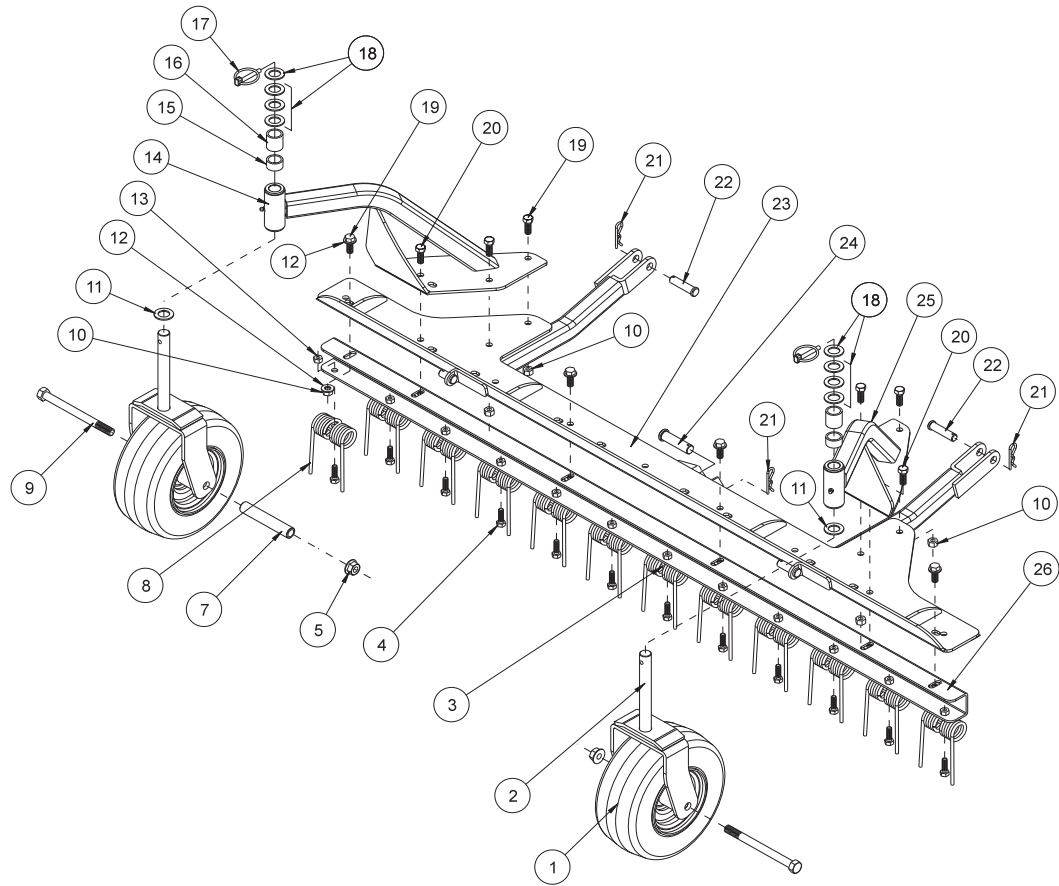
Center Attachment

## 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

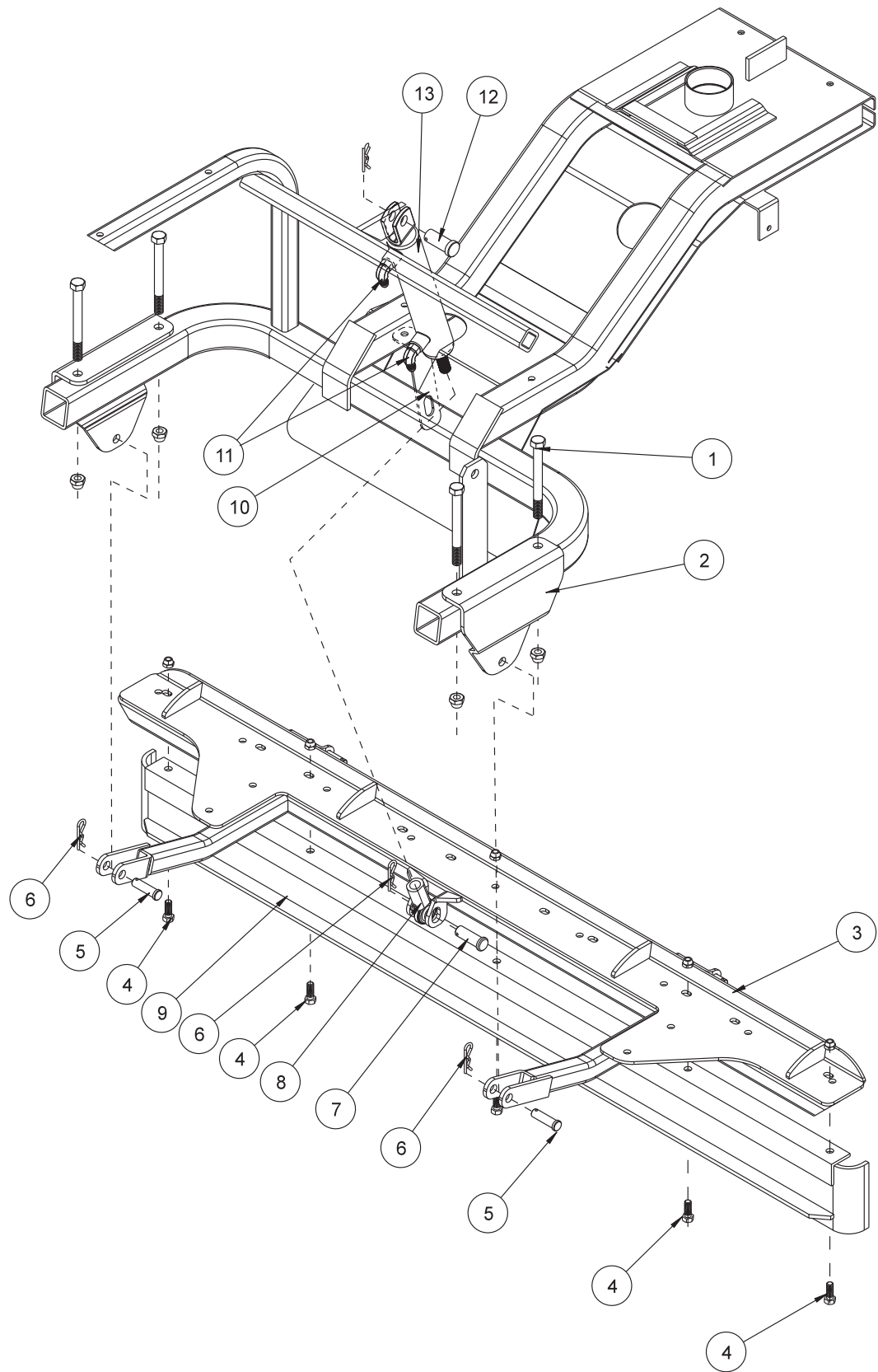


## 42-341 FIELD SCARIFIER WITH TINES AND CASTOR WHEELS PARTS LIST

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



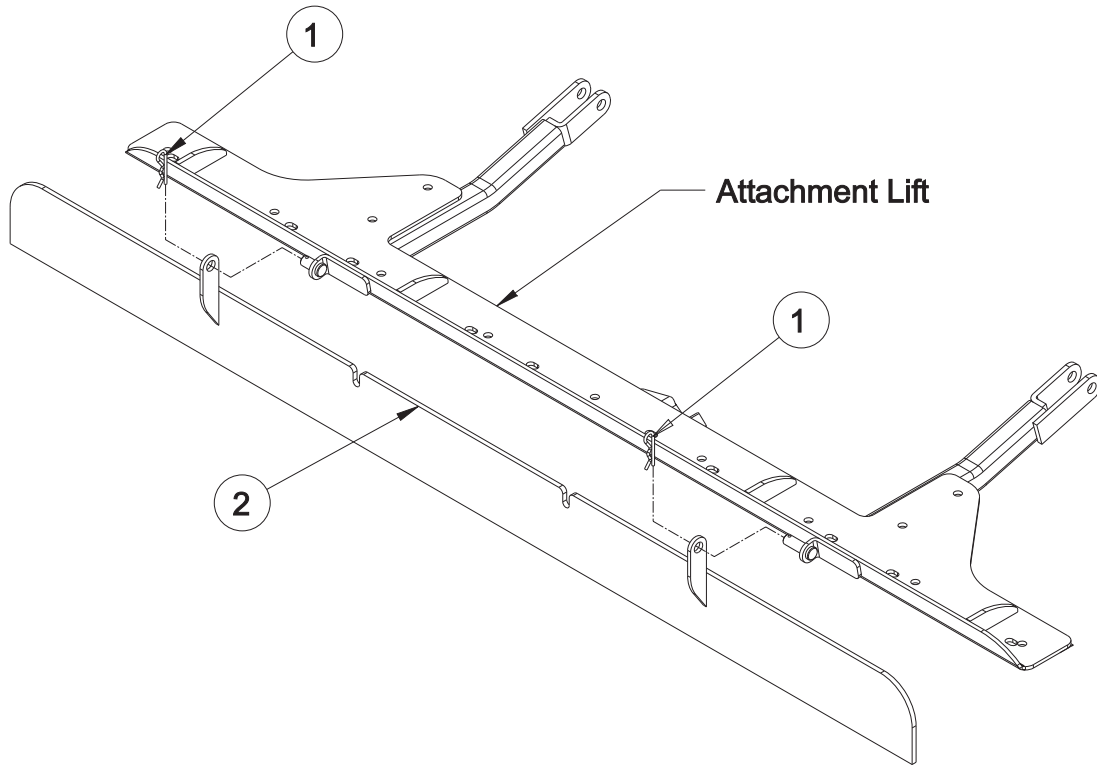
## 42-010 CONSTRUCTION LEVELING BLADE PARTS LIST

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

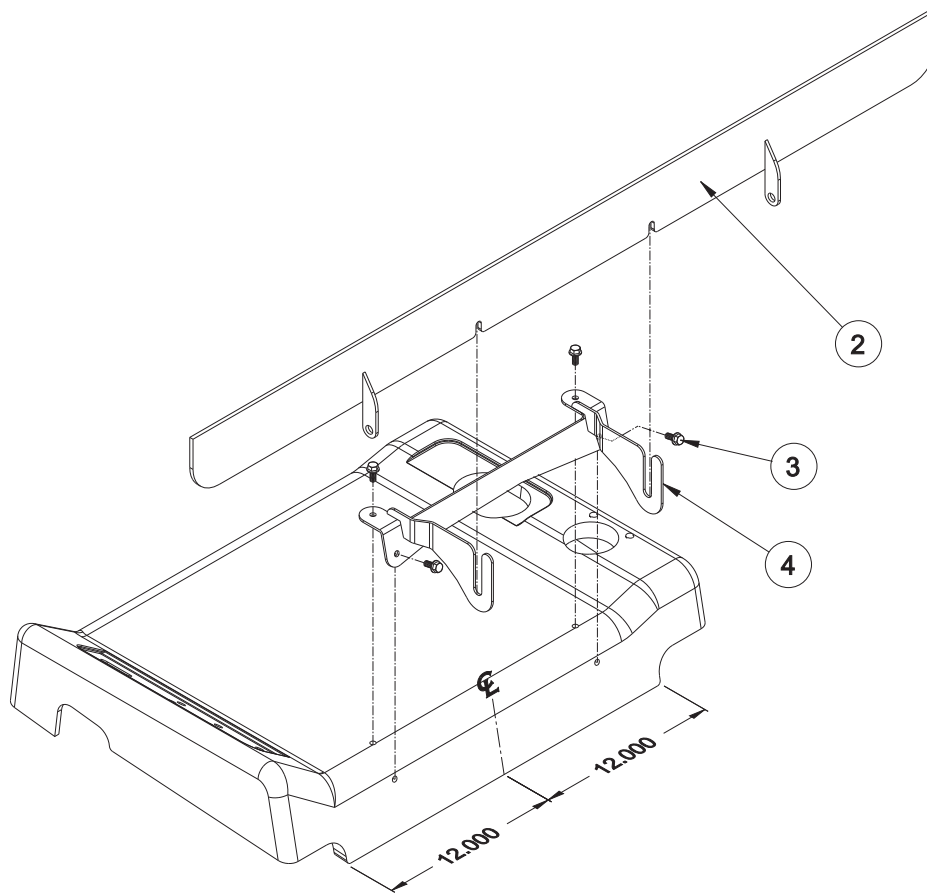
1. Remove the cylinder mount (Ref 10) from the machine.
2. Bolt leveling blade (Ref 9) to attachment lift (Ref 3) using five  $\frac{3}{8}$  - 16 x 1 bolts and five  $\frac{3}{8}$  - 16 lock nuts as shown on drawing.
3. Attach the attachment lift to attachment mount (Ref 3) using clevis pin and bridge 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

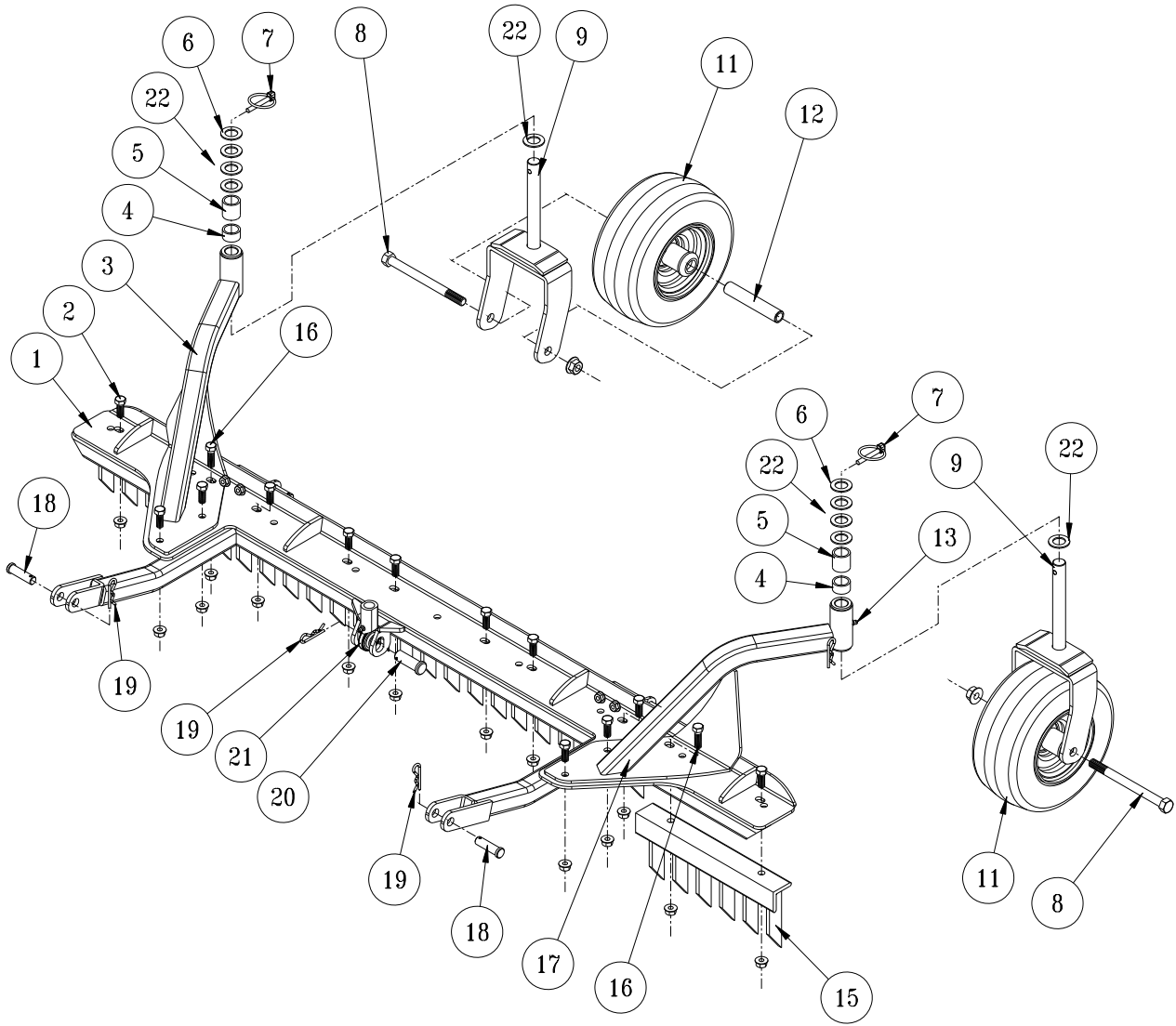
REF#	PART#	DESCRIPTION	QTY
1	HHP-18	Bridge Pin $\frac{1}{8}$	2
2	42-207	Grader Blade	1
3	HBFL-516-18-075	Flange Bolt, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	4
	HNFL-516-18	Flange Whiz-Loc Nut, $\frac{5}{16}$ - 18 <i>(not illustrated)</i>	4
4	42-386	Grader Blade Mount	1

## 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



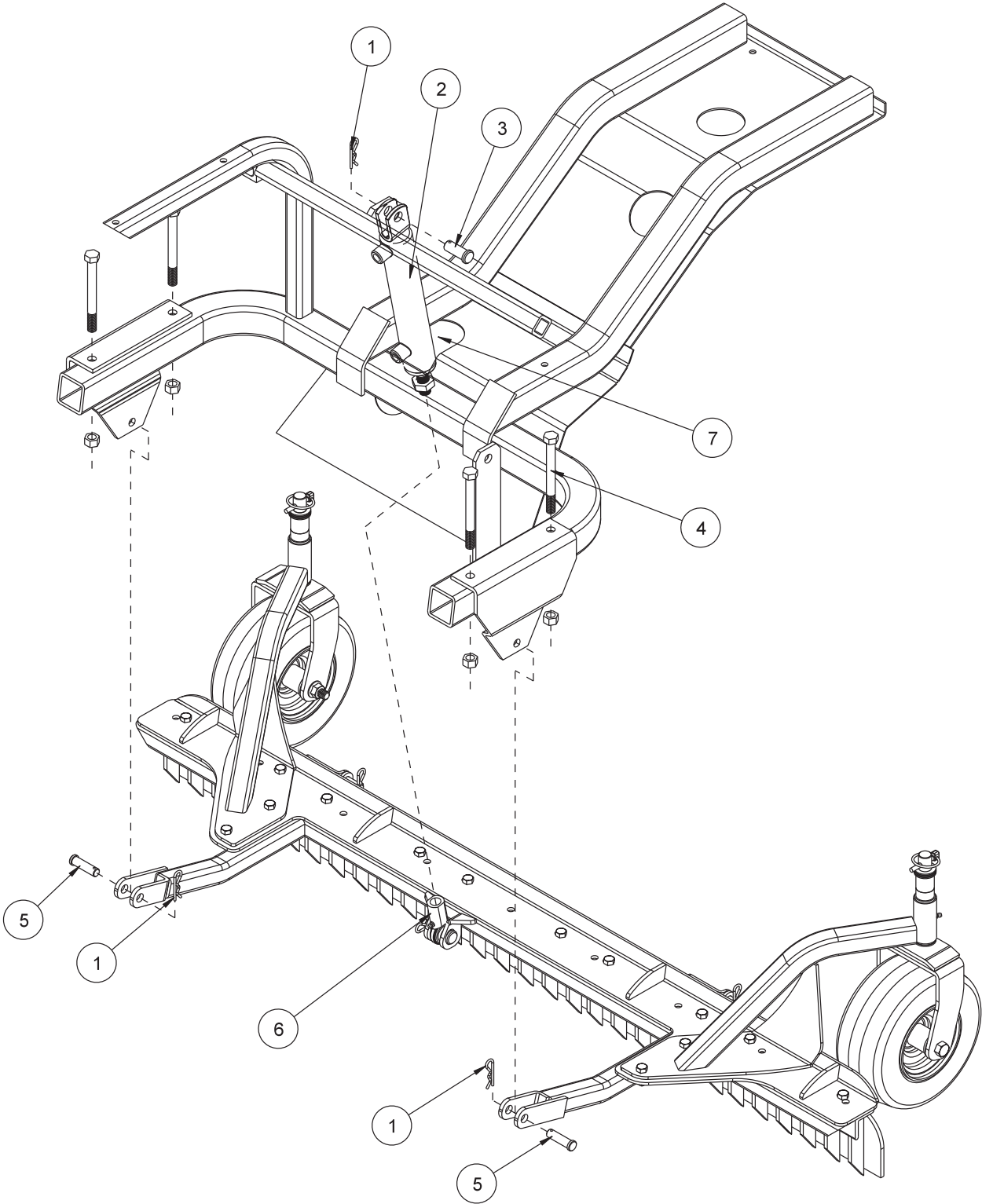
## 42-178 INFIELD SCARIFIER WITH VERTICAL BLADES PARTS LIST

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

Center Attachment

# 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

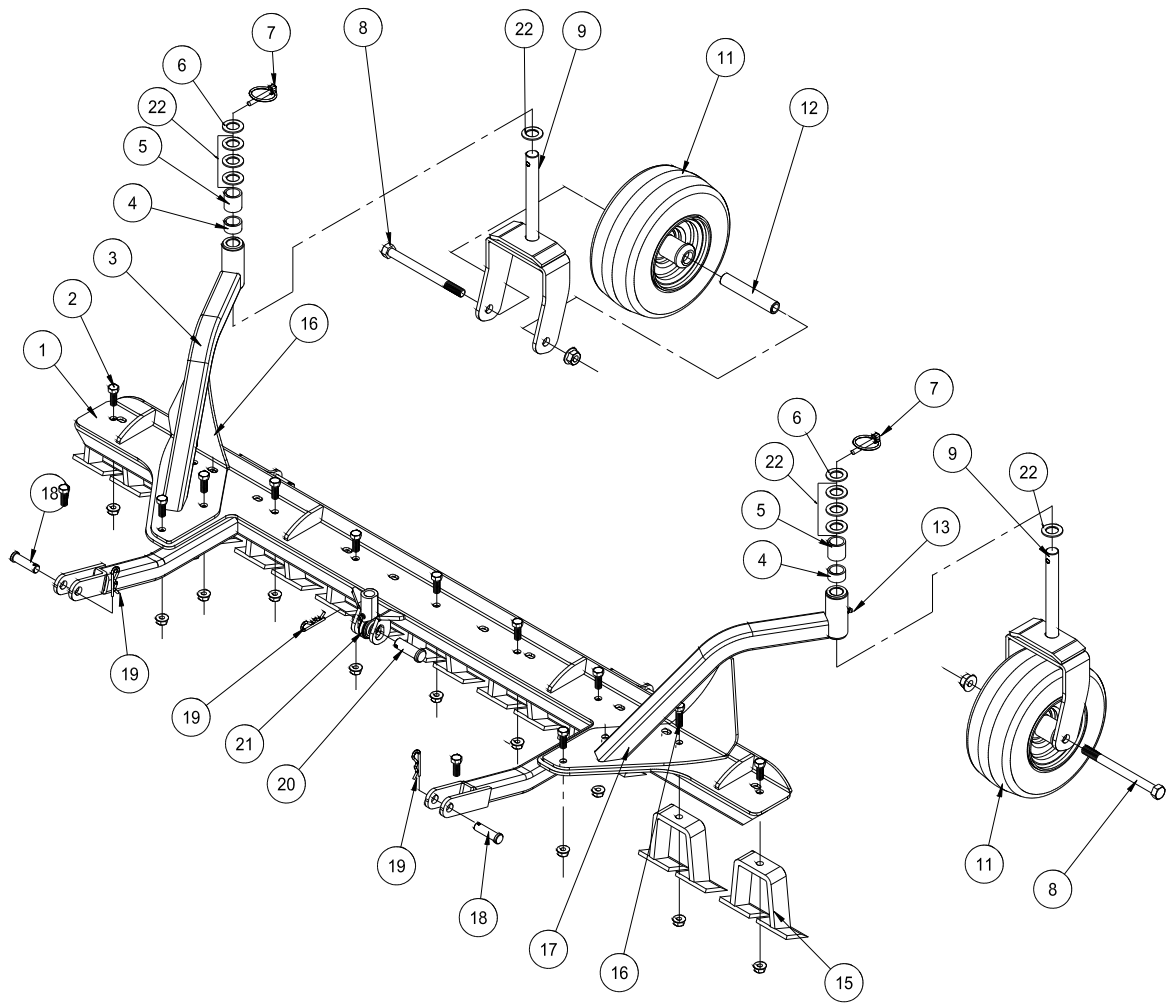
## INSTALLATION INSTRUCTIONS

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

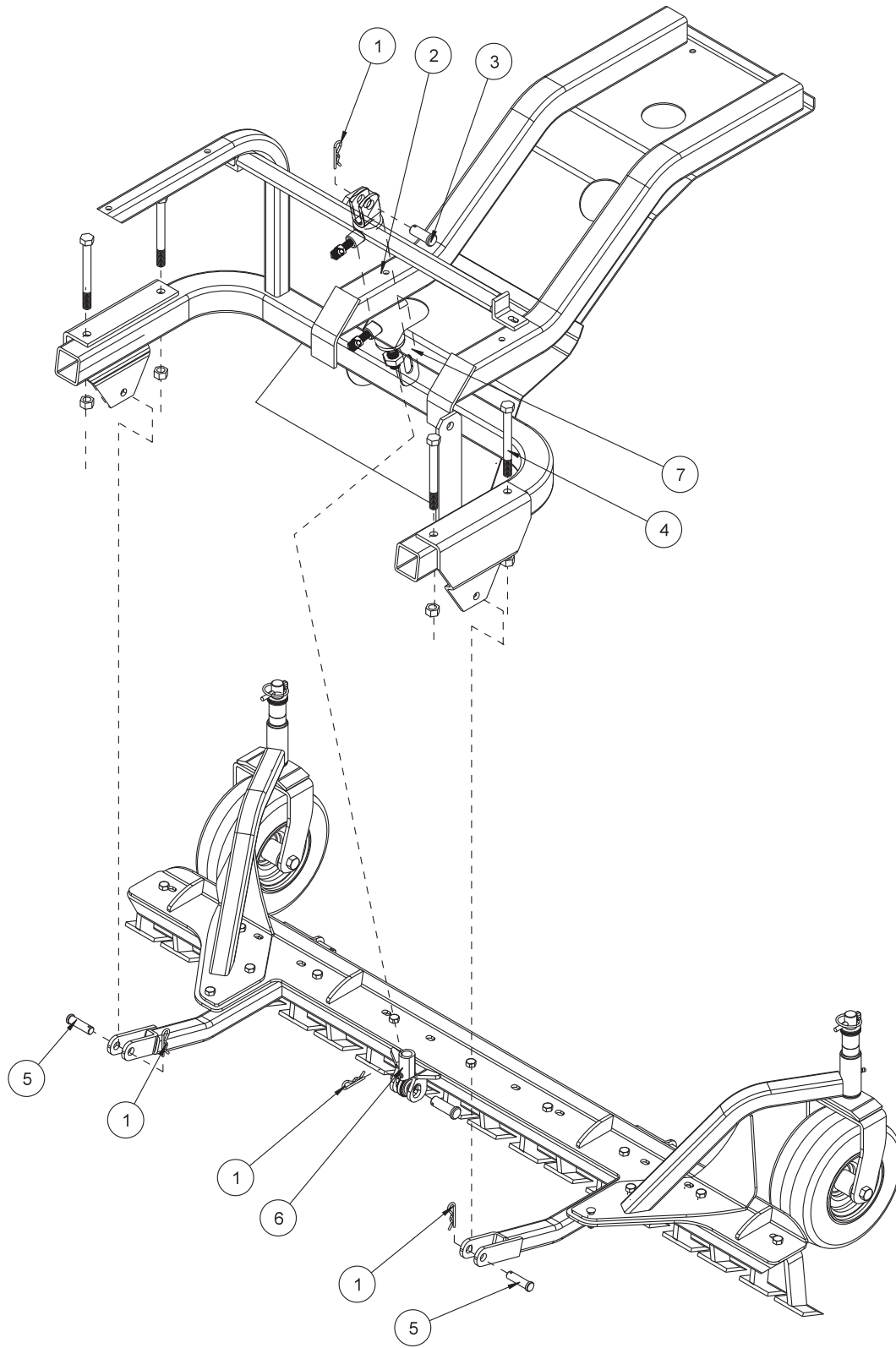


## 42-179 INFIELD SCARIFIER WITH CHISEL BLADES PARTS LIST

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

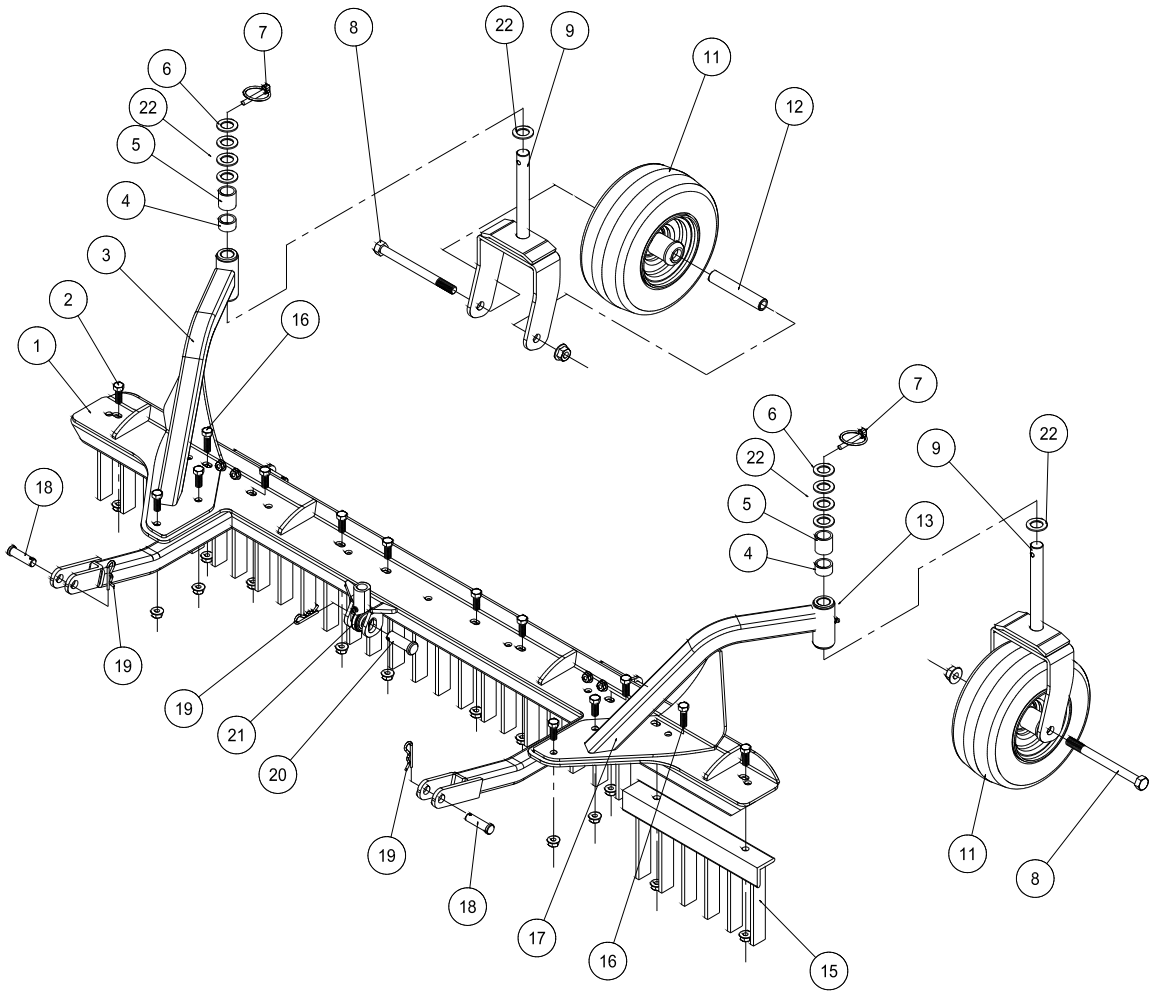
## INSTALLATION INSTRUCTIONS

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

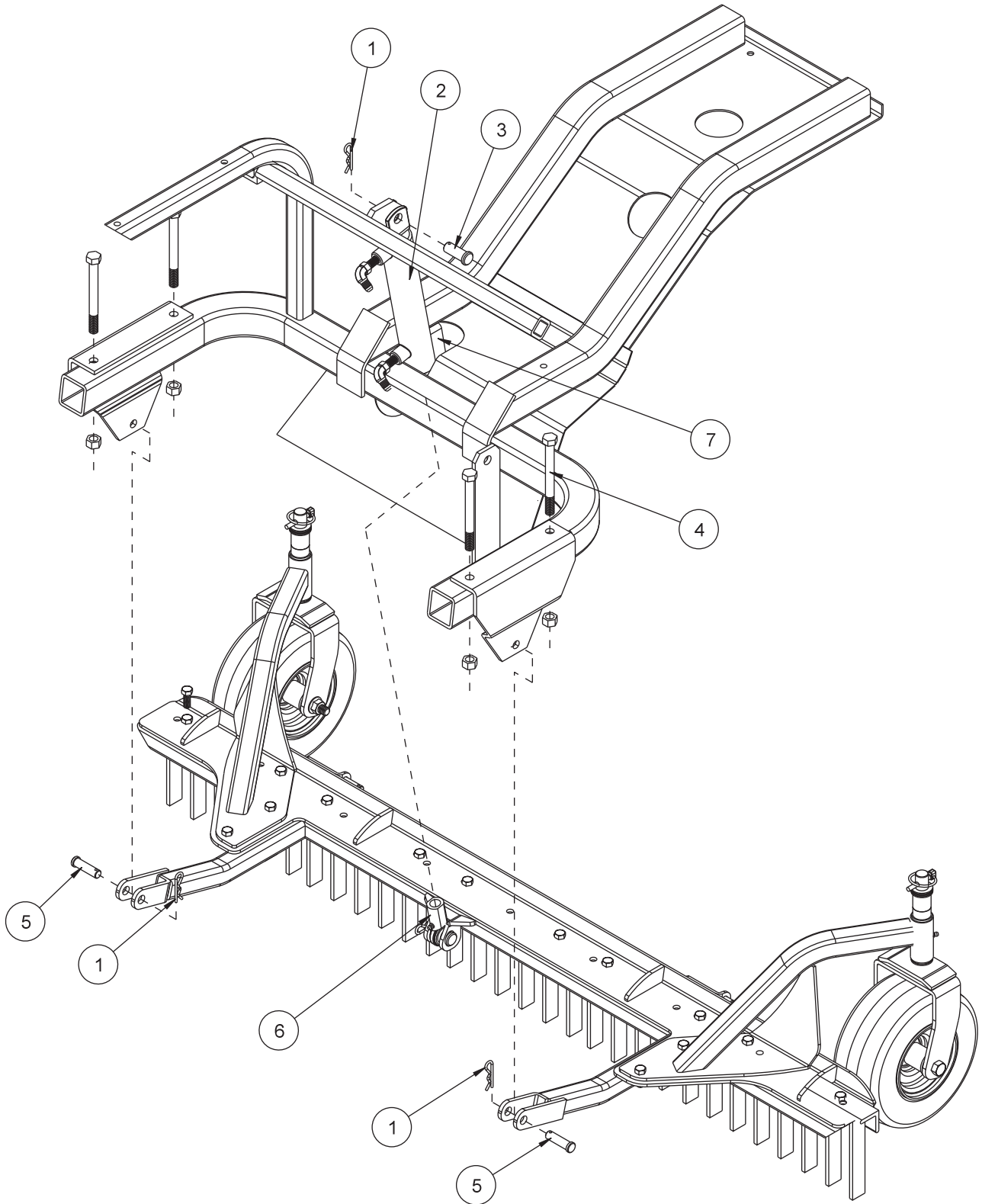


## 42-285 SCARIFIER WITH VERTICAL BLADES PARTSLIST

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

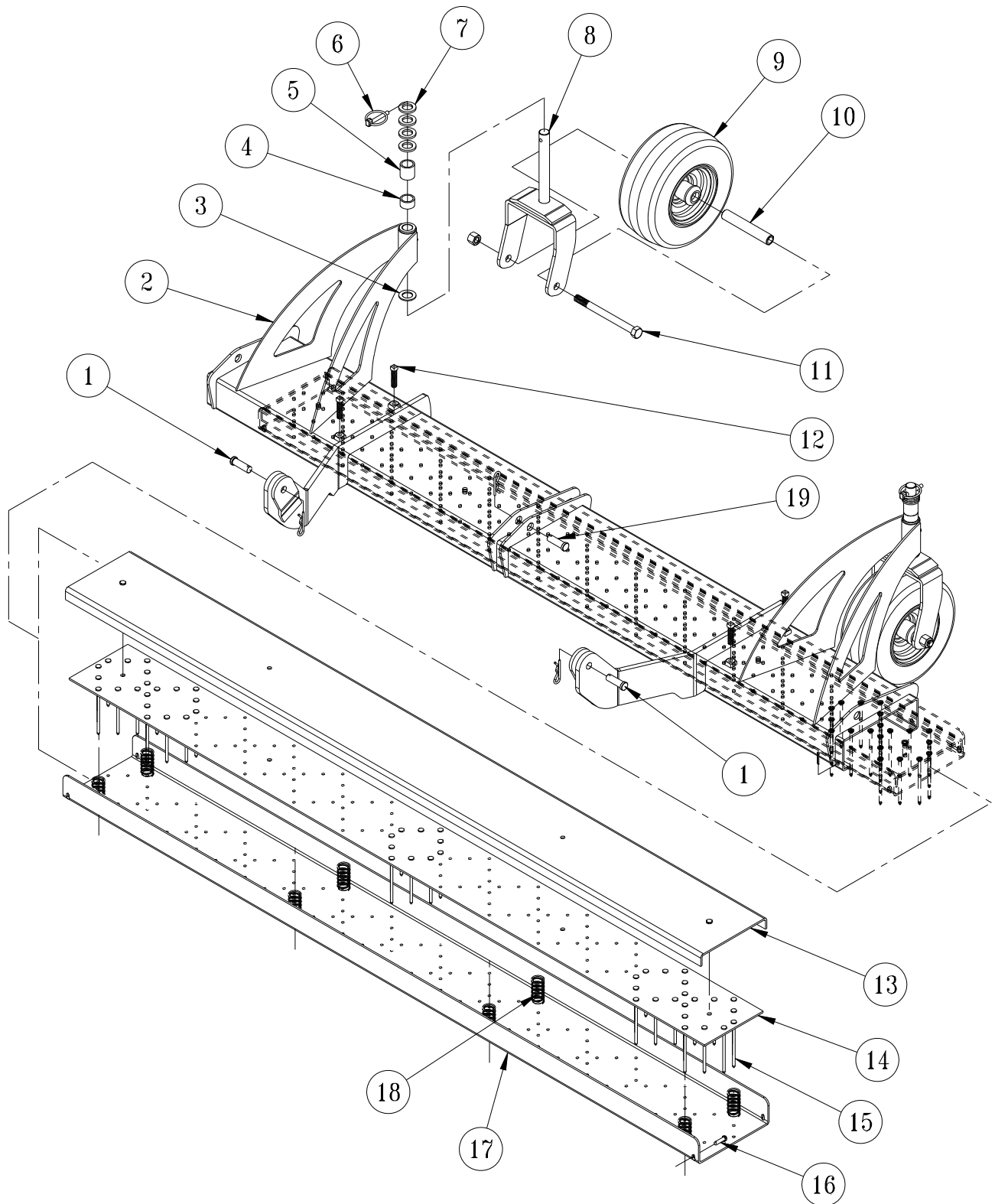
REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	3
2		Hydraulic Cylinder (part of machine)	1
3	HCP-58-175	Clevis Pin $\frac{5}{8} \times 1\frac{3}{4}$	1
4	HB-12-13-500	Bolt $\frac{1}{2}$ - 13 x 5 (part of machine)	4
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13 (part of machine)	4
5	HCP-12-175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

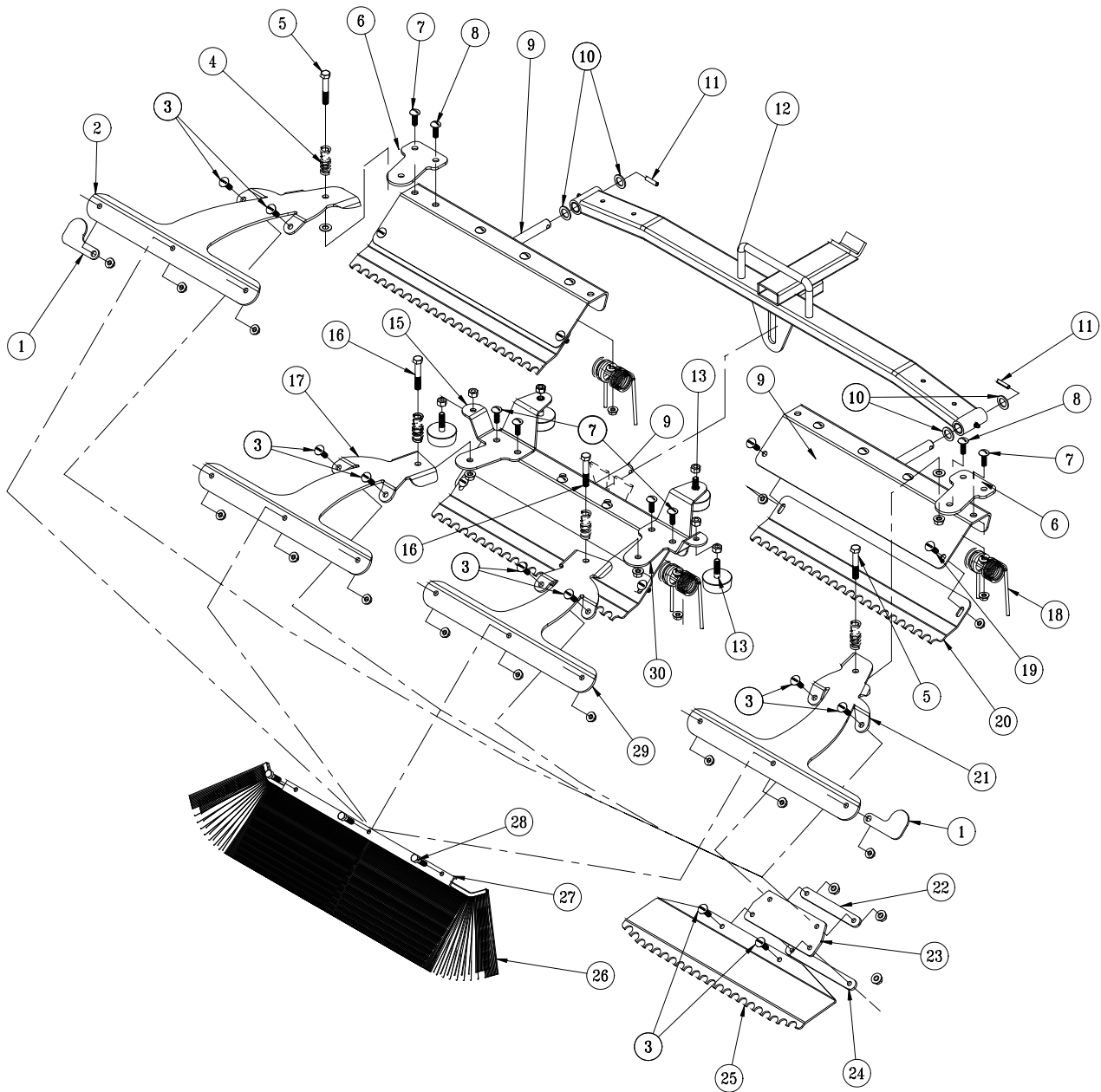
Center Attachment

# 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
<b>Belly Attachments .....</b>	<b>B</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
<b>Rear Attachments .....</b>	<b>C</b>
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, <sup>5</sup> / <sub>16</sub> - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-250	Hex Bolt, <sup>3</sup> / <sub>8</sub> - 16 x 2 <sup>1</sup> / <sub>2</sub>	2
	HW-38	Flat Washer, <sup>3</sup> / <sub>8</sub>	2
	HNTL-38-16	Lock Nut, <sup>3</sup> / <sub>8</sub> - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, <sup>5</sup> / <sub>16</sub> - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, <sup>5</sup> / <sub>16</sub> - 18 x 1 <sup>1</sup> / <sub>4</sub>	12
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	12
9	42-140	Outside Rake	3
10	HMB-58-14	Machine Bushing <sup>5</sup> / <sub>8</sub> x 14GA	4
11	HRP-14-100	Roll Pin <sup>1</sup> / <sub>4</sub> 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 <sup>3</sup> / <sub>8</sub> - 16	6
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, <sup>3</sup> / <sub>8</sub> - 16 x 2 <sup>1</sup> / <sub>2</sub>	2
	HNTL-38-16	Lock Nut, <sup>3</sup> / <sub>8</sub> - 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, <sup>5</sup> / <sub>16</sub> - 18 x <sup>3</sup> / <sub>4</sub>	6
	HNFL-516-18	Flange Whiz-Loc Nut <sup>5</sup> / <sub>16</sub> - 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, <sup>5</sup> / <sub>16</sub> - 18 x 1 <sup>1</sup> / <sub>4</sub>	12
	HNFL-516-18	Flange Whiz-Loc Nut <sup>5</sup> / <sub>16</sub> - 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

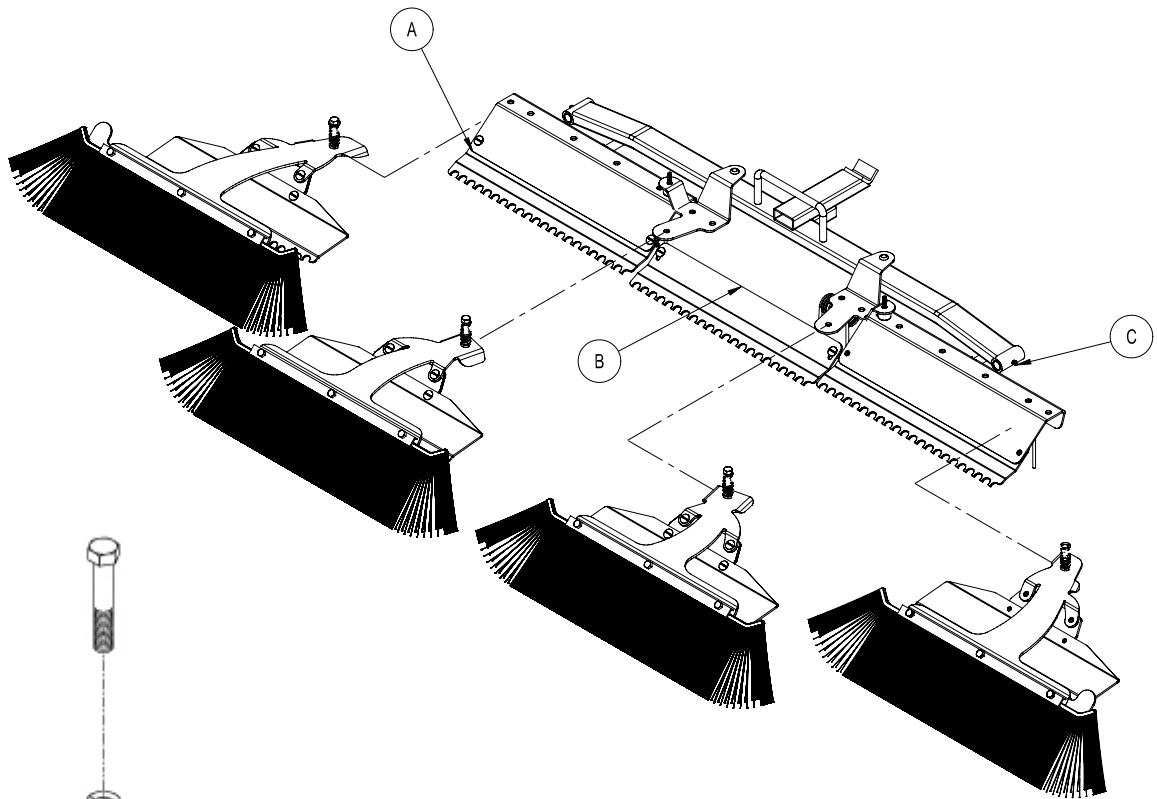


Fig.2

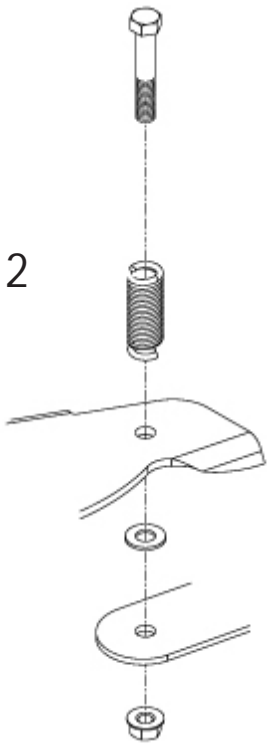


Fig. 3

Rear Attachment



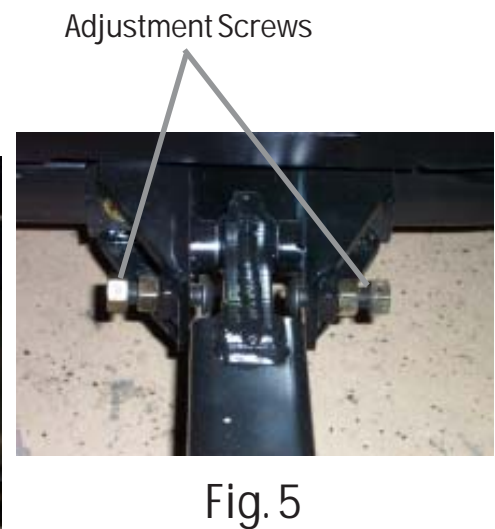
## PROBRUSH TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your PROBRUSH TOURNAMENT RAKE comes mostly assembled.

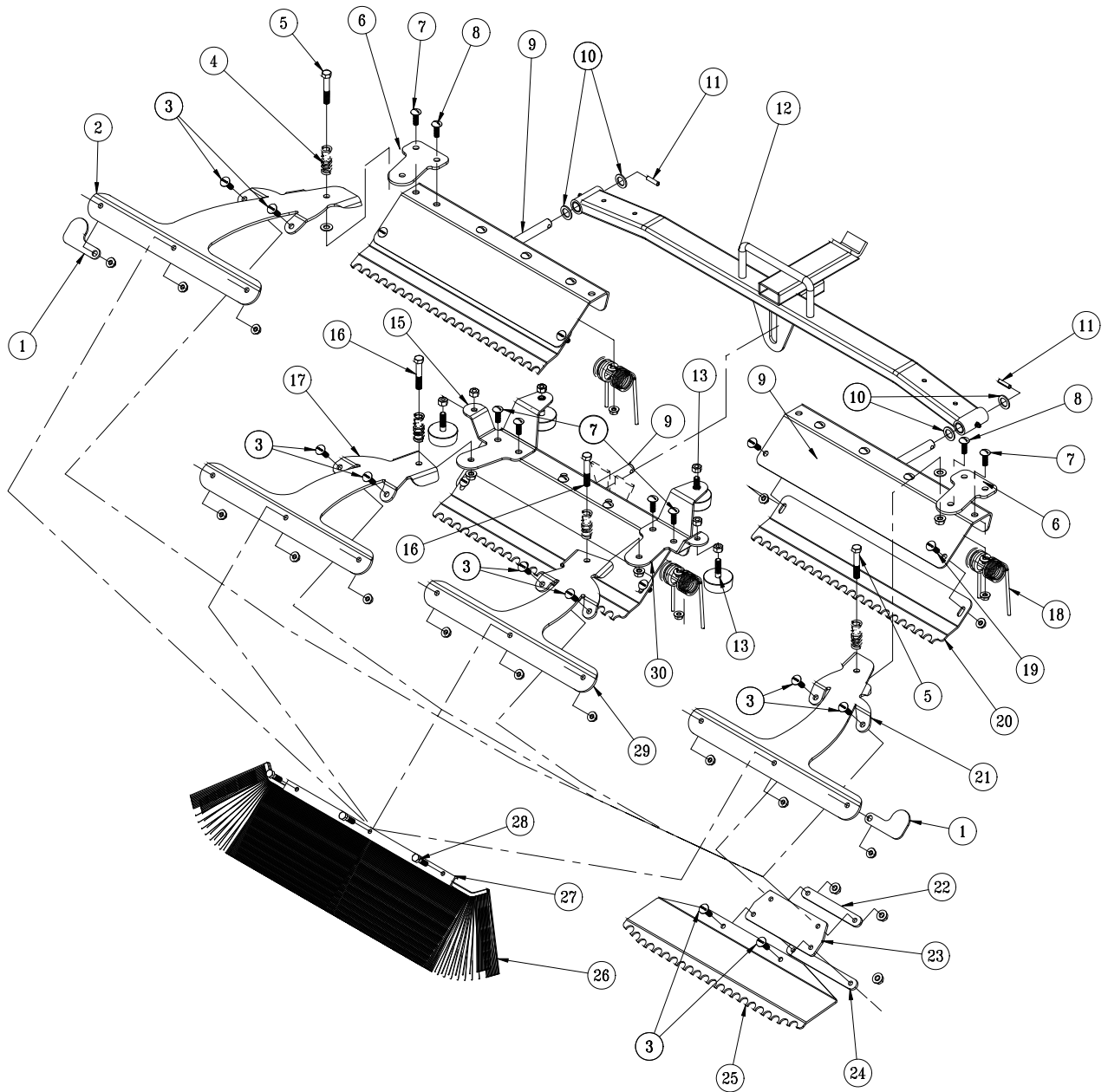
1. Before assembly please note the two Brush/Finish Blade Assemblies (Refs A & C in Fig.1) that are mounted on the outside (RH & LH) have flat washers that are between the Brush Arms (Refs 2 & 21) and the Brush Arm Mount (Ref 6).
2. Also please note the placement of the Brush/Finish Blade Assemblies 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, <sup>5</sup> / <sub>16</sub> - 18 x 1	16
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	16
4	11-055	Compression Spring	4
5	HB-38-16-250	Hex Bolt, <sup>3</sup> / <sub>8</sub> - 16 x 2 <sup>1</sup> / <sub>2</sub>	2
	HW-38	Flat Washer, <sup>3</sup> / <sub>8</sub>	2
	HNTL-38-16	Lock Nut, <sup>3</sup> / <sub>8</sub> - 16	2
6	42-396	Outside Brush Arm Mount	2
7	HSTP-516-18-100	Phillips Truss Head Screw, <sup>5</sup> / <sub>16</sub> - 18 x 1	4
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	4
8	HSTP-516-18-125	Phillips Truss Head Screw, <sup>5</sup> / <sub>16</sub> - 18 x 1 <sup>1</sup> / <sub>4</sub>	12
	HNFL-516-18	Flange Whiz-Loc Nut, <sup>5</sup> / <sub>16</sub> - 18	12
9	42-102	84" Outside Rake	3
10	HMB-58-14	Machine Bushing <sup>5</sup> / <sub>8</sub> x 14GA	4
11	HRP-14-100	Roll Pin <sup>1</sup> / <sub>4</sub> 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, <sup>3</sup> / <sub>8</sub> - 16	6
15	42-399	Brush Arm Mount, LH	1
16	HB-38-16-250	Hex Bolt, <sup>3</sup> / <sub>8</sub> - 16 x 2 <sup>1</sup> / <sub>2</sub>	2
	HNTL-38-16	Lock Nut, <sup>3</sup> / <sub>8</sub> - 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, <sup>5</sup> / <sub>16</sub> - 18 x <sup>3</sup> / <sub>4</sub>	6
	HNFL-516-18	Flange Whiz-Loc Nut <sup>5</sup> / <sub>16</sub> - 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, <sup>5</sup> / <sub>16</sub> - 18 x 1 <sup>1</sup> / <sub>4</sub>	12
	HNFL-516-18	Flange Whiz-Loc Nut <sup>5</sup> / <sub>16</sub> - 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

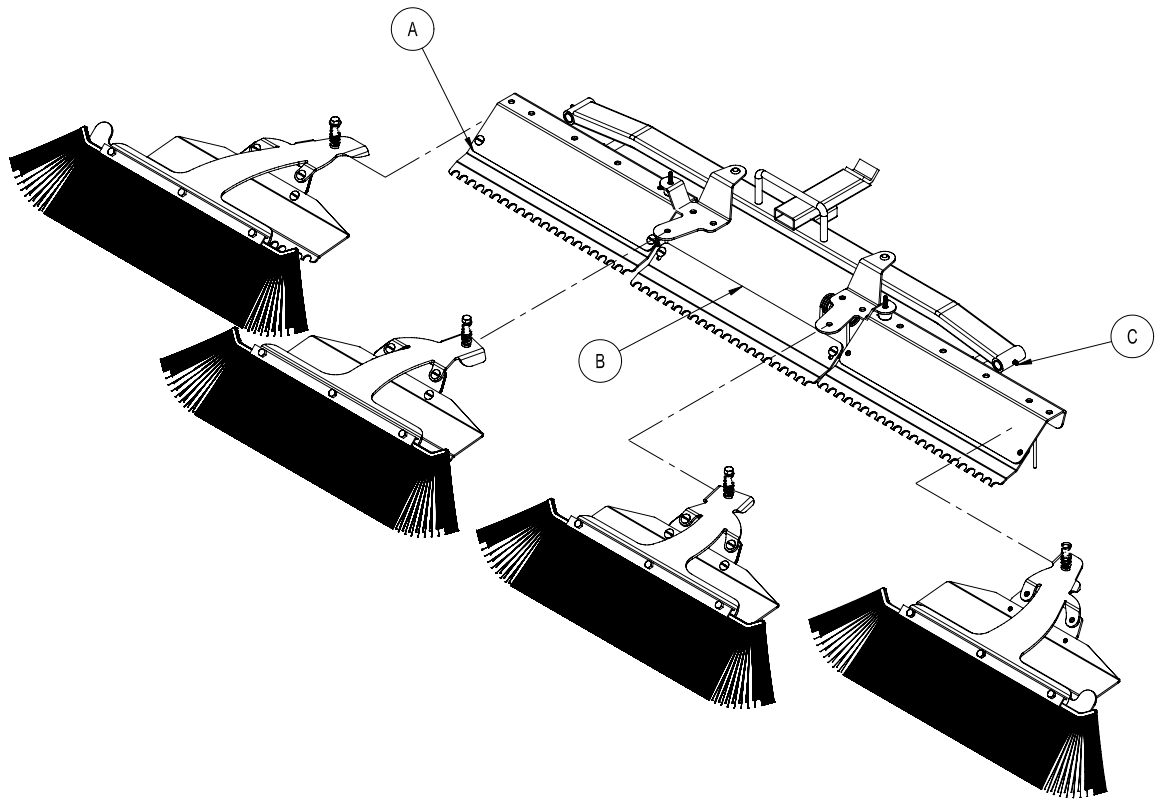


Fig.2

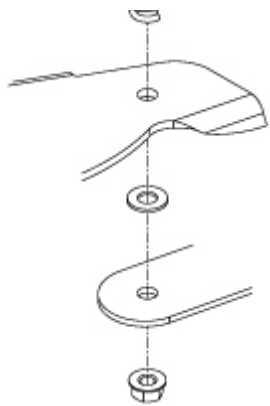


Fig.3

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.

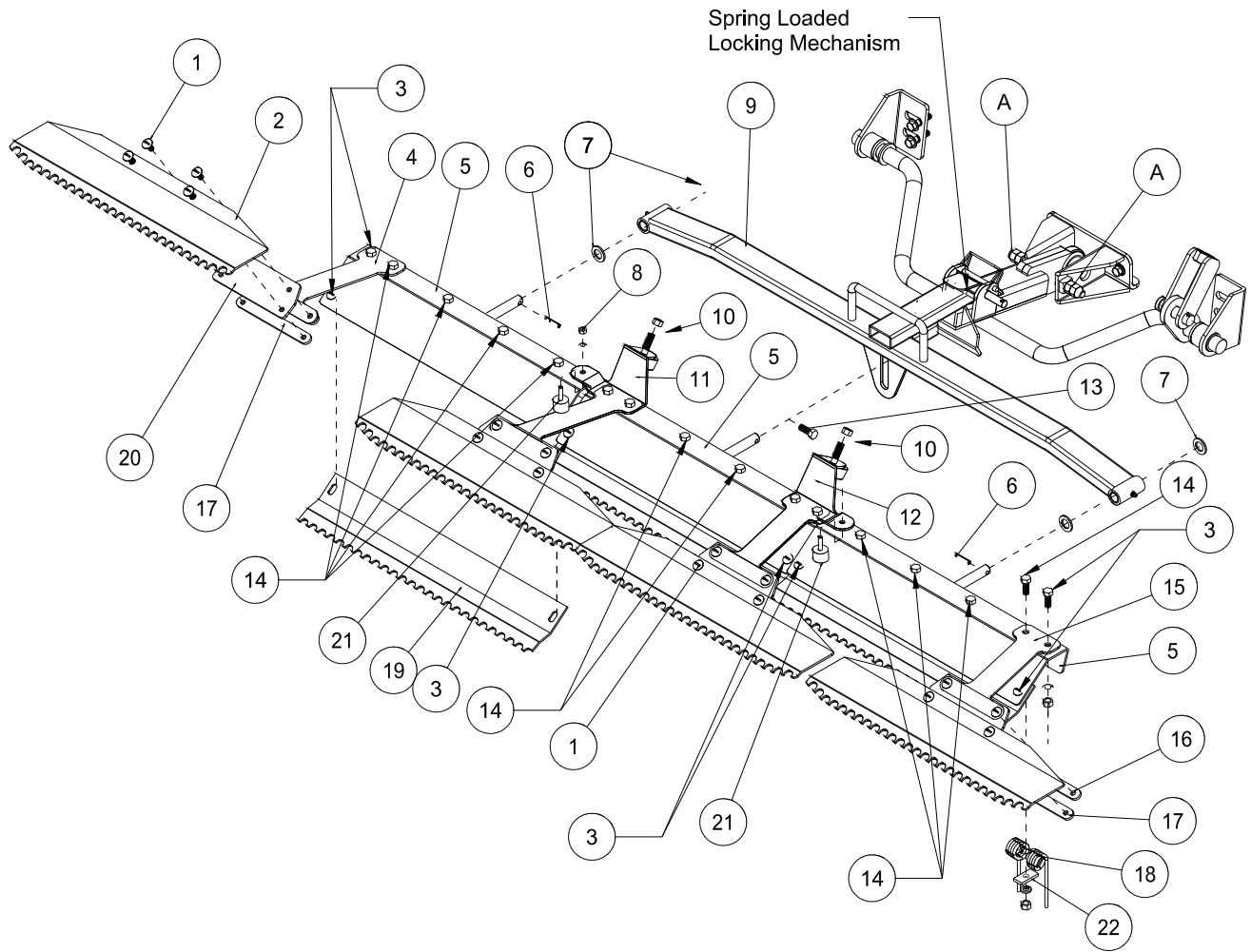
### NOTE:

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.





# 42-1300 84" (213CM) MILD STEEL TOURNAMENT RAKE DRAWING

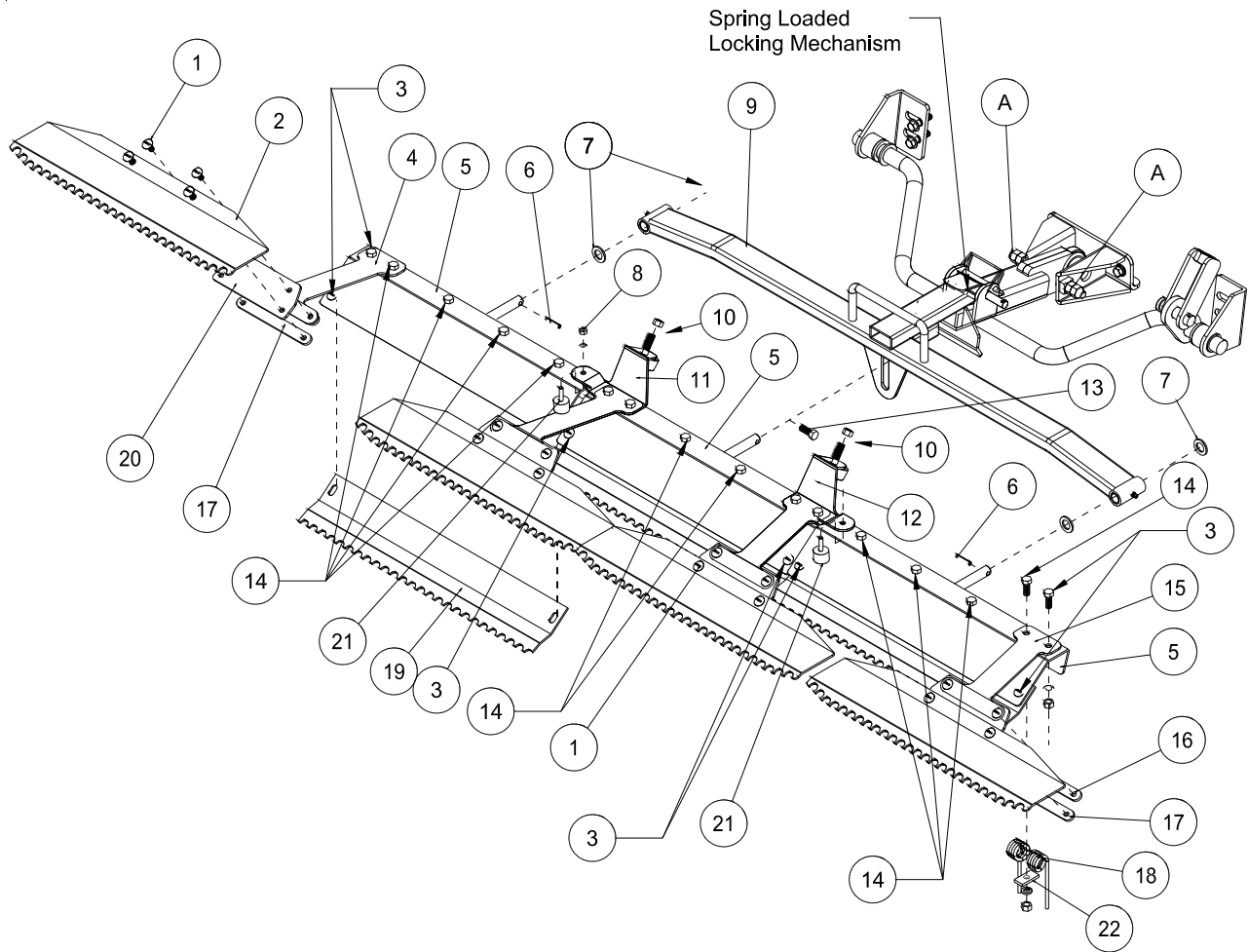


Rear Attachment

## 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

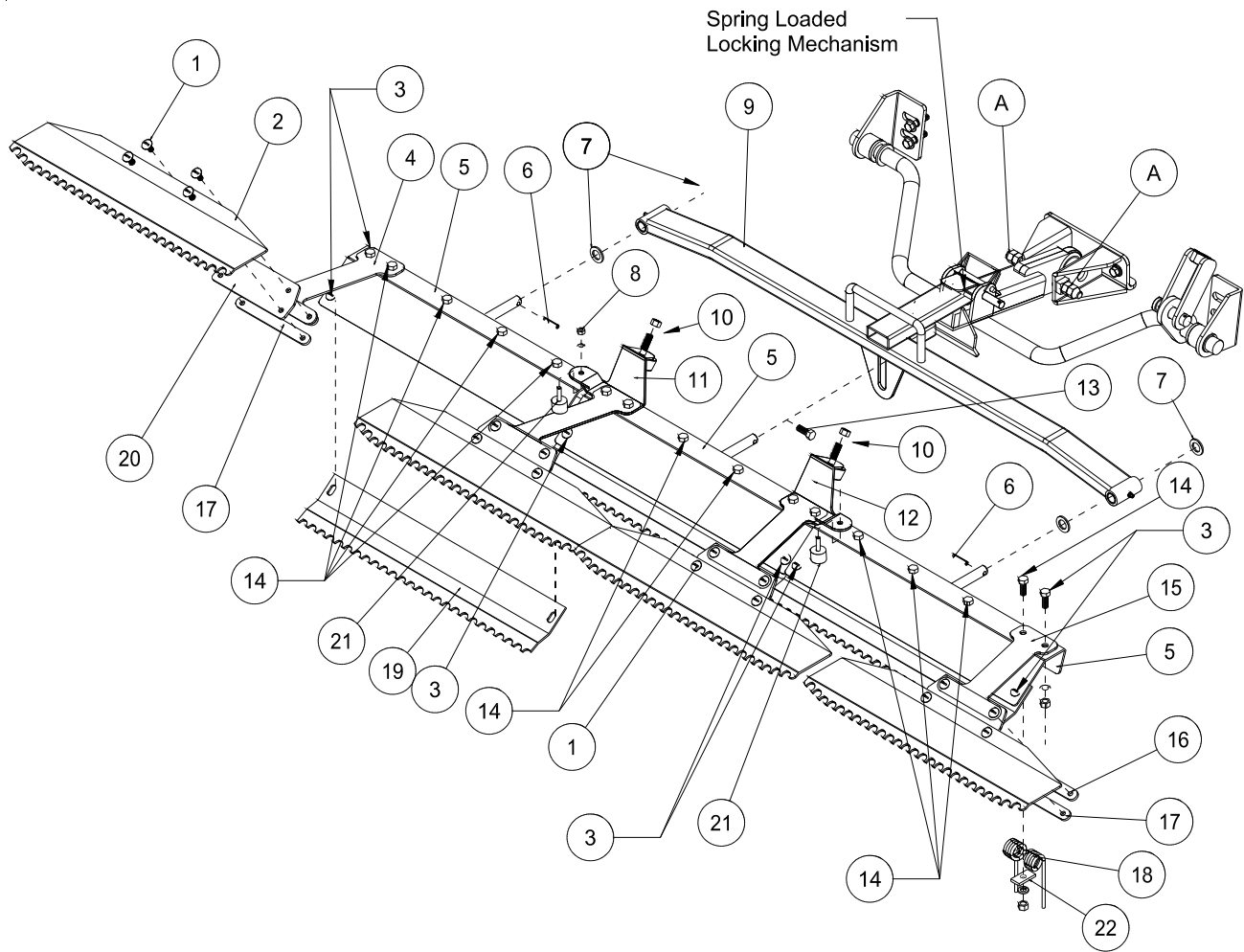


## RAKE ASSEMBLY INSTRUCTIONS

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 1<sup>1</sup>/<sub>4</sub>" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the 1<sup>1</sup>/<sub>4</sub>" 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 1<sup>1</sup>/<sub>2</sub> 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 <sup>5</sup>/<sub>16</sub> - 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 <sup>5</sup>/<sub>16</sub> - 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

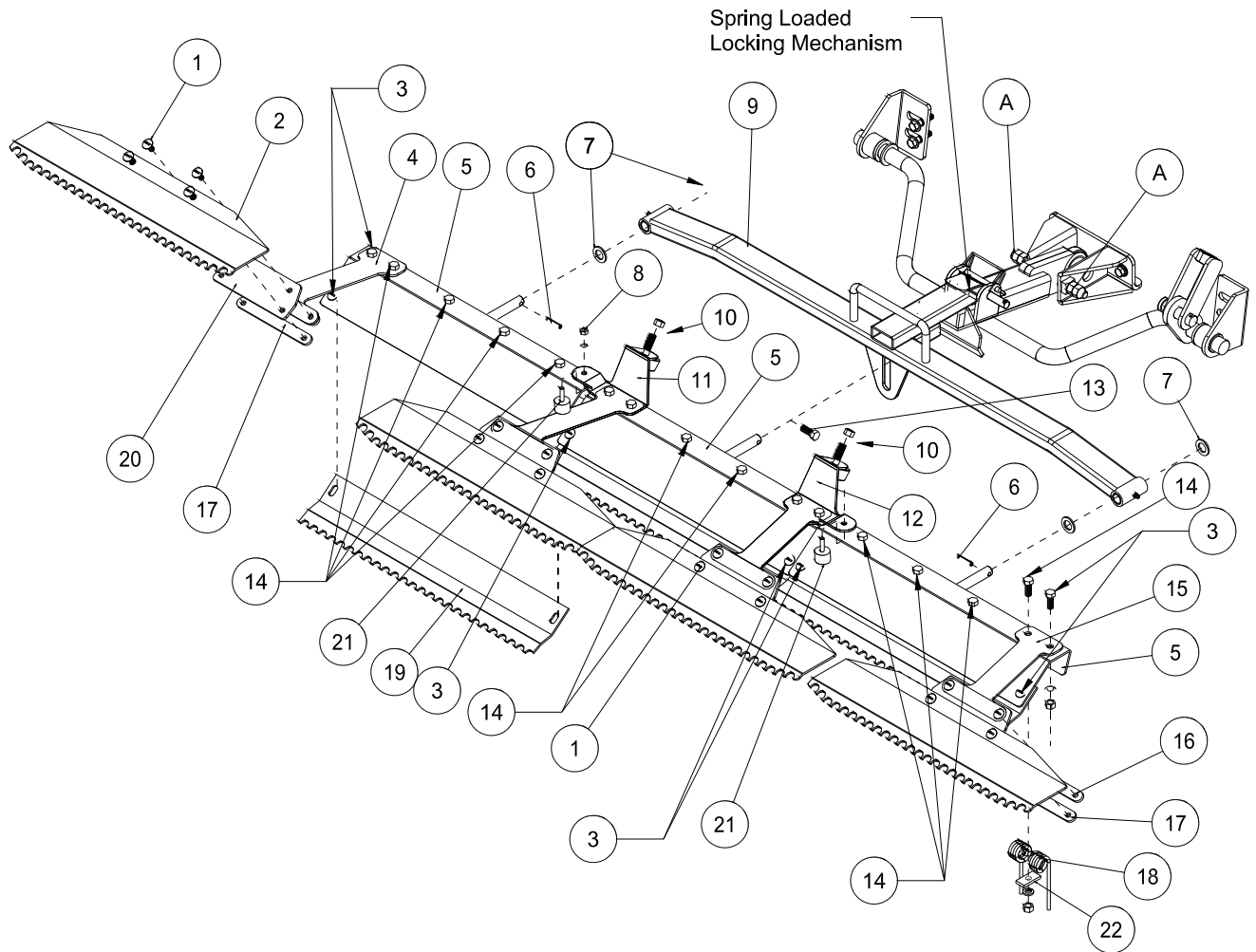


Rear Attachment

## 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



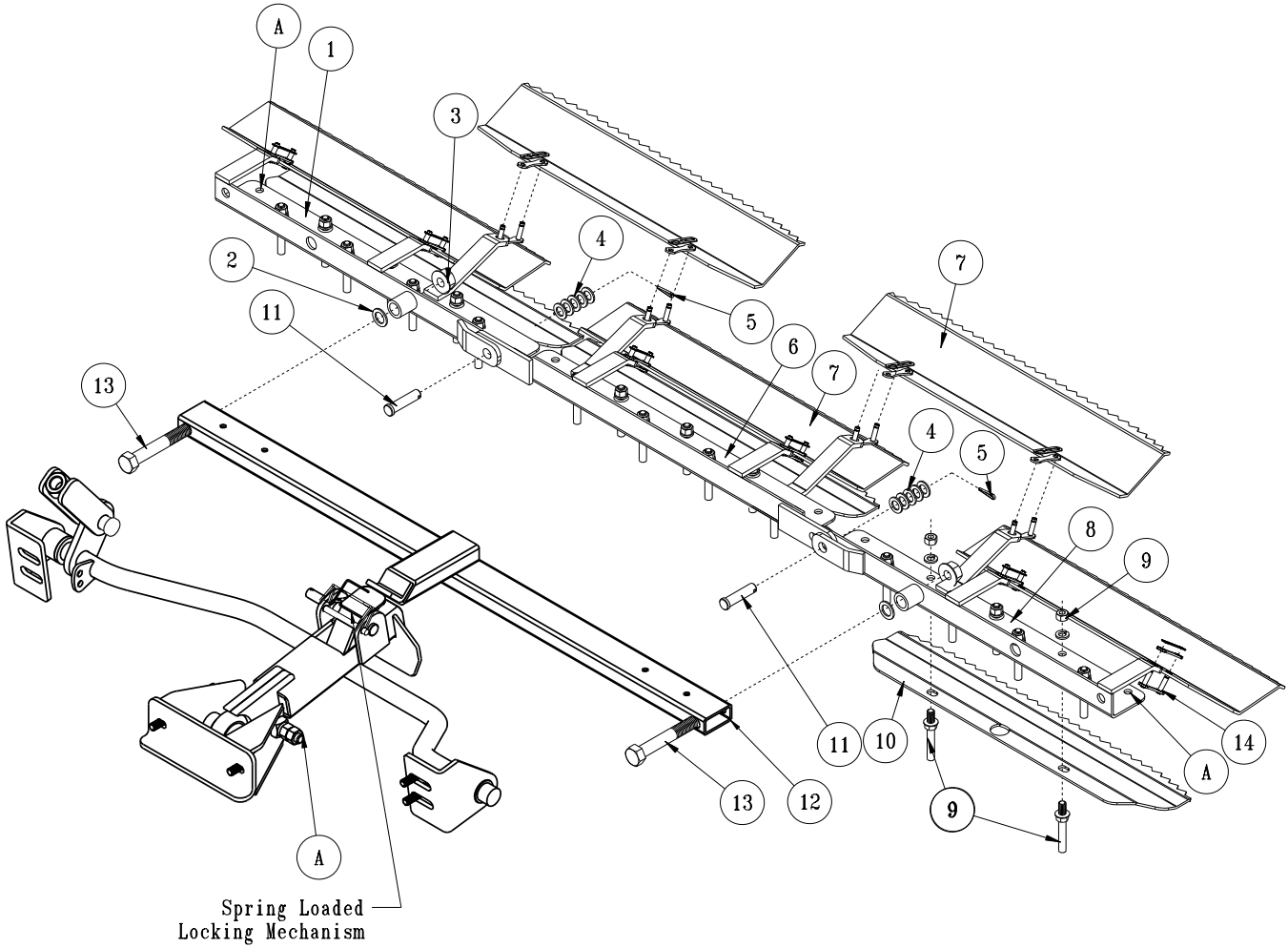
Rear Attachment

## 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 1<sup>1</sup>/<sub>4</sub>" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the 1<sup>1</sup>/<sub>4</sub>" 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 1<sup>1</sup>/<sub>2</sub> 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 <sup>5</sup>/<sub>16</sub> - 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 <sup>5</sup>/<sub>16</sub> - 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

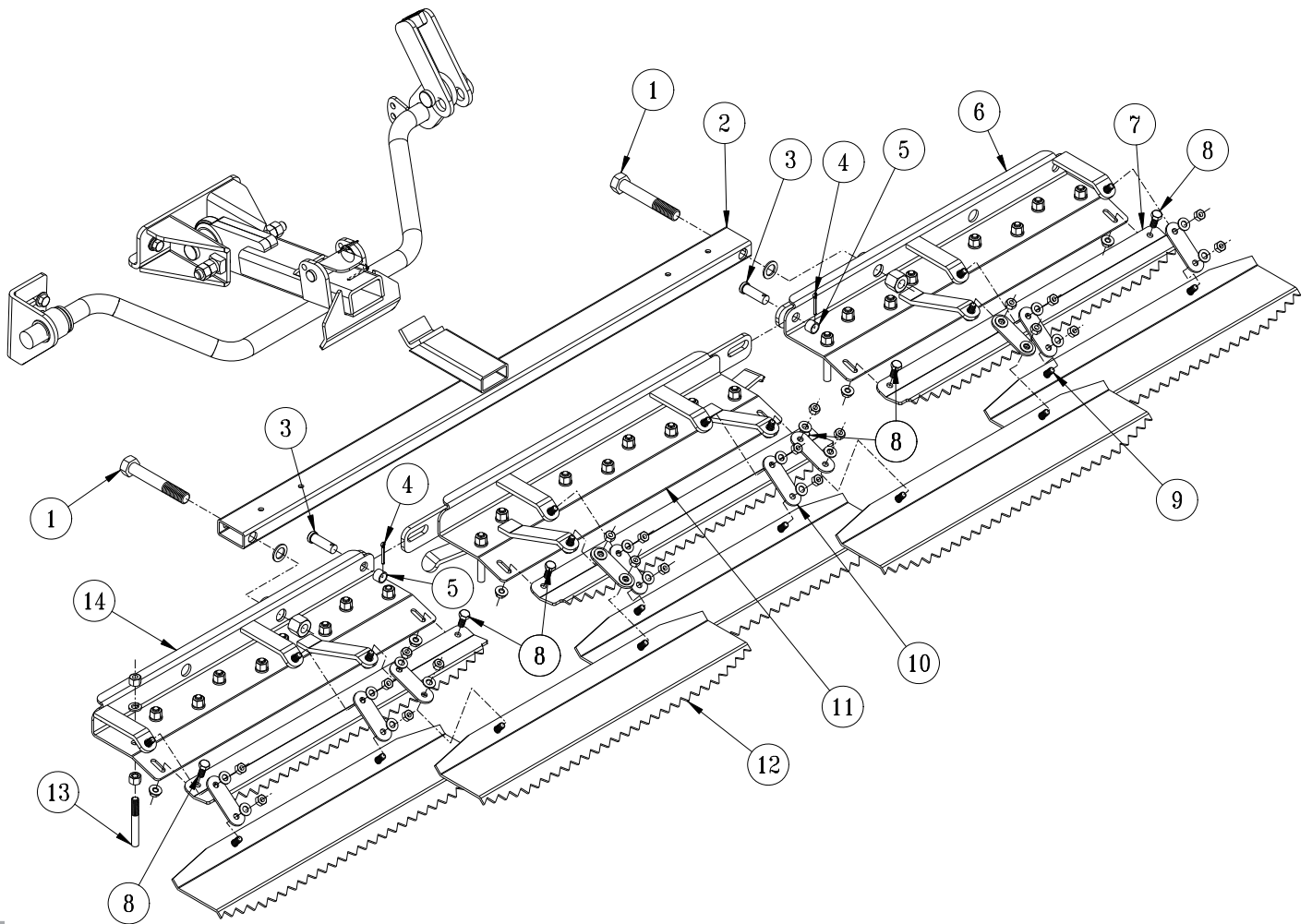
## INSTALLATION INSTRUCTIONS

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 MAX FLEX SAND RAKE

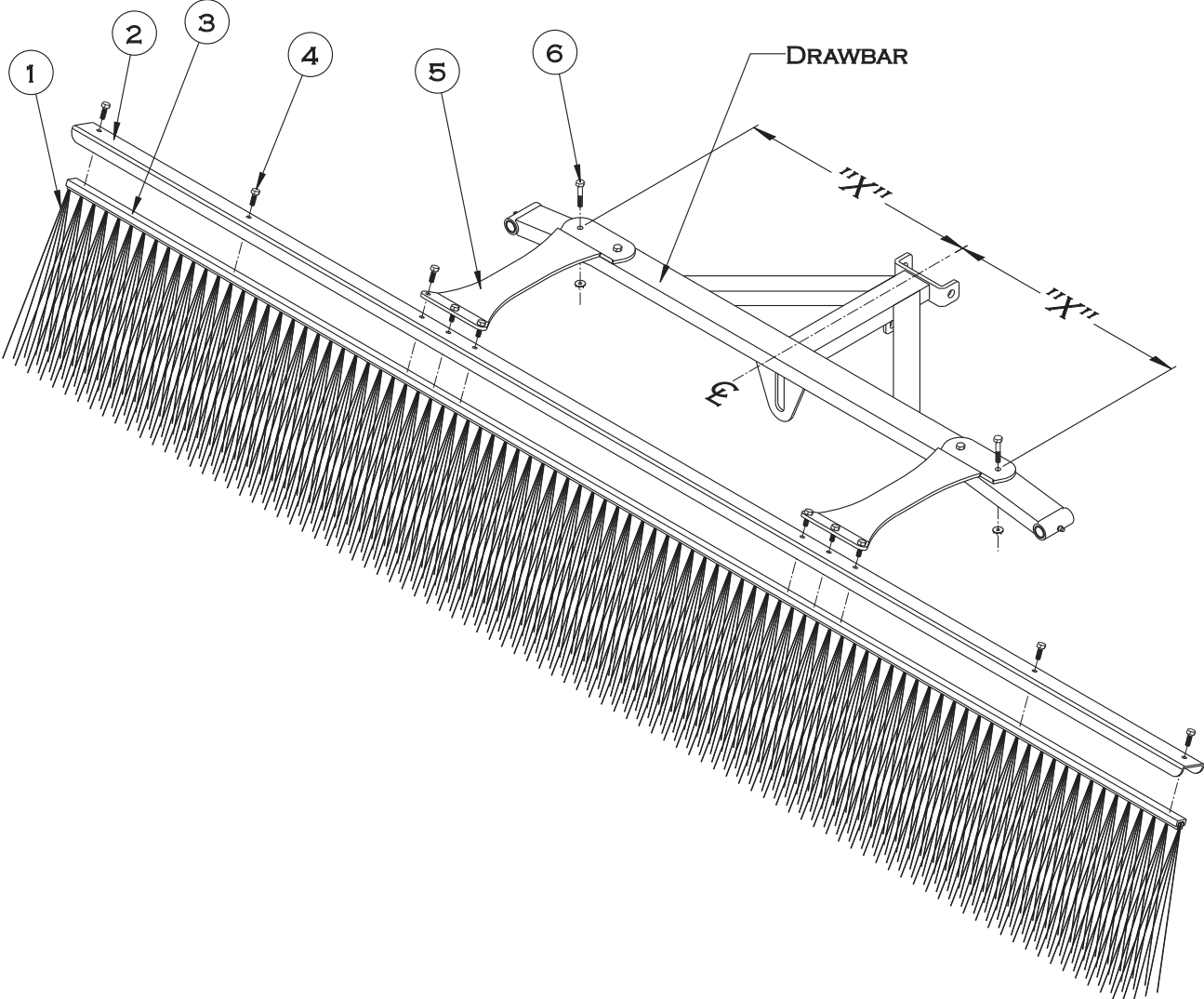
REF#	PART#	DESCRIPTION	QUANTITY
1	HB-58-11-400	Bolt, $\frac{5}{8}$ - 11 x 4	2
	HMB-58-14	Machine Bushing, $\frac{5}{8}$ x 14GA	2
	HNCL-58-11	Lock Nut, $\frac{5}{8}$ - 11	2
2	43-145	Drawbar	1
3	HCP-12-150	Clevis Pin, $\frac{1}{2}$ - $1\frac{1}{2}$	2
4	HP-18-100	Cotter Pin, $\frac{1}{8}$ x 1	2
5	76-275	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

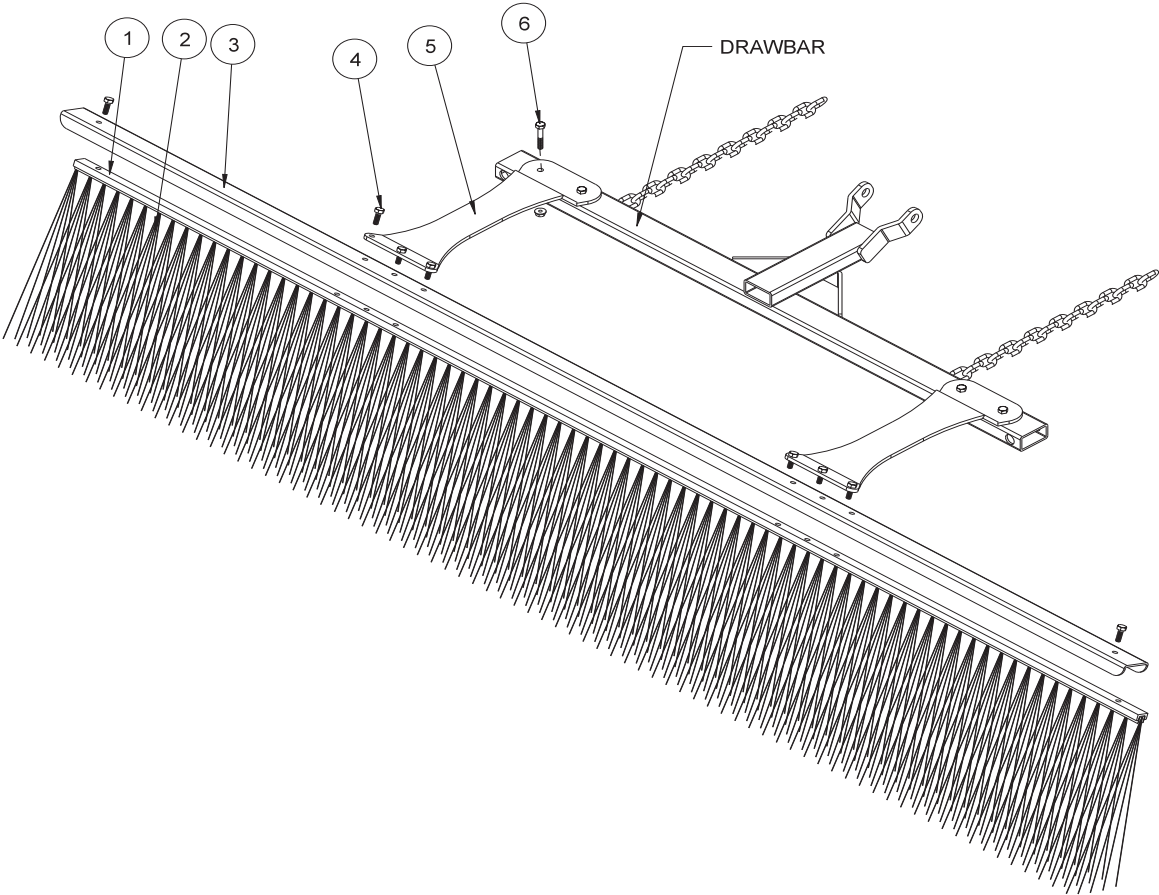
REF#	PART#	DESCRIPTION	QUANTITY
1	13-738	Brush, 89 x 11	1
2	13-737	Brush Channel	1
3	13-739	Brush Track	1
4	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	10
	HNFL-14-20	Flange Whiz-Lock Nut $\frac{1}{4}$ - 20	10
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{2}$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

## INSTALLATION INSTRUCTIONS

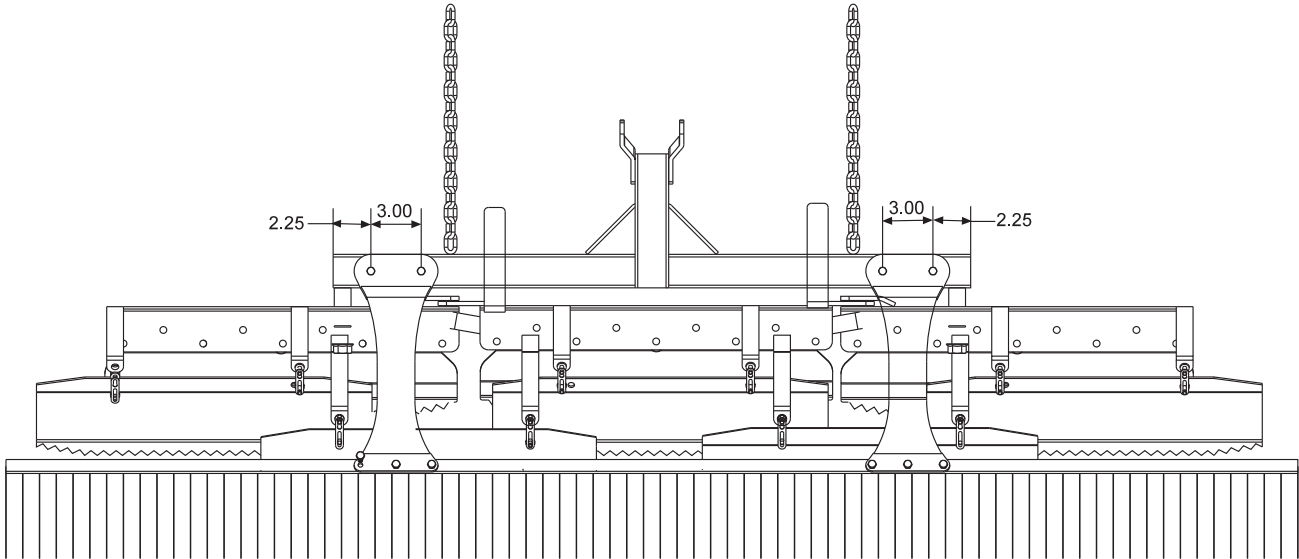
1. Place the Brush(Ref 1) into the Brush Track(Ref 3). Place the Brush Channel(Ref 2) between the brush track and the mounting brackets. Now bolt the Mounting Brackets(Ref 5) to the brush track using the  $\frac{3}{4}$ " bolts and flange whiz-lock nuts(Ref 4).
2. To mount the Brush Assembly(Refs 1-5) 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

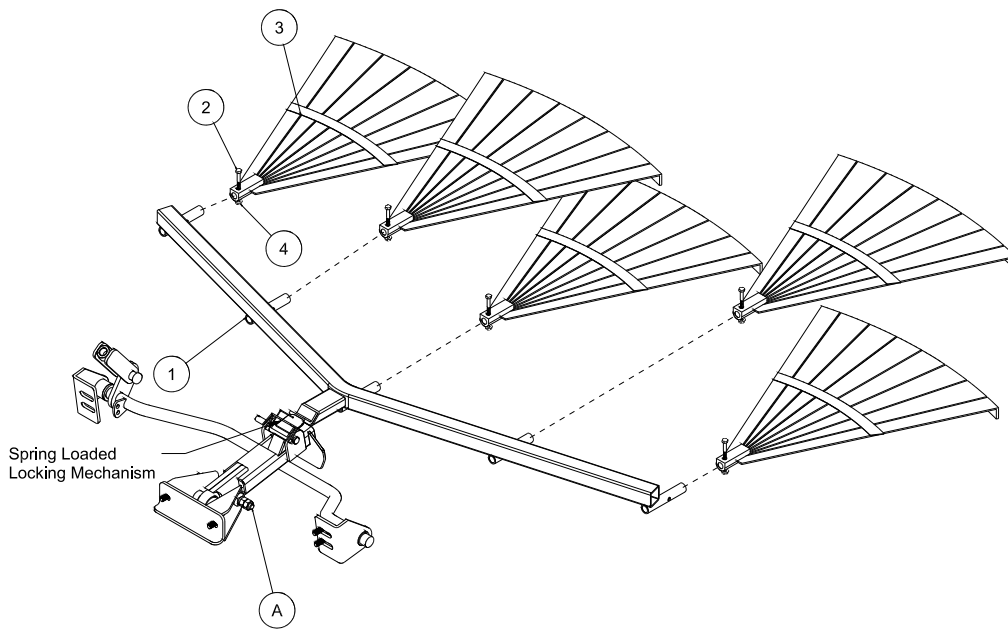
REF#	PART#	DESCRIPTION	QUANTITY
1	13-683	Brush Track	1
2	13-682	Brush 77 x 11	1
3	13-688	Brush Channel	1
4	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	8
	HNFL-14-20	Flange Whiz-Lock Nut $\frac{1}{4}$ - 20	8
5	13-681	Mounting Brackets	2
6	HB-14-20-150	Bolt $\frac{1}{4}$ - 20 x $1\frac{1}{2}$	4
	HNFL-14-20	Flange Whiz-Lock Nuts $\frac{1}{4}$ - 20	4

## INSTALLATION INSTRUCTIONS

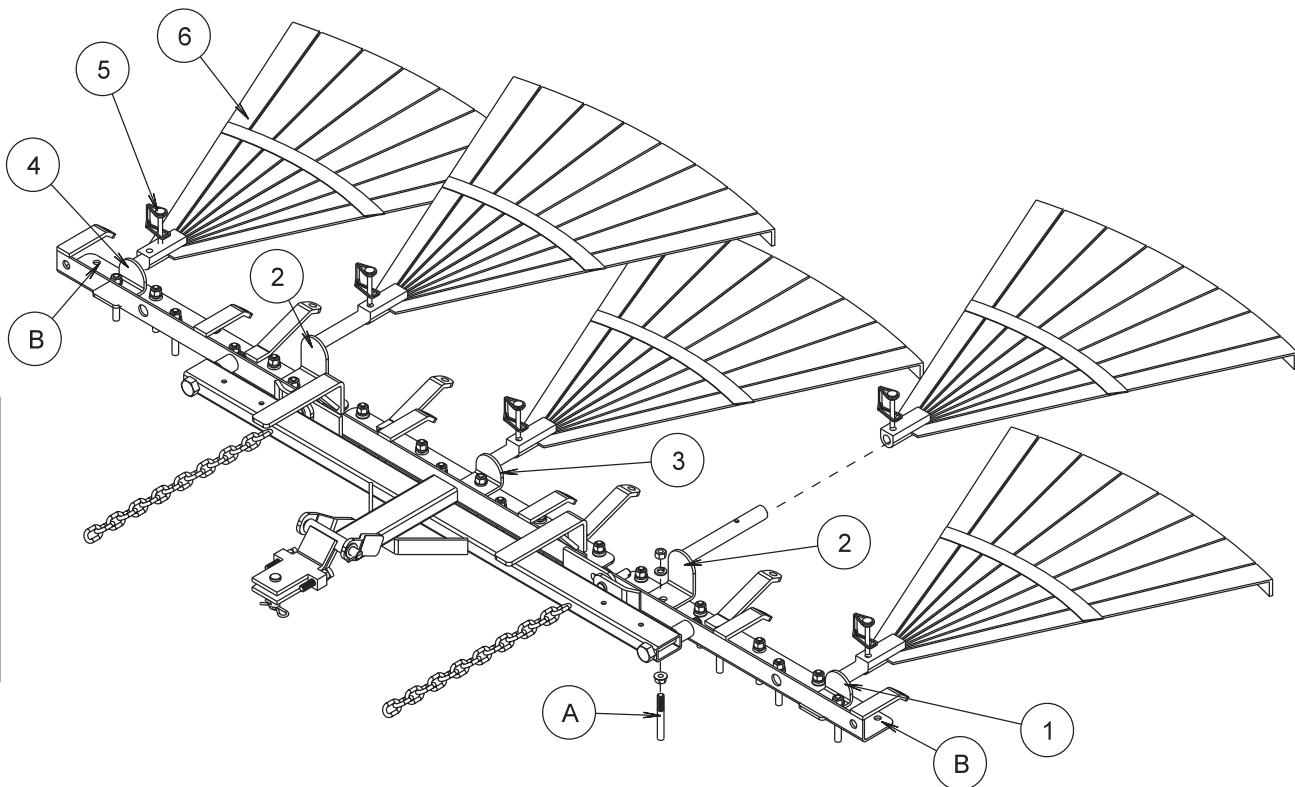
1. Place the brush (Ref 2) into the brush track (Ref 1). Place the brush channel (Ref 3) between the brush track and the mounting brackets. Now bolt the mounting brackets (Ref 5) to the brush track using the  $\frac{3}{4}$ " bolts and flange whiz-lock nuts (Ref 3).
2. Two holes need to be drilled into 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.

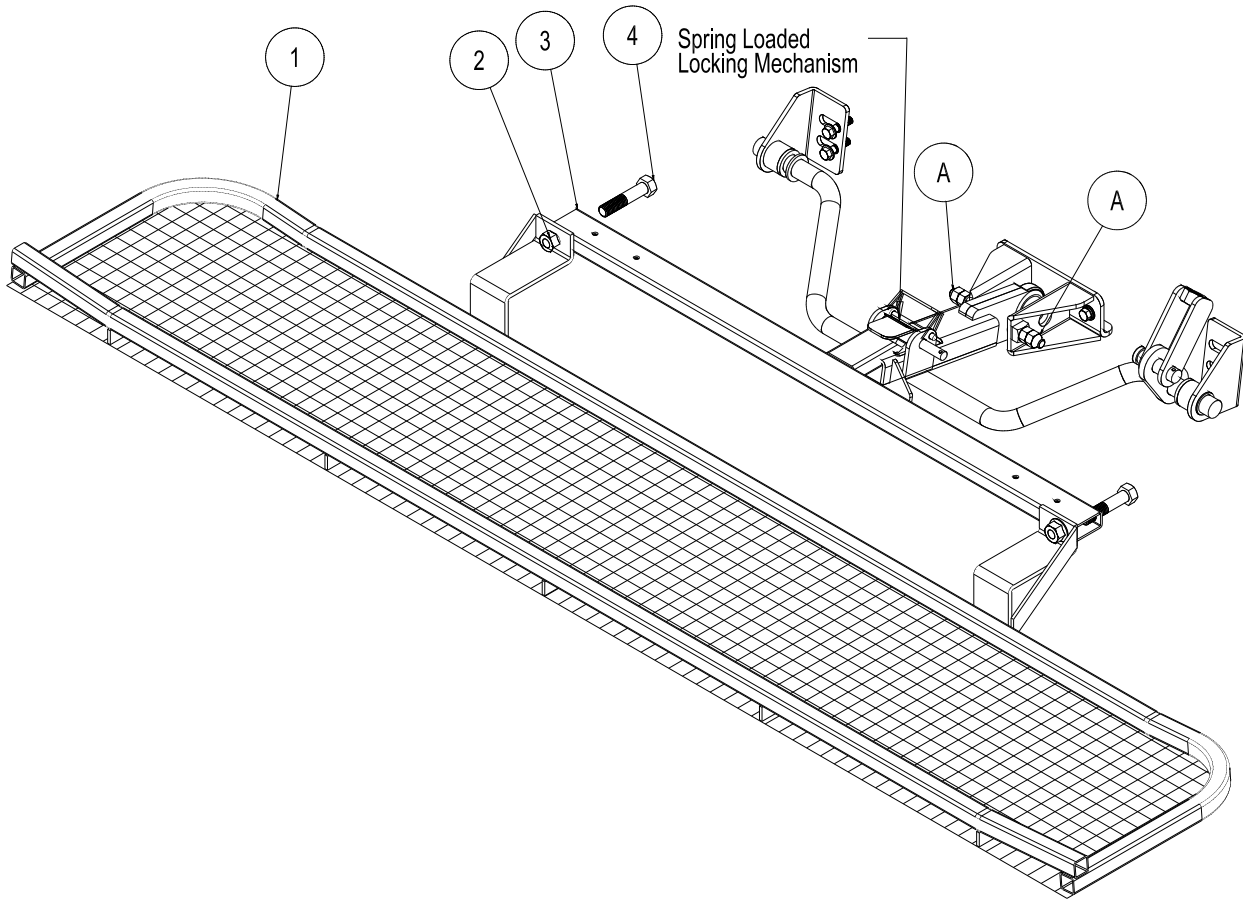
## 13-319-K FAN RAKE KIT PARTS LIST

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

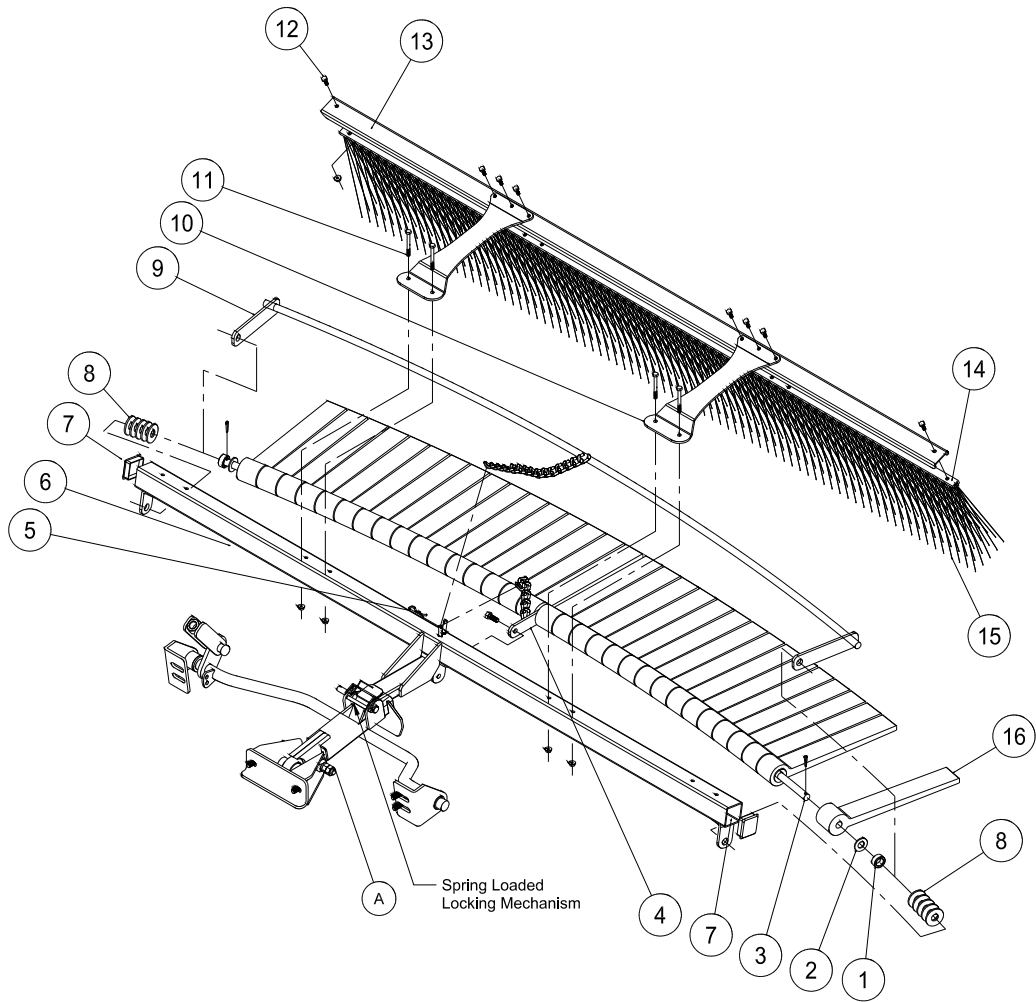
REF#	PART#	DESCRIPTION	QUANTITY
1	26-045	Leveling Screen	1
2	HNCL-58-11	Center Lock Nut $\frac{5}{8}$ - 11	2
3	43-145	Drawbar	1
4	HB-58-11-300	Bolt $\frac{5}{8}$ - 11 x 3	2

## 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

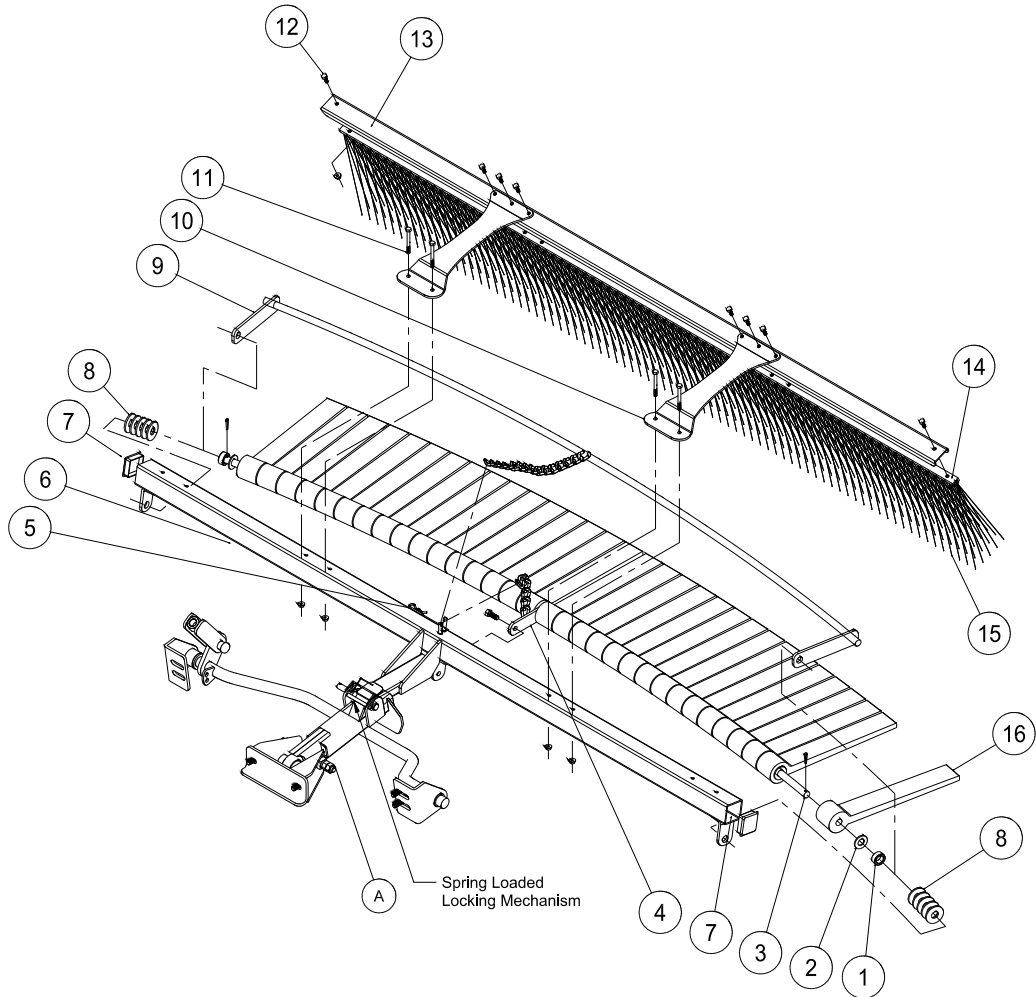


Rear Attachment

## 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

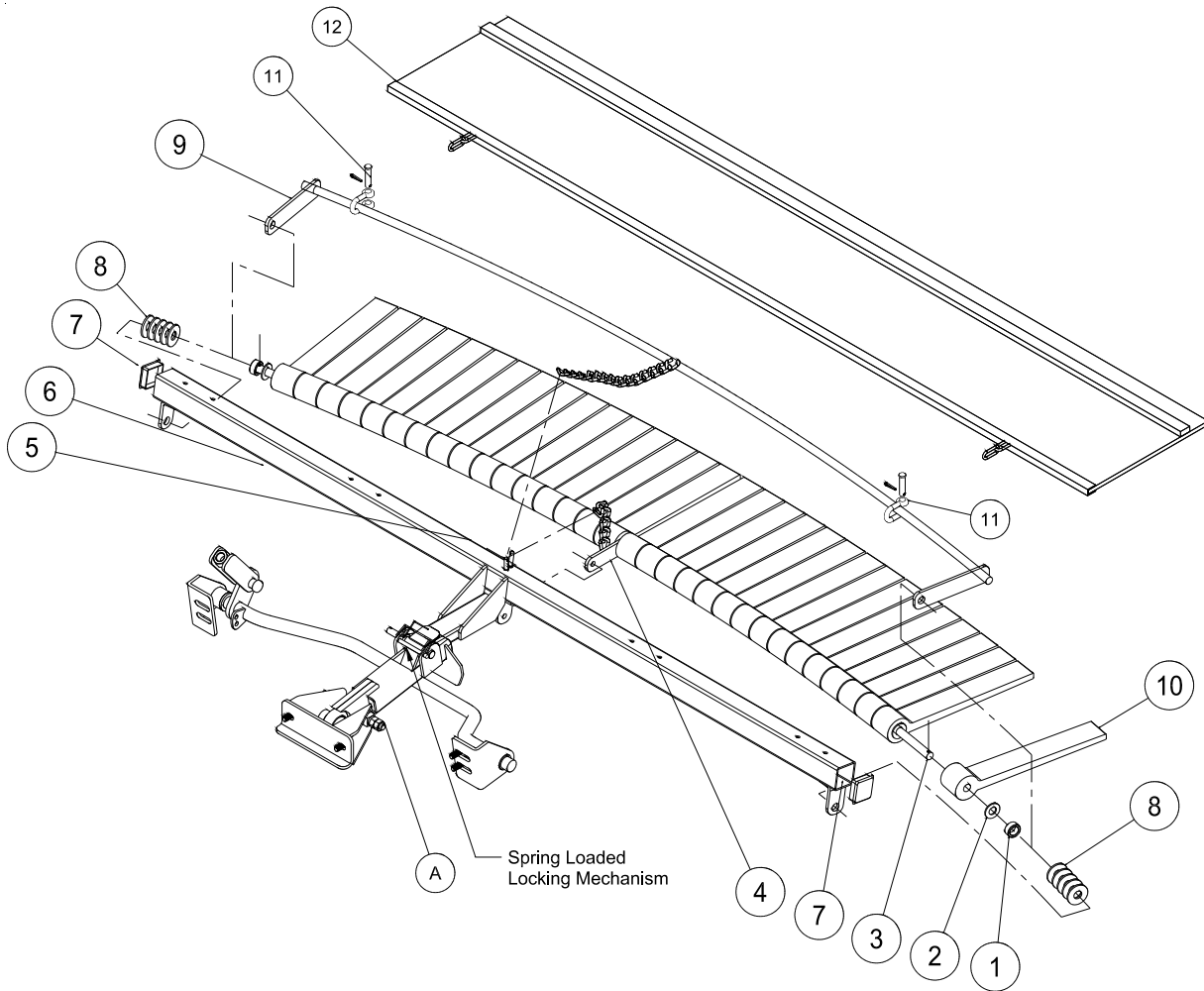
Running attachment with all flails down, flat on the surface, will provide a leveling function. Running attachment partially raised and flails at a 20° - 40° angle in relation to the level surface, will provide a finishing function. The flails increase down pressure for desired finish. Drive in wide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

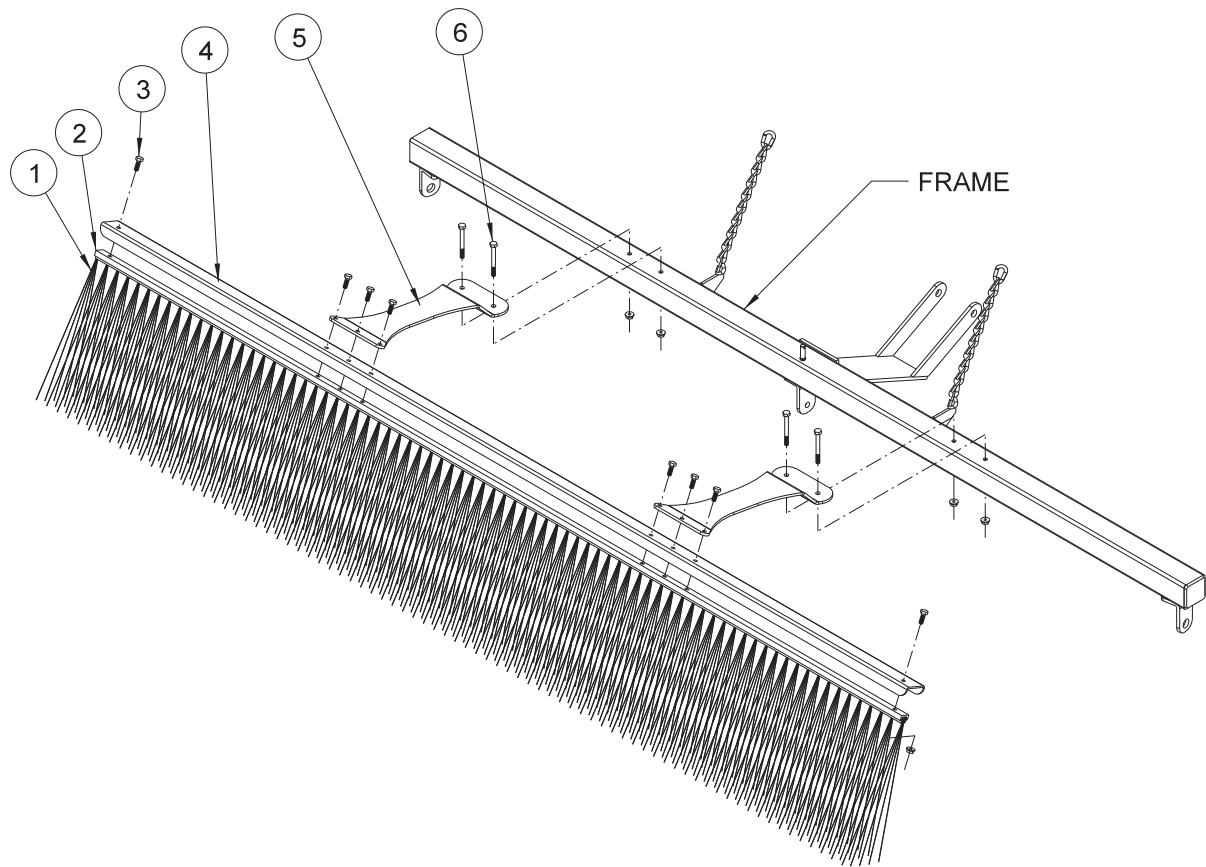
## INSTALLATION INSTRUCTIONS

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.

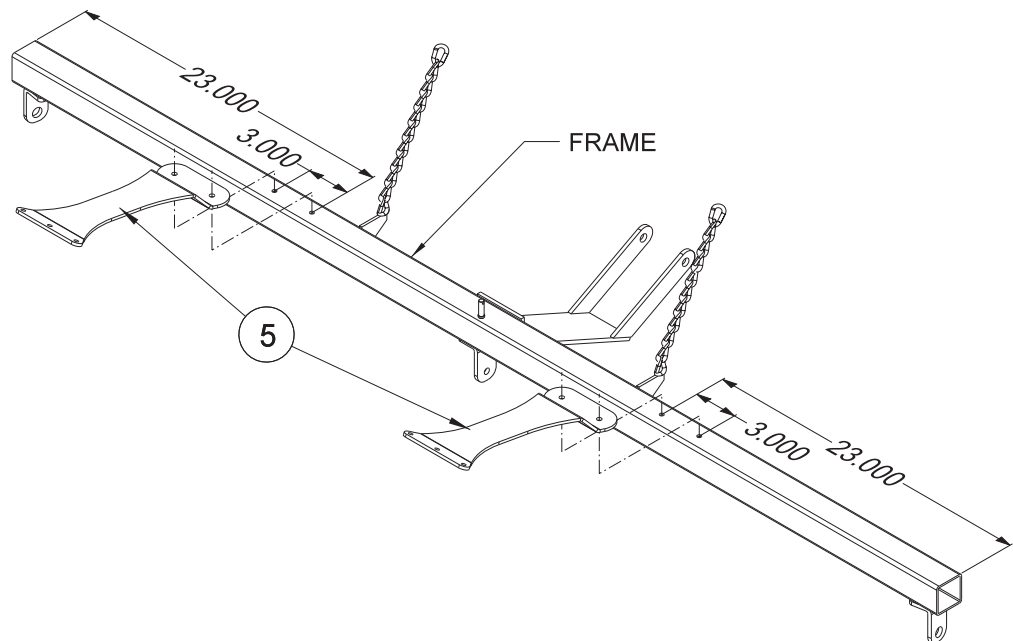
### OPERATING INSTRUCTIONS

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

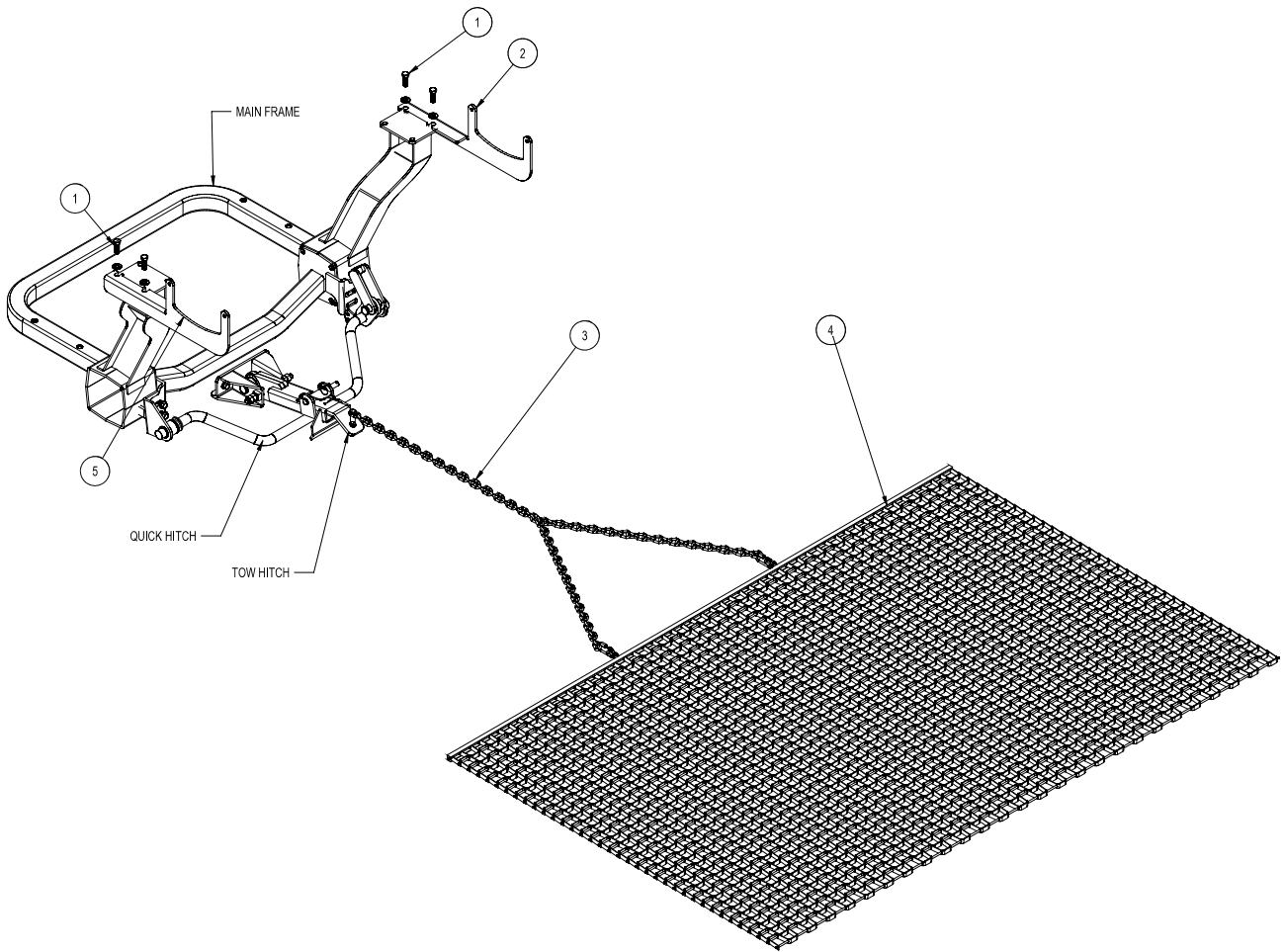
## 43-043 FINISHING BRUSH KIT PARTSLIST

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.

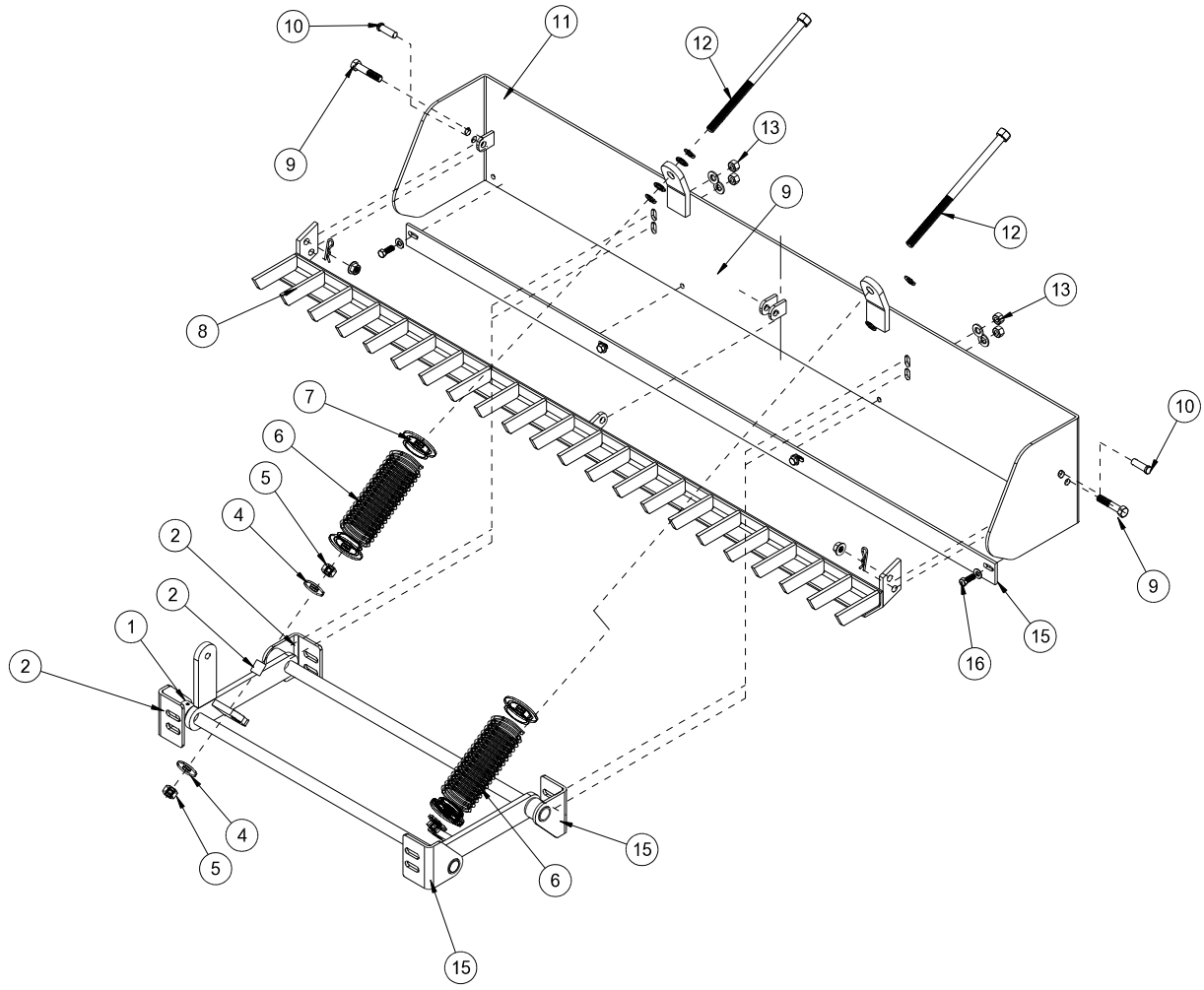


3. **WITHOUT ROLL BARS:** If your machine is not equipped with a roll bar the carrier brackets will bolt directly onto the roll bar support plates (see picture). Using the hardware provided, tighten the right and left carrier mounts to roll bar plates.



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

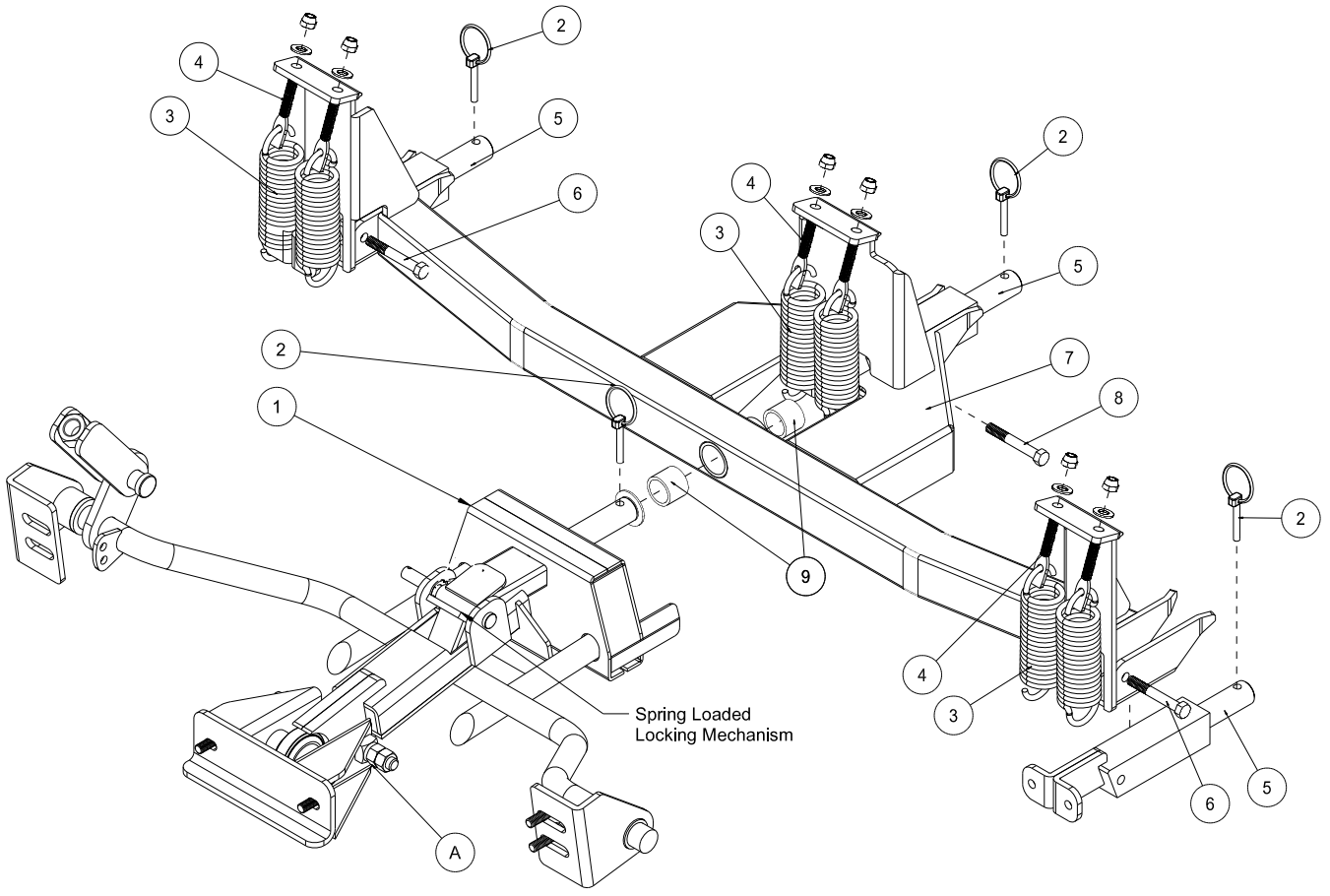


## 34-191 BOX GRADER PARTS LIST

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-38-16-125	Bolt, $\frac{3}{8}$ - 16 x 1 $\frac{1}{4}$	4
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	4
5	34-218	Cutter Blade	1
6	HB-12-13-200	Bolt $\frac{1}{2}$ - 13 x 2	2
	HNTL-12-13	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-12-13-125	Bolt $\frac{1}{2}$ - 13 x 1 $\frac{1}{4}$	1
	HNTL-12-13	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	HNTL-58-11	Lock Nut $\frac{5}{8}$ - 11	6
	HW-58	Washer $\frac{5}{8}$	4



# 42-586Q GREEN STAR RBS MAIN FRAME DRAWING

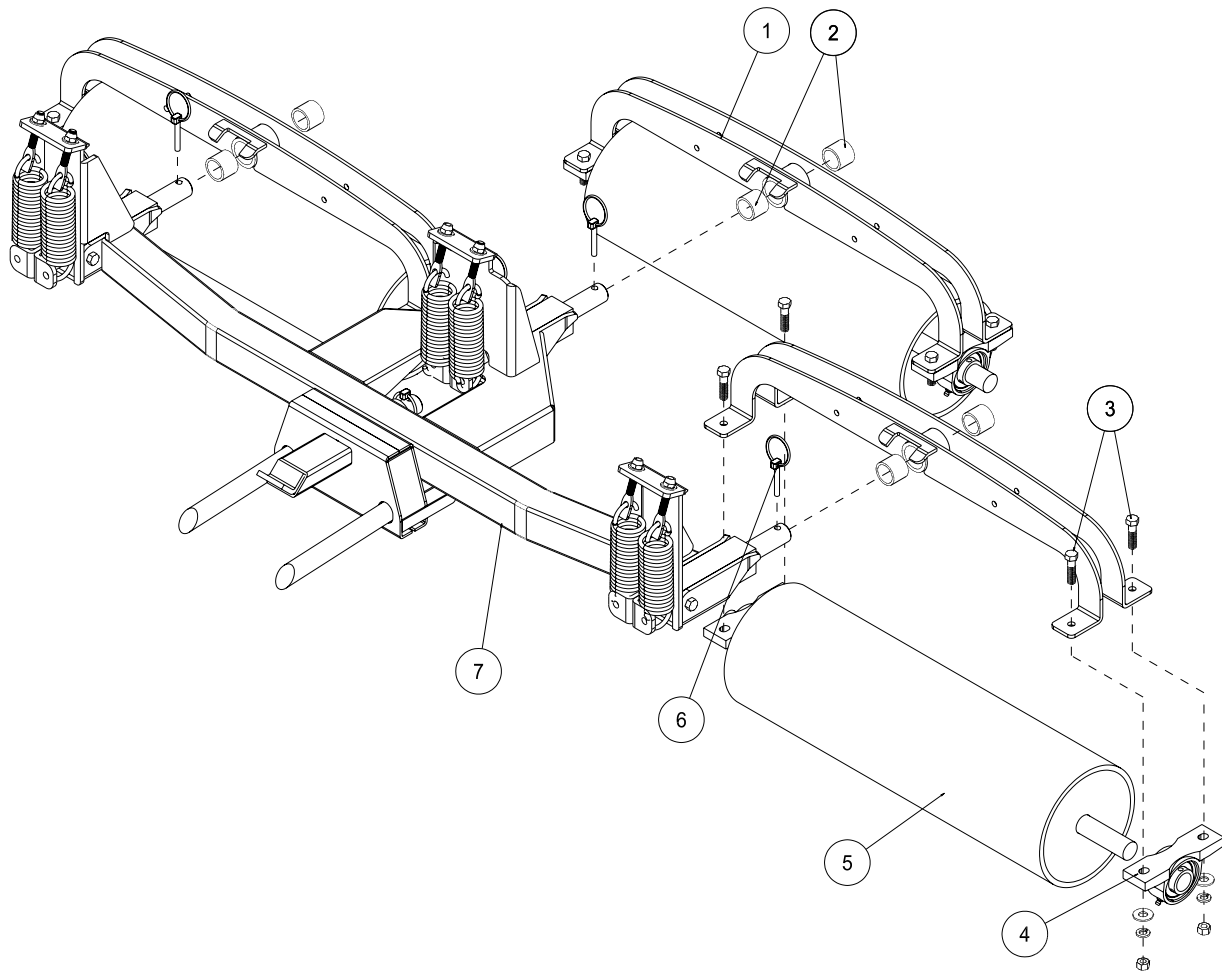


Rear Attachment

## 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
	HNHL-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 $\frac{3}{8}$ - 16 x 1 $\frac{1}{2}$	12
	HWL-38	Lock Washer $\frac{3}{8}$	12
	HW-38	Washer $\frac{3}{8}$	12
	HN-38-16	Nut $\frac{3}{8}$ - 16	12
4	11-094	Pillow Block	6
5	42-584	Roller	3
6	42-539	Lynch Pin $\frac{5}{16}$ (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.

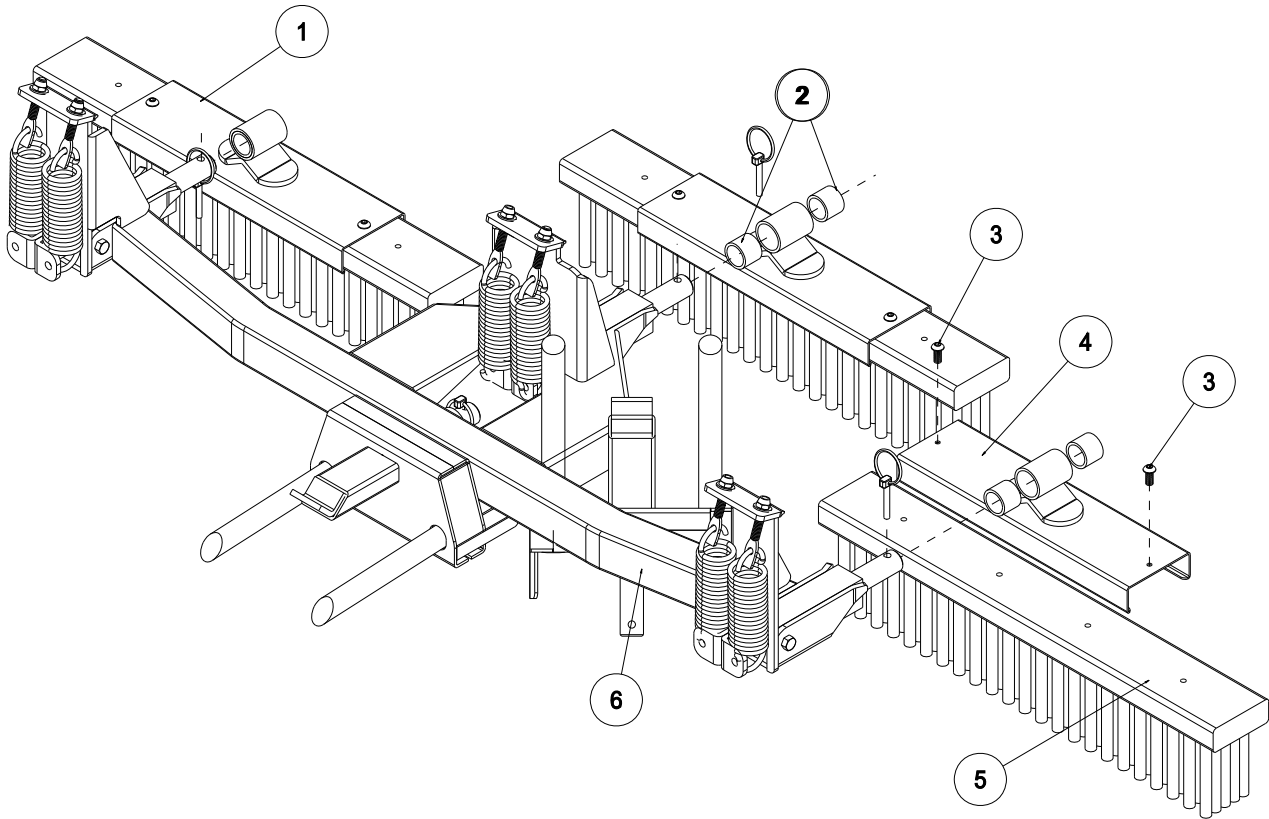
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

### 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

REF#	PART#	DESCRIPTION	QUANTITY
1	11-094	Pillow Block	6
2	HNJ-114-12	Jam Nut 1 <sup>1</sup> / <sub>4</sub> - 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 <sup>5</sup> / <sub>16</sub> - 18 x <sup>3</sup> / <sub>4</sub>	12
	HNTL-516-18	Lock Nut <sup>5</sup> / <sub>16</sub> - 18	12
10	HB-38-16-150	Bolt <sup>3</sup> / <sub>8</sub> - 16 x 1 <sup>1</sup> / <sub>2</sub>	12
	HWL-38	Lock Washer <sup>3</sup> / <sub>8</sub>	12
	HW-38	Washer <sup>3</sup> / <sub>8</sub>	12
	HN-38-16	Nut <sup>3</sup> / <sub>8</sub> - 16	12
11	42-586Q	Green Star RBS Main Frame	1
12	42-539	Lynch Pin <sup>5</sup> / <sub>16</sub> (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.

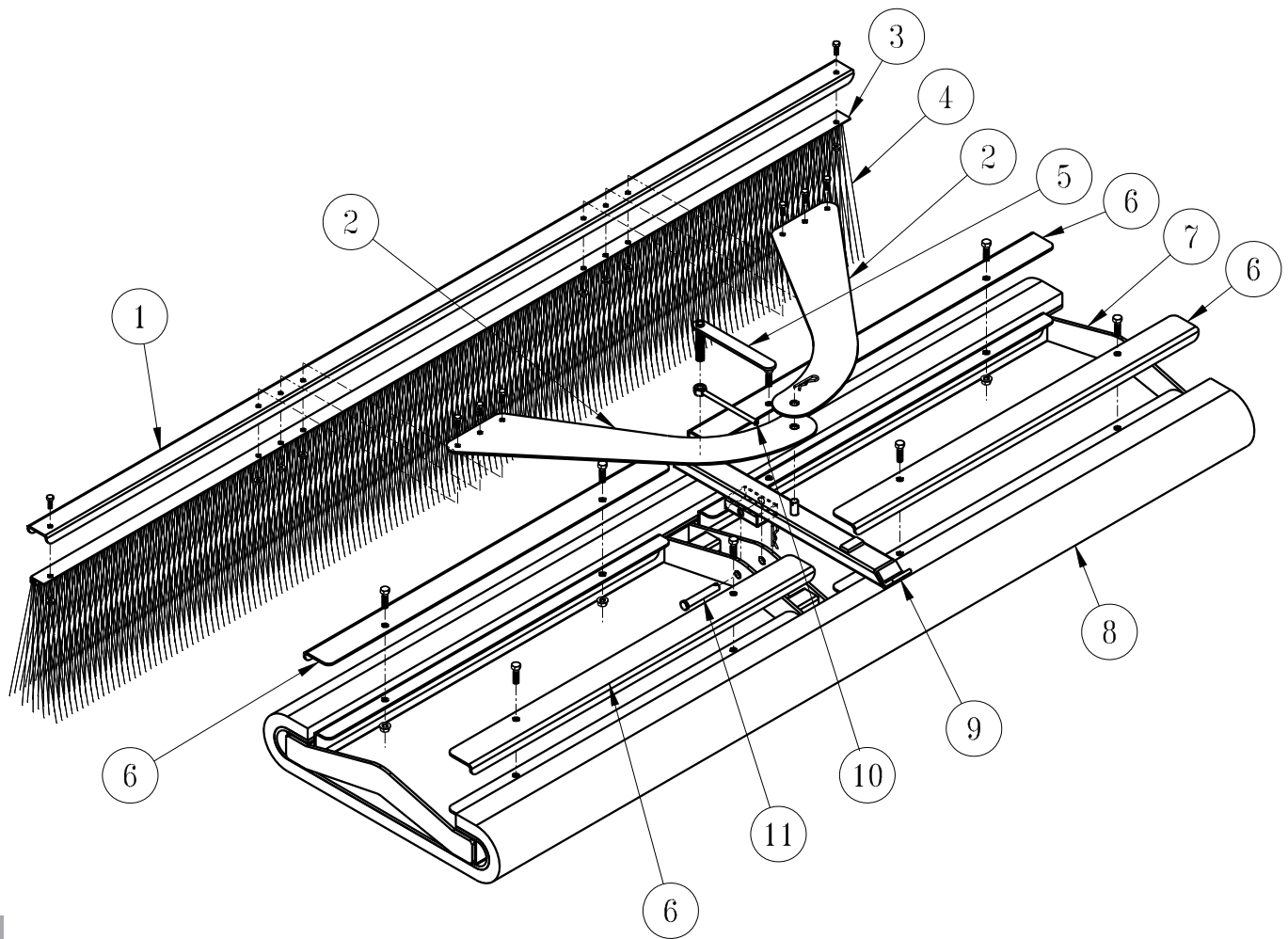
To begin spiking, lower unit all the way down as you come across collar and continue straight across green until reaching other collar and raise as you come off of green. Overlap stripes the same as if you were mowing.

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

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

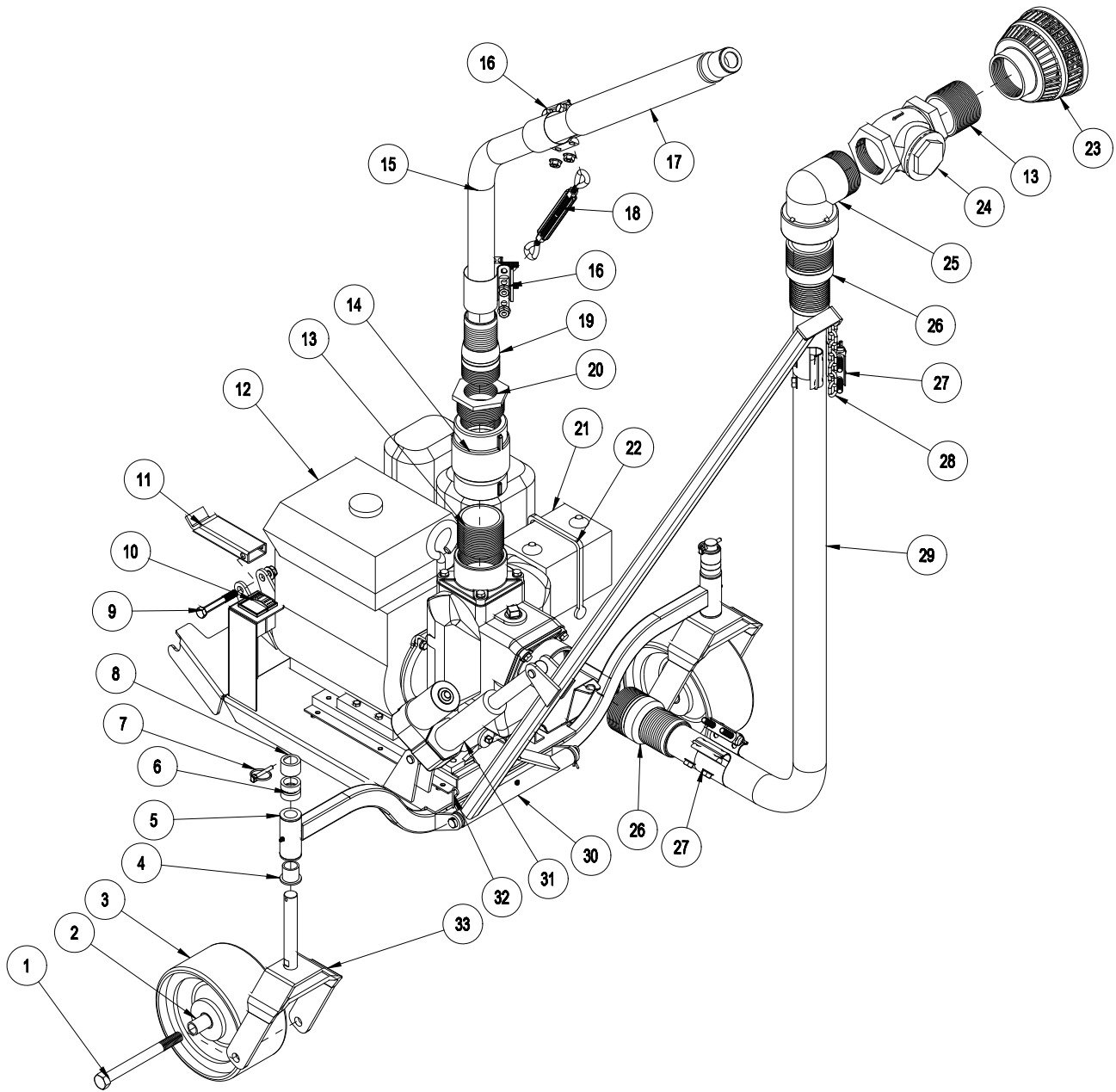
1. Start by mounting the Drawbar (Ref 9) to the Frame (Ref 7) using the Clevis Pin and Bridge Pin (Ref 11). Position the Drawbar, using either set of holes, as illustrated.
2. Next, mount the Brush assembly (Ref 1, 3 & 4) to the Brush Mount Arms (Ref 2), as illustrated, using the (6) 1/4 - 20 x 3/4 Hex Bolts and 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

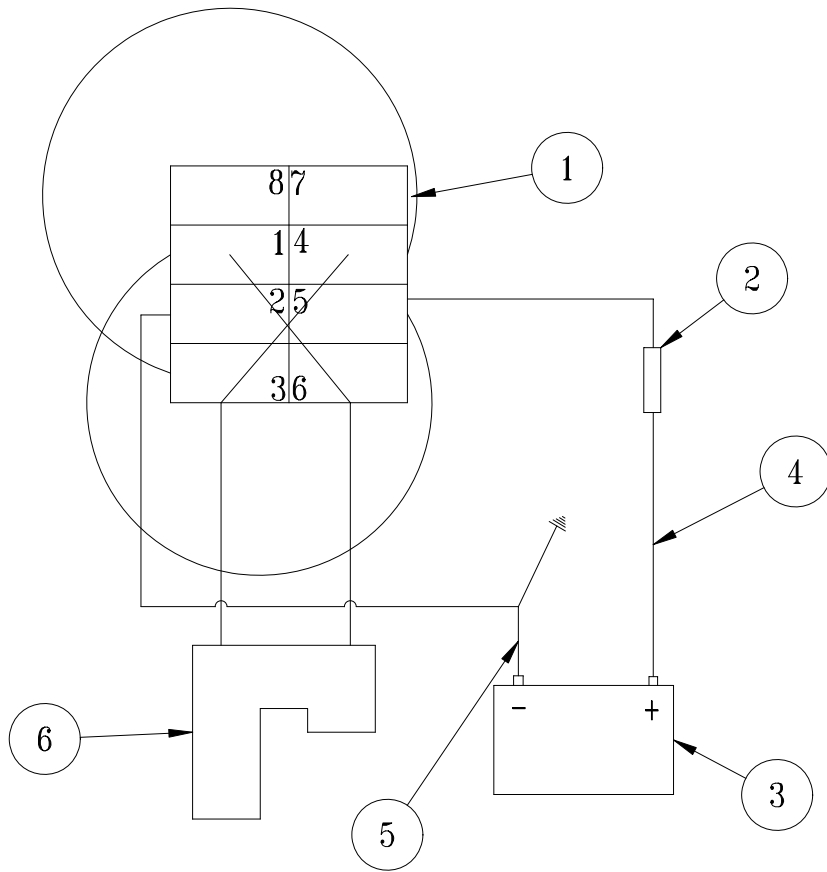


Rear Attachment

## 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.**

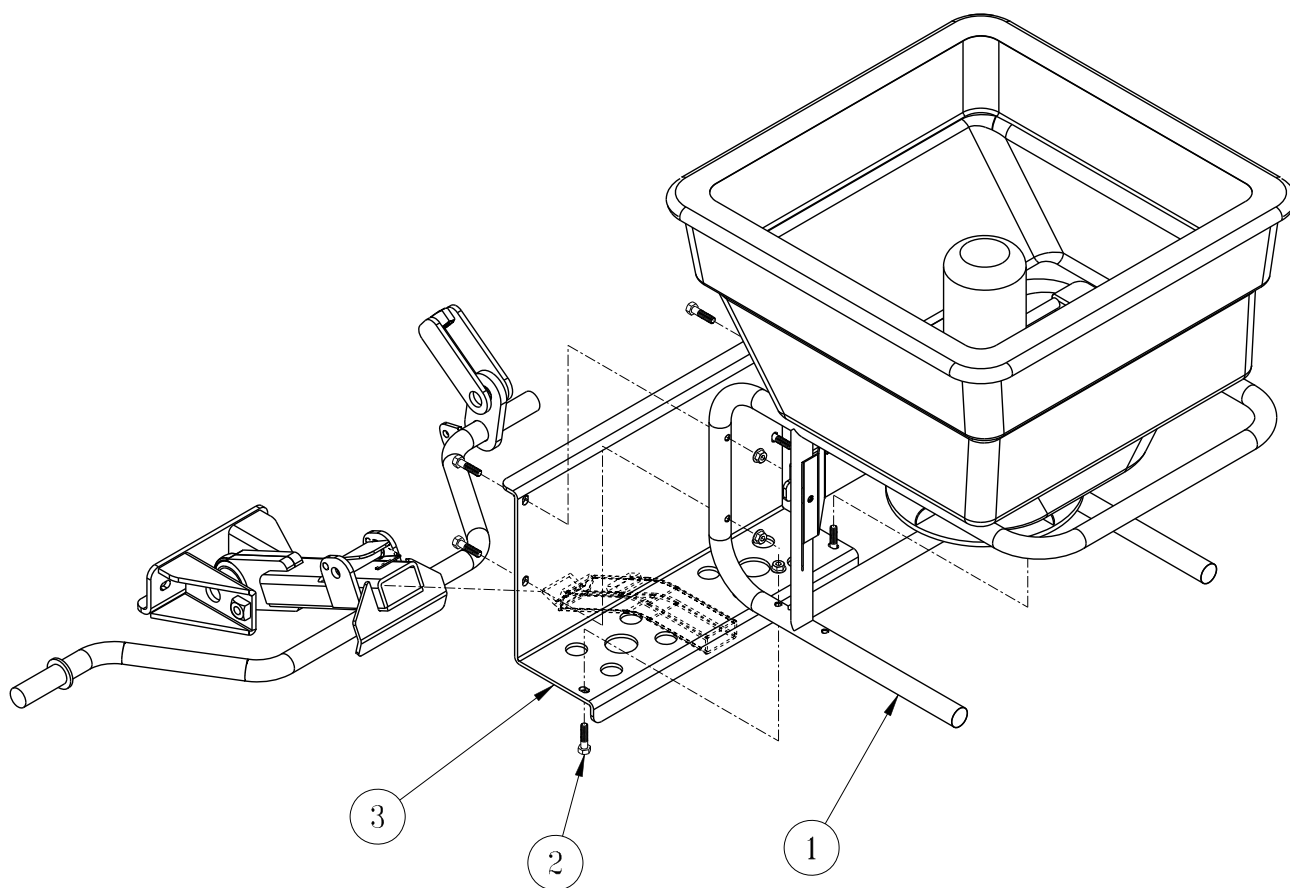
1. You must prime pump before starting the engine. To do so, insert garden hose in Discharge Tube and fill system to full. Full is when you see water in both suction hoses.
2. Fill engine up with 4-stroke motor oil as advised in the engine manual.
3. Install a U-1 300 Amp Battery into the battery box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

**Wayne, PA 19087**

