Parts & Service

Smithco

Wayne, PA 19087 www.smithco.com

# Super Star Diesel Quick Hitch 43-001

SN: 14185

March 2009

**Product Support:** Hwy 55 & Poplar Ave; Cameron WI 54822
1-800-891-9435 productsupport@smithco.com

## CONTENTS

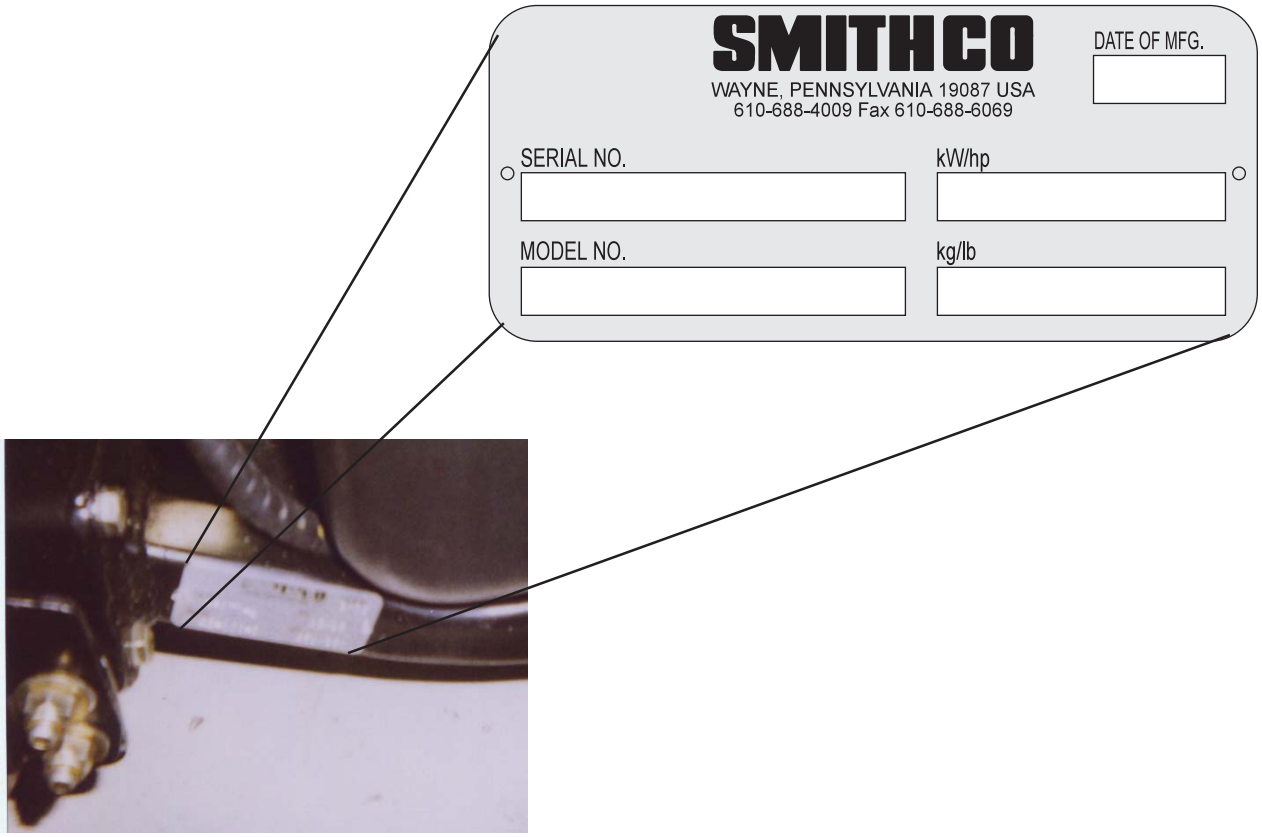
Thank you for purchasing a ***Smithco*** product.

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

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

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

For easy access record your Serial and Model numbers here.




Information needed when ordering replacement parts:

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

## SAFE PRACTICES

1. It is your responsibility to read this manual and all publications associated with this machine (engine, accessories and attachments).
2. Never allow anyone to operate or service the machine or its attachments without proper training and instructions. Never allow minors to operate any equipment.
3. Learn the proper use of the machine, the location and purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Wear all the necessary protective clothing and personal safety devises 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.***

# SPECIFICATIONS DIESEL SUPERSTAR

| | |
|---|---|
| **WEIGHTS AND DIMENSIONS** | |
| Length | 68" (1.7 m) |
| Width | 60" (1.5 m) |
| Height | 50" (1.2 m) |
| Wheel Base | 44" (1.1 m) |
| Weight | 1010 lbs. ( 458 kg) |
| **SOUND LEVEL** (EAR PROTECTION REQUIRED) | |
| At Ear Level | 94 dB |
| At 3ft (.914 m) | 90 dB |
| At 30 ft (9.14 m) | 85 dB |
| **ENGINE** | |
| Make | Briggs and Stratton Diesel |
| Model# | 522447 |
| Type / Spec# | 0206 |
| Horsepower | 23 hp (17 kW) |
| Fuel | Diesel 40 Octane Minimum |
| Cooling System | Liquid Cooled |
| Lubrication System | Full Pressure |
| Alternator | 16 amp |
| **WHEELS & TIRE** | Three: 22 X 11 - 10.0 Knobby Tires 8 psi (.55 bar) |
| | Optional: 23-10.50 x 12 Turf Tires 8 psi (.55 bar)<br>43-124 Front tire fluid filled to 80 lbs. total 45.5 pints of windshield washer fluid or equivalent. 42-158 Rear 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

**CAUTION** **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 Diesel Super Star has four grease fittings. One is located on the foot pedal. One located on te steering cyclinder and two on the rake lift.

## REMOTE AIR CLEANER

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

## TOWING

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

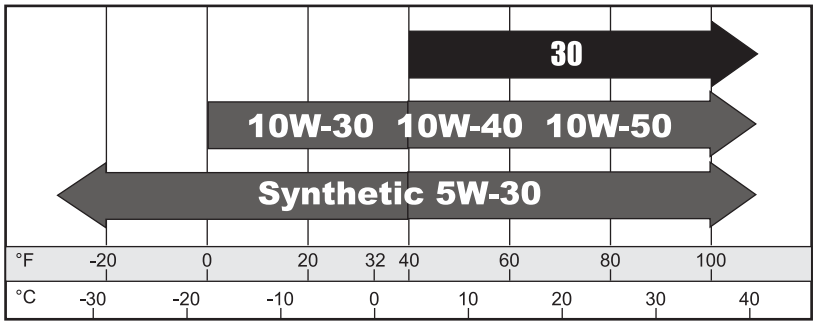
TIRE PRESSURE

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

ENGINE

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

SAE VISCOSITY GRADES




***Starting Temperature Range Anticipated Before Next Oil Change***

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

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

HYDRAULIC OIL

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

WHEEL MOUNTING PROCEDURE

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

BATTERY

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

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

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

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

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

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

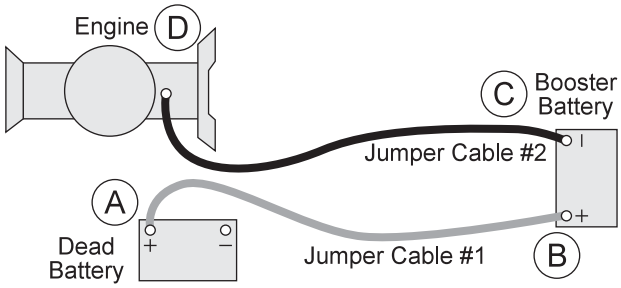
JUMP STARTING

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

To jump start (negative grounded battery):

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

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




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

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

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



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

# *END USER'S SERVICE CHART*

| Maintence Check Item | For the week of: | | | | | | |
|---|---|---|---|---|---|---|---|
| | Mon | Tues. | Wed. | Thurs. | Fri. | Sat. | Sun. |
| Check the Safety Seat Switch | | | | | | | |
| Check Steering Operation | | | | | | | |
| Check the fuel level | | | | | | | |
| Check the engine oil level. | | | | | | | |
| Check the condition of the air filter | | | | | | | |
| Clean the engine cooling fins. | | | | | | | |
| Check for unusual engine noises | | | | | | | |
| Check the hydraulic oil level | | | | | | | |
| Check hydraulic hoses and fittings for damage | | | | | | | |
| Check for fluid leaks. | | | | | | | |
| Check the tire pressure (5 psi) | | | | | | | |
| Check the Instrumentation | | | | | | | |
| Inspect electrical system for frayed wires | | | | | | | |
| Check park brake adjustment | | | | | | | |
| Change oil filter. | | | | | | | |
| Change oil. | | | | | | | |
| Ensure all warning decals are intact. | | | | | | | |

| Areas of Concern | | |
|---|---|---|
| Inspection Performed by: | | |
| Item | Date | Information |
| | | |
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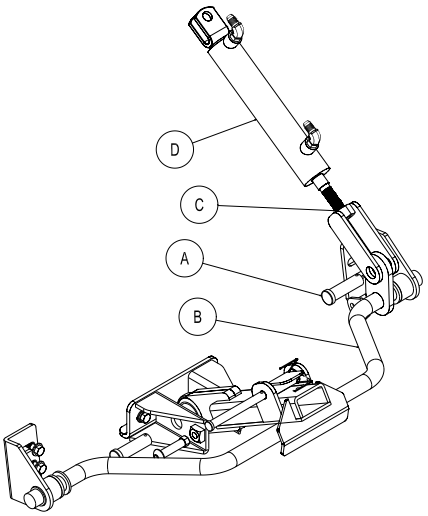
*Duplicate this page for routine use.*

## ADJUSTMENT SPEED BOSS

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.




**CAUTION**

**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.**

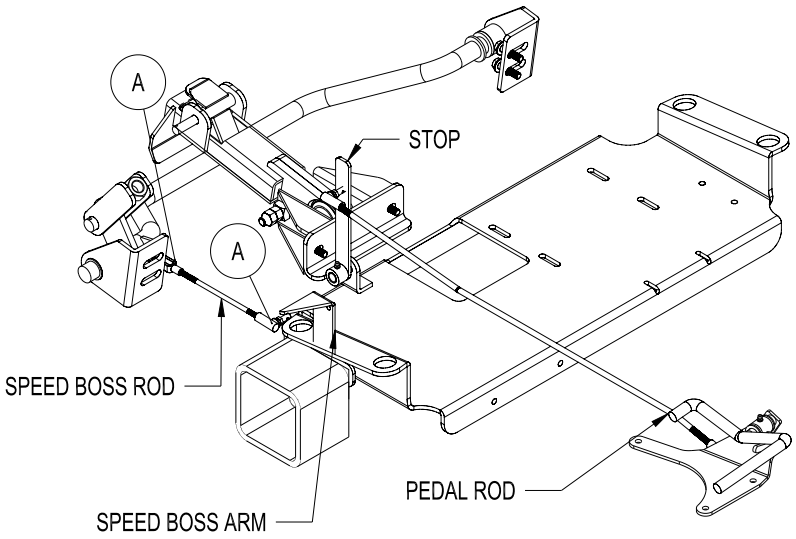


## SPEED BOSS

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.

Quick Disconnect Ball Joints (A) are used in applications where the housing needs to be easily disconnected from the ball stud. This is accomplished by pulling back the spring-loaded outer housing.

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.



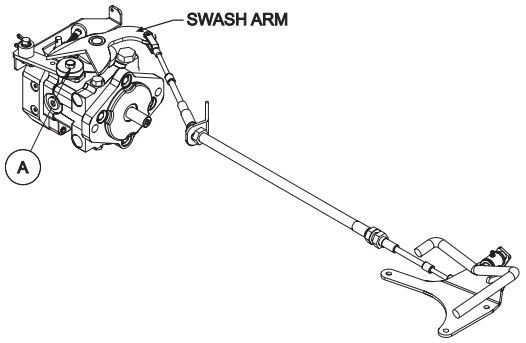

For RBS System, Spiker and Grader Box remove the speed boss arm and the speed boss rod from machine so it does not interfere with other operations.spring-loaded outer housing.

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. Reconnect the ball joint. 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 interfer with other operations.

WHEEL 'CREEP' ADJUSTMENT

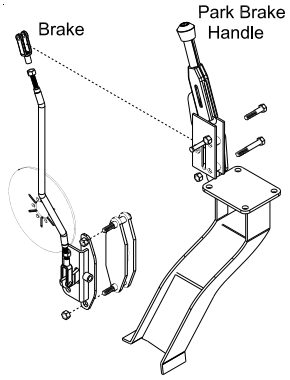
'Creep' is when engine is running and hydrostatic transmission is in neutral, but due to inadequate alignment, wheels still move. Do the following procedures to stop this motion.




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

PARK BRAKE

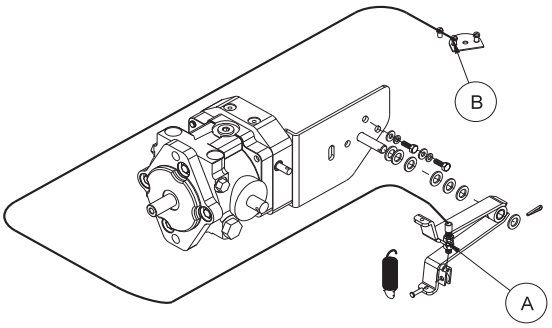
The park brake is located on the right hand side of the machine and operates a brake on the right rear wheel. Push lever forward to engage and pull back to disengage.




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

TO ADJUST FOOT PEDAL THROTTLE CABLE

1. Jack up unit so that all drive wheel are off the ground. (Use jack stands)
2. Start the engine, make certain that the hand throttle is in the idle position (1200 engine RPM).
3. Engine speed must increase as soon as the foot pedal begins to move in either direction. At the full forward position, the engine RPM must be 3600 RPM ± 100.
4. Minor adjustment can be made by backing out (unscrewing) (Ref A) until you reach full engine RPM with the foot pedal fully depressed in the forward position. Be sure to recheck after the nuts are fully tightened.




5. Major adjustment needs to be made at (Ref B) by pulling the slack out of the cable. Loosen the screw in the wire block that is clamped onto the end of the cable and sliding it up to the cable block that is through the throttle plate. Do not let the throttle plate move to increase idle speed. Tighten the screw.
6. Test run to determine that there is no binding and that engine idle speed is 1200 RPM and that it is 3600 RPM at full forward position of the foot pedal.

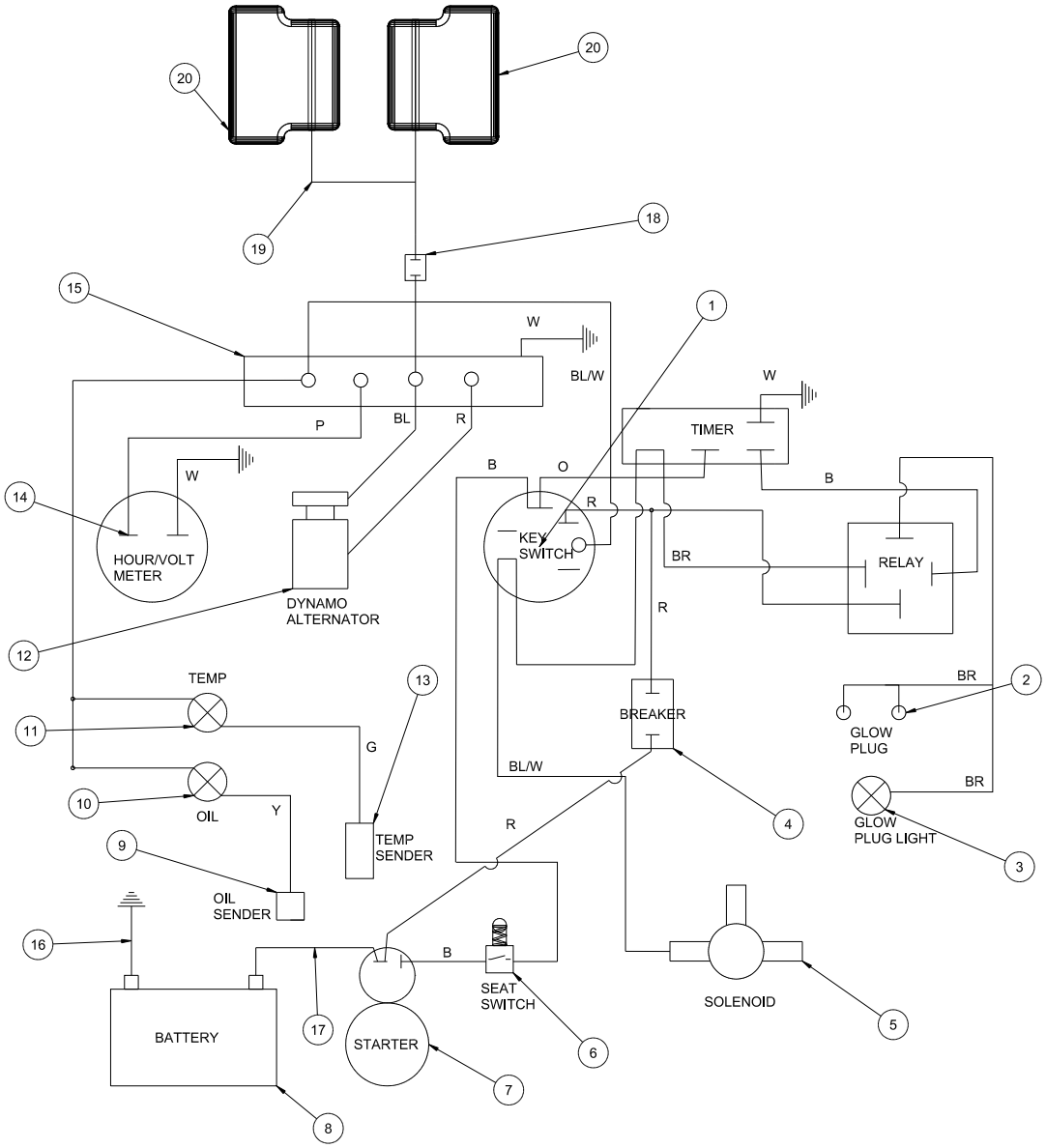
# STORAGE

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.

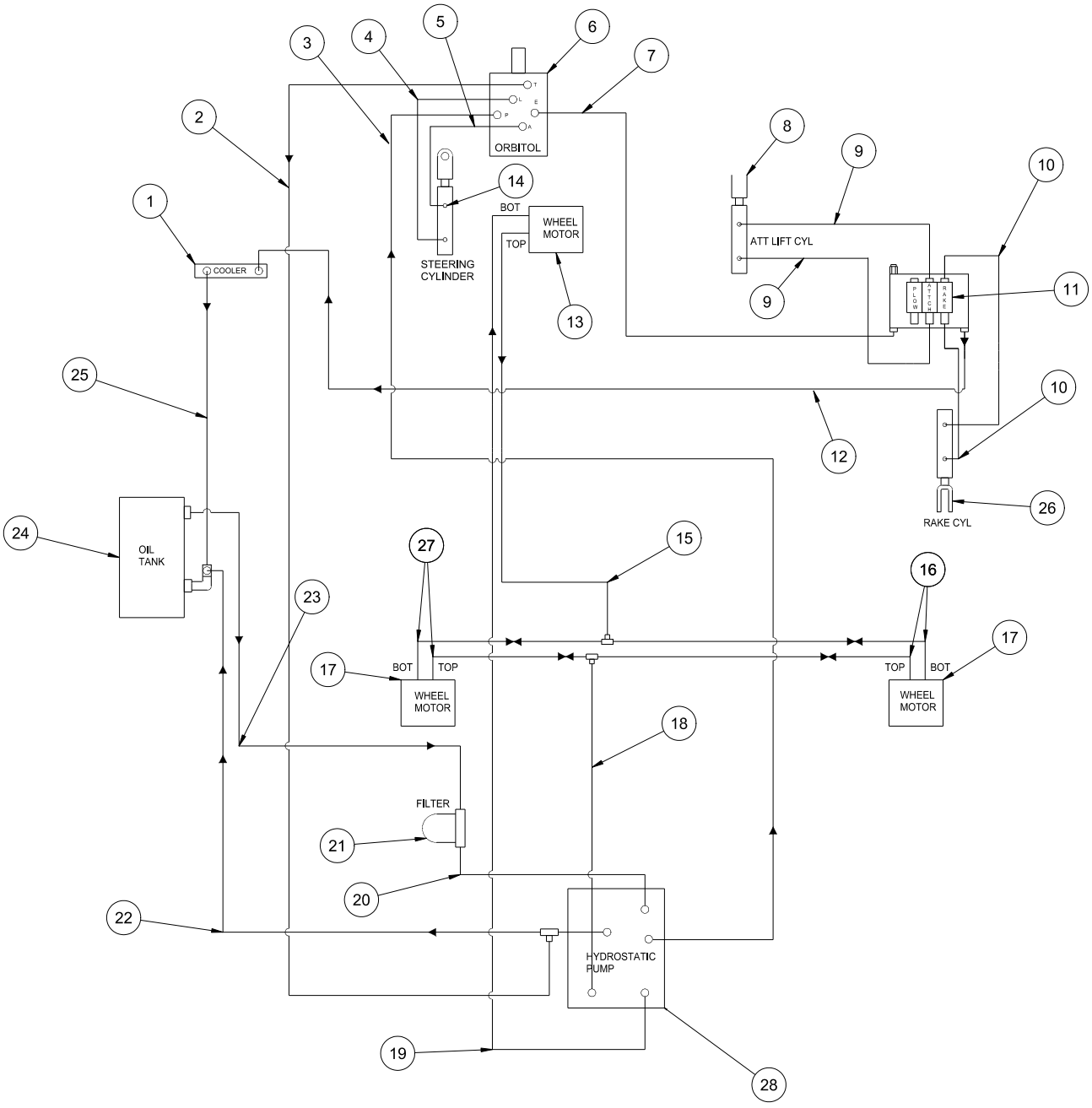
# WIRING DRAWING

| Color Code Chart | |
|---|---|
| Bl | Blue |
| Br | Brown |
| Y | Yellow |
| Grn | Green |
| O | Orange |
| R | Red |
| B | Black |
| P | Purple |
| W | White |



| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 13-488 | Ignition Switch (B & S# 496603) | 1 |
| | 76-310 | Key Set (comes with 13-488) | 1 |
| 2 | 17-171 | Glow Plug (comes with engine) | 1 |
| 3 | 50-359 | Glow Plug Indicator Light | 1 |
| 4 | 8975 | Breaker | 1 |
| | 8977 | Breaker Boot | |
| 5 | | After Fire Solenoid (on engine) | 1 |
| 6 | 14-292 | Seat Switch | 1 |
| 7 | | Starter (on engine) | |
| 8 | | Battery (not included) | |
| 9 | 13-491 | Oil Sender (on engine B & S# 491657) | 1 |
| 10 | 50-359 | Oil Pressure Warning Light | 1 |
| 11 | 50-359 | Water Tempature Light | 1 |
| 12 | | Dynamo Alternator (comes with engine) | 1 |
| 13 | | Temp Sender (comes with engine) | |
| 14 | 12-017 | Hour Meter | 1 |
| 15 | 8935 | Bus Bar | 1 |
| 16 | 22-054 | Ground Battery Cable Black | 1 |
| 17 | 22-055 | Battery Cable Red | 1 |
| 18 | 12-003 | Toggle Switch | 1 |
| | 15-472 | Switch Boot | 1 |
| 19 | 42-319 | Light Wire Harness | 1 |
| 20 | 42-317 | Lights | 2 |
| | 42-317-01 | Replacement Bulb | 1 |
| | 43-073 | Wire Harness (includes all wire colors with *) | 1 |

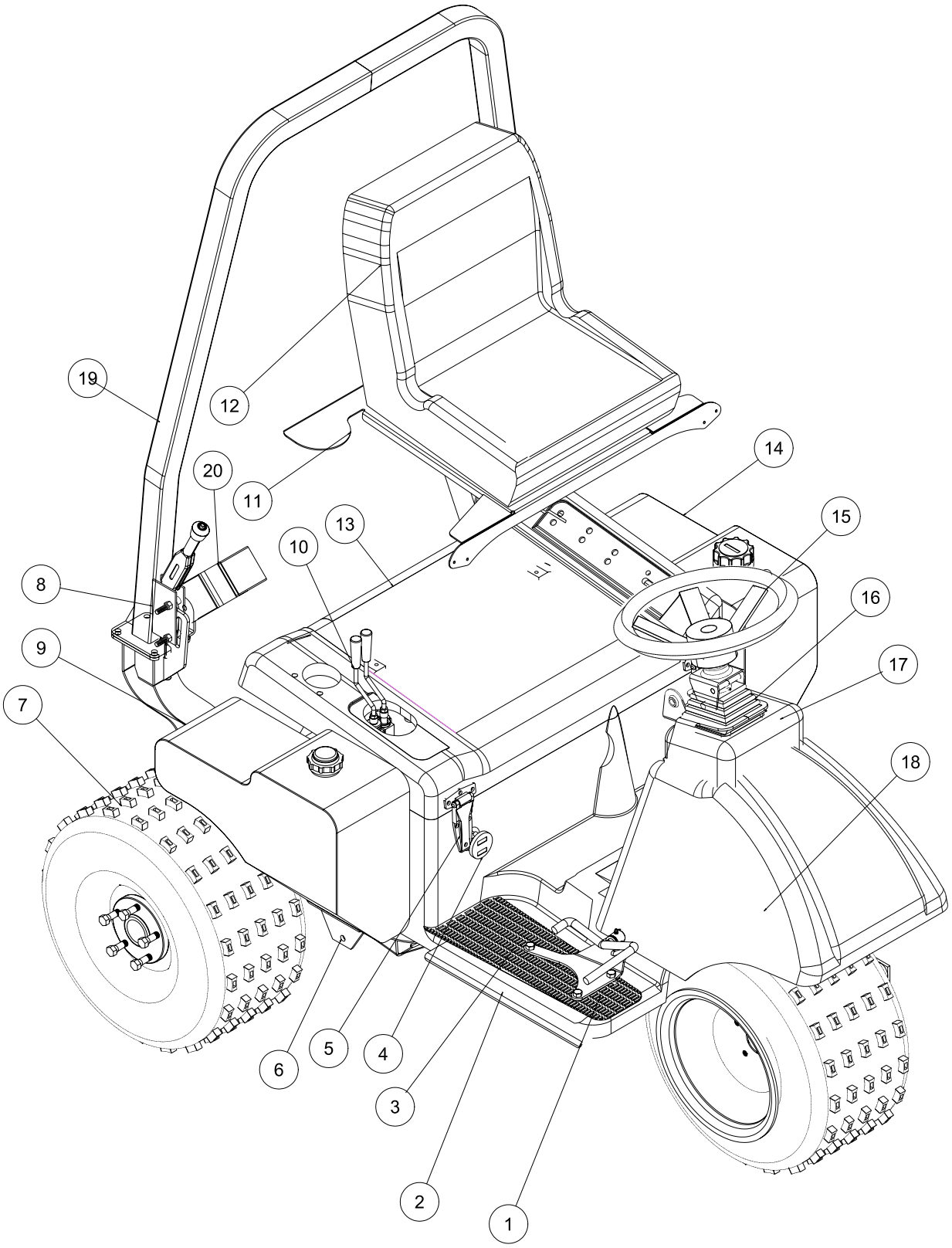
# HYDRAULIC DRAWING



| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 34-105 | Cooler | 1 |
| 2 | 43-034 | Hydraulic Hose - 32" | 1 |
| 3 | 43-033 | Hydraulic Hose - 48" | 1 |
| 4 | 43-029 | Hydraulic Hose - 24" | 1 |
| 5 | 43-035 | Hydraulic Hose - 20" | 1 |
| 6 | 34-103 | Orbitol | 1 |
| 7 | 43-036 | Hydraulic Hose - 55" | 1 |
| 8 | 10-135 | Attachment Lift Cylinder | 1 |
| | 18-154 | Rod End | 1 |
| | HNJ-58-18 | Jam Nut $^5/_8$ -18 | 1 |
| 9 | 42-047 | Hydraulic Hose - 32" | 2 |
| 10 | 42-048 | Hydraulic Hose - 14" | 2 |
| 11 | 13-729 | 2-Bank Valve | 1 |
| 12 | 42-045 | Hydraulic Hose - 41" | 1 |
| 13 | 43-116 | Front Wheel Motor, 17.1 $in^3$ | 1 |
| 14 | 75-714 | Steering Cylinder | 1 |
| 15 | 43-071 | Hydraulic Hose - 69$^1/_2$" | 1 |
| 16 | 43-094 | Hydraulic Line - RH | 2 |
| 17 | 43-117 | Rear Wheel Motor, 8.6 $in^3$ | 2 |
| 18 | 43-125 | Hydraulic Hose - 22.5" | 1 |
| 19 | 43-070 | Hydraulic Hose - 98" | 1 |
| 20 | 8832-11 | $^3/_4$" Suction Hose - 12 | 1 |
| | 18-222 | Hose Clamp | 2 |
| 21 | 23-006 | Oil Filter | 1 |
| | 23-031 | Replacement Filter only | |
| 22 | 42-787 | Hydraulic Hose - 36$^1/_2$" | 1 |
| 23 | 8832-50 | $^3/_4$" Suction Hose - 49" | 1 |
| | 18-222 | Hose Clamp | 2 |
| 24 | 42-005 | Oil Tank | 1 |
| | 13-747 | Filler Breather | 1 |
| 25 | 42-045 | Hydraulic Hose - 41" | 1 |
| 26 | 13-357 | Rake Cylinder | 1 |
| | 42-040 | Yoke End | 1 |
| | HNJ-34-16 | Jam Nut $^3/_4$ - 16 | 2 |
| 27 | 43-095 | Hydraulic Line - LH | 2 |
| 28 | 42-797 | Hydrostatic Pump | 1 |

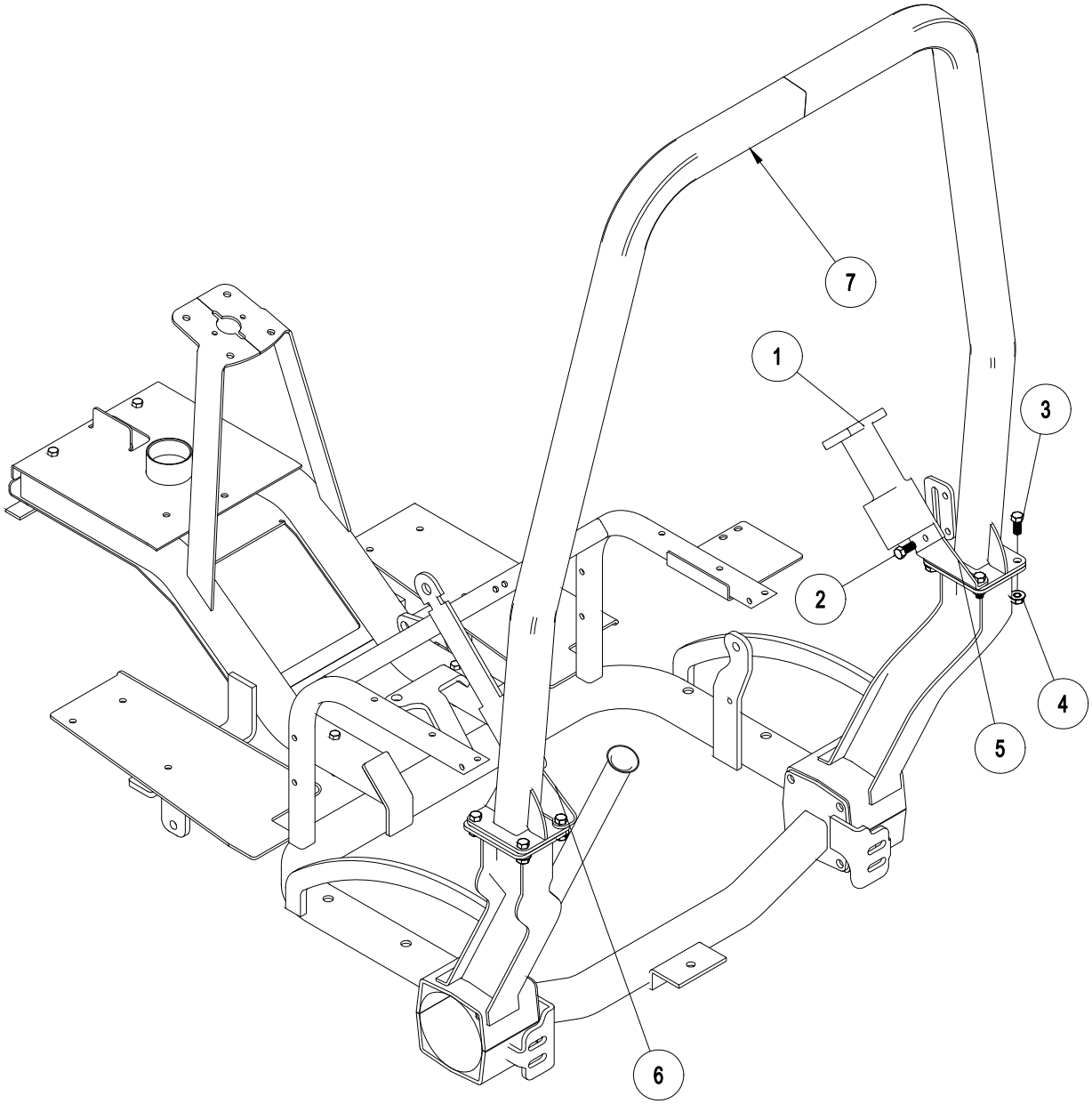
| | | | |
|---|---|---|---|
| Pump Displacement | .913 $in^3$/rev | Charge Pump Displacement | .33 $in^3$/rev |
| Pump Input Speed (up to) | 3600 rpm | Max. Inlet Vacuum | 5 in. Hg |
| Max. Operating Pressure | 3000 peak psi | Max. Case Pressure | 25 psi |
| Implement Setting | 700-1000 psi | Relief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

# MAIN FRAME DRAWING



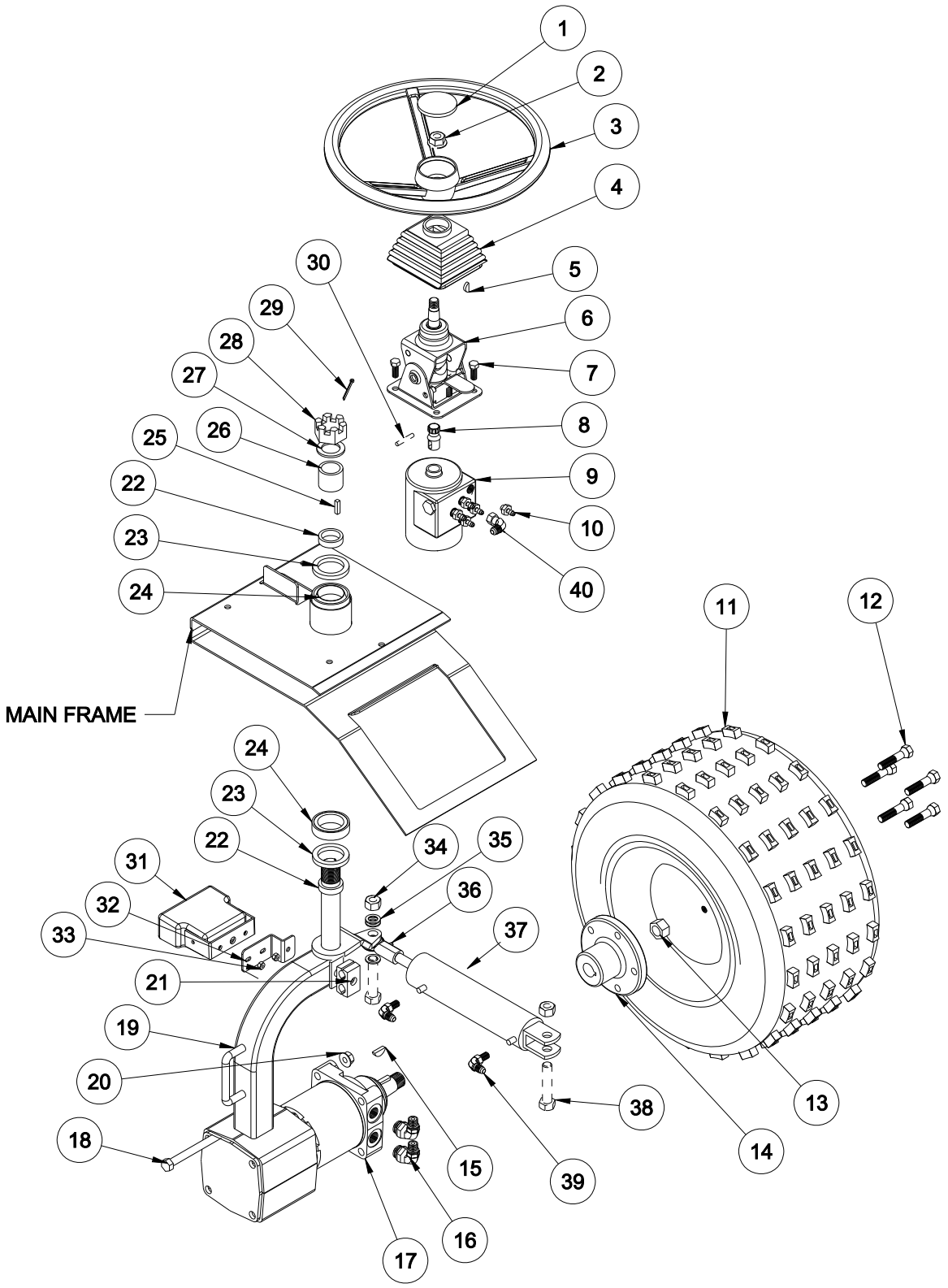
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 43-087 | Foot Pedal | 1 |
| 2 | 42-780 | Floor Panel (fiberglass) | 1 |
| 3 | 42-767 | Right Floor Mat | 1 |
| | 42-768 | Left Floor Mat | 1 |
| 4 | 12-017 | Hour Meter | 1 |
| 5 | 27-055 | Hinge | 2 |
| 6 | 43-120 | Main Frame | 1 |
| 7* | 43-058 | Tire and Wheel | 3 |
| | 42-161-02 | Tire 22 x 11 - 10 Knobby Type | 3 |
| | 43-058-01 | Wheel | 3 |
| | 25-383 | Wheel Bolt | 10 |
| 8 | 60-106 | Park Brake Lever | 1 |
| 9 | 42-006 | Fuel Tank | 1 |
| | 77-179 | Cap | 1 |
| 10 | 42-778 | Valve Handle | 2 |
| 11 | 42-772 | Seat Panel | 1 |
| | 8803-17 | Trim w/ Black Lace | 1 |
| 12 | 14-518 | Adjustable Low Back Seat | 1 |
| 13 | 43-080 | Seat Panel (fiberglass) | 1 |
| 14 | 42-005 | Oil Tank | 1 |
| | 13-747 | Filler Breather | 1 |
| | 13-586-03 | Neck | 1 |
| 15 | 13-718 | Steering Wheel | 1 |
| 16 | 76-364 | 90° Black Boot (comes with 76-362) | 1 |
| | 76-362 | Tilt Steering Mechanism | 1 |
| 17 | 42-782 | Console (fiberglass) | 1 |
| 18 | 42-471 | Nose Cone (fiberglass) | 1 |
| | HSTP-14-20-100 | Phillips Machine Screw $^1/_4$ - 20 x 1 | 6 |
| | HNTL-14-20 | Lock Nut $^1/_4$ - 20 | 6 |
| 19 | 42-801 | ROPS | 1 |
| 20 | 76-198-03 | Seat Belt | 1 |
| | | | |
| * | Optional Tires | | |
| Front | 43-124 | Turf Tire | 1 |
| Rear | 42-158 | Turf Tire | 2 |

# ROPS DRAWING



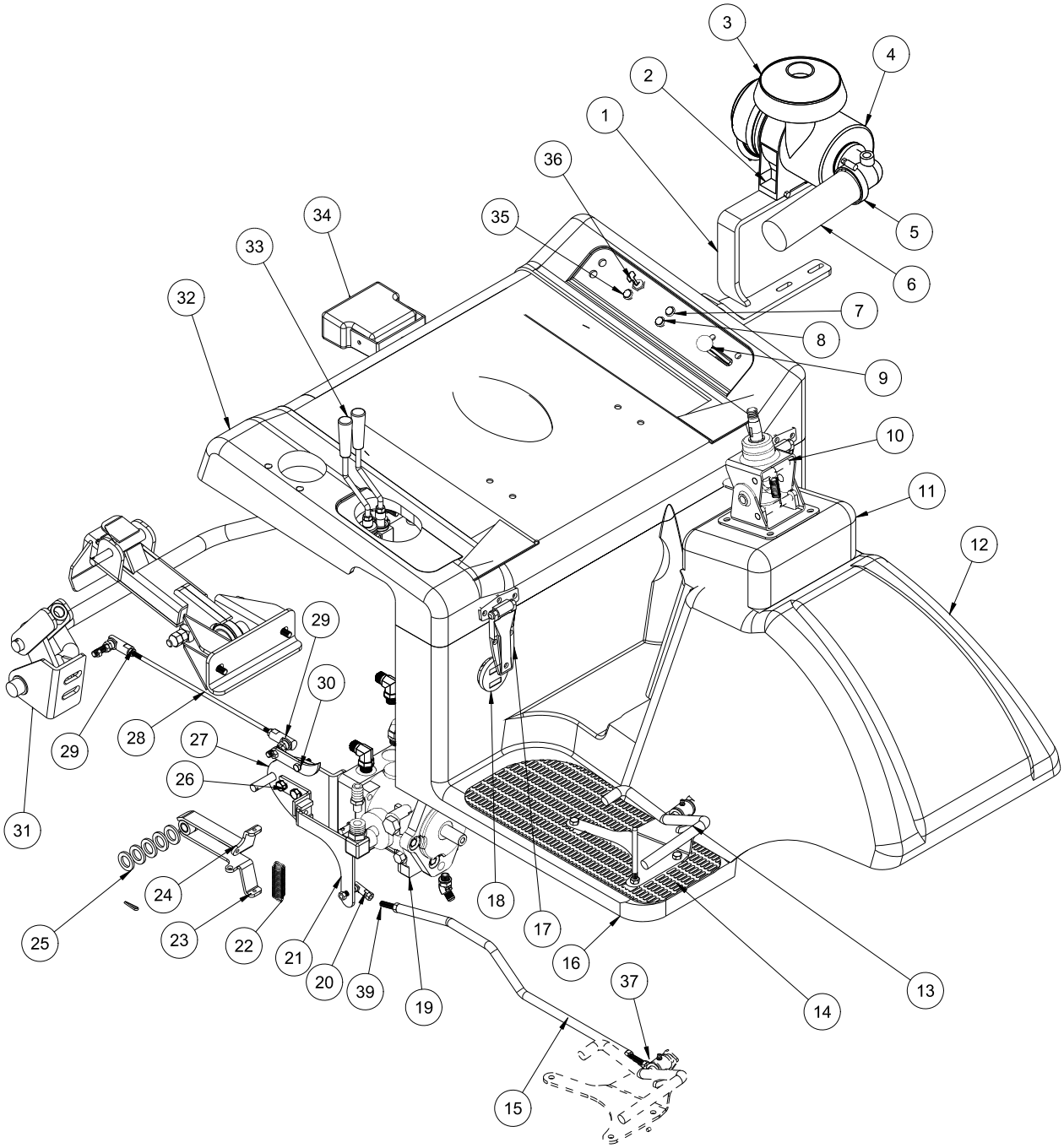
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 76-198-03 | Seat belt | 1 |
| 2 | HB-716-14-100 | Bolt $^{7}/_{16}$ - 14 x 1 | 2 |
| 3 | HB-716-14-125 | Bolt $^{7}/_{16}$ - 14 x $1^{1}/_{4}$ | 8 |
| 4 | HNTL-716-14 | Lock Nut $^{7}/_{16}$ - 14 | 10 |
| 5 | 42-802 | Right Seat belt Bracket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

# FRONT FORK DRAWING



| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 13-726 | Center Cap | 1 |
| | 27-077 | Decal, Smithco Round | 1 |
| 2 | HNTL-58-11 | Lock Nut 5/8 - 11 | 1 |
| 3 | 13-718 | Steering Wheel 13" | 1 |
| 4 | 76-364 | Tilt Steering Boot (comes with 76-362) | 1 |
| 5 | HWK-316-075 | Woodruff Key 3/16 x 3/4 | 1 |
| 6 | 76-362 | Tilt Steering Mechanism | 1 |
| 7 | HB-516-18-125 | Bolt 5/16 - 18 x 1 1/4 | 2 |
| | HNTL-516-18 | Lock Nut 5/16 - 18 | 2 |
| 8 | 48-187 | Stub Shaft | 1 |
| 9 | 34-103 | Orbitrol | 1 |
| 10 | 18-169 | Adapter 3/8 SAE | 5 |
| 11 | 43-058 | Knobby Tire and Wheel | 1 |
| | 43-058-02 | Tire 22 x 11 - 10 Knobby Type | 1 |
| | 43-058-01 | Wheel | 1 |
| | 8839 | Windshield Washer Fluid or Equivalent | 43.5 pints |
| 12 | 25-383 | Wheel Bolt | 5 |
| 13 | 14-265 | Nut | 1 |
| 14 | 13-033 | Hub | 1 |
| 15 | HWK-14-100 | Woodruff Key 1/4 - 1 (part of 76-238) | 1 |
| 16 | 18-350 | 90° Seal Lok Elbow | 2 |
| 17 | 43-116 | Wheel Motor | 1 |
| 18 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 4 |
| 19 | 43-053 | Front Fork | 1 |
| 20 | HNFL-12-13 | Flange Whiz Lock Nut 1/2 - 13 | 4 |
| 21 | 13-652 | Hose Clamp | 1 |
| 22 | 20-141 | Spacer | 2 |
| 23 | 20-142 | Oil Seal | 2 |
| 24 | 20-143 | Bearing | 2 |
| 25 | HKSQ-14-100 | Square Key 1/4 x 1/4 x 1 | 1 |
| 26 | 43-027 | Shaft Spacer | 1 |
| 27 | HMB-114-10 | Machine Bushing 1 1/4 x 10GA | 1 |
| 28 | HNA-114-12 | Axle Nut 1 1/4 - 12 | 1 |
| 29 | HP-18-200 | Cotter Pin 1/8 x 2 | 1 |
| 30 | HRP-14-150 | Roll Pin 1/4 x 1 1/2 | 1 |
| 31 | 42-317 | Light | 1 |
| | 42-317-01 | Replacement Bulb | |
| 32 | 42-323 | Light Mount | 1 |
| 33 | HSTP-14-20-100 | Truss Head Screw 1/4 - 20 x 1 | 2 |
| | HNFL-14-20 | Flange Whiz Lock Nut 1/4 - 20 | 2 |
| 34 | HNTL-58-11 | Lock Nut 5/8 - 11 | 2 |
| 35 | HMB-58-14 | Machine Bushing 5/8 x 14GA | 7 |
| 36 | 18-154 | Yoke End | 1 |
| | HG-14-28-180 | Grease Fitting 1/4 - 28 x 180° | 1 |
| 37 | 75-714 | Hydraulic Cylinder | 1 |
| 38 | HB-58-11-200 | Bolt 5/8 - 11 x 2 | 2 |
| 39 | 18-168 | 3/8 Straight Thread Elbow | 2 |
| 40 | 18-202 | Elbow | 1 |

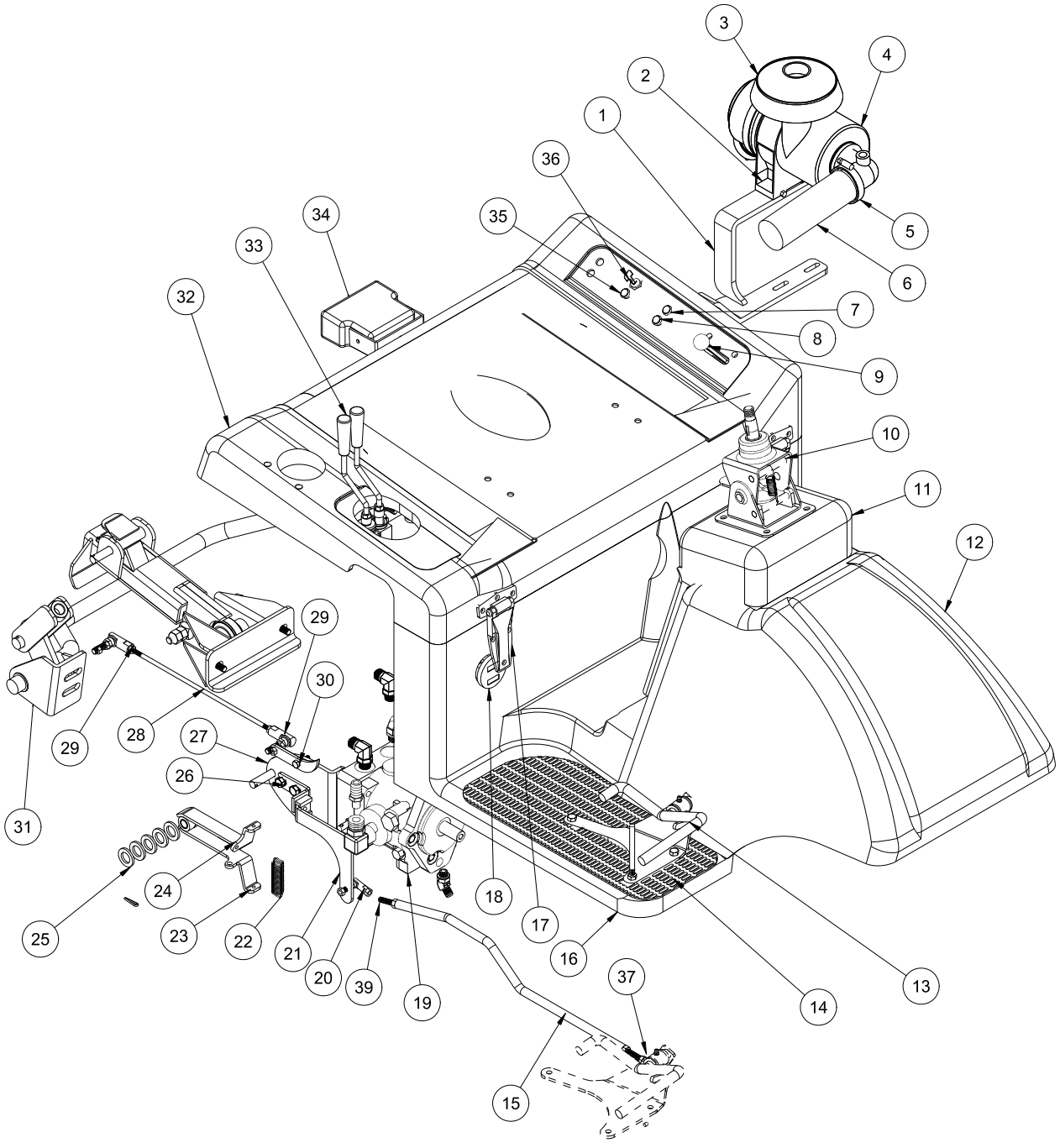
# LINKAGE DRAWING



| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 43-067 | Oil Tank Support | 1 |
| | HB-516-18-100 | Bolt 5/16 - 18 x 1 | 2 |
| | HNFL-516-18 | Flange Whiz Lock Nut 5/16 - 18 | 2 |
| 2 | 42-076-04 | Band (part of engine) | 1 |
| 3 | 42-076-02 | Hat | 1 |
| 4 | 42-076 | Air Cleaner (part of engine) | 1 |
| | 42-076-03 | Replacement Filter (part of engine) | |
| 5 | 18-123 | Hose Clamp | 2 |
| 6 | 8959-17 | Flex Hose x 17" | 1 |
| 7 | 50-359 | Oil Warning Light | 1 |
| 8 | 50-359 | Water Temp Warning Light | 1 |
| 9 | 42-789 | Throttle Cable | 1 |
| | 42-766 | Throttle Bracket | 1 |
| | HSTP-14-20-075 | Phillips Truss Head Screw 1/4 - 20 x 3/4 | 2 |
| | HNFL-14-20 | Flange Whiz Lock Nut 1/4 - 20 | 2 |
| 10 | 76-362 | Tilt Steering | 1 |
| | 76-364 | Boot Black (comes with 76-362) | 1 |
| 11 | 42-782 | Console (fiberglass) | 1 |
| 12 | 42-471 | Nose Cone (fiberglass) | 1 |
| 13 | 43-087 | Foot Pedal | 1 |
| | HG-14-28-180 | Grease Fitting 1/4 - 28 x 180° (comes with 42-790) | 1 |
| | 76-299 | Pedal Pad Long | 1 |
| | 42-791 | Pedal Pad Short | 1 |
| | HB-516-18-125 | Bolt 5/16 - 18 x 1 1/4 | 2 |
| | HW-516 | Washer 5/16 | 2 |
| | HNFL-516-18 | Flange Whiz Lock Nut 5/16 -18 | 2 |
| 14 | 42-767 | Right Floor Mat | 1 |
| | 42-768 | Left Floor Mat | 1 |
| 15 | 43-075 | Accelerator Linkage | 1 |
| 16 | 42-780 | Floorboard (fiberglass) | 1 |
| 17 | 27-055 | Hinge | 2 |
| | HSMFCS-10-32-100 | Machine Screw #10 - 32 x 1 | 6 |
| | HSM-10-32-063 | Machine Screw #10 - 32 x 5/8 | 4 |
| | HNFL-10-32 | Flange Whiz Lock Nut #10 -32 | 10 |
| 18 | 12-017 | Hour Meter | 1 |
| 19 | 42-797 | Pump | 1 |
| 20 | 21-462 | Ball Joint 5/16 - 24 | 2 |
| | HN-516-24 | Nut 5/16 -24 | 2 |
| | HWL-516 | Lockwasher 5/16 | 2 |
| 21 | 43-068 | Swash Arm | 1 |
| 22 | 11-050 | Extension Spring | 1 |
| 23 | 42-312 | Bottom Centering Arm | 1 |
| | 18-234 | Bushing (part of 42-312) | 1 |
| 24 | 42-311 | Top Centering Arm | 1 |
| | 18-234 | Bushing (part of 42-312) | 1 |
| 25 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 7 |
| 26 | 42-247 | Creep Arm | 1 |
| 27 | 17-223 | Pump Mount Plate | 1 |
| 28 | 43-148 | Speed Boss Rod | |

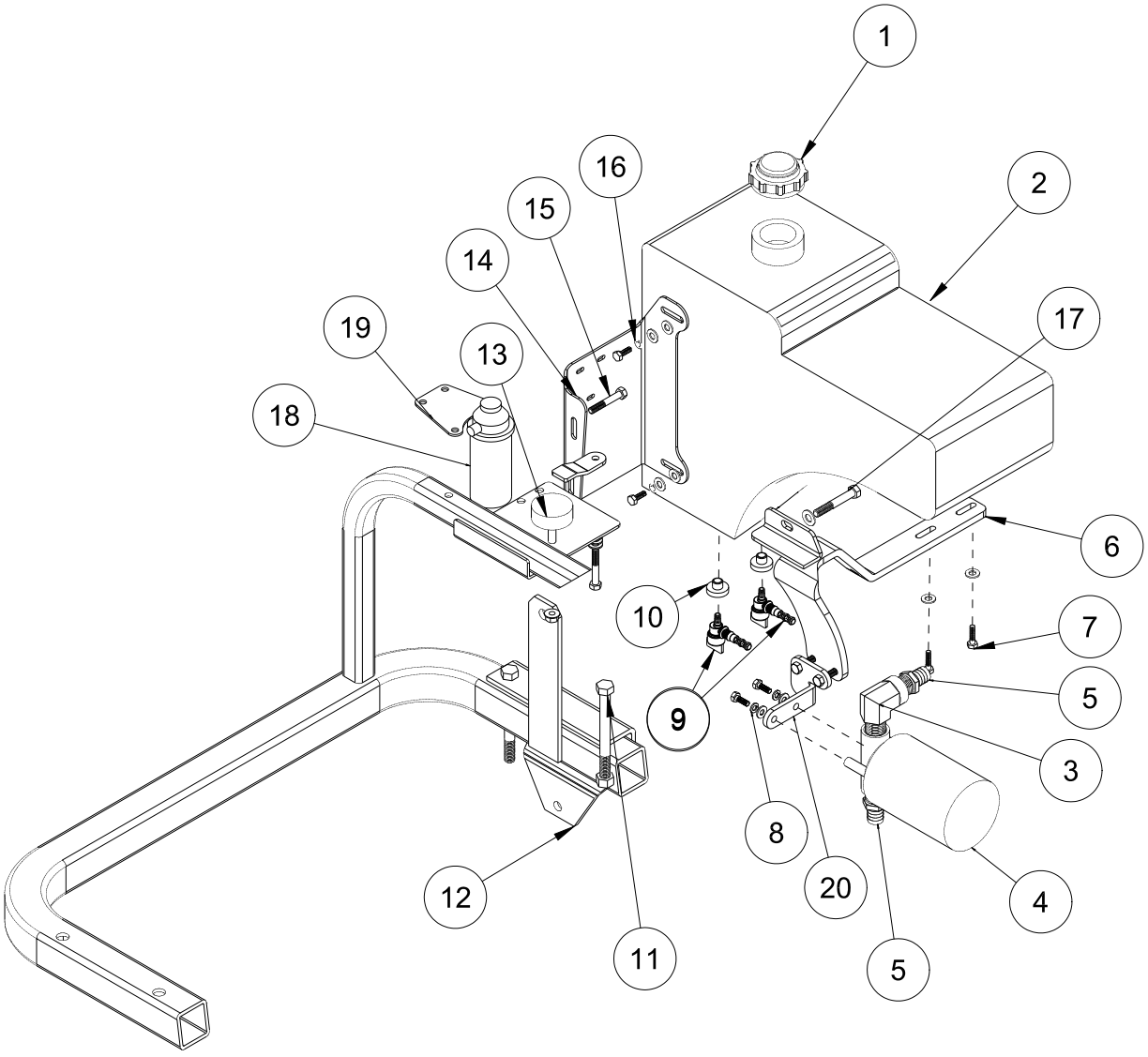
*(Continued on next page)*

# LINKAGE DRAWING



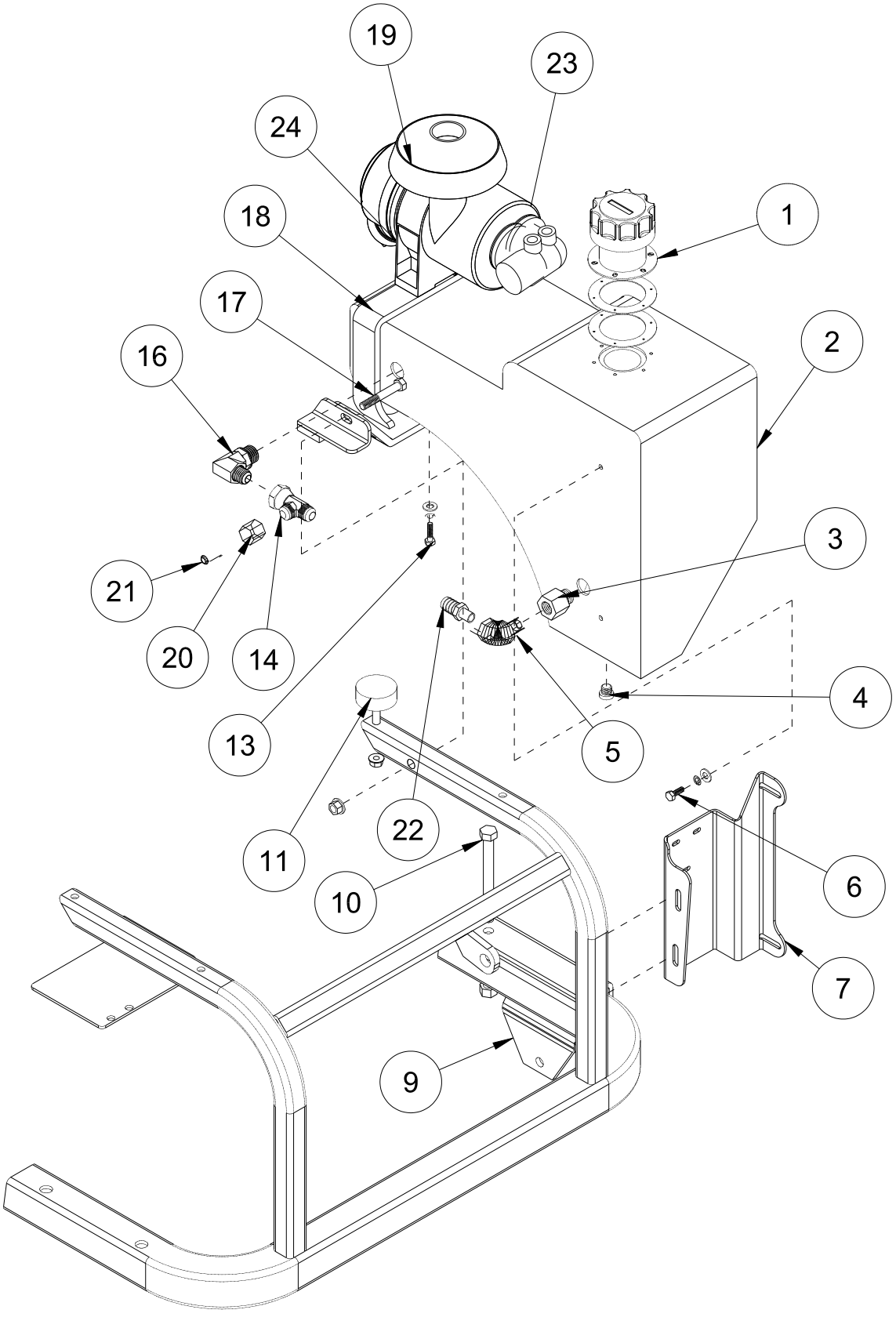
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 29 | 18-386 | Ball Joint 1/4 - 28 | 2 |
| | HN-14-28 | Nut 1/4 - 28 | 2 |
| 30 | 43-076 | Speed Boss Arm | 1 |
| | HB-38-16-150 | Bolt 3/8 - 16 x 1 1/2 | 1 |
| | HMB-12-14 | Machine Bushing 1/2 x 14GA | 4 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 2 |
| 31 | 43-137 | Lift Bar | 1 |
| 32 | 43-080 | Seat Panel | 1 |
| | 42-786 | Cup Holder | 1 |
| | 42-772 | Seat Mount | 1 |
| | 26-034 | Ball Stud | 2 |
| | 13-569 | Gas Shock | 1 |
| | 43-069 | Decal, Control Panel | 1 |
| 33 | 42-778 | Levers | 2 |
| | 42-765 | Decal, Lift Controls | 1 |
| 34 | 42-317 | Light | 1 |
| | 42-317-01 | Replacement Bulb | 1 |
| | HSTP-14-20-100 | Truss Head Screw 1/4 - 20 x 1 | 2 |
| | HNFL-14-20 | Flange Whiz Lock Nut 1/4 - 20 | 2 |
| 35 | 50-359 | Glow Plug Warning Light | 1 |
| 36 | 13-488 | Key Switch (B&S 692318) | 1 |
| | 76-310 | Key Set | 1 |
| 37 | 34-021 | Foot Pedal Rod | 2 |

# FUEL TANK DRAWING



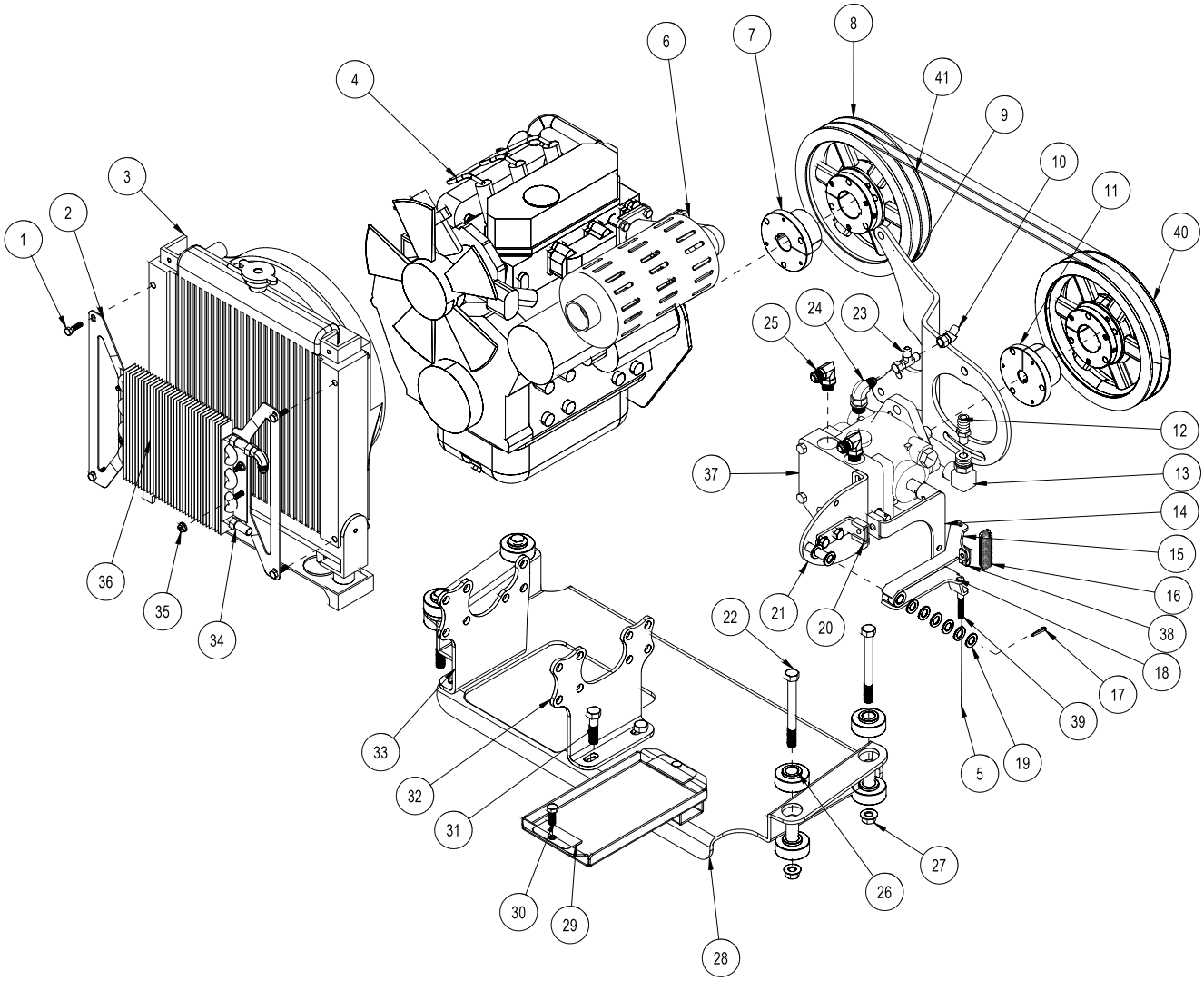
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 77-179 | Cap | 1 |
| 2 | 42-006 | FuelTank | 1 |
| 3 | 18-140 | Elbow | 1 |
| 4 | 23-006 | Oil Filter | 1 |
| | 23-031 | Replacement Filter | 1 |
| 5 | 18-249 | Hose Barb | 2 |
| 6 | 42-770 | Right Tank Support | 1 |
| 7 | HB-14-20-100 | Bolt 1/4 - 20 x 1 | 2 |
| | HW-14 | Washer 1/4 | 2 |
| | HW-516 | Washer 5/16 | 2 |
| | HWL-14 | Lock Washer 1/4 | 2 |
| 8 | HB-14-20-075 | Bolt 1/4 - 20 x 3/4 | 2 |
| | HWL-14 | Lockwasher 1/4 | 2 |
| | HW-14 | Washer 1/4 | 2 |
| 9 | 26-055 | Fuel Shut Off (1 comes with 42-006) | 2 |
| | 8940-14 | Fuel Hose 14" | 1 |
| | 8940-48 | Fuel Hose 48" | 1 |
| | 18-186 | Hose Clamp | 4 |
| 10 | 26-054 | Rubber Grommet (1 comes with 42-006) | 2 |
| | 8800-62 | Fuel Hose | 1 |
| | 18-186 | Hose Clamp | 2 |
| 11 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 2 |
| | HNFL-12-13 | Flange Whiz Lock Nut 1/2 - 13 | 2 |
| 12 | 42-015 | Attachment Mount | 1 |
| 13 | 50-081 | Rubber Bumper | 1 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 1 |
| 14 | 42-773 | Gas Tank Bracket | 1 |
| 15 | HB-516-18-225 | Bolt 5/16 - 18 x 2 1/4 | 2 |
| | HNFL-516-18 | Flange Whiz Lock Nut 5/16 - 18 | 2 |
| 16 | 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 |
| 17 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 1 |
| | HW-38 | Washer 3/8 | 2 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 1 |
| 18 | 43-081-03 | Fuel Filter | 1 |
| | 43-081-04 | Element | |
| 19 | 43-064 | Filter Bracket | 1 |
| 20 | 43-129 | Oil Filter Bracket | 1 |
| | HB-516-18-100 | Bolt 5/16 - 18 x 1 | 2 |
| | HNFL-516-18 | Flange Nut 5/16 - 18 | 2 |

## OIL TANK DRAWING



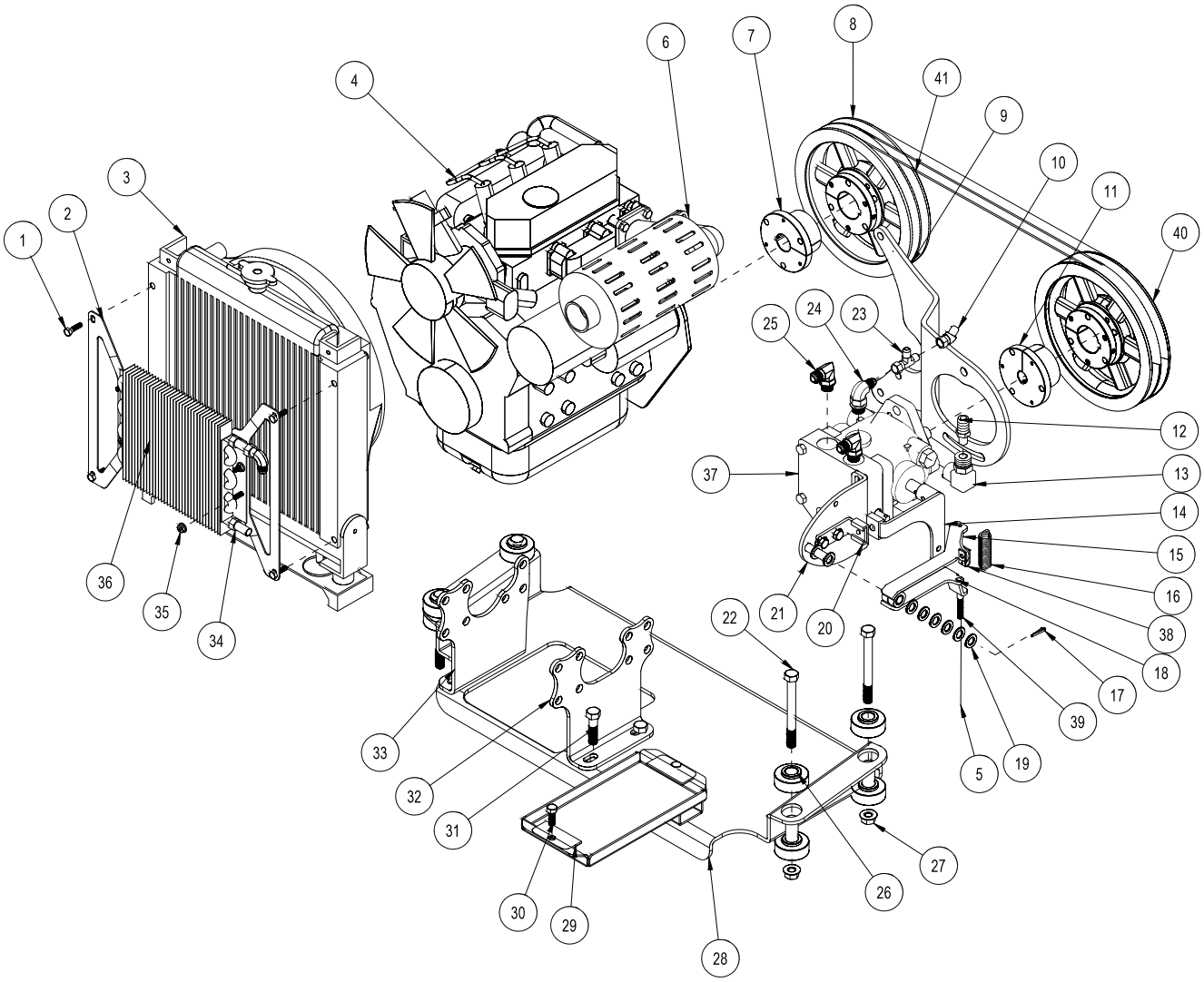
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 13-747 | Filler Breather | 1 |
| | 13-586-03 | Neck | 1 |
| | HSM-8-32-050 | Machine Screw #8 - 32 x 1/2 | 6 |
| | HWS-8 | Star Washer #8 | 6 |
| 2 | 42-005 | Oil Tank | 1 |
| 3 | 18-240 | Adapter | 1 |
| 4 | 23-126 | #6 Plug | 1 |
| 5 | 18-009 | Elbow | 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 | 42-774 | Oil Tank Bracket | 1 |
| | HB-516-18-225 | Bolt 5/16 - 18 x 2 1/4 | 2 |
| | HNFL-516-18 | Flange Whiz Lock Nut 5/16 - 18 | 2 |
| 9 | 42-015 | Attachment Mount | 1 |
| 10 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 2 |
| | HNFL-12-13 | Flamge Whiz Lock Nut 1/2 - 13 | 2 |
| 11 | 50-081 | Rubber Bumper | 1 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 1 |
| 13 | HB-38-16-150 | Bolt 3/8 - 16 x 1 1/2 | 1 |
| | HW-38 | Washer 3/8 | 1 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 1 |
| 14 | 18-337 | Tee | 1 |
| 16 | 23-189 | 90° Elbow | 1 |
| 17 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 1 |
| | HW-38 | Washer 3/8 | 1 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 1 |
| 18 | 43-067 | Left Tank Bracket | 1 |
| 19 | 42-076 | Remote Air Cleaner | 1 |
| 20 | 34-128 | Adapter | 1 |
| 21 | 23-120 | Tube Nut | 1 |
| 22 | 18-133 | Barb Fitting | 1 |

# ENGINE DRAWING



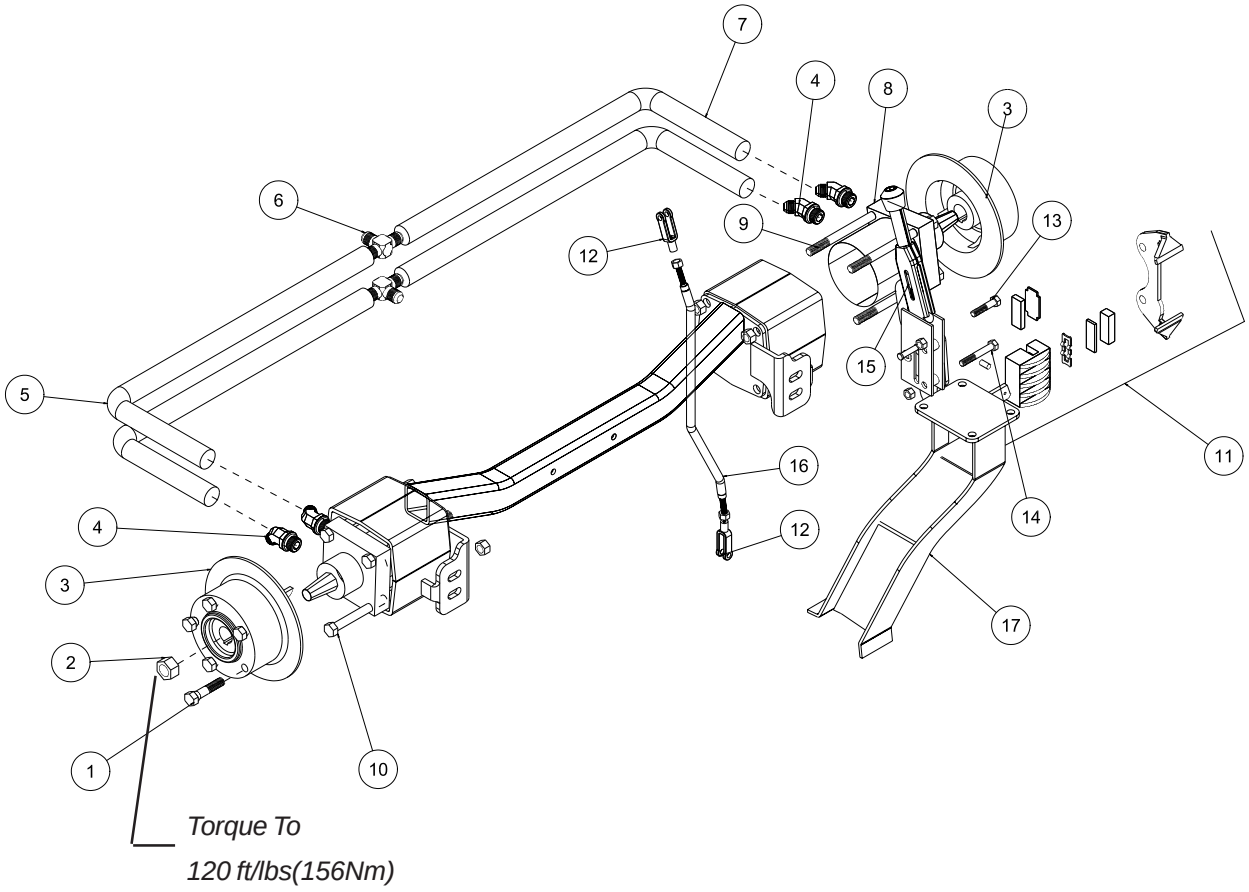
| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HB-14-20-100 | Bolts 1/4 - 20 x 1 | 4 |
| 2 | 43-066 | Oil Cooler Mount | 2 |
| 3 | | Radiator (comes with engine) | 1 |
| | HBM-8-1.25-20 | Metric Hex Bolt M8-1.25 x 20 | 8 |
| | HWLM-8 | Metric Washer M8 | 8 |
| | HBM-10-1.25-35 | Metric Hex Bolt M10 - 1.25 x 35 | 2 |
| 4 | 43-081 | Engine 19HP 850D | 1 |
| | 21-161 | Wire Block | 3 |
| 5 | 17-151 | Cable | 1 |
| | 17-152 | Conduit | 1 |
| | 17-156 | Conduit Button | 1 |
| 6 | 43-122 | Muffler | 1 |
| 7 | 43-084 | Hub 1 1/8" | 1 |
| | HKSQ-14-100 | Square Key 1/4 x 1 | 1 |
| 8 | 43-159 | Pulley | 1 |
| 9 | 43-065 | Pump Mount | 1 |
| | HBM-8-1.25-20 | Metric Hex Bolt M8-1.25 x 20 | 4 |
| | HWLM-8 | Metric Washer M8 | 4 |
| 10 | 18-202 | Elbow 90° | 1 |
| 11 | 42-246 | Hub | 1 |
| 12 | 18-133 | Elbow | 1 |
| 13 | 23-130 | Elbow | 1 |
| 14 | 43-068 | Swash Arm | 1 |
| | HRP-14-100 | Roll Pin 1/4 x 1 | 1 |
| 15 | 42-311 | Top Centering Arm | 1 |
| 16 | 11-050 | Spring | 1 |
| 17 | HP-18-100 | Cotter Pin 1/8 x 1 | 1 |
| 18 | 42-312 | Bottom Centering Arm | 1 |
| 19 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 7 |
| 20 | 42-247 | Creep Arm | 1 |
| | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 2 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 2 |
| 21 | 17-223 | Filter Mount | 1 |
| 22 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 4 |
| 23 | 18-190 | Tee | 1 |
| 24 | 18-185 | Elbow | 1 |
| 25 | 18-174 | Elbow | 2 |
| 26 | 60-107 | Rubber Insulator | 8 |
| | 60-168 | Spacer | 4 |
| 27 | HNFL-12-13 | Flange Whiz Lock Nut 1/2 - 13 | 4 |
| 28 | 43-061 | Engine Plate | 1 |
| 29 | 42-027 | Battery Holddown | 2 |
| 30 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 2 |
| | HNFL-38-16 | Flange Lock Nut 3/8 - 16 | 2 |
| 31 | HB-12-13-150 | Bolt 1/2 - 13 x 1 1/2 | 4 |
| | HNFL-12-13 | Flange Whiz Lock Nut 1/2 - 13 | 4 |
| 32 | 43-062 | Right Engine Mount | 1 |
| 33 | 43-063 | Left Engine Mount | 1 |
| 34 | 18-202 | Elbow | 1 |
| 35 | HB-14-20-075 | Bolt 1/4 - 20 x 3/4 | 4 |
| | HNFL-14-20 | Flange Whiz Lock Nut 1/4 - 20 | 4 |

# ENGINE DRAWING



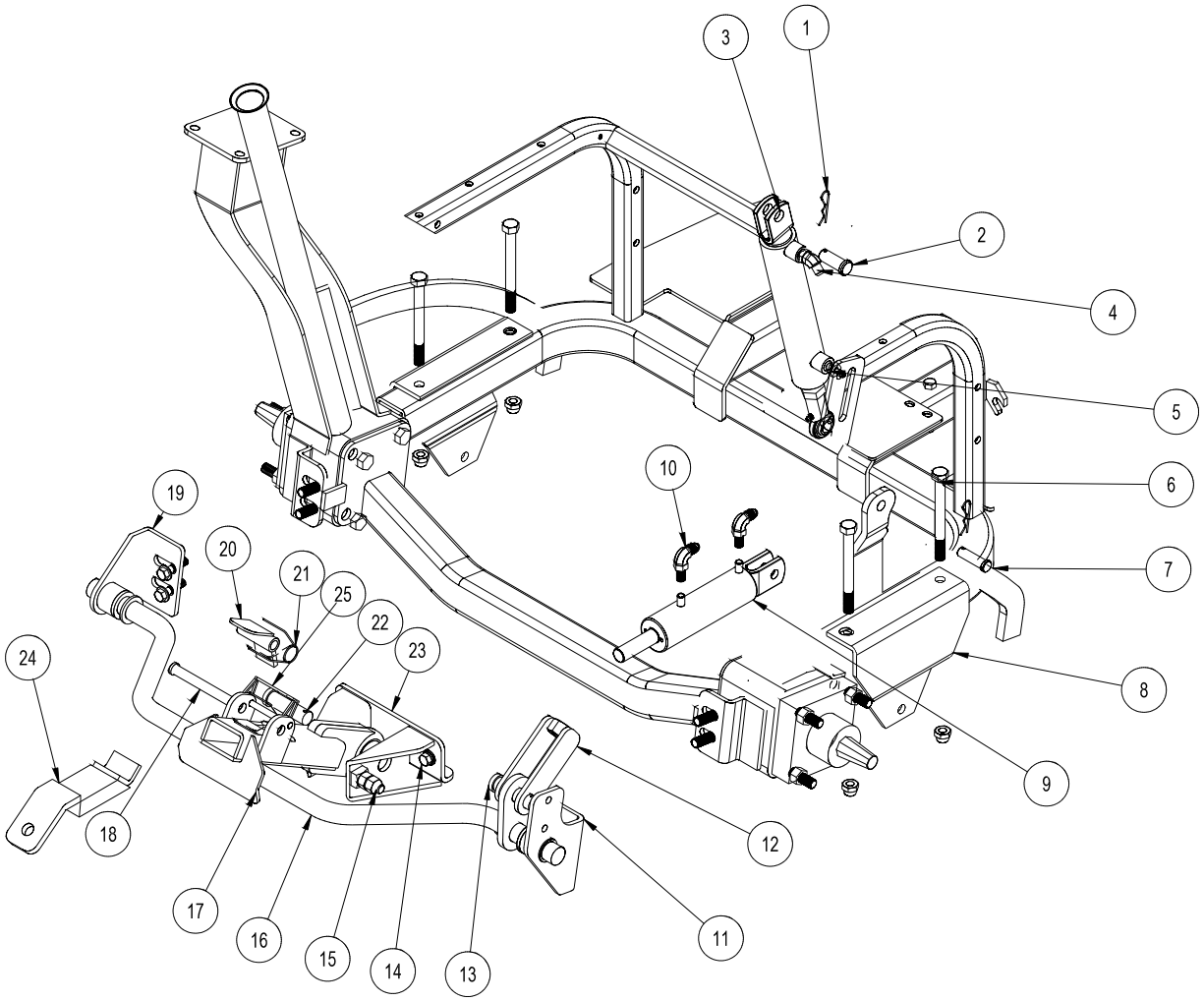
| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 36 | 34-105 | Oil Cooler | 1 |
| 37 | 42-797 | Variable Pump | 1 |
| | 18-188 | 45° Elbow | 1 |
| | 23-126 | Pipe Plug | 1 |
| 38 | 17-153 | Clevis | 1 |
| 39 | 17-155 | Retainer | 1 |
| 40 | 43-160 | Pulley | 1 |
| 41 | 43-161 | Belt | 2 |

# REAR AXLE DRAWING



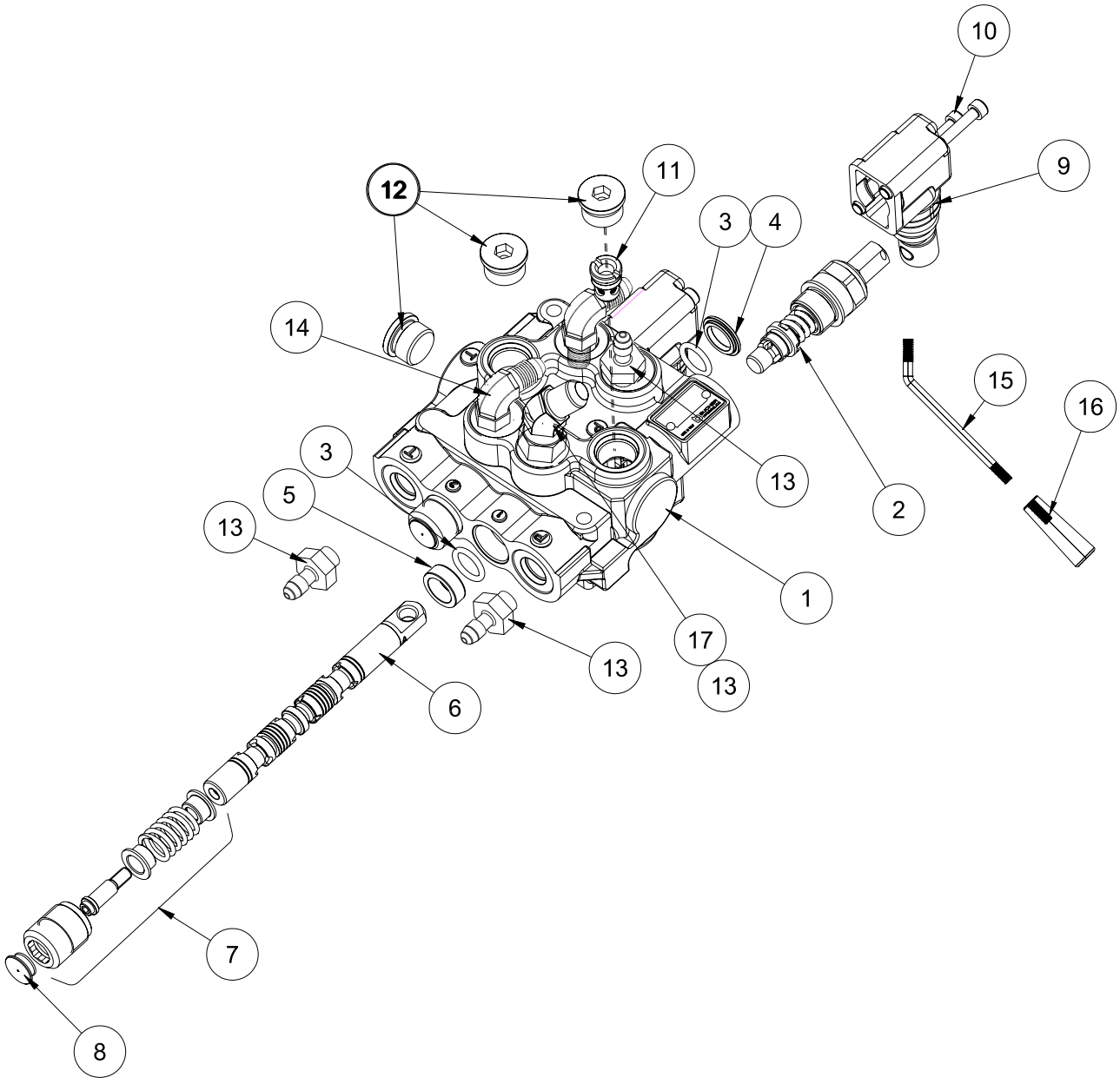
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 60-268 | Lug Bolt | 10 |
| 2 | 14-265 | Nut 1-20 | 2 |
| 3 | 76-239 | Brake Disc | 2 |
| 4 | 18-383 | 45° Adapters | 4 |
| 5 | 43-095 | Hydraulic Tube | 2 |
| 6 | 18-170 | Tee | 2 |
| 7 | 43-094 | Hydraulic Tube | 2 |
| 8 | 43-117 | Wheel Motor | 2 |
| | HWK-14-100 | Woodruff Key 1/4 x 1 | 2 |
| 9 | HB-12-13-750 | Bolt $^1/_2$ -13 x $7^1/_2$ | 2 |
| | HNTL-12-13 | Lock Nut $^1/_2$ - 13 | 2 |
| 10 | HB-12-13-700 | Bolt $^1/_2$ -13 x 7 | 6 |
| | HNTL-12-13 | Lock Nut $^1/_2$ - 13 | 6 |
| 11 | 42-496 | Right Caliper CW | 1 |
| 12 | 11-100 | Linkage Yoke | 2 |
| | HCP-516-100 | Clevis Pin $^5/_{16}$ x 1 | 2 |
| | HP-18-100 | Cotter Pin $^1/_8$ x 1 | 2 |
| 13 | HB-516-18-175 | Bolt $^5/_{16}$ - 18 x $1^3/_4$ | 1 |
| | HNFL-516-18 | Flange Whiz Lock Nut $^5/_{16}$ - 18 | 1 |
| 14 | HB-516-18-250 | Bolt $^5/_{16}$ - 18 x $2^1/_2$ | 1 |
| | HNFL-516-18 | Flange Whiz Lock Nut $^5/_{16}$ - 18 | 1 |
| 15 | 60-106 | Brake Lever | 1 |
| 16 | 42-804 | Brake Rod | 1 |
| | HN-516-24 | Nut $^5/_{16}$ - 24 | 2 |
| 17 | 42-596 | Main Frame | 1 |

# RAKE LIFT DRAWING



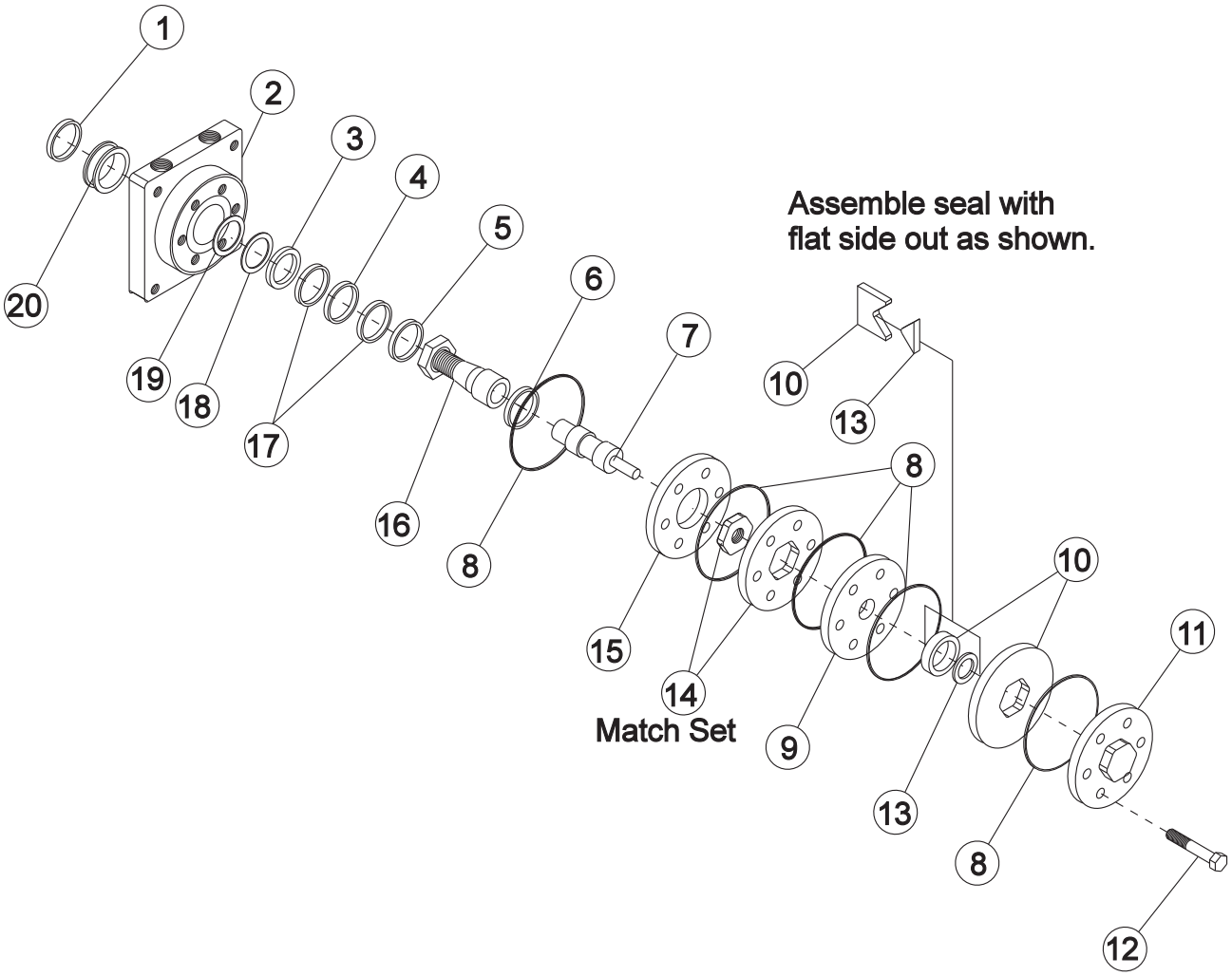
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HHP-18 | Bridge Pin 1/8 | 3 |
| 2 | HCP-58-175 | Clevis Pin 5/8 - 1 3/4 | 1 |
| 3 | 10-135 | Hydraulic Cylinder | 1 |
| | HNJ-58-18 | Jam Nut 5/8 - 18 | 1 |
| | 8-154 | Rod End | 1 |
| | HG-14-28-180 | Grease Fitting 1/4 - 28 x 180° | 1 |
| 4 | 18-214 | 45° Elbow | 1 |
| 5 | 18-169 | 3/8 Adapter | 1 |
| 6 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 4 |
| | HNFL-12-13 | Flange Lock Nut 1/2 - 13 | 4 |
| 7 | HCP-12-300 | Clevis Pin 1/2 - 3 | 1 |
| | HP-18-100 | Cotter Pin 1/8 x 1 | 1 |
| 8 | 42-015 | Attachment Mount | 2 |
| 9 | 43-150 | Hydraulic Cylinder | 1 |
| 10 | 18-168 | 90° Elbow | 2 |
| 11 | 34-220 | Pivot Bracket - RH | 1 |
| 12 | 43-138 | Lift Linkage | 1 |
| 13 | HCP-34-200 | Clevis Pin 3/4 x 2 | 1 |
| 14 | HB-38-24-100 | Bolt 3/8 - 24 x1 | 2 |
| 15 | 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 |
| 16 | 43-137 | Lift Bar | 1 |
| | 15-019 | Rubber Grip | 2 |
| 17 | 43-141 | Lift Arm | 1 |
| 18 | HCP-12-450 | Clevis Pin 1/2 - 4 1/2 | 1 |
| 19 | 34-219 | Pivot Bracket - LH | 1 |
| 20 | 43-139 | Lock | 1 |
| 21 | 43-136 | Torsion Spring | 1 |
| 22 | HCP-78-350 | Clevis Pin 7/8 x 3 1/2 | 1 |
| 23 | 43-140 | Frame Mount | 1 |
| 24 | 43-143 | Towing Hitch | 1 |
| 25 | 25-382 | Lock Pin | 1 |

# 13-729 2-BANK HYDRAULIC VALVE DRAWING

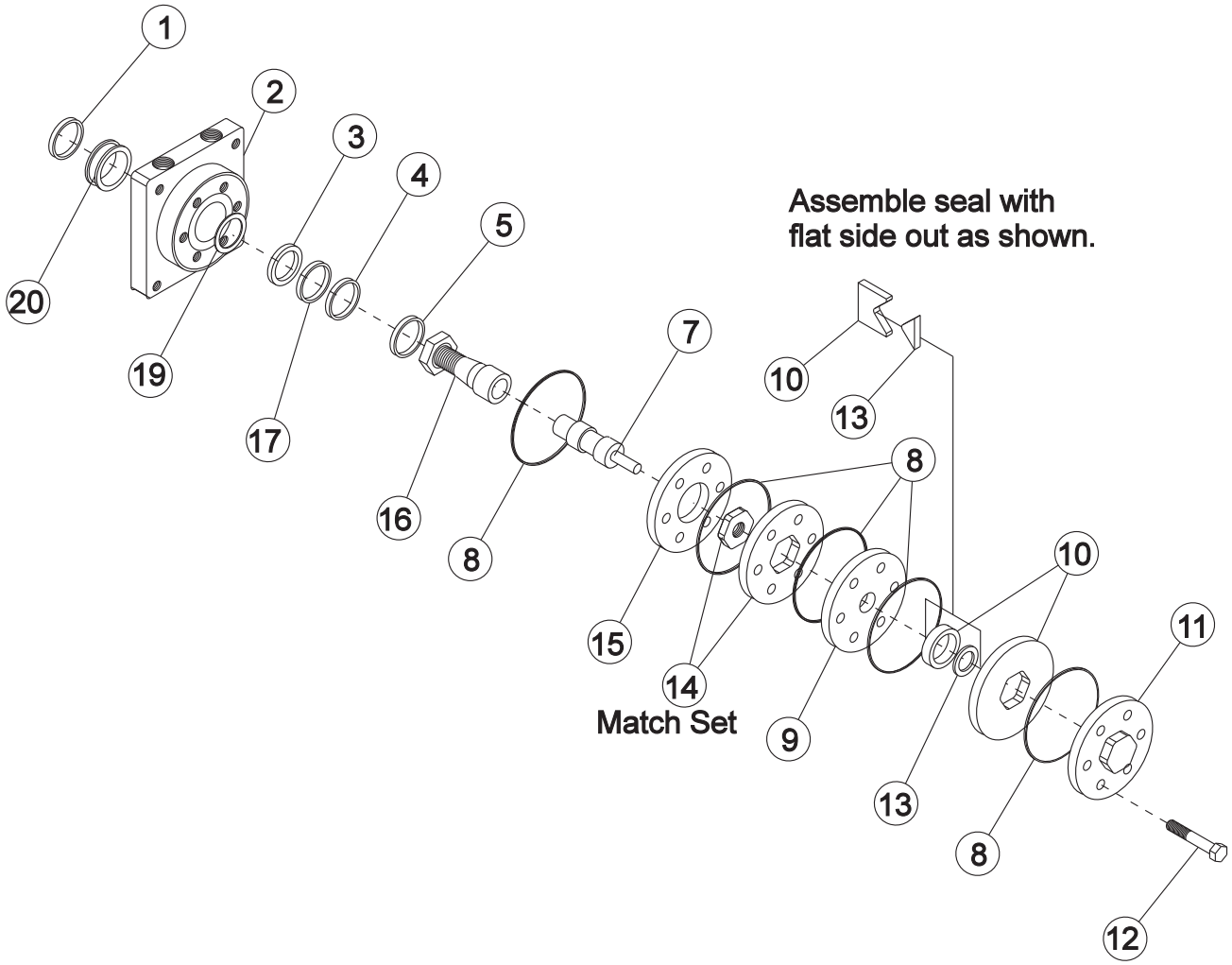


| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1* | 78-415-01 | Body (complete with spacer and check valve) | 1 |
| 2* | 78-415-02 | Spool HDM10 | 1 |
| 3* | 78-415-03 | O-Ring Seal | 6 |
| 4* | 78-415-04 | Flanged Washer HDM10 | 3 |
| 5* | 78-415-05 | Spacer | 3 |
| 6* | 78-415-06 | A Type Spool HDS11 | 3 |
| 7* | 78-415-11 | Positioner | 2 |
| 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 | 6 |
| 11* | 78-415-12 | Check Valve Assembly HDM12 | 1 |
| 12* | 78-415-13 | $^{3}/_{4}$ - 16 SAE 8 Screw Plug | 3 |
| 13 | 18-169 | Adapter $^{1}/_{4}$ - $^{3}/_{8}$ SAE | 4 |
| 14 | 18-168 | Elbow 3/8 Straight Thread | 2 |
| 15 | 42-778 | Bent Handle | 2 |
| 16 | 8-552-01 | Tapered Knob | 2 |
| 17 | 18-214 | Elbow 45° | 1 |
| * | 13-729 | 2 – Bank Hydraulic Valve (includes all * items) | |

# 43-116 FRONT WHEEL MOTOR DRAWING



| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1* | | Water & Dirt Seal | 1 |
| 2† | 13-615-05 | 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 | 43-116-01 | Drive Link | 1 |
| 8* | | Ring Seal | 5 |
| 9 | 13-032-31 | Manifold | 1 |
| 10 | 13-032-32 | Commulator Assembly (matched set) | 1 |
| 11 | 13-032-33 | End Cover | 1 |
| 12 | 43-116-02 | Bolt | 7 |
| 13* | | Commulator Seal (matches with #10) | 1 |
| 14 | 43-116-03 | Rotor Set (matched set) | 1 |
| 15 | 13-032-35 | Plate Wear | 1 |
| 16 | 13-615-04 | Coupling Shaft | 1 |
| | HWK-516-100 | Woodruff Key $^{5}/_{16}$ 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 |
| † | Included in 13-615-05 Service Housing Assembly | | |


1
2
3
4
5
20
19
17
16
8
7
Assemble seal with
flat side out as shown.
10
13
8
10
11
15
14
Match Set
9
13
8
12

| REF # | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1* | | Water & Dirt Seal | 1 |
| 2† | 13-615-05 | 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 | 76-321-02 | Drive Link | 1 |
| 8* | | Ring Seal | 5 |
| 9 | 13-032-31 | Manifold | 1 |
| 10 | 13-032-32 | Commulator Assembly (matched set) | 1 |
| 11 | 13-032-33 | End Cover | 1 |
| 12 | 76-321-01 | Bolt | 7 |
| 13* | | Commulator Seal (matches with #10) | 1 |
| 14 | 76-321-03 | Rotor Set (matched set) | 1 |
| 15 | 13-032-35 | Plate Wear | 1 |
| 16 | 13-615-04 | Coupling Shaft | 1 |
| | HWK-516-100 | Woodruff Key $^{5}/_{16}$ 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 |
| † | Included in 13-615-05 Service Housing Assembly | | |

# DECAL LIST

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

| | | | |
|---|---|---|---|
| 13-556 | Decal, Warning | 1 | Left Side Below Seat |
| 25-371 | Decal, Diesel | 2 | Nose Cone |
| 16-088 | Decal, Moving Parts Hot | 1 | Rear Seat Panel |
| 17-128 | Decal, Radiator Coolant | 1 | Radiator |
| 25-277 | Decal, Battery | 1 | Bottom Seat |
| 25-286 | Decal, Pinch Point | 1 | Bottom Seat Panel |
| 25-298 | Decal, Warning Hot | 3 | Seat Panel, Both Sides of Radiator |
| 25-337 | Decal, Speed Boss | 1 | Hang from Steering |
| 25-373 | Decal, Smithco Star | 1 | Steering Column |
| 25-349 | Decal, Foot Pedal | 1 | Right Side Nose Cone |
| 25-352 | Decal, By-Pass Valve | 1 | Hang Tag |
| 25-354 | Decal, Tire Pressure 5psi | 2 | Rear Wheels |
| 25-372 | Decal, Smithco | 1 | Rear Seat Panel |
| 25-379 | Decal, Fluid Filled Tire | 1 | Front Wheel |
| 27-077 | Decal, Smithco Round | 1 | Steering Cap |
| 43-110 | Decal, Super Star | 2 | Nose Cone |
| 42-765 | Decal, Lift Control | 1 | Right Body Top |
| 43-069 | Decal, Control Panel | 1 | Left of Seat |

# QUICK REFERENCE REPLACEMENT PARTS

REPLACEMENT FILTERS

| | | |
|---|---|---|
| 23-031 | Hydraulic Oil Filter | |
| 15-165-01 | Air Filter Element with Pre-Cleaner | Briggs and Stratton# 5050 |
| 42-076-03 | Air Filter Element Fender Mounted | |
| 50-403 | Fuel Filter | |
| 13-531 | Engine Oil FIlter | Briggs and Stratton #492932 |
| 43-081-01 | Stub Shaft | Briggs and Stratton #835039 |
| 43-081-02 | Oil filter | Briggs and Stratton #820314 |
| 43-081-03 | Filter Assembly | Briggs and Stratton #825219 |
| 43-081-04 | Filter Element | Briggs and Stratton #820311 |
| 43-081-05 | Fan Belt | Briggs and Stratton #821075 |

SEAL KITS

| | |
|---|---|
| 42-797 | Variable Pump |
| 14-098 | Seal Kit |
| 43-117 | Wheel Motor (Rear) |
| 14-080 | Seal Kit |
| 43-116 | Wheel Motor (Front) |
| 14-080 | Seal Kit |
| 13-729 | 2-Bank Valve |
| 78-415-03 | Seal Kit |
| 10-135 | Hydraulic `Cylinder (Attachment Lift Cylinder) |
| 14-267 | Seal Kit |
| 43-150 | Hydraulic Cylinder (for Rake Lift) |
| 43-150-01 | Seal Kit |
| 75-714 | Hydraulic Cylinder for Sand Plow Lift |
| 14-254 | Seal Kit |

FLUIDS

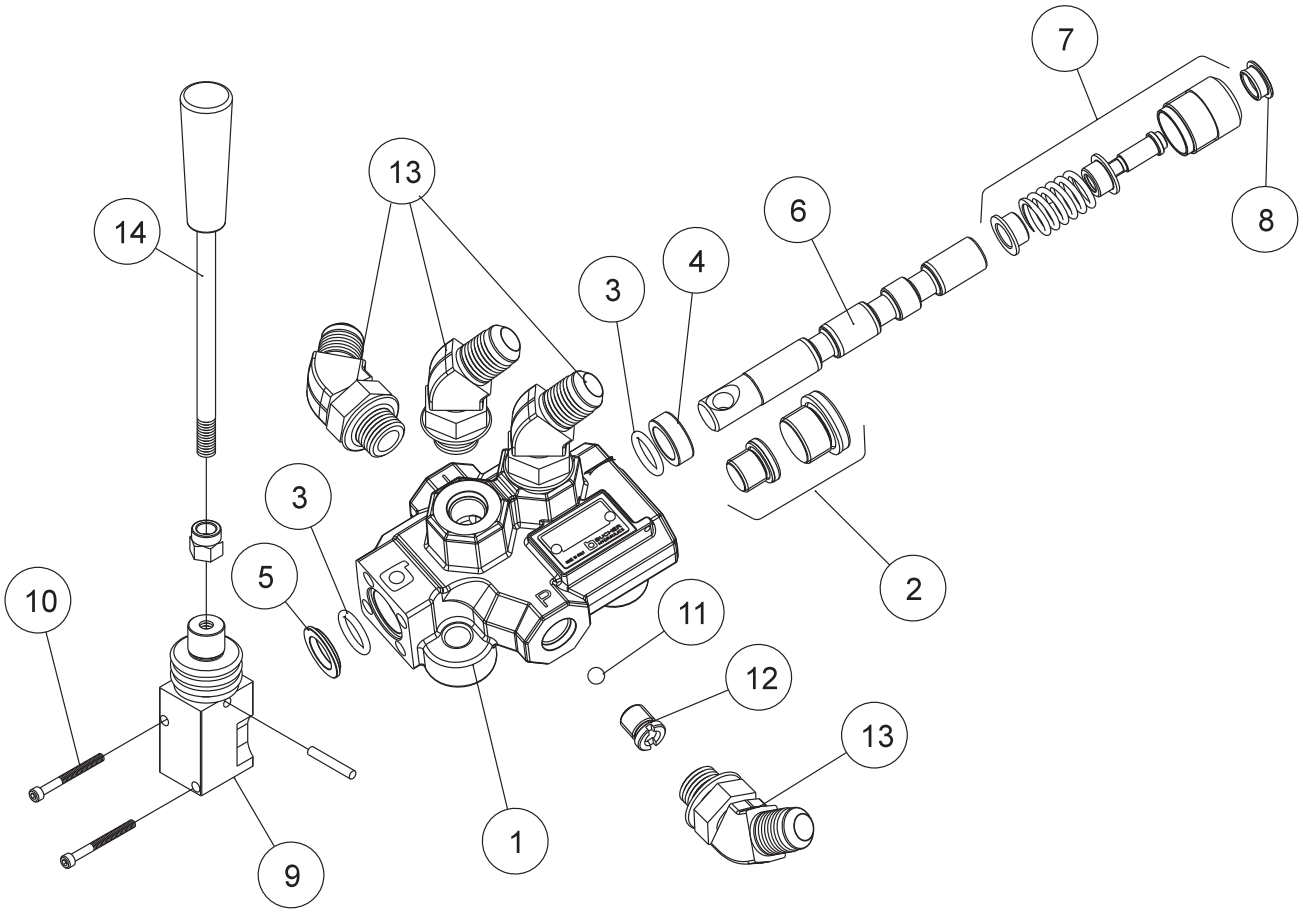
| | |
|---|---|
| Engine Oil | Refer to Engine Manual |
| Hydraulic Fluid | SAE 10W-40 API Service SJ or higher Motor Oil |

OTHER PARTS

| | | |
|---|---|---|
| 43-124 | Turf Front Tire | |
| 42-158 | Turf Rear Tire | |
| | Spark Plugs | RC12YC (Gap 0.030 inch (0.76mm)) |

# ACCESSORIES

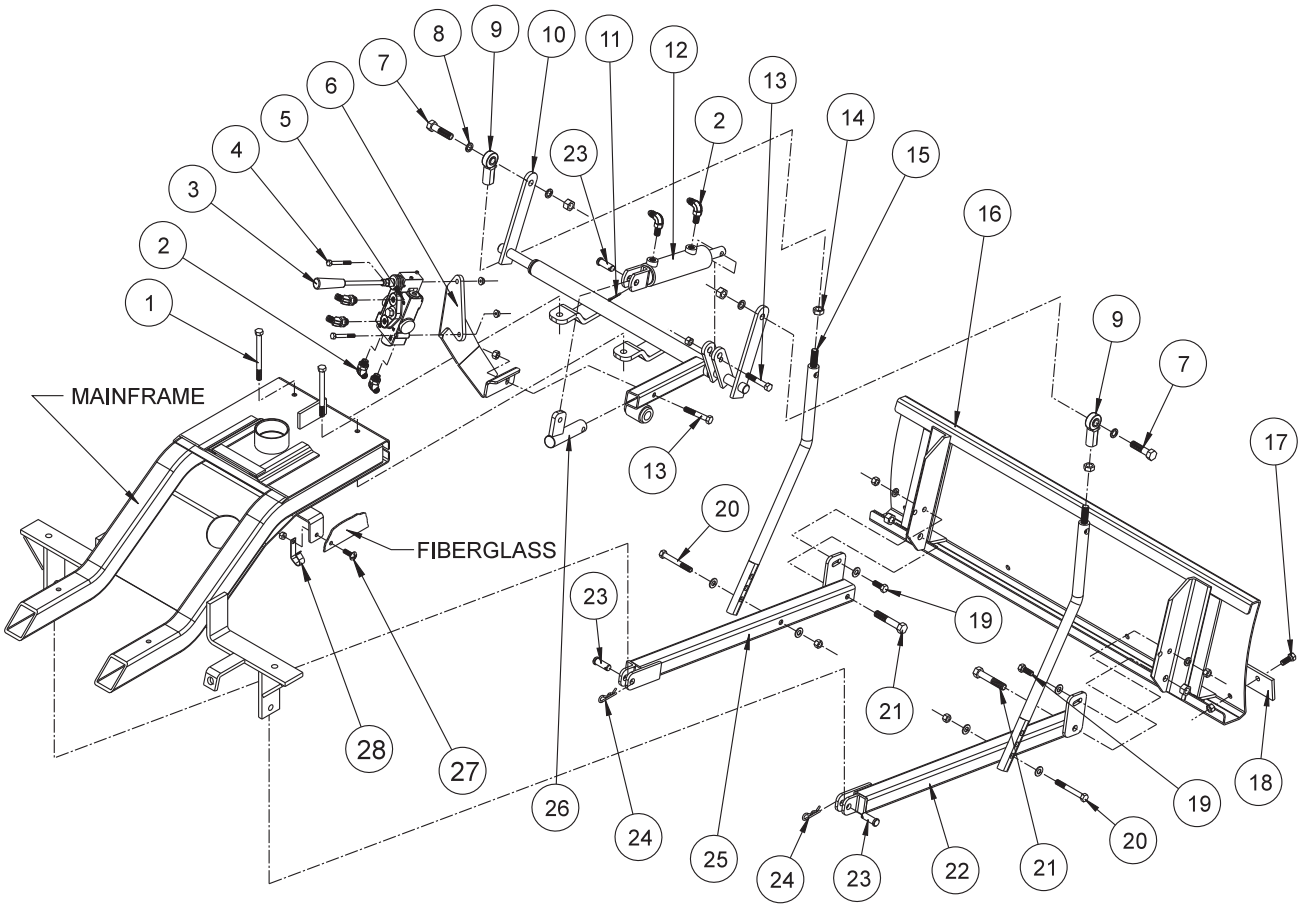
# 13-731 SINGLE BANK HYDRAULIC VALVE DRAWING



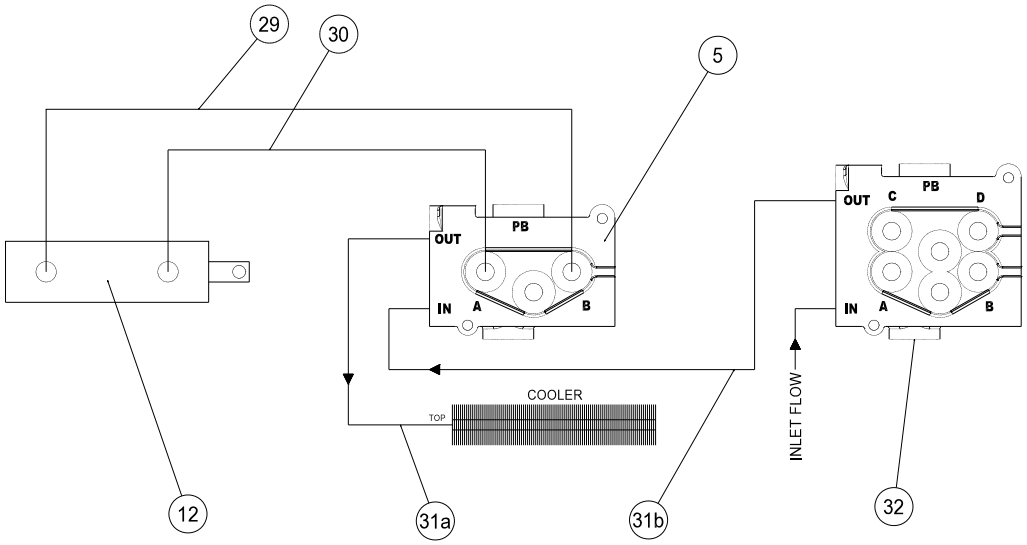
# 13-731 SINGLE BANK HYDRAULIC VALVE PARTS LIST

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

## 43-003 HYDRAULIC SAND PLOW DRAWING



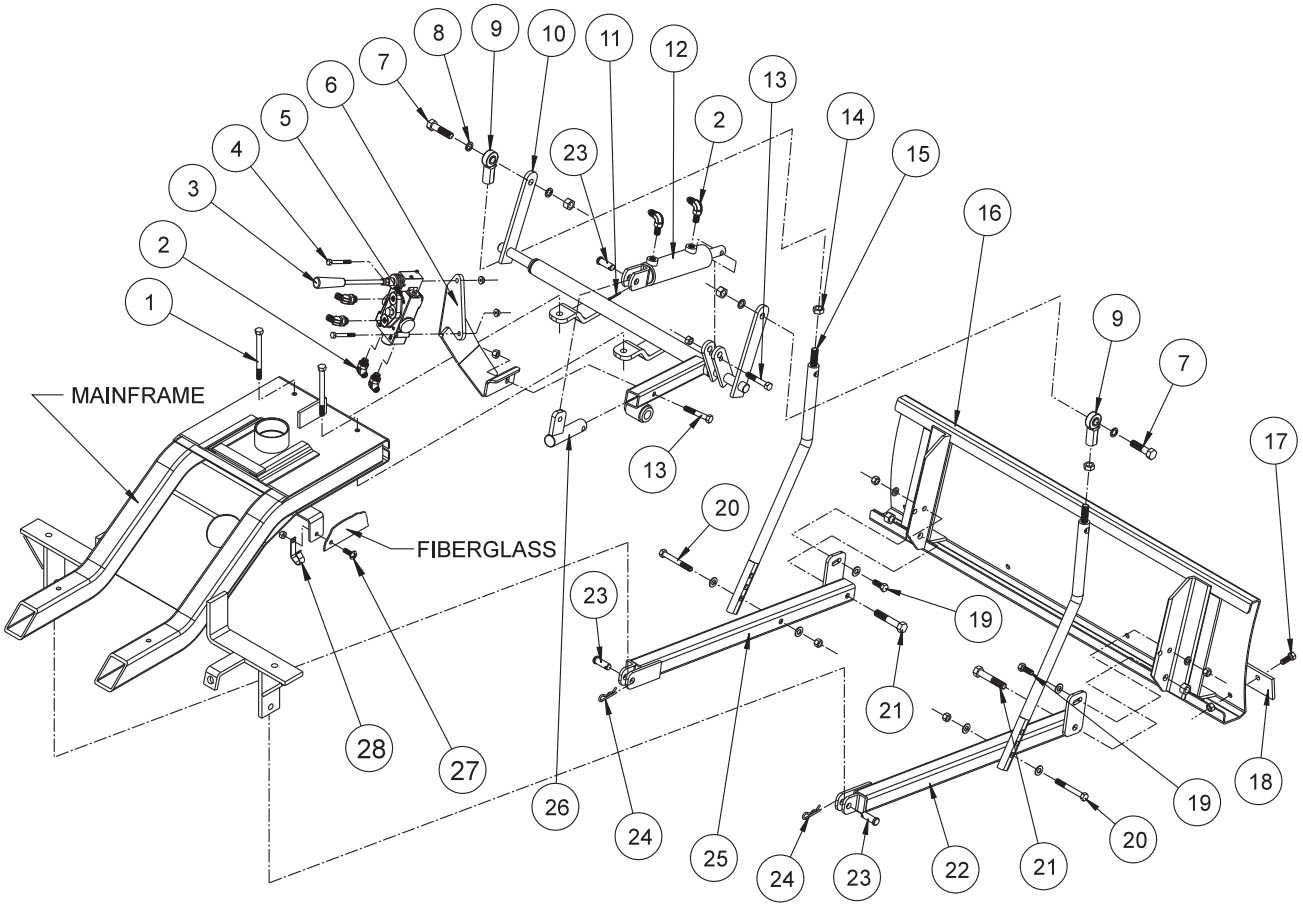

## HYDRAULIC VALVE PLUMBING DRAWING



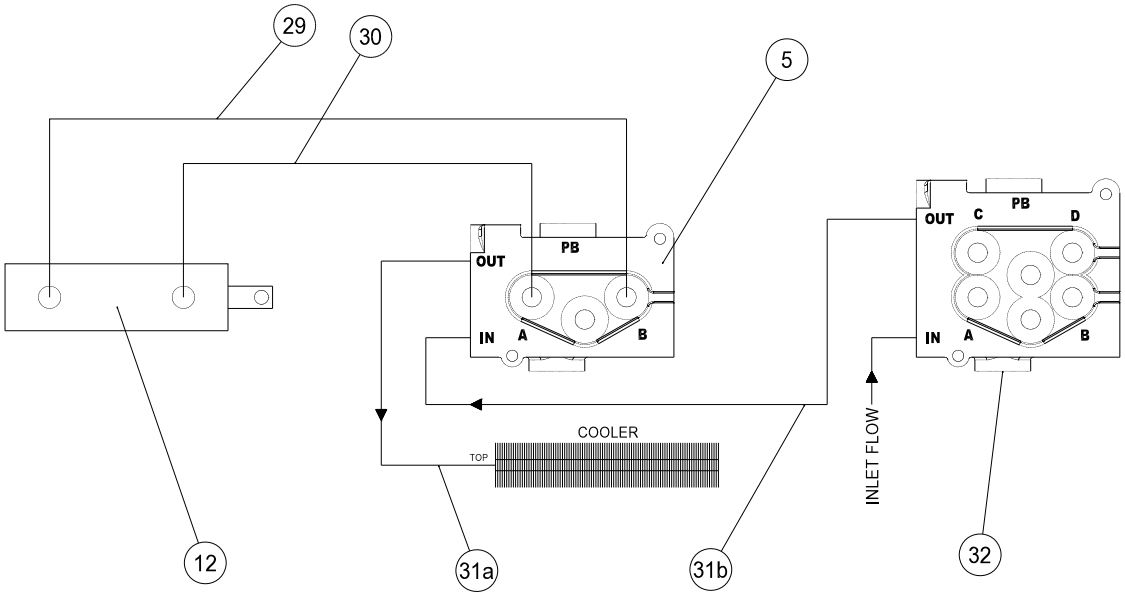
# 43-003 HYDRAULIC SAND PLOW PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HB-38-16-350 | Bolt, 3/8 - 16 x 3 1/2 (Part of machine) | 2 |
| | HW-38 | Washer, 3/8 | 2 |
| | HNTL-38-16 | Lock Nut, 3/8 - 16 | 2 |
| 2 | 18-188 | 45° Elbow | 6 |
| 3 | 42-225 | Straight Handle Kit | 1 |
| 4 | HB-14-20-200 | Bolt, 1/4 - 20x 2 | 2 |
| | HNFL-14-20 | Flange Whiz-Lock Nut, 1/4 - 20 | 2 |
| 5 | 43-046 | Single Bank Hydraulic Valve | 1 |
| 6 | 43-050 | Valve Mount | 1 |
| 7 | HB-12-13-200 | Bolt, 1/2 - 13 x 2 | 2 |
| | HNTL-12-13 | Lock Nut, 1/2 - 13 | 2 |
| 8 | HMB-12-14 | Machine Bushing, 1/2 x 14GA | 4 |
| 9 | 80-006 | Rod End | 2 |
| 10 | 42-346 | Lift Assembly | 1 |
| 11 | HP-18-100 | Cotter Pin, 1/8 x 1 | 1 |
| 12 | 13-292 | Hydraulic Cylinder | 1 |
| 13 | HB-38-16-200 | Bolt, 3/8 - 16 x 2 | 2 |
| | HNTL-38-16 | Lock Nut, 3/8 - 16 | 2 |
| 14 | HNJ-12-20 | Jam Nu,t 1/2 - 20 | 2 |
| 15 | 27-073 | Lift Rod | 2 |
| 16 | 27-017 | Aluminum Sand Plow Blade | 1 |
| 17 | HB-38-16-100 | Bolt, 3/8 - 16 x 1 | 4 |
| | HNFL-38-16 | Flange Whiz Lock Nut, 3/8 - 16 | 4 |
| 18 | 13-167 | Wear Blade | 1 |
| 19 | HB-38-16-100 | Bolt, 3/8 - 16 x 1 | 2 |
| | HW-38 | Washer, 3/8 | 2 |
| | HWL-38 | Lockwasher, 3/8 | 2 |
| | HN-38-16 | Nut, 3/8 - 16 | 2 |
| 20 | 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 |
| 21 | HB-12-13-300 | Bolt, 1/2 - 13 x 3 | 2 |
| | HNTL-12-13 | Lock Nut, 1/2 - 13 | 2 |
| 22 | 27-050 | Right Pusher Bar | 1 |
| 23 | HCP-12-150 | Clevis Pin, 1/2 x1 1/2 | 3 |
| 24 | HHP-18 | Bridge Pin, 1/8 | 2 |
| 25 | 27-049 | Left Pusher Bar | 1 |
| 26 | 42-096 | Cylinder Lift | 1 |
| 27 | HSTP-516-18-100 | Machine Screw, 5/16 - 18 x 1 (on machine) | 1 |
| 28 | HLC-A-58 | Loom Clamp | 1 |
| 29 | 43-049 | Hose, 18" | 1 |
| 30 | 43-048 | Hose, 20" | 1 |
| 31a&b | 43-047 | Hose, 57½" | 2 |
| 32 | 42-220 | 2-Bank Valve (on machine) | |

## 43-003 HYDRAULIC SAND PLOW DRAWING



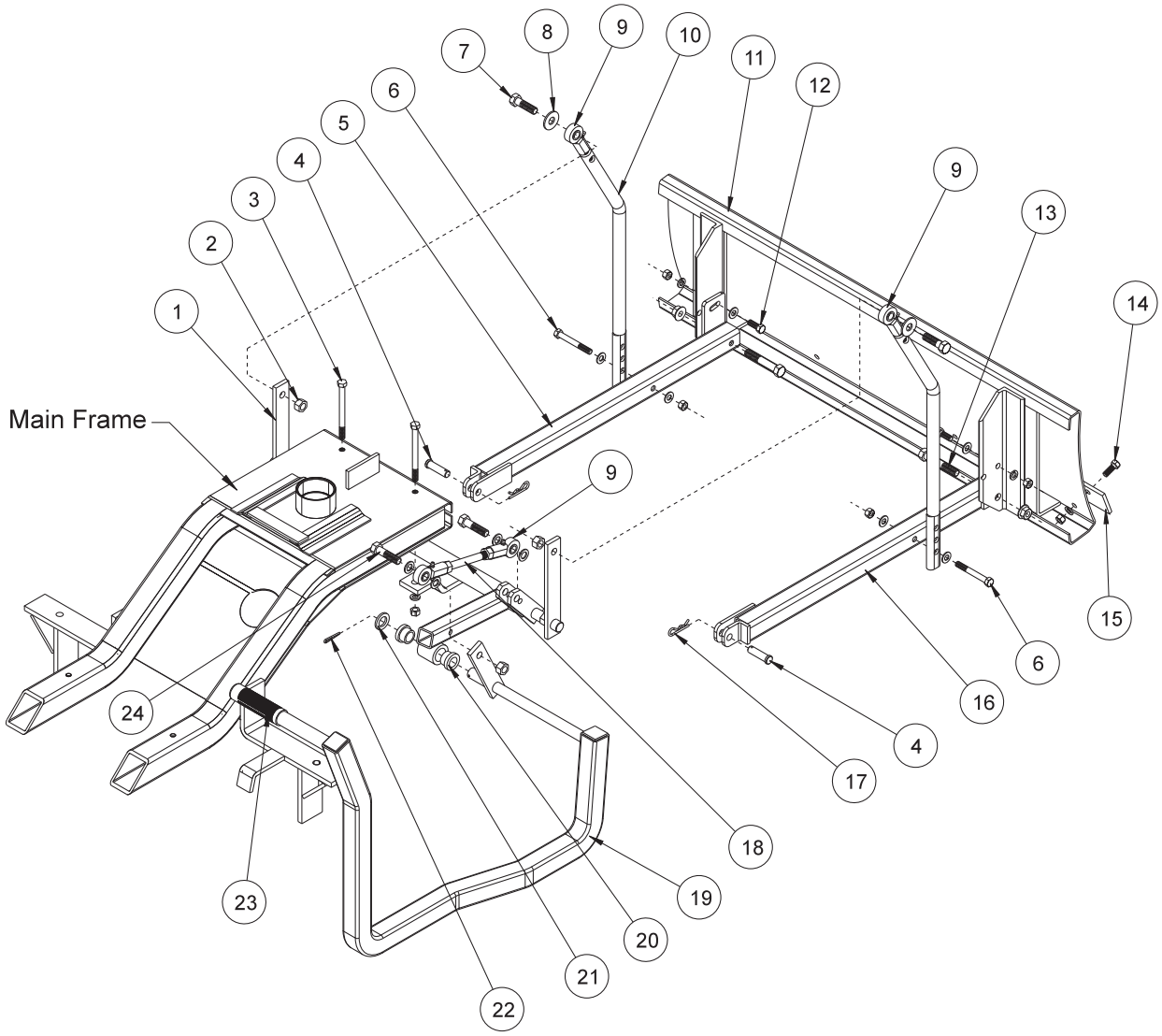

## HYDRAULIC VALVE PLUMBING DRAWING



1. Assemble Pusher Bars (Ref # 22 and 25) to Plow Blade (Ref # 16) using one $^{3}/_{8}$-16 x 1 Bolt (Ref # 19) and one $^{3}/_{8}$-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 $^{3}/_{8}$-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 $^{3}/_{8}$-16 Nut. Using a $^{3}/_{8}$-16 x 2 Bolt mount the Hydraulic Cylinder (Ref # 12) to the Lift Assembly and secure with one $^{3}/_{8}$-16 Nut. Connect the other end of the Hydraulic Cylinder to the Cylinder Lift using ½ x 1½ Clevis Pin (Ref # 23) and $^{1}/_{8}$ x 1 Cotter Pin (Ref #11).
4. Thread one ½ - 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 ½" Machine Bushing (Ref # 8) between Rod End and Lift Arm and secure with ½ -13 Lock Nut.
5. Slide the Plow/Pusher Bar Assembly under machine and connect to machine. Secure using ½ x 1½ Clevis Pins (Ref # 23) and $^{1}/_{8}$" Bridge Pins (Ref # 24).
6. To connect Lift Rods (Ref # 15) to Pusher Bars start by lifting up the Plow Blade. Using one $^{3}/_{8}$-16 x 3 Bolt (Ref # 20) and two $^{3}/_{8}$" 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 $^{3}/_{8}$-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 57½" 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 ¼ - 20 x 2 Bolts (Ref # 4). Secure with the two ¼ - 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 **OUT** 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 57½" Hose (Ref # 31[a]) from the **OUT** port on the Single Bank Valve to the top port on the Oil Cooler. Connect the other 57½" Hose (Ref # 31[b]) from the **IN** port of the Single Bank Valve to the **OUT** port of the 2 Bank Valve. Tie up Hoses using $^{5}/_{8}$ Loom Clamp (Ref # 28). Route 57½" Hoses under the body and along the frame avoiding any pinch points. Fasten to the frame using the 14½" Nylon Ties.
14. Reconnect the negative (-) ground battery cable to battery.
15. Make sure that everything is clear of the machine. Start the machine, work the valve so that the plow will both raise and lower. Also, do this with both the attachment lift and the rake lift. Work the lift a number of times until all air works out of the plow circuit and the cylinder works smoothly. At this time look for hydraulic leaks. If there are leaks, turn engine off and repair, start up and check again.
16. Check the hydraulic oil level. The level should be 2" to 2½" below the top of the tank. If more is needed, use SAE 10W-40 API service SG motor oil.

## 42-011 -AB ALUMINUM SAND PLOW DRAWING

## 42-011 -SB STEEL SAND PLOW DRAWING



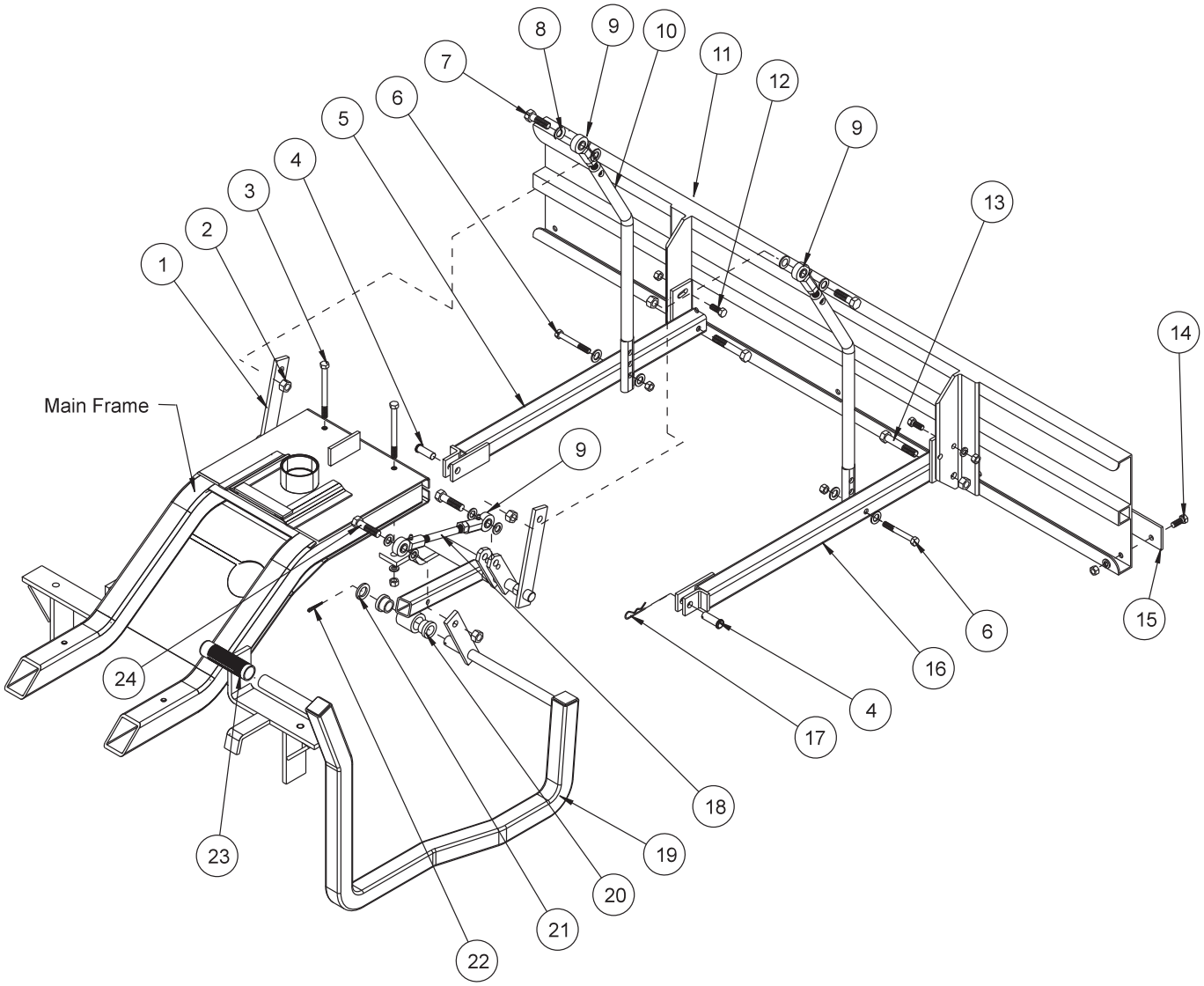
## 42-011 SAND PLOW PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-346 | Lift Assembly (includes Ref# 20) | 1 |
| 2 | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 3 | HB-38-16-350 | Bolt 3/8 - 16 x 31/2 (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 |
| 8 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 8 |
| 9 | 80-006 | Rod End | 4 |
| | HNJ-12-20 | Jam Nut 1/2 - 20 | 4 |
| 10 | 27-073 | Lift Rod | 2 |
| 11 | 27-017 | Aluminum Sand Plow Blade | 1 |
| | 13-352 | Steel Sand Plow Blade | 1 |
| 12 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 2 |
| | HW-38 | Washer 3/8 | 2 |
| | HWL-38 | Lock Washer 3/8 | 2 |
| | HN-38-16 | Nut 3/8 - 16 | 2 |
| 13 | HB-12-13-300 | Bolt 1/2 - 13 x 3 | 2 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 14 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 4 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 4 |
| 15 | 13-167 | Wear Blade | 1 |
| 16 | 27-050 | Right Pusher Bar | 1 |
| 17 | HHP-18 | Bridge Pin 1/8 | 2 |
| 18 | 42-348 | Threaded Rod | 1 |
| 19 | 42-347 | Lift Handle | 1 |
| 20 | 18-221 | Flange Bushing | 2 |
| 21 | HMB-34-14 | Machine Bushing 3/4 - 14GA | 1 |
| 22 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| 23 | 15-019 | Grip | 1 |
| 24 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 2 |

## INSTALLATION INSTRUCTIONS

1. Assemble the pusher bars (Ref 5 and 16) to the 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.
2. 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.
3. 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.
4. 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.
5. Slide Plow under machine and connect to machine. Use clevis pin and bridge pin (Ref 4 & 17).
6. Lift up the plow. Using the top hole in the lift rod as a starting point hook on the pusher bars. Use (Ref 6) hardware. The three holes in the lift rods are for adjusting the hand lever. The top hole moves the lever forward and holds the blade with the most clearance. Each hole down moves the lever to the rear of the machine and decreases blade clearance by approximately one inch.
7. 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.

# 42-136 60" SAND PLOW DRAWING



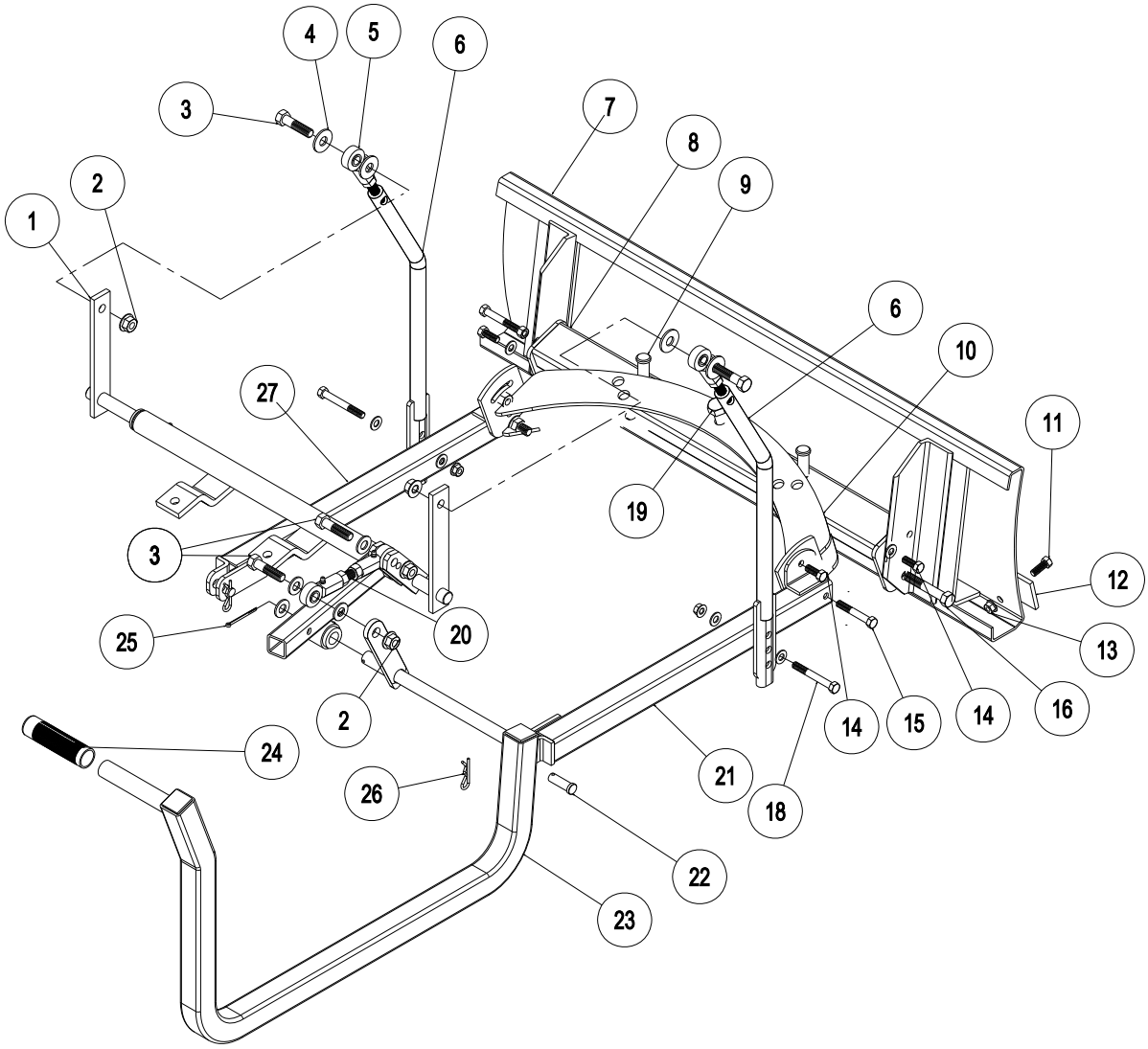
## 42-136 60" SAND PLOW PART LIST

| 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 |
| 8 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 8 |
| 9 | 80-006 | Rod End | 4 |
| | HNJ-12-20 | Jam Nut 1/2 - 20 | 4 |
| 10 | 27-073 | Lift Rod | 2 |
| 11 | 35-011 | Aluminum Plow Blade 60" | 1 |
| 12 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 2 |
| | HW-38 | Washer 3/8 | 2 |
| | HWL-38 | Lock Washer 3/8 | 2 |
| | HN-38-16 | Nut 3/8 - 16 | 2 |
| 13 | HB-12-13-300 | Bolt 1/2 - 13 x 3 | 2 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 14 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 5 |
| | HWL-38 | Lock Washer 3/8 | 5 |
| | HN-38-16 | Nut 3/8 - 16 | 5 |
| 15 | 35-012 | Wear Blade | 1 |
| 16 | 27-050 | Right Pusher Bar | 1 |
| 17 | HHP-18 | Bridge Pin 1/8 | 2 |
| 18 | 42-348 | Threaded Rod | 1 |
| 19 | 42-093 | Lift Handle | 1 |
| 20 | 18-221 | Flange Bushing | 2 |
| 21 | HMB-34-14 | Machine Bushing 3/4 - 14GA | 1 |
| 22 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| 23 | 15-019 | Grip | 1 |
| 24 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 2 |

## INSTALLATION INSTRUCTIONS

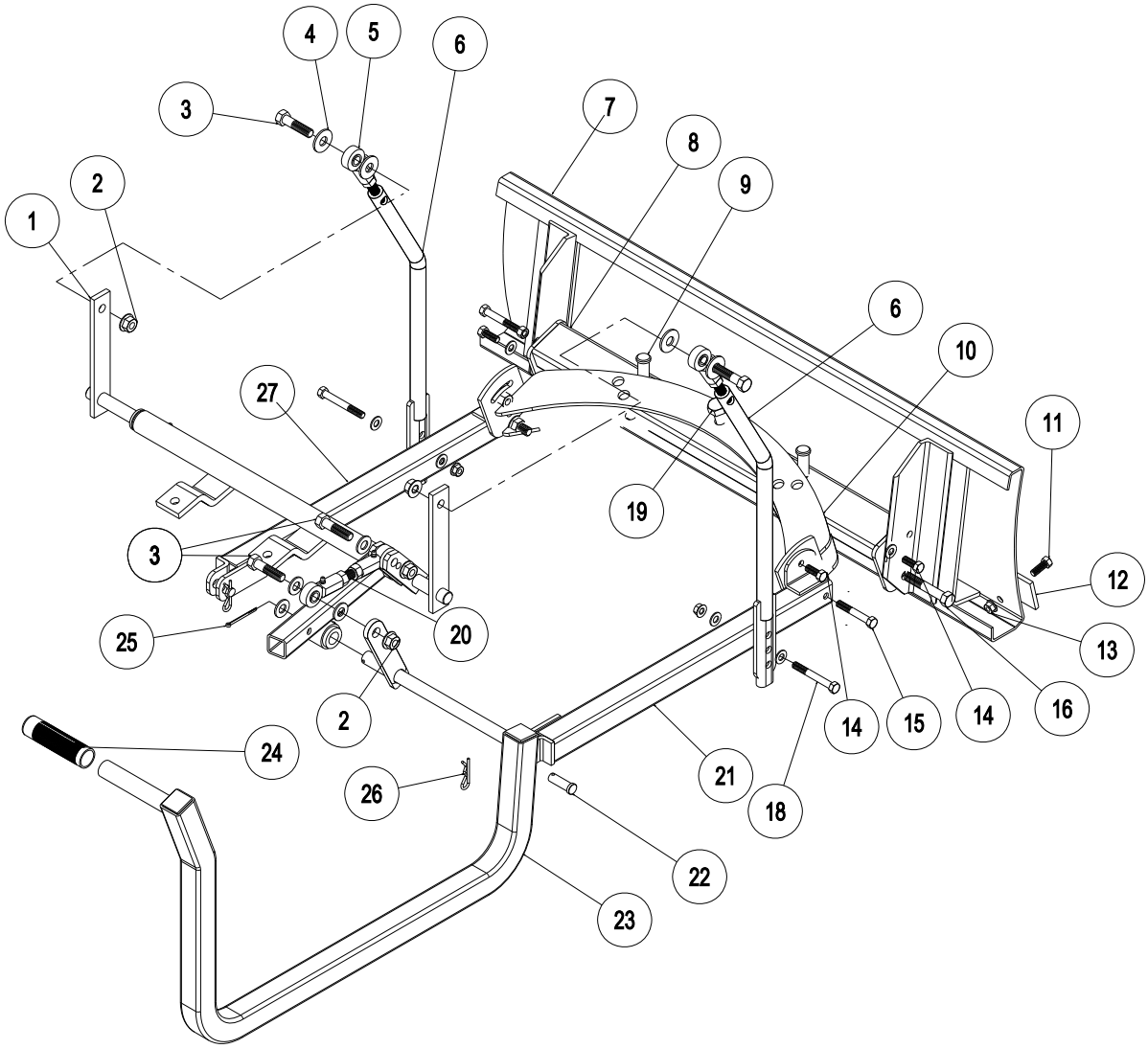
1. Assemble pusher bars (Ref 5 and 16) to plow (Ref 11) using hardware (Ref 12 & 13). There are 2 holes to bolt the hardware in. Using hole closest to the blade will result in a shallow cut, whereas using the hole furthest from the blade will result in a deeper cut. The slot on the pusher bar is for fine tuned adjustment.
2. 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.
3. 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.
4. 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.
5. Slide plow under machine and connect to machine. Use clevis pin and bridge pin (Ref 4 & 17).
6. Lift up the plow. Using the top hole in the lift rod as a starting point hook on the pusher bars. Use (Ref 6) hardware. The three holes in the lift rods are for adjusting the hand lever. The top hole moves the lever forward and holds the blade with the most clearance. Each hole down moves the lever to the rear of the machine and decreases blade clearance by approximately one inch.
7. 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



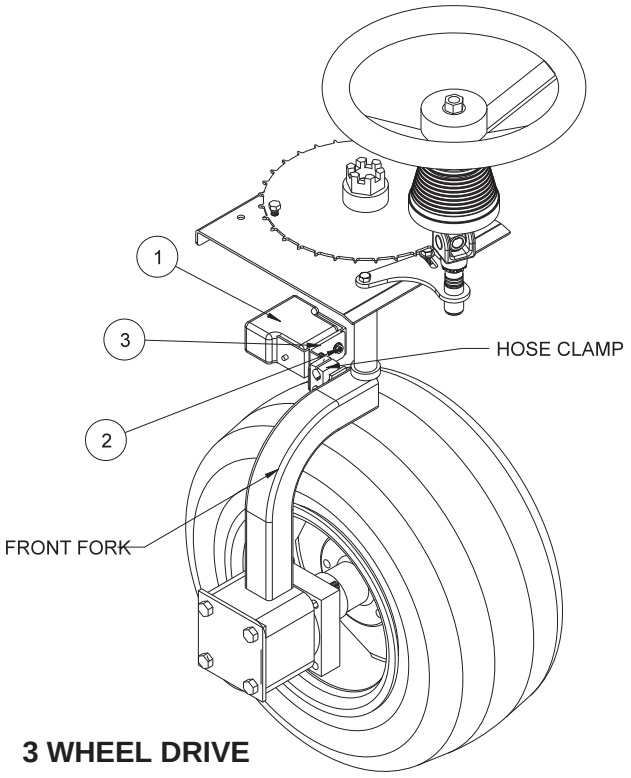
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-346 | Lift Assembly | 1 |
| 2 | HNTL-12-13 | Lock Nut 1/2 - 13 | 4 |
| 3 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 4 |
| 4 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 10 |
| 5 | 80-006 | Rod End | 4 |
| | HNJ-12-20 | Jam Nut 1/2 - 20 | 4 |
| 6 | 27-073 | Lift Rod | 2 |
| 7 | 27-017 | Aluminum Sand Plow Blade | 1 |
| 8 | 42-495 | Pivot Frame | 1 |
| 9 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 2 |
| | HHP-18 | Bridge Pin 1/8 | 2 |
| 10 | 42-456 | Plow Mount | 1 |
| 11 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 4 |
| 12 | 13-167 | Wear Blade | 1 |
| 13 | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 4 |
| 14 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 4 |
| | HW-38 | Washer 3/8 | 4 |
| | HWL-38 | Lock Washer 3/8 | 4 |
| | HN-38-16 | Nut 3/8 - 16 | 4 |
| 15 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 2 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 2 |
| 16 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 2 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 18 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 2 |
| | HW-38 | Washer 3/8 | 4 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 2 |
| 19 | HB-58-11-300 | Bolt 5/8 -11 x 3 | 1 |
| | HNTL-58-11 | Lock Nut 5/8 - 11 | 1 |
| 20 | 42-348 | Rod | 1 |
| 21 | 42-458 | Right Pusher Bar | 1 |
| 22 | HCP-12-150 | Clevis Pin 1/2 x1 1/2 | 2 |
| 23 | 42-347 | Lift Handle | 1 |
| | 18-221 | Flange Bushing | 2 |
| 24 | 15-019 | Grip | 1 |
| 25 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| | HMB-34-14 | Machine Bushing 3/4 - 14GA | 1 |
| 26 | HHP-18 | Bridge Pin 1/8 | 2 |
| 27 | 42-459 | Left Pusher Bar | 1 |

# 42-490 60" ANGLE PLOW

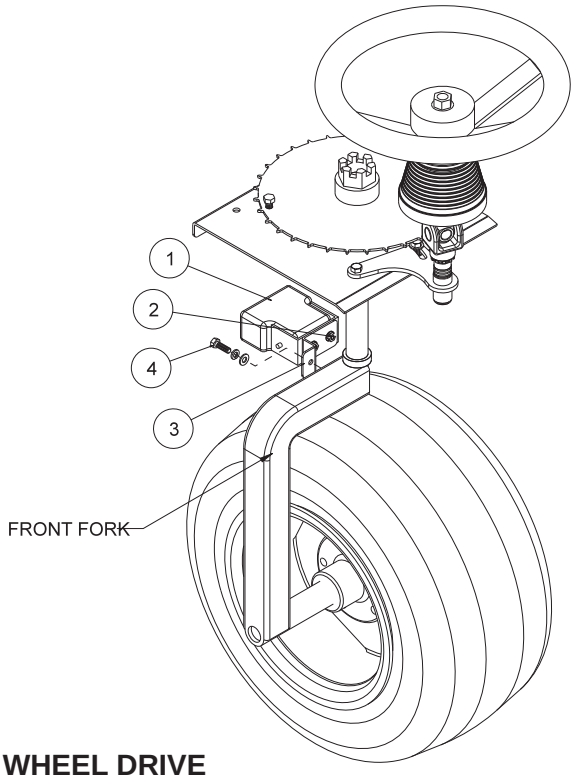


| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-346 | Lift Assembly | 1 |
| 2 | HNTL-12-13 | Lock Nut 1/2 - 13 | 4 |
| 3 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 4 |
| 4 | HMB-12-14 | Machine Bushing 1/2 x 14GA | 10 |
| 5 | 80-006 | Rod End | 4 |
| | HNJ-12-20 | Jam Nut 1/2 - 20 | 4 |
| 6 | 27-073 | Lift Rod | 2 |
| 7 | 35-012 | Aluminum Sand Plow Blade | 1 |
| 8 | 42-495 | Pivot Frame | 1 |
| 9 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 2 |
| | HHP-18 | Bridge Pin 1/8 | 2 |
| 10 | 42-456 | Plow Mount | 1 |
| 11 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 5 |
| 12 | 35-011 | Wear Blade | 1 |
| 13 | HNFL-38-16 | Flange Whiz Lock Nut 3/8 - 16 | 5 |
| 14 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 4 |
| | HW-38 | Washer 3/8 | 4 |
| | HWL-38 | Lock Washer 3/8 | 4 |
| | HN-38-16 | Nut 3/8 - 16 | 4 |
| 15 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 2 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 2 |
| 16 | HB-12-13-200 | Bolt 1/2 - 13 x 2 | 2 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 18 | HB-38-16-250 | Bolt 3/8 - 16 x 2 1/2 | 2 |
| | HW-38 | Washer 3/8 | 4 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 2 |
| 19 | HB-58-11-300 | Bolt 5/8 -11 x 3 | 1 |
| | HNTL-58-11 | Lock Nut 5/8 - 11 | 1 |
| 20 | 42-348 | Rod | 1 |
| 21 | 42-458 | Right Pusher Bar | 1 |
| 22 | HCP-12-150 | Clevis Pin 1/2 x1 1/2 | 2 |
| 23 | 42-347 | Lift Handle | 1 |
| | 18-221 | Flange Bushing | 2 |
| 24 | 15-019 | Grip | 1 |
| 25 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| | HMB-34-14 | Machine Bushing 3/4 - 14GA | 1 |
| 26 | HHP-18 | Bridge Pin 1/8 | 2 |
| 27 | 42-459 | Left Pusher Bar | 1 |

## 42-315 LIGHT KIT - FRONT LIGHT MOUNT DRAWING

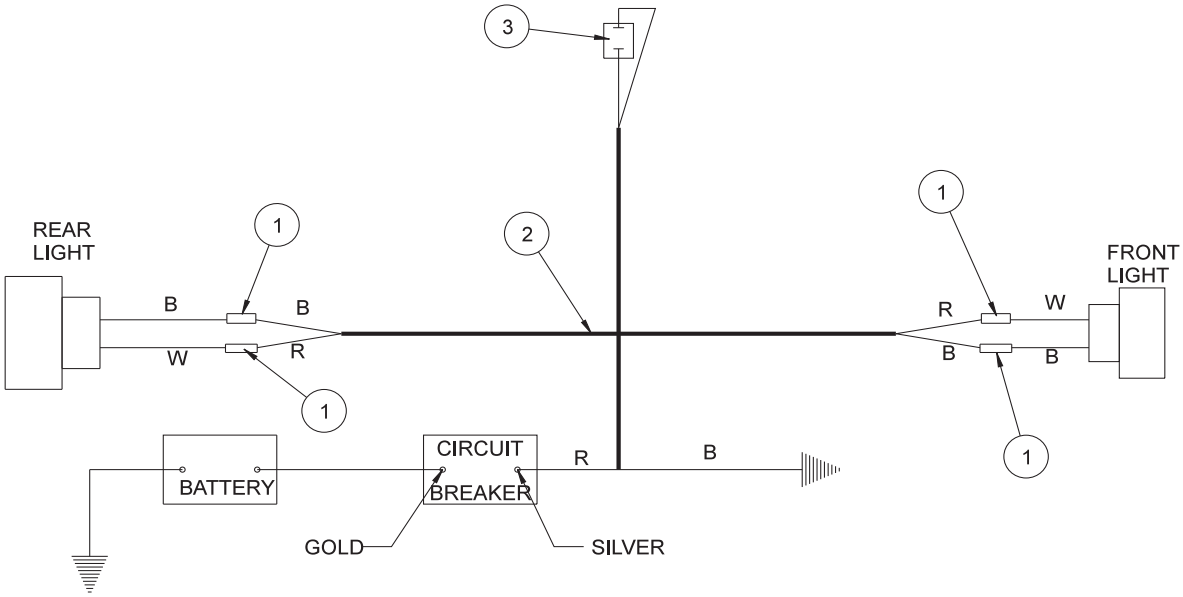



**3 WHEEL DRIVE**




**2 WHEEL DRIVE**

## WIRING DRAWING



## 42-315 LIGHT KIT PART LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-317 | Front Light | 1 |
| | 42-317-01 | Replacement Bulb | 1 |
| 2 | HSTP-14-20-075 | Phillips Machine Screw 1/4 - 20 x 3/4 | 2 |
| | HNFL-14-20 | Flange Whiz Lock Nut 1/4 - 20 | 2 |
| 3 | 42-323 | Front Light Mount | 1 |
| 4 | HB-516-18-100 | Bolt 5/16 - 18 x 1(2 WD Only) | 1 |
| | HW-516 | Washer 5/16 (2 WD Only) | 1 |
| | HWL-516 | Lockwasher 5/16 (2 WD Only) | 1 |

## FRONT LIGHT INSTALLATION

SUPER STAR 3 WHEEL DRIVE FRONT LIGHT INSTALLATION

1. Remove bolt and strong back from hose clamp on front of front fork. Place front light mount (Ref 3) on hose clamp and replace bolt and strong back.
2. Bolt front light (Ref 1) to front light mount, using the 1/4 - 20 machine screws and whiz lock nuts. Be sure wires aremacup.

SUPER STAR 2 WHEEL DRIVE FRONT LIGHT INSTALLATION

1. You will have to drill and tap a 5/16 - 18 hole in the front fork approximately 1" from the end, and centered, where the steering shaft is welded.
2. Bolt front light mount (Ref 3) to the front fork using the 5/16 -18 bolt, lockwasher and washer (Ref 4).
3. Bolt front light (Ref 1) to front light mount, using the 1/4 - 20 machine screws and whiz lock nuts. Be sure wires are up.

## WIRING PARTS LIST

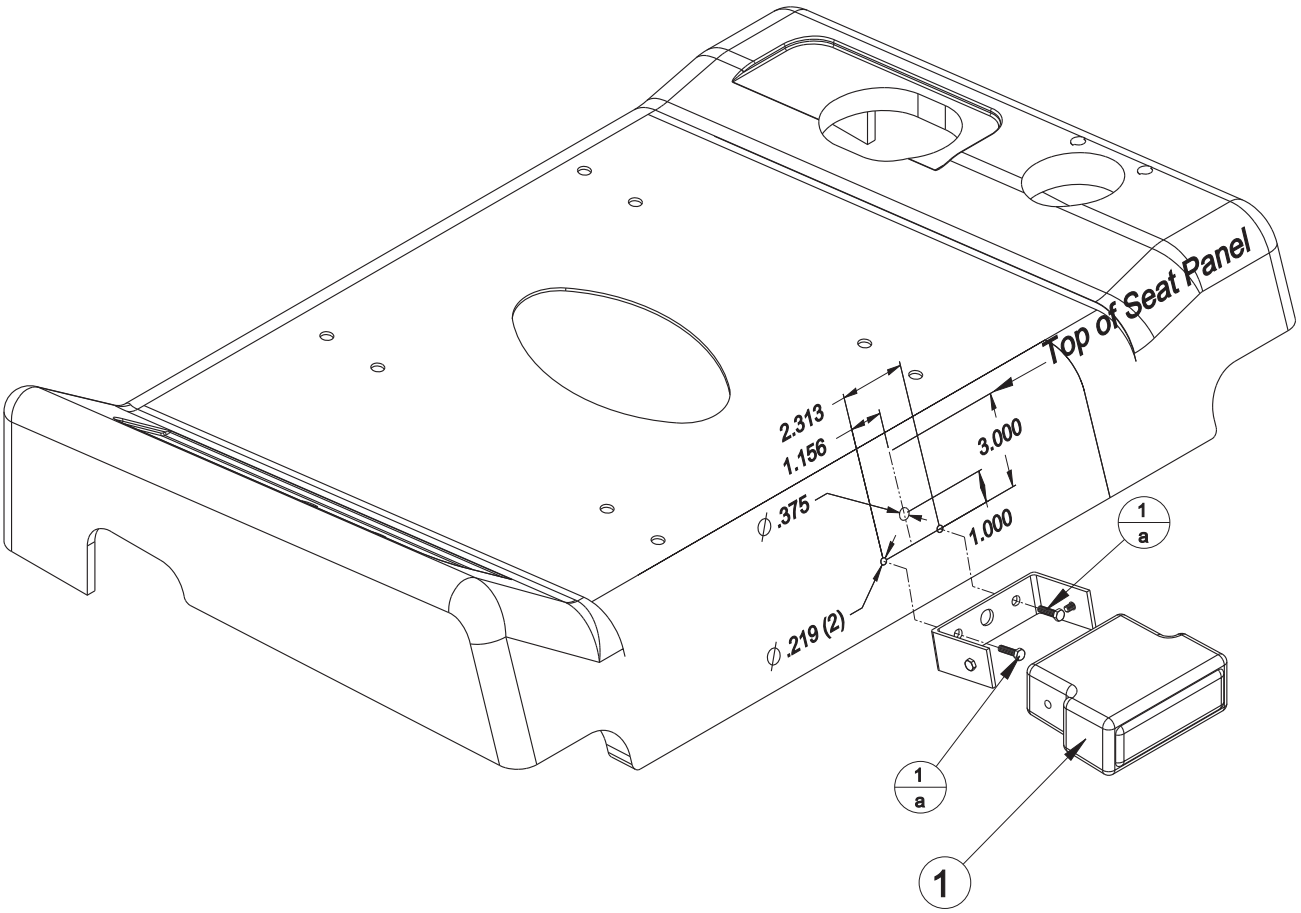
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 8875 | Bullet Terminal | 4 |
| | 8963 | Heat Shrink 1/4" | 4 |
| 2 | 42-319 | Wire Harness | 1 |
| | HLC-58 | Loom Clamp 5/8" | 2 |
| 3 | 12-003 | Toggle Switch | 1 |
| | 15-472 | Switch Boot | 1 |

## WIRING INSTALLATION

1. Remove nut from left hand seat studs and place two loom clamps (HLC-58) onto seat stud. Hold in place with the nut.
2. Drill a 1/2" hole in fiberglass control panel 1" from 2WD/3WD toggle switch. (NOTE: Use 2WD/3WD hole if not being used).
3. Hook red wire from the wire harness to toggle switch. Place toggle switch (Ref 3) into hole. Install switch boot.
4. Run wire harness (Ref 2) to the front light. Snip the factory installed ends on headlight wires and install the heat shrink and the bullet terminal (Ref 1) provided. Plug in wire harness to front head light. Do the same to the rear light.
5. Run the red wire to the silver post of the circuit breaker and the black to the ground battery wire on the engine.
6. Hook wire harness up in the loom clamps installed earlier.
7. Rotate front wheel to stop. Check for wire routing and interference. Place warning decal on lights.
8. Test headlights before putting machine into service.

**WARNING** **Do not touch lights. Very Hot.**

# 42-315 REAR LIGHT MOUNT DRAWING




## 42-315 REAR LIGHT MOUNT PARTS LIST

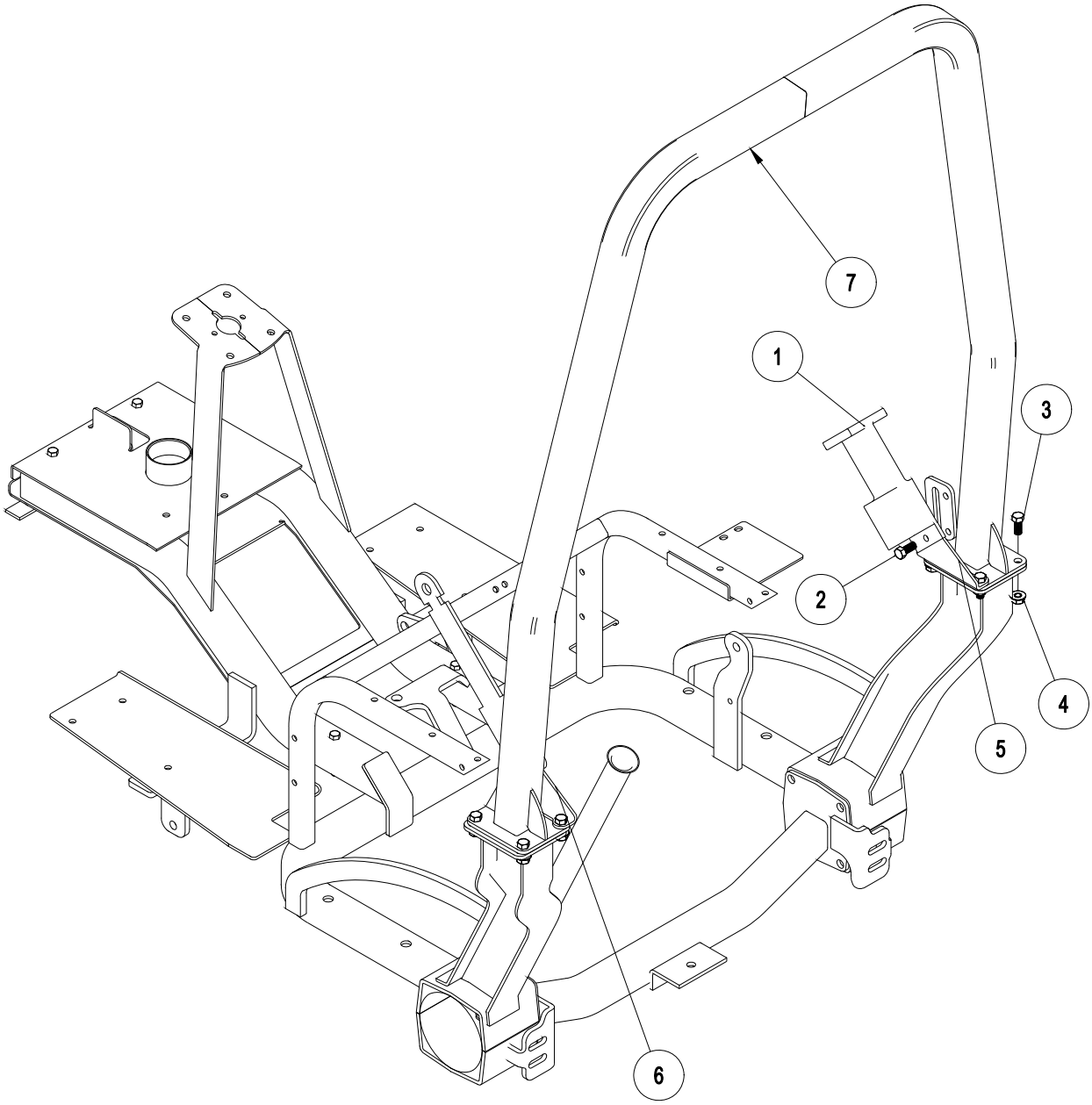
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-317 | Light | 1 |
| | 42-317-01 | Replacement Bulb | 1 |
| 1a | HSM-10-32-075 | Machine Screw 10-32 x $^3/_4$ | 2 |
| 1b | HNFL-10-32 | Flange Whiz Lock Nut 10-32 *(not illustrated)* | 2 |

## REAR LIGHT INSTALLATION

**NOTE:** *The rear light of this kit must be installed in the position specified to prevent interference with the 42-210 Grader Blade Kit (if installed) on your machine*.

1. Find the center of the seat panel. Measure down 3" on this center line and mark the centers for two, Ø$^7/_{32}$ holes at the positions illustrated. Measure 1" above the previous two marks for the position of the Ø$^3/_8$ hole.
2. Once the hole positions are marked proceed to drill the holes to the sizes specified.
3. Next, position Light (Ref. 1) with wires up, and using the #10 - 32 Machine Screws (Ref 1a) and #10 - 32 Whiz-Loc Nuts (Ref. 1b), mount the Light to the Seat Panel.
4. Run wires through the Ø$^3/_8$ hole and connect according to the **Wiring Drawing** on the previous pages.

# 42-800 ROLL OVER PROTECTION



# 42-800 ROP

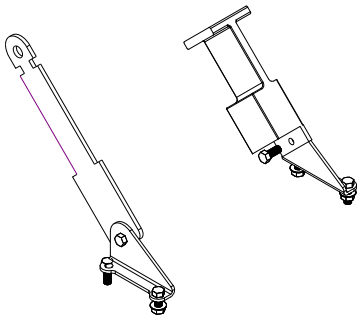
| REF# | PART # | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 76-198-03 | Seat belt | 1 |
| 2 | HB-716-14-100 | Bolt $^{7}/_{16}$ - 14 x 1 | 2 |
| 3 | HB-716-14-125 | Bolt $^{7}/_{16}$ - 14 x $1^{1}/_{4}$ | 8 |
| 4 | HNTL-716-14 | Lock Nut $^{7}/_{16}$ - 14 | 10 |
| 5 | 42-802 | Right Seat belt 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.



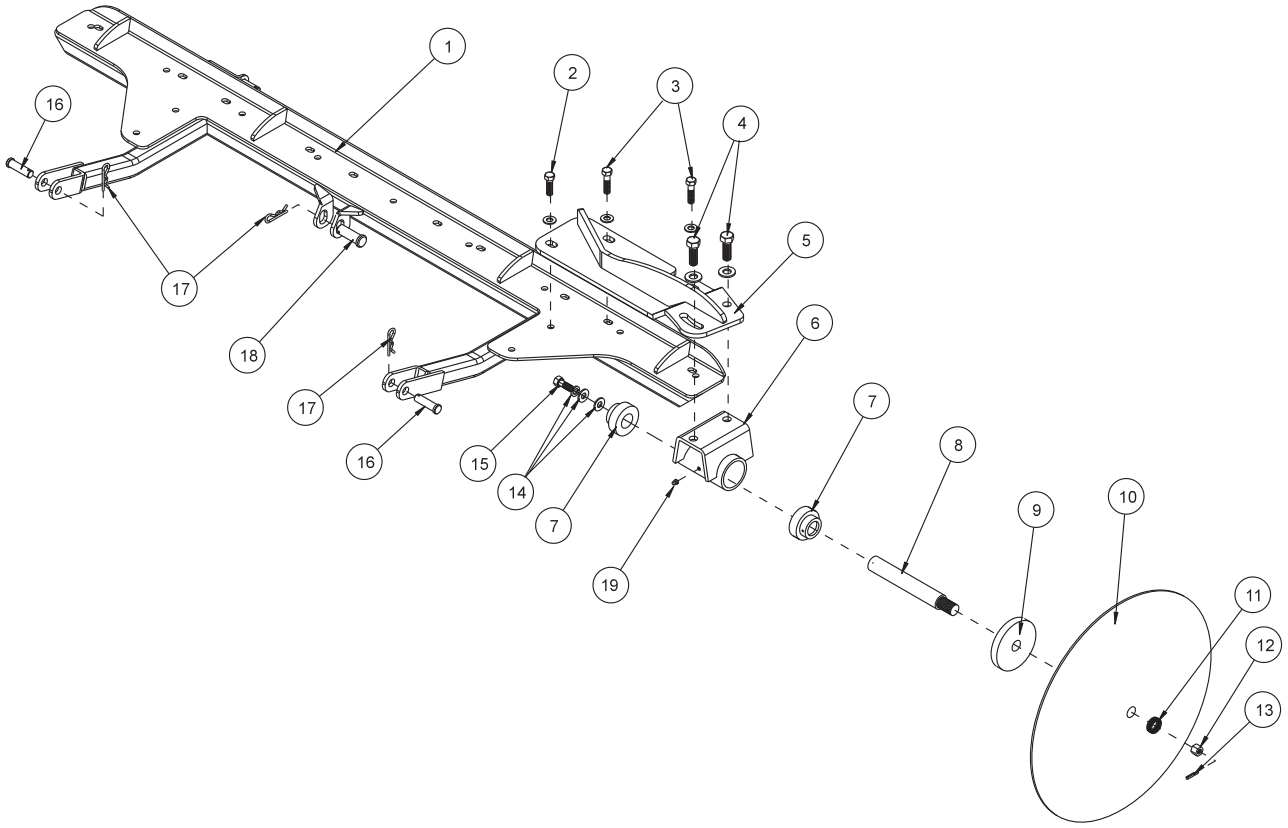
ROPs have been certified to meet OSHA 1928.52 and seat belts are certified to OSHA 1928.51.

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

# ACCESSORIES

# 42-223 ADJUSTABLE DISC EDGER DRAWING





## 42-223 ADJUSTABLE DISC EDGER PARTS LIST

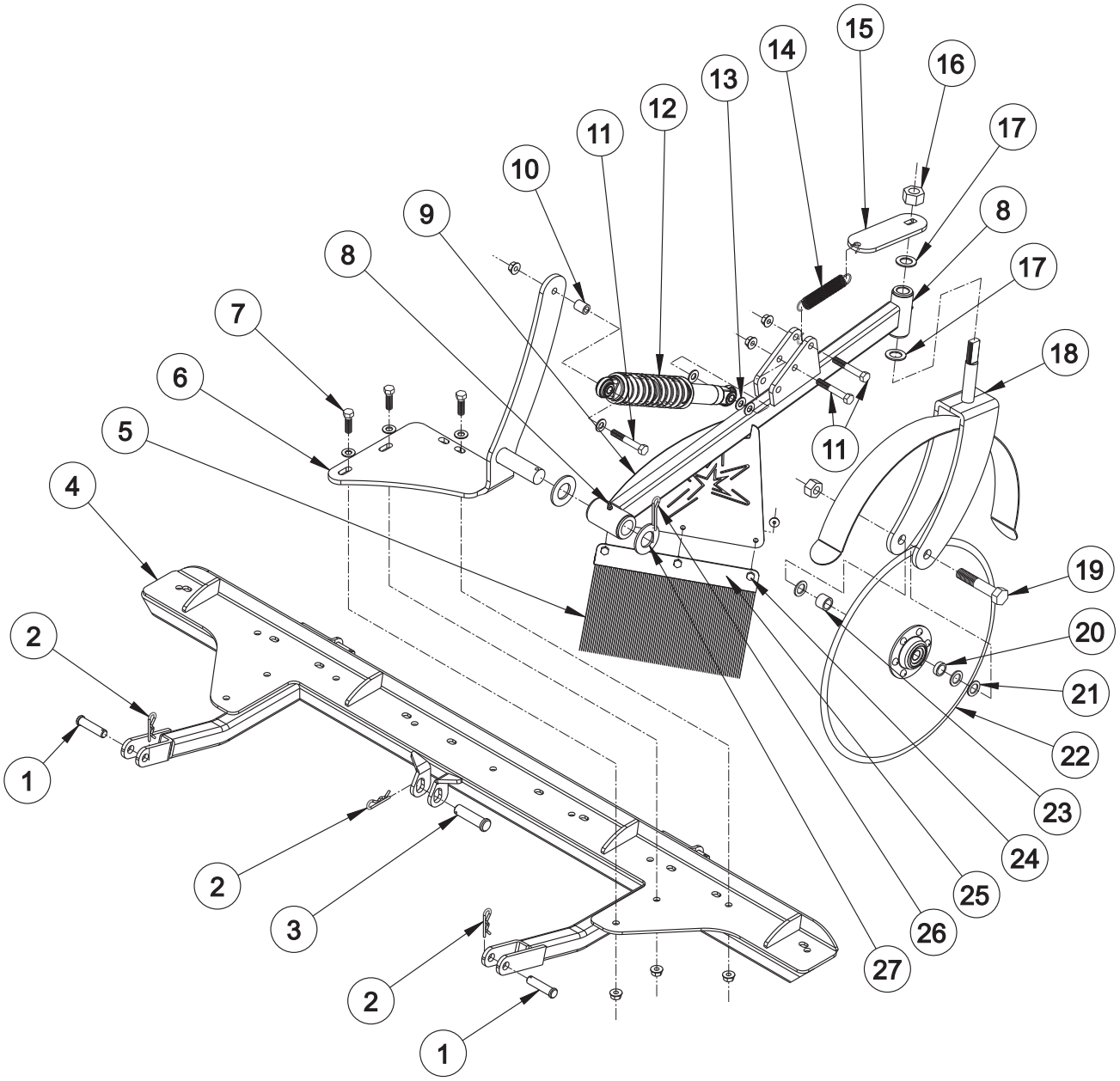
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-203 | Attachment Lift Assembly | 1 |
| 2 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 1 |
| | HW-38 | Washer 3/8 | 1 |
| | HNTL-38-16 | Lock Nut 3/8 -16 | 1 |
| 3 | HB-38-16-150 | Bolt 3/8 - 16 x 1 1/2 | 2 |
| | HW-38 | Washer 3/8 | 2 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 2 |
| 4 | HB-12-13-150 | Bolt 1/2 - 13 x 1 1/2 | 2 |
| | HW-12 | Washer 1/2 | 2 |
| | HNTL-12-13 | Lock Nut 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 | 1/2 Disc Flange | 1 |
| 10 | 13-204 | Disc | 1 |
| 11 | HMB-34-10 | Machine Bushing 3/4 x 10GA | 4 |
| 12 | HNA-34-16 | Axle Nut 3/4 - 16 | 1 |
| 13 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| 14 | HWL-38 | Washer 3/8 | 1 |
| | HW-516 | Washer 5/16 | 1 |
| | HW-716 | Washer 7/16 | 1 |
| 15 | HB-38-16-100 | Bolt 3/8 -16 x 1 | 1 |
| 16 | HCP-12-200 | Clevis Pin 1/2 x 2 | 2 |
| 17 | HHP-18 | Bridge Pin 1/8 | 3 |
| 18 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 19 | HG-14-28-180 | Grease Fitting 1/4 - 28 x 180 | 1 |

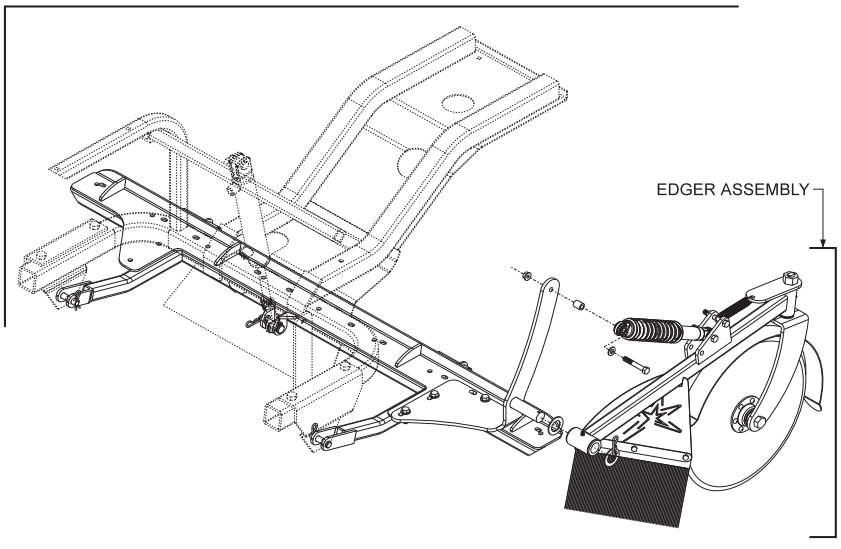


## INSTALLATION INSTRUCTIONS

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

# 42-750 CART PATH AND SIDEWALK EDGER DRAWING



# 42-750 CART PATH AND SIDEWALK EDGER PARTS LIST

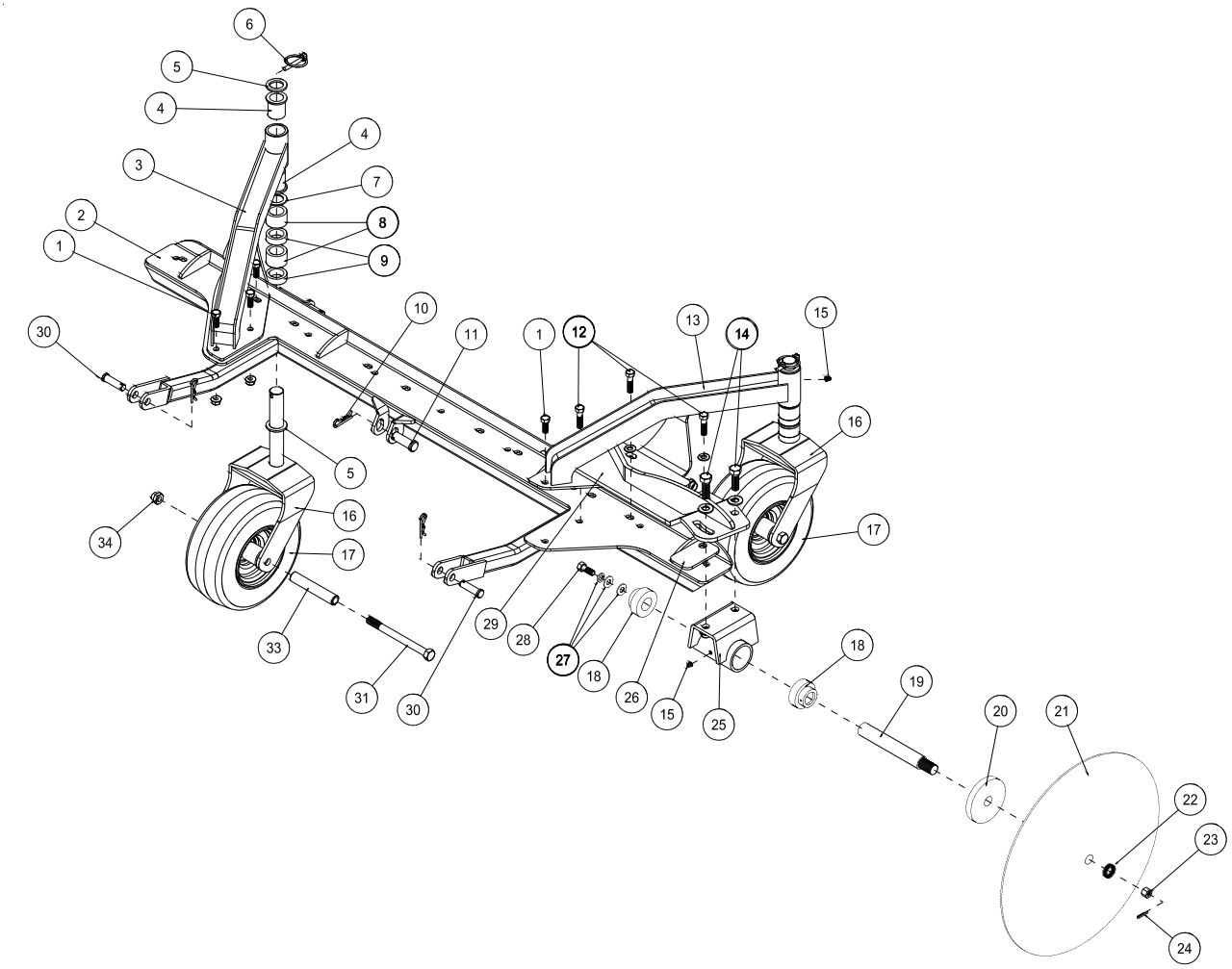
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HCP-12-200 | Clevis Pin, 1/2 x 2 | 2 |
| 2 | HHP-18-100 | Bridge Pin, 1/8 x 1 | 3 |
| 3 | HCP-58-250 | Clevis Pin, 5/8 x 2 1/2 | 1 |
| 4 | 42-203 | Attachment Lift Assembly | 1 |
| 5 | 42-758 | Brush | 1 |
| 6 | 42-754 | Edger Mount | 1 |
| 7 | HB-38-16-125 | Bolt, 3/8 -16 x 1¼ | 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 2½ | 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, ¾ - 16 | 1 |
| 17 | HMB-34-10 | Machine Bushing, ¾ x 10GA | 2 |
| 18 | 42-756 | Edger Fork | 1 |
| 19 | HB-58-11-325 | Bolt, 5/8 - 11 x 3¼ | 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, ¼ - 20 x ¾ | 3 |
| | HNFL-14-20 | Flange Whiz-Lock Nut, ¼ - 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 |

# 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.

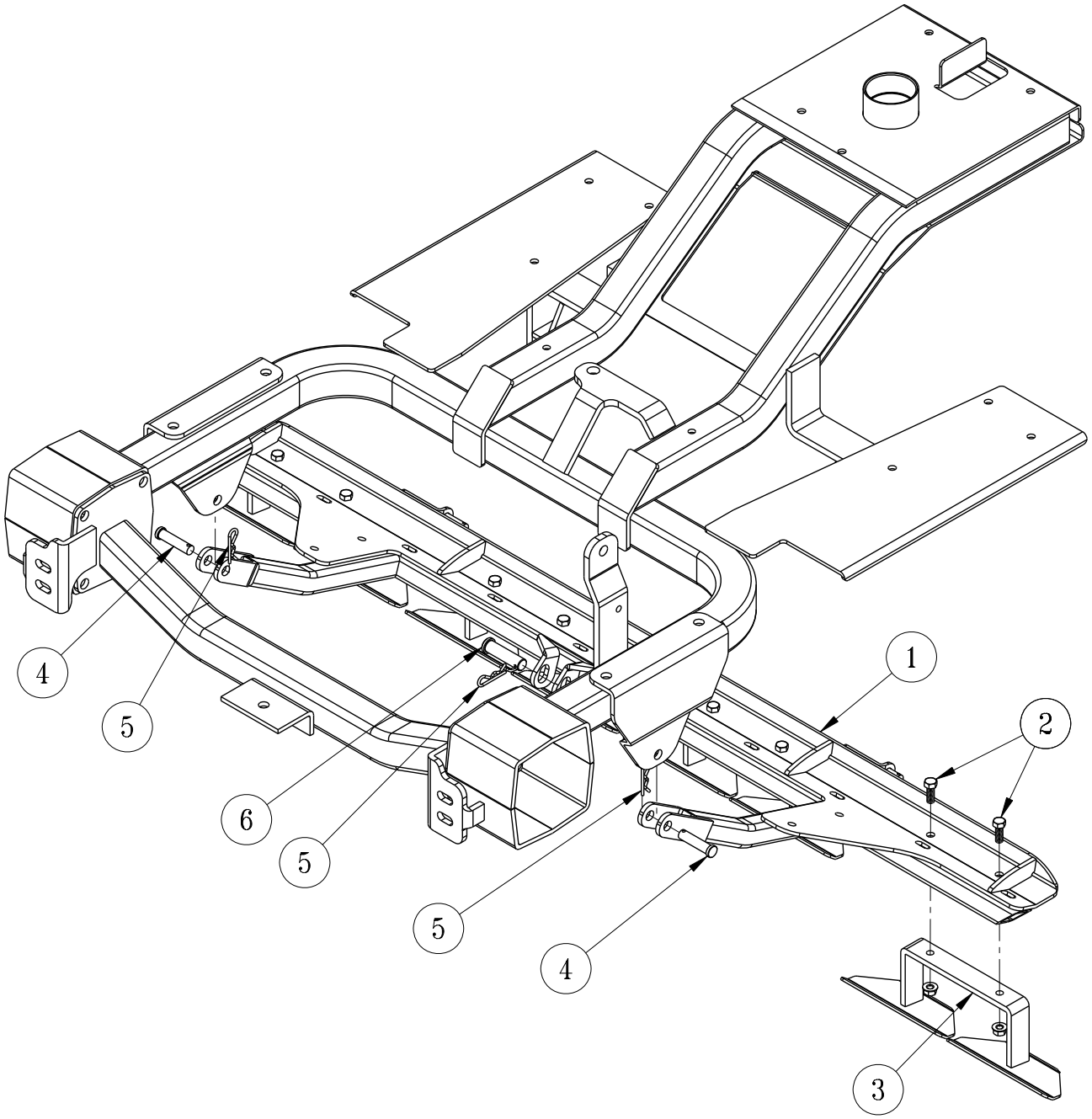
1. Slide Attachment Lift Assembly (Ref 4) under machine and attach using (2) ½ x 2" Clevis Pins (Ref 1) & (2) 1/8" Bridge Pins (Ref 2). Connect the free end of the hydraulic cylinder to the Attachment Lift Assembly (Ref 4) as illustrated using the 5/8 x 2½ Clevis Pin (Ref 3) & (1) 1/8" Bridge Pin (Ref 2).
2. Attach the Edger Mount (Ref 6) to the Attachment Lift Assembly (Ref 4) using (3) 3/8 - 16 x 1¼ bolts, 3/8 Flat Washers and 3/8 -16 Whiz-Lock Nuts (Ref 7).
3. 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 1½ Cotter Pin (Ref 26).
4. Slide (1) 3/8" Flat Washer onto (1) 3/8 - 16 x 2½ 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.
5. Grease all Grease Fittings (Ref 8) and check all fasteners for proper installation.

# 42-287 EDGER KIT WITH CASTOR WHEELS DRAWING



# 42-287 EDGER KIT WITH CASTOR WHEELS PARTS LIST

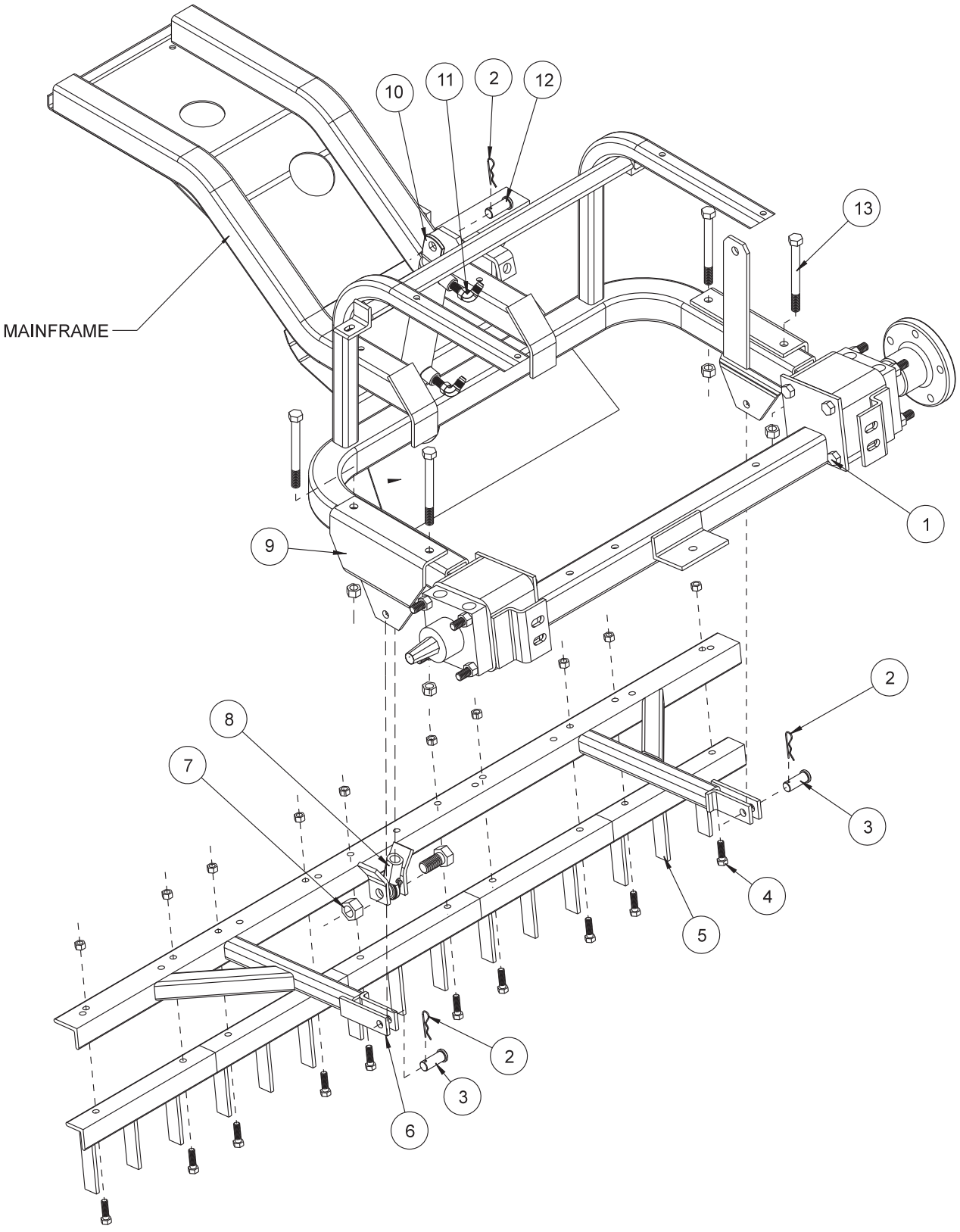
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 4 |
| | HNFL-38-16 | Flange Whiz Lock Nut 3/8-16 | 4 |
| 2 | 42-203 | Attachment Lift Assembly | 1 |
| 3 | 42-293 | Left Castor Bracket | 1 |
| 4 | 18-035 | Flange Bushing (part of 42-292) | 2 |
| 5 | 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 | 1/2" Spacer | 4 |
| 10 | HHP-18 | Bridge Pin 1/8 | 3 |
| 11 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 12 | HB-38-16-150 | Bolt 3/8 - 16 x 1 1/2 | 3 |
| | HW-38 | Washer 3/8 | 3 |
| | HNFL-38-16 | Flange Whiz Lock Nut 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 1/2 - 13 x 1 1/2 | 2 |
| | HW-12 | Washer 1/2 | 2 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 2 |
| 15 | HG-14-28-180 | Grease Fitting 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 | 1/2 Disc Flange | 1 |
| 21 | 13-204 | Disc | 1 |
| 22 | HMB-34-10 | Machine Bushing 3/4 x 10GA | 4 |
| 23 | HNA-34-16 | Axle Nut 3/4 - 16 | 1 |
| 24 | HP-18-150 | Cotter Pin 1/8 x 1 1/2 | 1 |
| 25 | 13-203 | Spindle | 1 |
| 26 | 42-294 | Edger Spacer | 1 |
| 27 | HWL-38 | Washer 3/8 | 1 |
| | HW-516 | Washer 5/16 | 1 |
| | HW-716 | Washer 7/16 | 1 |
| 28 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 1 |
| 29 | 42-224 | Edger Mount | 1 |
| 30 | HCP-12-200 | Clevis Pin 1/2 x 2 | 2 |
| 31 | HB-12-13-600 | Bolt 1/2 - 13 x 6 | 2 |
| 33 | 33-338 | Axle Bearing | 2 |
| 34 | HNTL-12-13 | Lock Nut 1/2 -13 | 2 |


4
5
6
5
5
4
1
2
3

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

# 42-008 SAND CULTIVATOR DRAWING





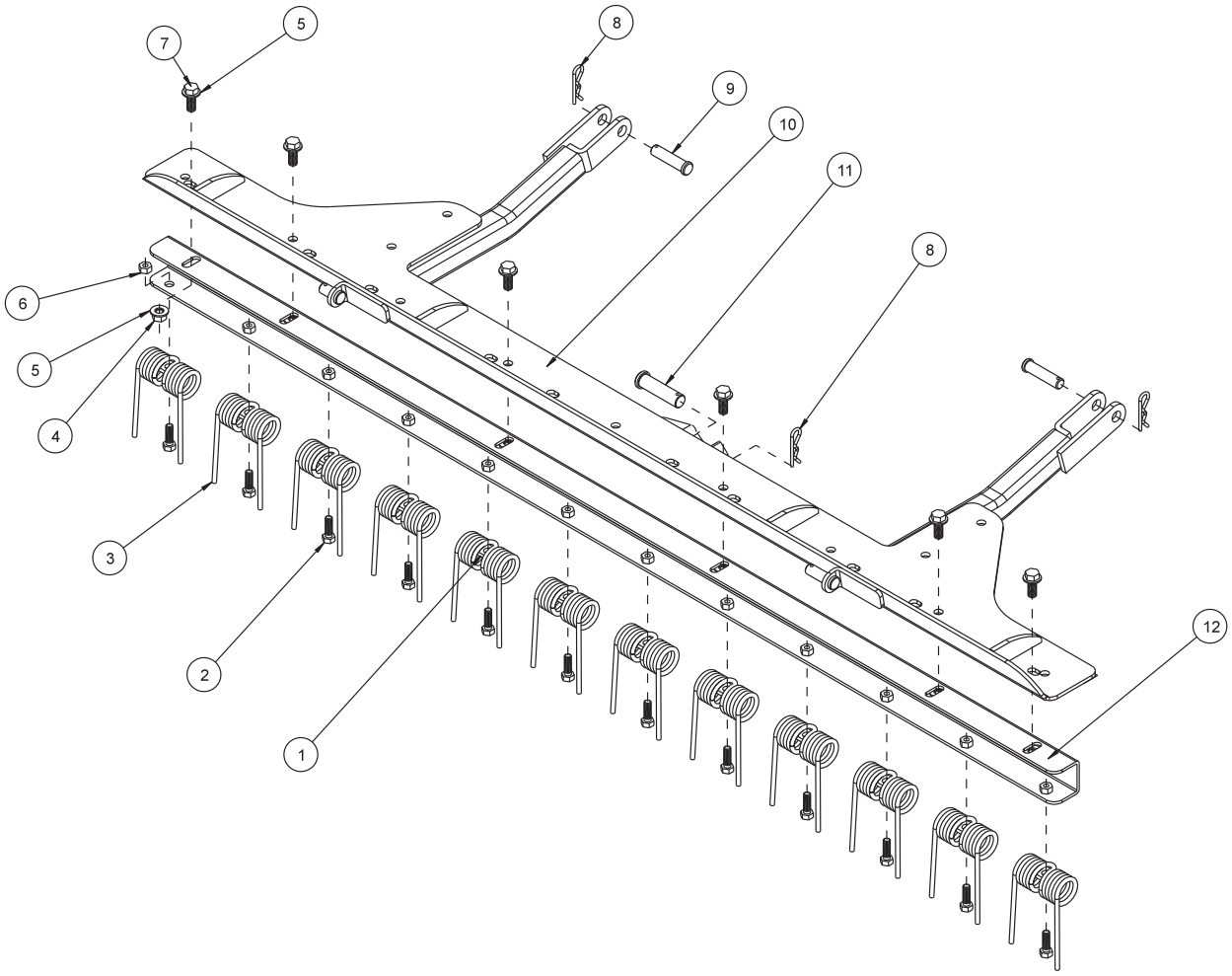
## 42-008 SAND CULTIVATOR PARTS LIST

| REF# | PART# | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | HCP-58-175 | Clevis Pin 5/8 - 1 3/4 | 1 |
| 2 | 10-135 | Hydraulic Cylinder | 1 |
| 3 | 18-168 | 90° Elbow | 2 |
| 4 | 42-217 | Cylinder Mount | 1 |
| 5 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 4 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 4 |
| 6 | 42-015 | Attachment Mount | 2 |
| *7 | HHP-18 | Bridge Pin 1/8 | 3 |
| *9 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 10 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 10 |
| *10 | 42-038 | Tine Segment | 5 |
| *11 | HCP-12-200 | Clevis Pin 1/2 x 2 | 2 |
| *12 | 42-203 | Attachment Lift | 1 |
| *13 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 14 | 18-154 | Rod End | 1 |
| * | 42-008 | Sand Cultivator (all other parts reference only) | |

## INSTALLATION INSTRUCTIONS

1. Install valve handle with linkage (13-672) onto valve.
2. Remove the cylinder mount (Ref 4) from the machine.
3. Tine Segments (Ref 10) should be bolted to the attachment lift (Ref 12). Attach the attachment lift to (Ref 12) attachment mount using (Ref 11 & 7) clevis pin and bridge pin.
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.
6. Turn machine on and test for proper operation.

# 42-340 SAND CULTIVATOR WITH SPRING TINES DRAWING

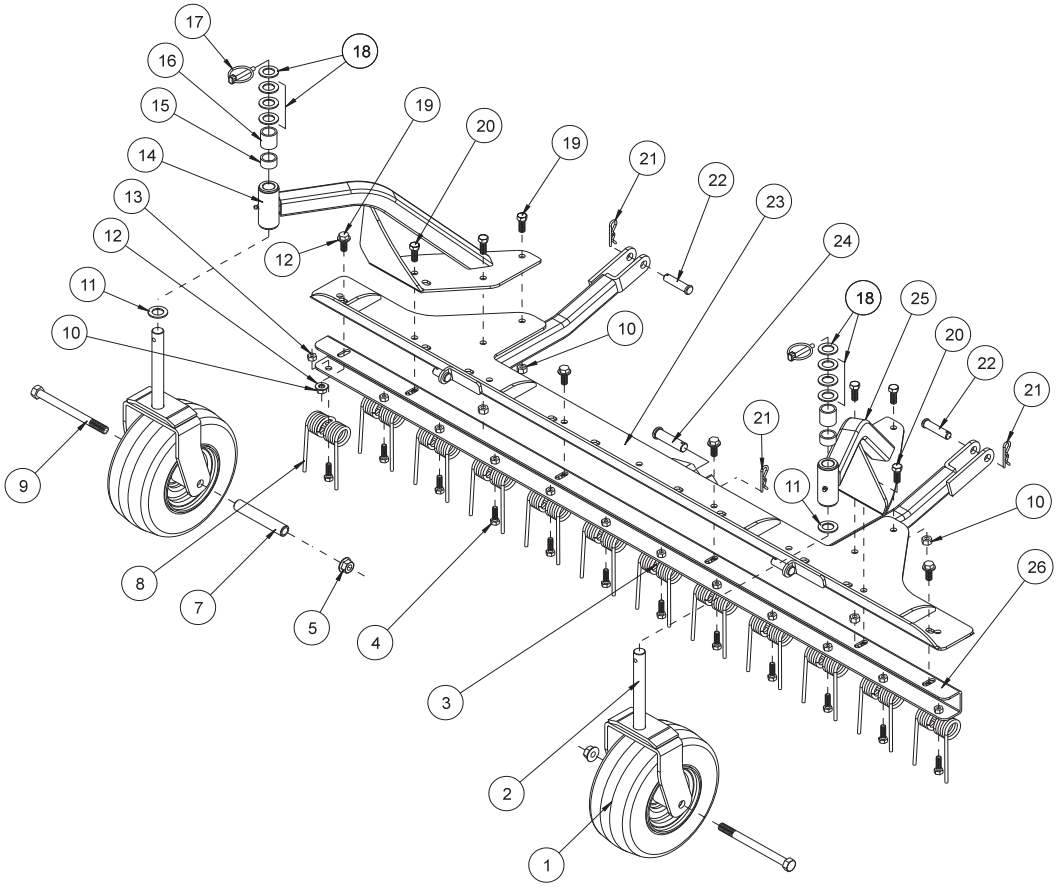


# 42-340 SAND CULTIVATOR WITH SPRING TINES PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-177 | Spring Holder | 12 |
| 2 | HB-516-18-100 | Hex Bolt $^{5}/_{16}$ - 18 x 1 | 12 |
| 3 | 42-122 | Rake Spring | 12 |
| 4 | HNTL-38-16 | Lock Nut $^{3}/_{8}$ - 16 | 6 |
| 5 | HW-38 | Flat Washer $^{3}/_{8}$ | 12 |
| 6 | HNTL-516-18 | Lock Nut $^{5}/_{16}$ - 18 | 12 |
| 7 | HB-38-16-100 | Hex Bolt $^{3}/_{8}$ - 16 x 1 | 6 |
| 8 | HHP-18 | Bridge Pin 1/8 | 3 |
| 9 | HCP-12-200 | Clevis Pin ½ x 2 | 2 |
| 10 | 42-203 | Attachment Lift Bar | 1 |
| 11 | HCP-58-250 | Clevis Pin $^{5}/_{8}$ x 2½ | 1 |
| 12 | 42-343 | Spring Bar | 1 |

# 42-341 FIELD SCARIFIER WITH TINES AND CASTOR WHEELS DRAWING



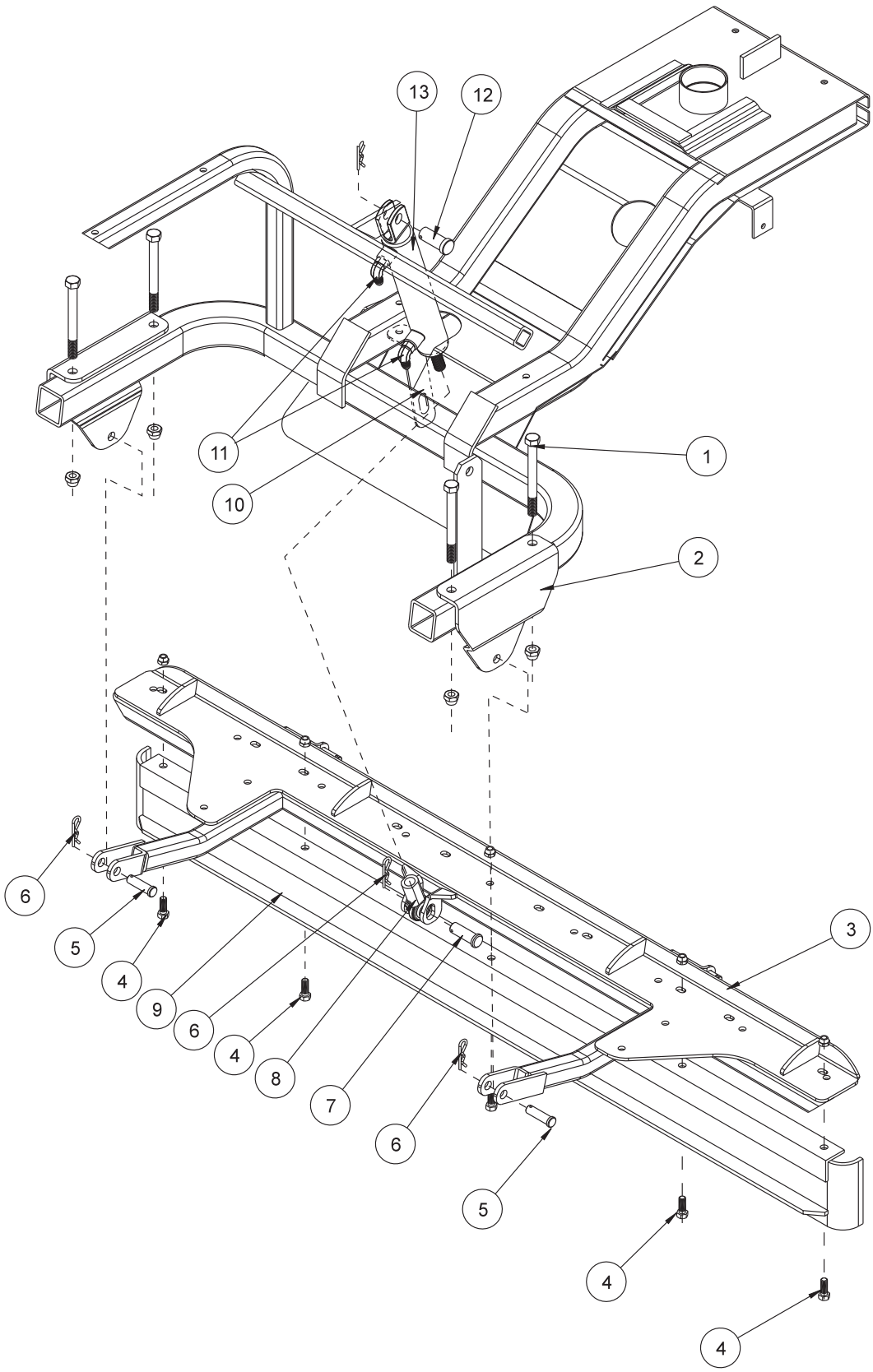


# 42-341 FIELD SCARIFIER WITH TINES AND CASTOR WHEELS PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 33-435 | Tire & Wheel | 2 |
| 2 | 42-204 | Castor Fork | 2 |
| 3 | 42-177 | Spring Holder | 12 |
| 4 | HB-516-18-100 | Hex Bolt 5/16 - 18 x 1 | 12 |
| 5 | HNTL-12-13 | Lock Nut ½ - 13 | 2 |
| 7 | 33-338 | Axle Bearing | 2 |
| 8 | 42-122 | Rake Spring | 12 |
| 9 | HB-12-13-600 | Hex Bolt ½ - 13 x 6 | 2 |
| 10 | HNTL-38-16 | Lock Nut 3/8 - 16 | 10 |
| 11 | HMB-34-14 | Machine Bushing ¾ x 14GA | 2 |
| 12 | HW-38 | Flat Washer 3/8 | 12 |
| 13 | HNTL-516-18 | Lock Nut 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 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 ¼" | 2 |
| 18 | HMB-34-10 | Machine Bushing ¾ x 10GA | 8 |
| 19 | HB-38-16-100 | Hex Bolt 3/8 - 16 x 1 | 8 |
| 20 | HB-38-16-125 | Hex Bolt 3/8 - 16 x 1¼ | 2 |
| 21 | HHP-18 | Bridge Pin 1/8 | 3 |
| 22 | HCP-12-200 | Clevis Pin ½ x 2 | 2 |
| 23 | 42-203 | Attachment Lift Bar | 1 |
| 24 | HCP-58-250 | Clevis Pin 5/8 x 2½ | 1 |
| 25 | 42-288 | Left Castor Wheel Bracket | 1 |
| | 10-025 | Flange Bushing (Part of 42-288) | 2 |
| | HG-14-28-180 | Grease Fitting 1/4 - 28 x 180° (Part of 42-288) | 1 |
| 26 | 42-343 | Spring Bar | 1 |

# 42-010 CONSTRUCTION LEVELING BLADE DRAWING





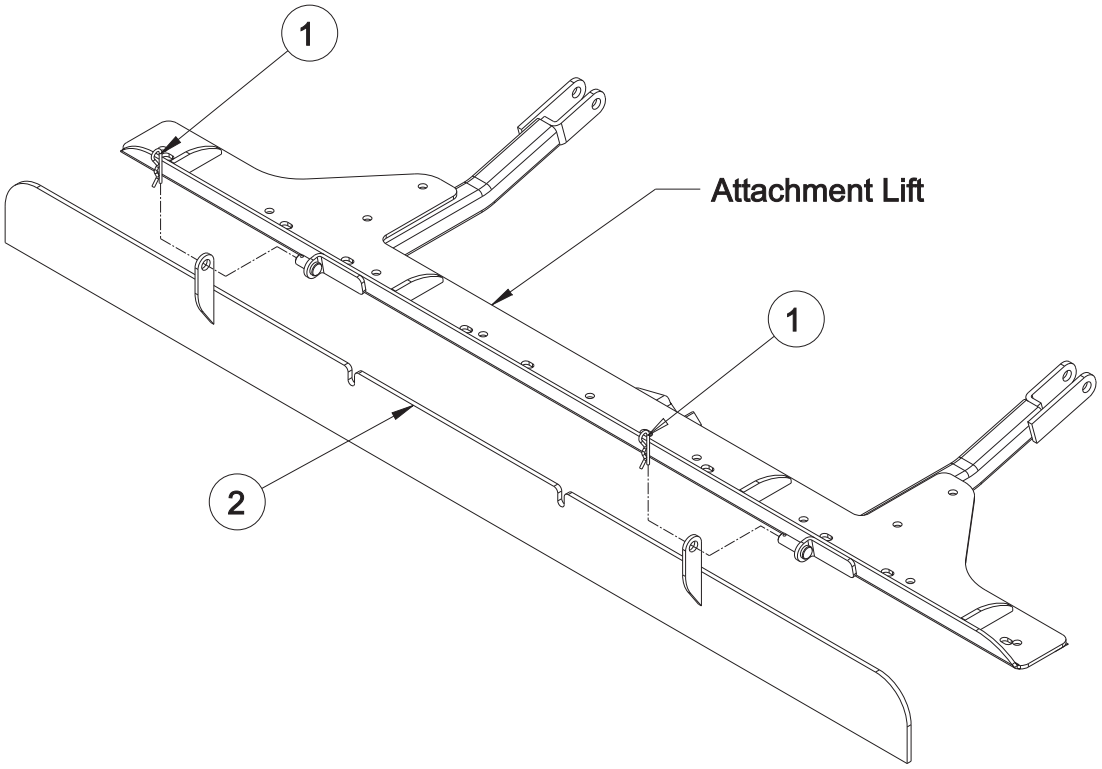
## 42-010 CONSTRUCTION LEVELING BLADE PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HB-12-13-500 | Bolt 1/2 - 13 x 5 | 4 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 | 4 |
| 2 | 42-015 | Attachment Mount | 2 |
| *3 | 42-203 | Attachment Lift | 1 |
| *4 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 5 |
| | HNTL-38-16 | Lock Nut 3/8 - 16 | 5 |
| *5 | HCP-12-200 | Clevis Pin 1/2 x 2 | 2 |
| *6 | HHP-18 | Bridge Pin 1/8 | 3 |
| *7 | HCP-58-250 | Clevis Pin 5/8 x 2 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 3/4 - 1 3/4 | 1 |
| 13 | 10-135 | Hydraulic Cylinder | 1 |
| * | 42-010 | Construction Leveling Blade (all other parts are reference only) | |

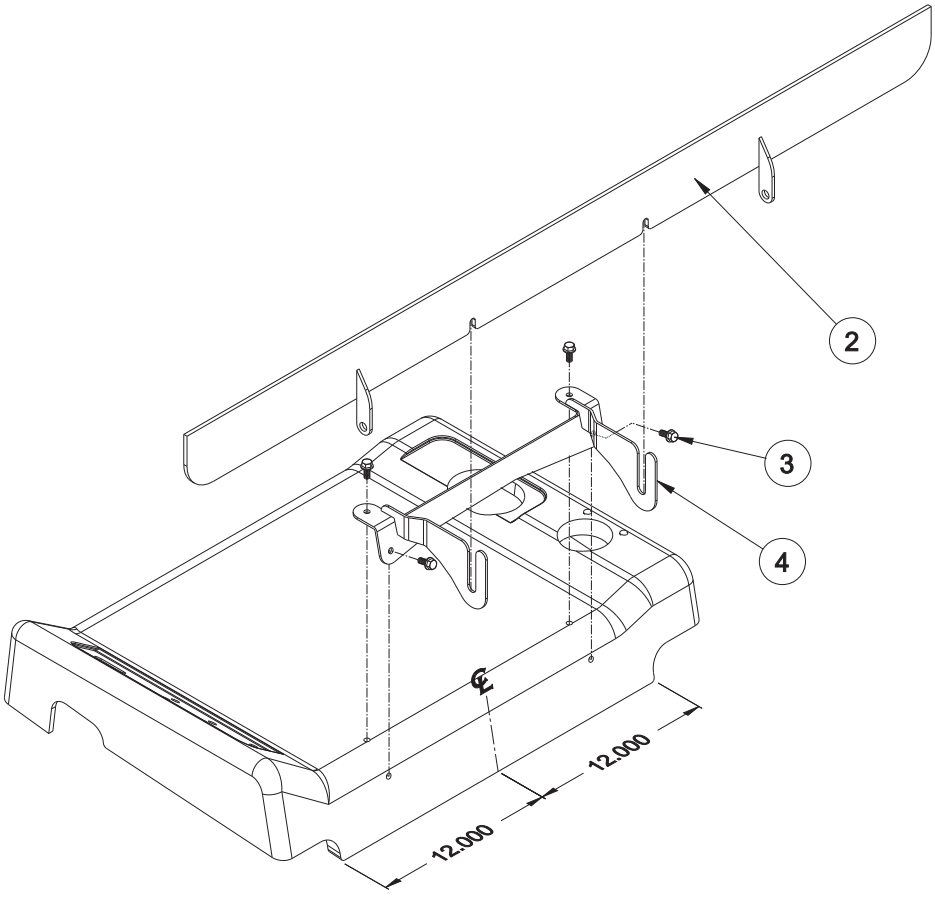
## INSTALLATION INSTRUCTIONS

1. Remove the cylinder mount (Ref 10) from the machine.
2. Bolt leveling blade (Ref 9) to attachment lift (Ref 3) using five 3/8 - 16 x 1 bolts and five 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 5/8 x 2 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




## 42-210 GRADER BLADE MOUNT DRAWING



## 42-210 GRADER BLADE PARTS LIST

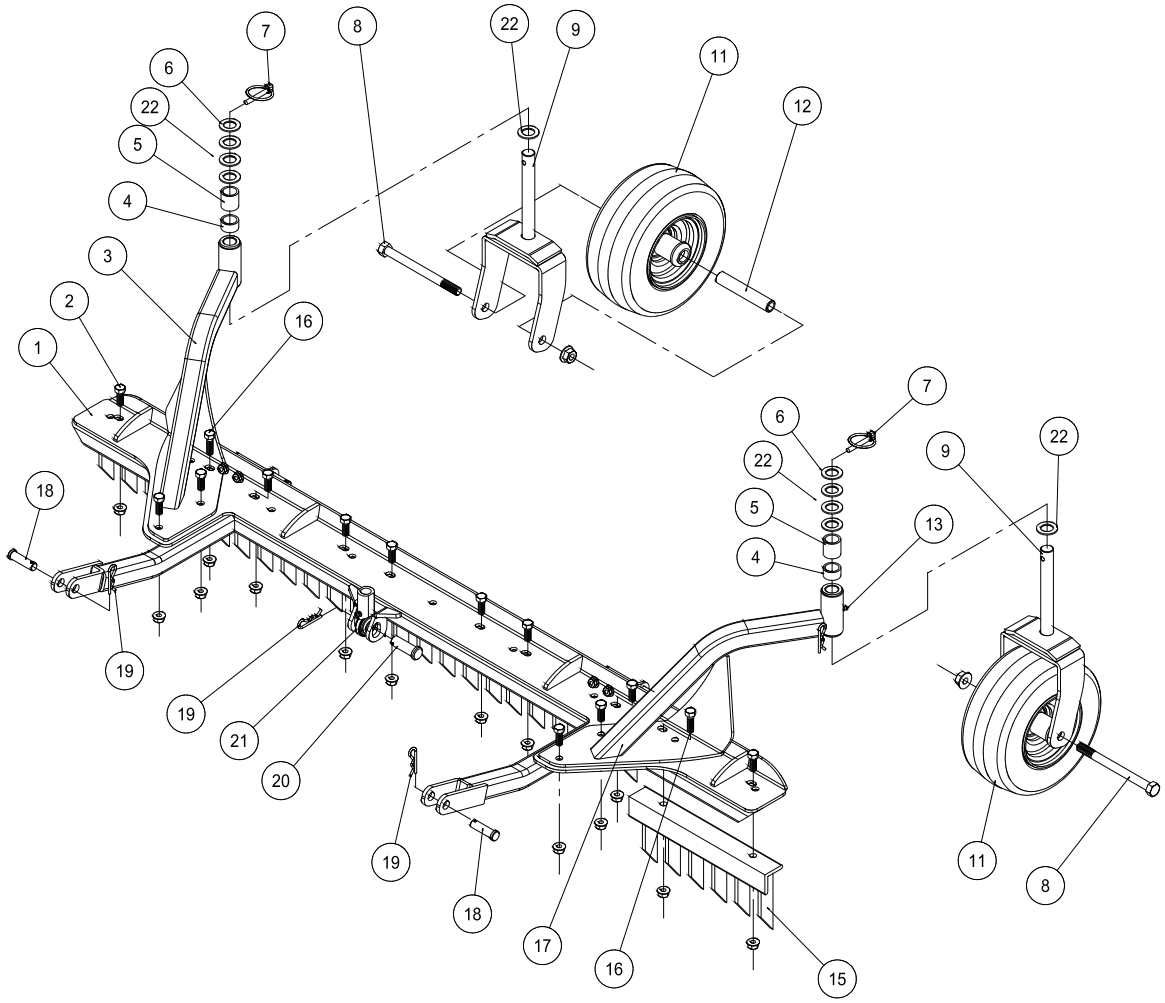
| REF# | PART# | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | HHP-18 | Bridge Pin $^{1}/_{8}$ | 2 |
| 2 | 42-207 | Grader Blade | 1 |
| 3 | HBFL-516-18-075 | Flange Bolt, $^{5}/_{16}$ - 18 x $^{3}/_{4}$ | 4 |
| | HNFL-516-18 | Flange Whiz-Loc Nut, $^{5}/_{16}$ - 18 *(not illustrated)* | 4 |
| 4 | 42-386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

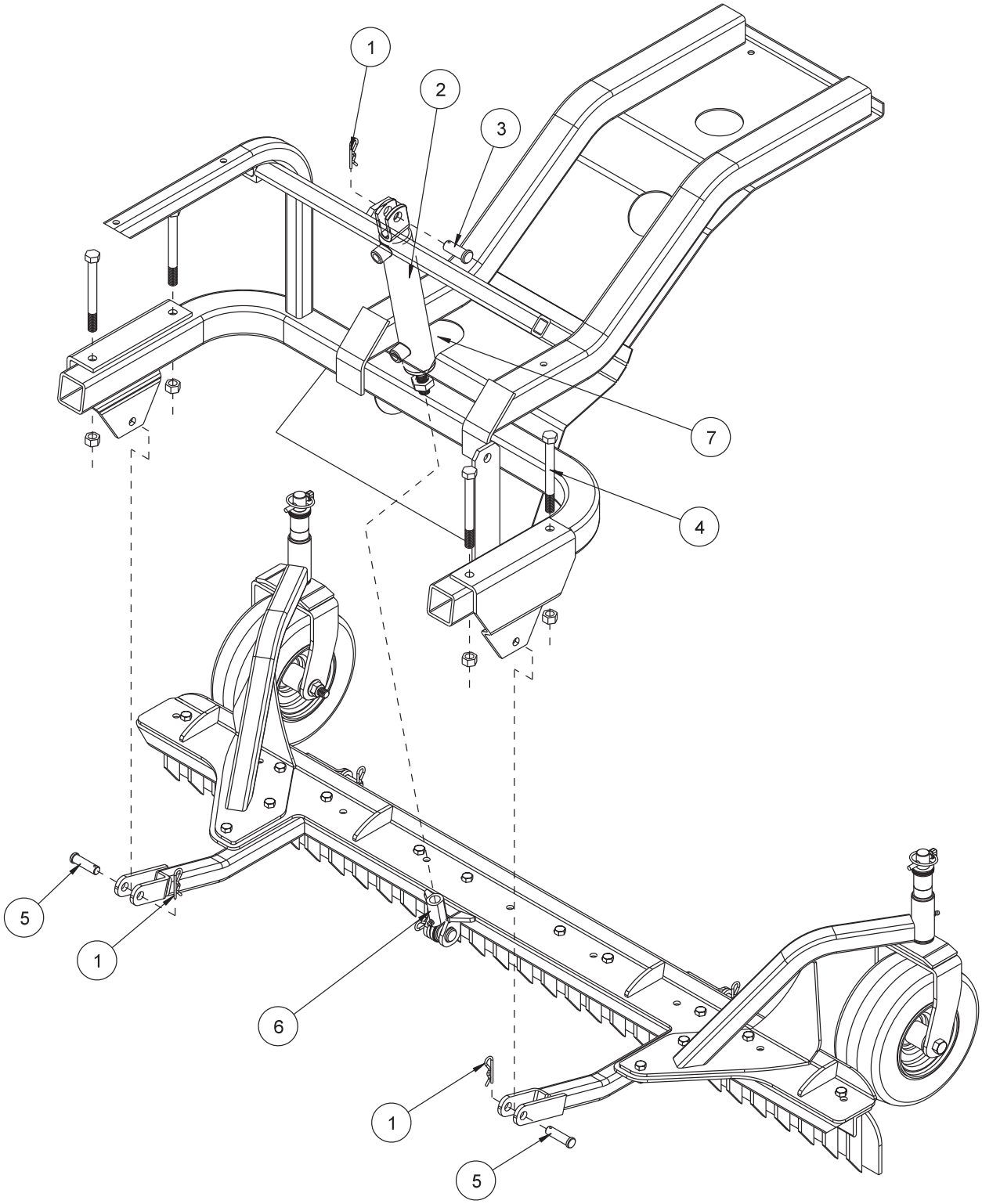


# 42-178 INFIELD SCARIFIER WITH VERTICAL BLADES PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-203 | Attachment Lift Assembly | 1 |
| 2 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 12 |
| | HNTL-38-16 | Lock Nut 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 3/4 x 14GA | 2 |
| 7 | 42-539 | Lynch Pin 5/16 | 2 |
| 8 | HB-12-13-600 | Bolt 1/2-13 x 6 | 2 |
| | HNTL-12-13 | Lock Nut 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 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 3/8 - 16 x 1 1/4 | 2 |
| | HNTL-38-16 | Lock Nut 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 1/2 x 2 | 2 |
| 19 | HHP-18 | Bridge Pin 1/8 | 3 |
| 20 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 21 | 18-154 | Rod End (part of machine) | 1 |
| 22 | HMB-34-10 | Machine Bushing 3/4 x 10GA | 8 |

# 42-178 SCARIFIER MOUNTING DRAWING





## 42-178 SCARIFIER MOUNTING PARTS LIST

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

## INSTALLATION INSTRUCTIONS

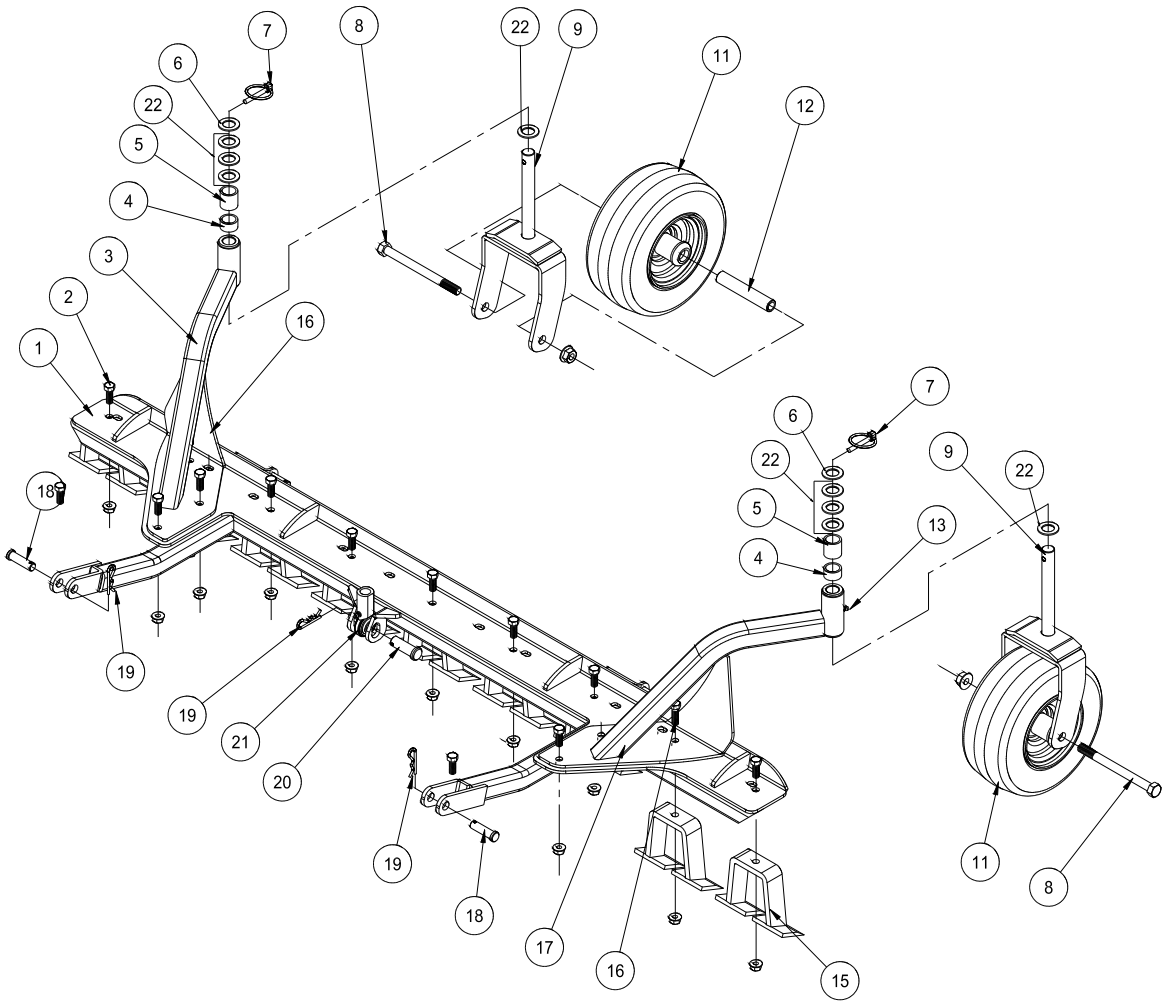
1. Assemble the Scarifier as shown on previous page.
2. Remove the rod end (Ref 6) on the hydraulic cylinder (Ref 2) from the cylinder mount (Ref 7). Remove the cylinder mount (Ref 7) from the machine.

*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

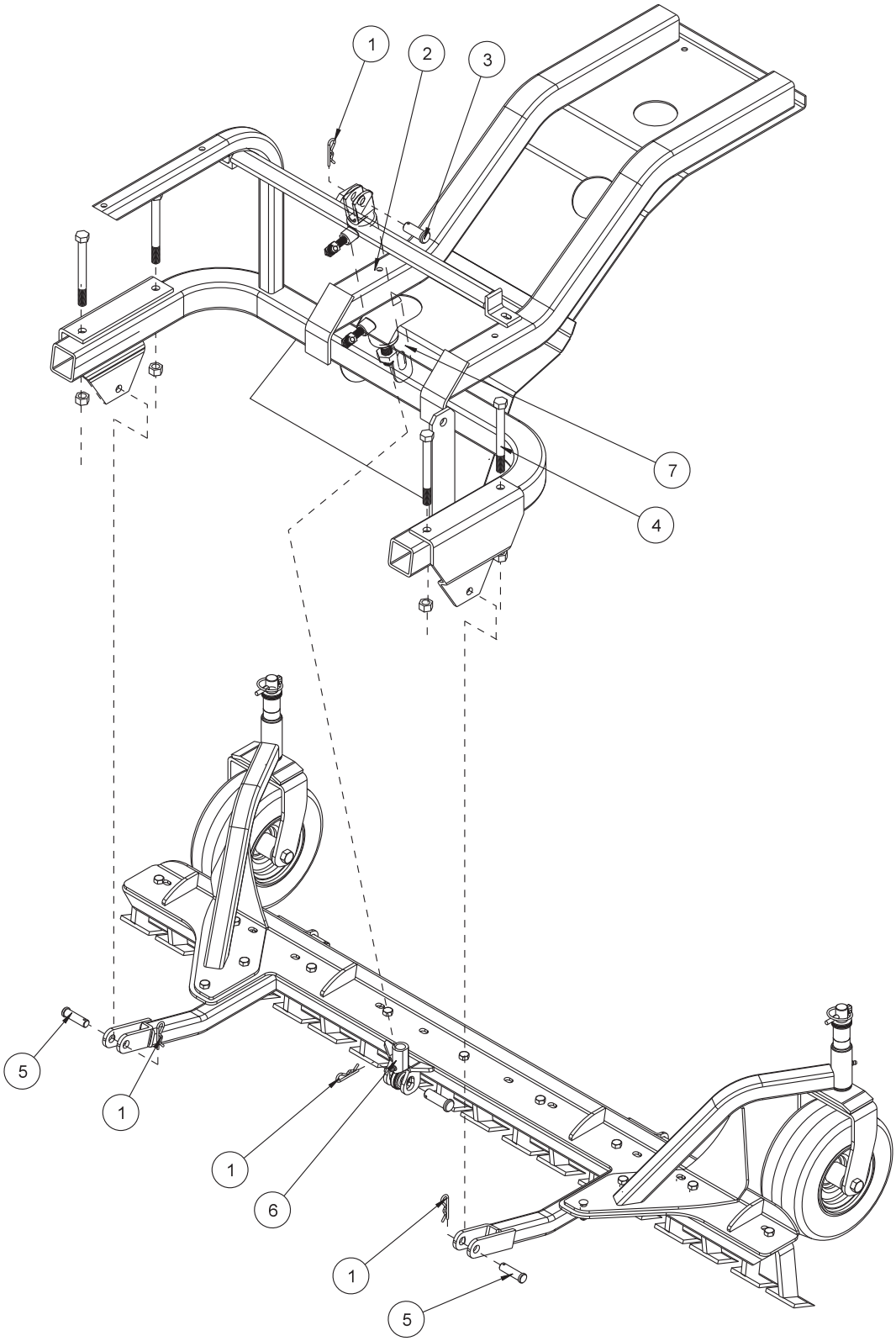


# 42-179 INFIELD SCARIFIER WITH CHISEL BLADES PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-203 | Attachment Lift Assembly | 1 |
| 2 | HB-38-16-125 | Bolt 3/8 - 16 x 1 1/4 | 11 |
| | HNTL-38-16 | Lock Nut 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 3/4 x 14GA | 2 |
| 7 | 42-539 | Lynch Pin 5/16 | 2 |
| 8 | HB-12-13-600 | Bolt 1/2-13 x 6 | 2 |
| | HNTL-12-13 | Lock Nut 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 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 3/8 - 16 x 1 1/2 | 2 |
| | HNTL-38-16 | Lock Nut 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 1/2 x 2 | 2 |
| 19 | HHP-18 | Bridge Pin 1/8 | 3 |
| 20 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 21 | 18-154 | Rod End (part of machine) | 1 |
| 22 | HMB-34-10 | Machine Bushing 3/4 x 10GA | 8 |

# 42-179 SCARIFIER MOUNTING DRAWING





## 42-179 SCARIFIER MOUNTING PARTS LIST

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

## INSTALLATION INSTRUCTIONS

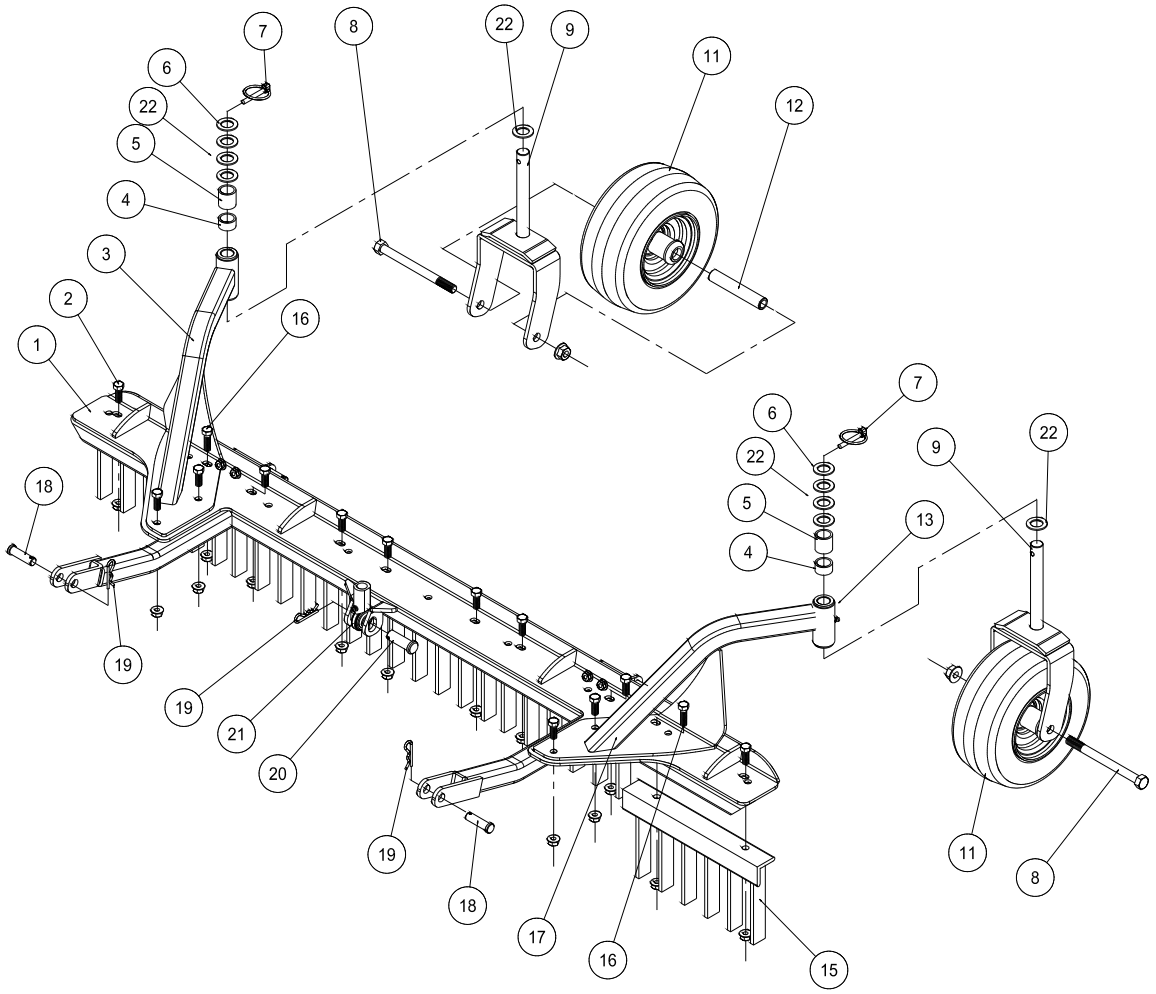
1. Assemble the Scarifier as shown on previous page.
2. Remove the rod end (Ref 6) on the hydraulic cylinder (Ref 2) from the cylinder mount (Ref 7). Remove the cylinder mount (Ref 7) from the machine.

*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

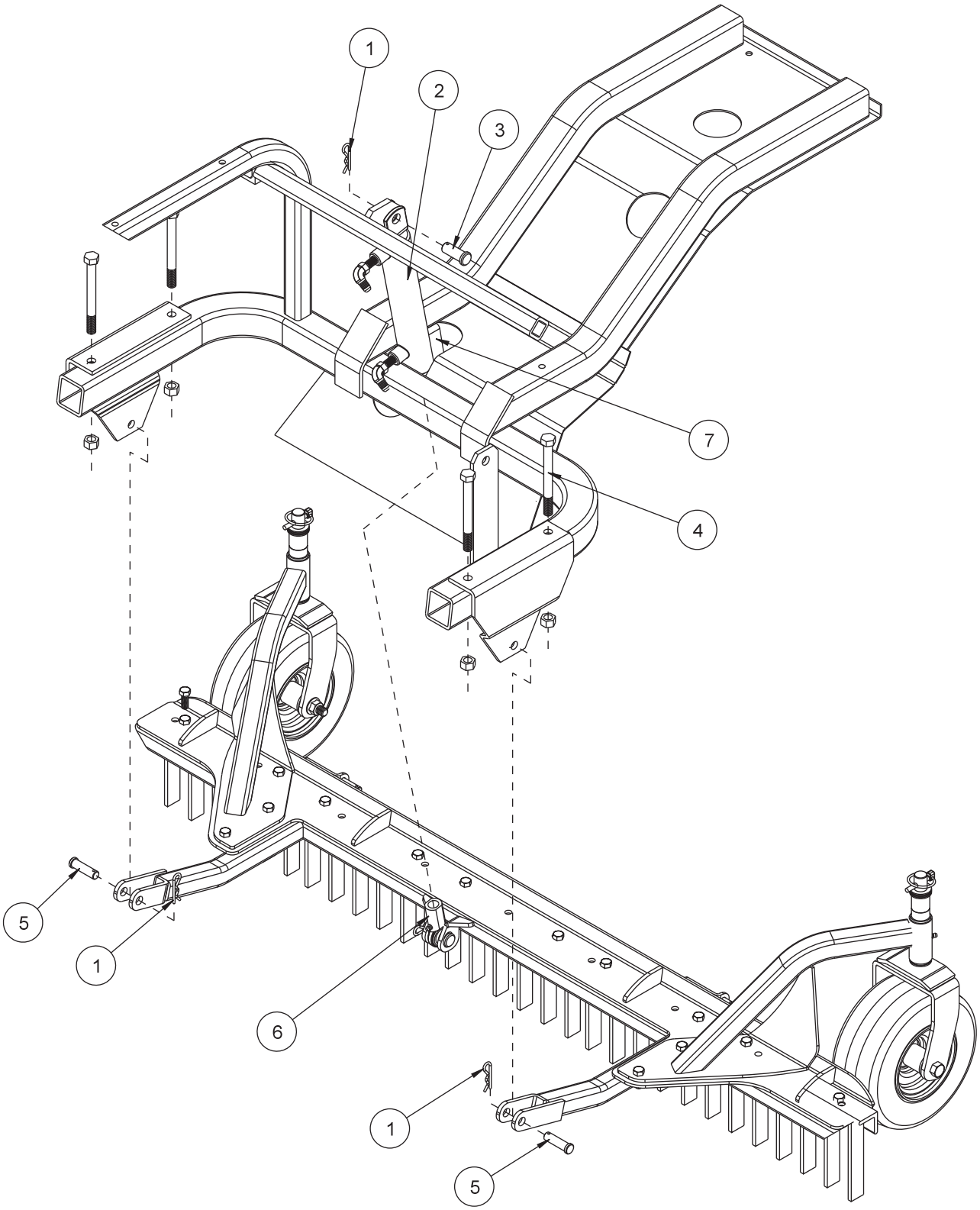


# 42-285 SCARIFIER WITH VERTICAL BLADES PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 42-203 | Attachment Lift Assembly | 1 |
| 2 | HB-38-16-100 | Bolt 3/8 - 16 x 1 | 12 |
| | HNTL-38-16 | Lock Nut 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 3/4 x 14GA | 2 |
| 7 | 42-539 | Lynch Pin 5/16 | 2 |
| 8 | HB-12-13-600 | Bolt 1/2-13 x 6 | 2 |
| | HNTL-12-13 | Lock Nut 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 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 3/8 - 16 x 1 1/4 | 2 |
| | HNTL-38-16 | Lock Nut 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 1/2 x 1 3/4 | 2 |
| 19 | HHP-18 | Bridge Pin 1/8 | 3 |
| 20 | HCP-58-250 | Clevis Pin 5/8 x 2 1/2 | 1 |
| 21 | 18-154 | Rod End (part of machine) | 1 |
| 22 | HMB-34-10 | Machine Bushing 3/4 x 10GA | 8 |

# 42-285 SCARIFIER WITH VERTICAL BLADES MOUNTING DRAWING





## 42-285 SCARIFIER WITH VERTICAL BLADES MOUNTING PARTS LIST

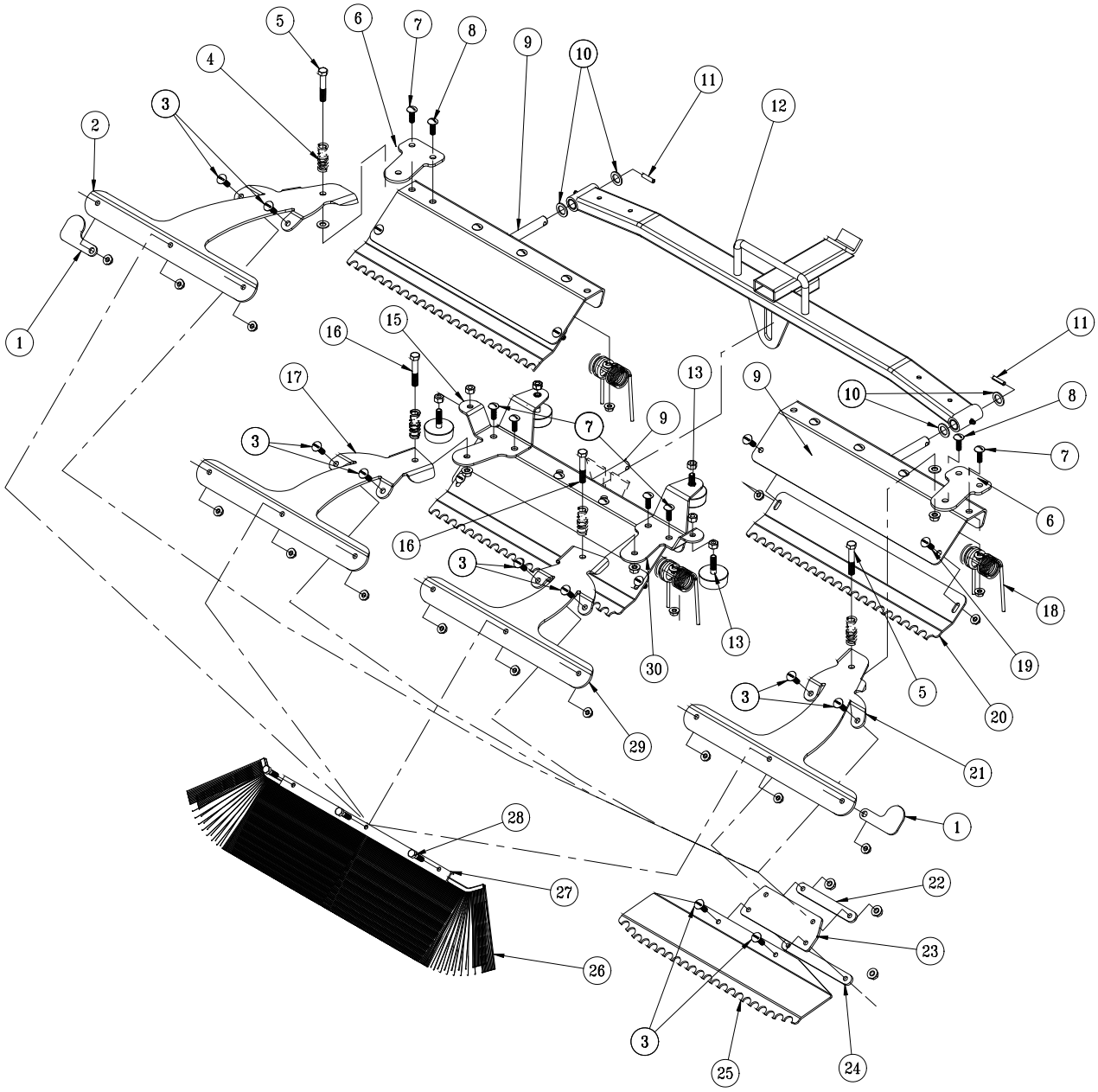
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HHP-18 | Bridge Pin 1/8 | 3 |
| 2 | | Hydraulic Cylinder (part of machine) | 1 |
| 3 | HCP-58-175 | Clevis Pin 5/8 x 1 3/4 | 1 |
| 4 | HB-12-13-500 | Bolt 1/2 - 13 x 5 (part of machine) | 4 |
| | HNTL-12-13 | Lock Nut 1/2 - 13 (part of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

# ACCESSORIES

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



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

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

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

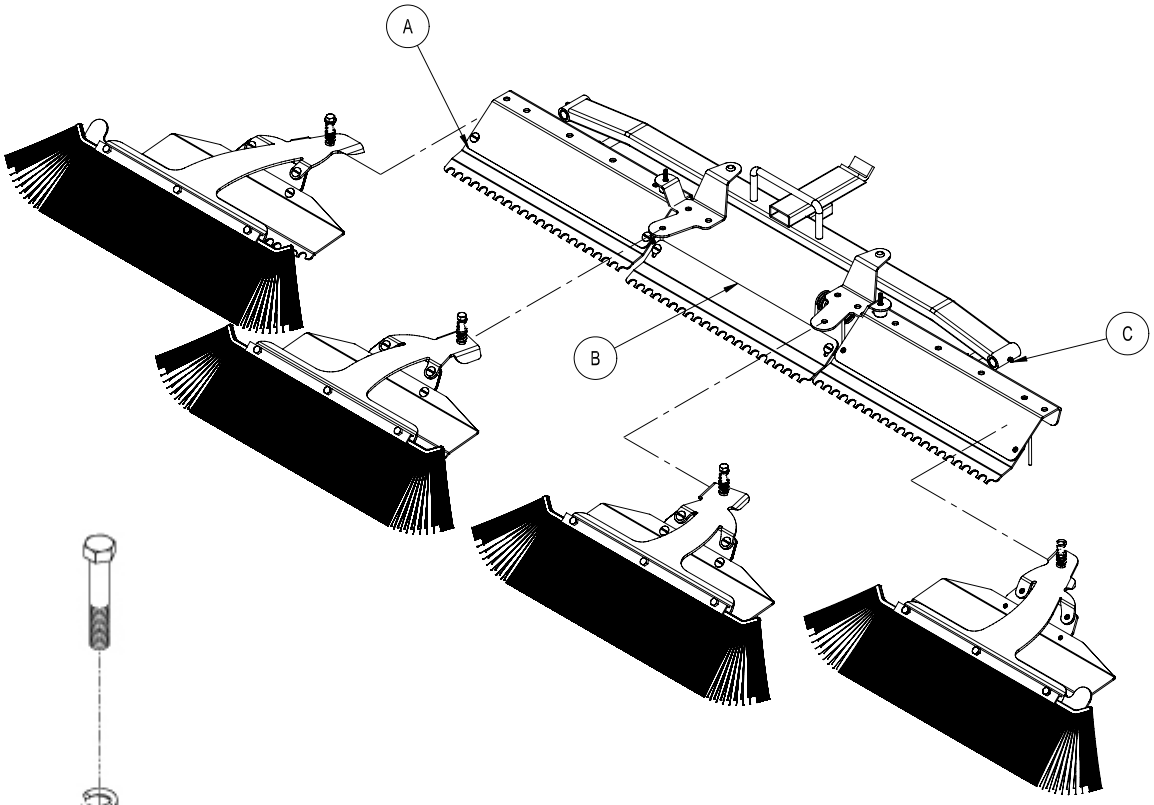



Fig. 1

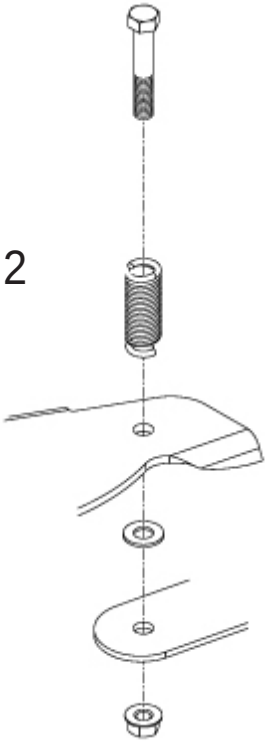


Fig. 2

Fig. 3

# PROBRUSH TOURNAMENT RAKE ASSEMBLY INSTRUCTIONS

Your PROBRUSH TOURNAMENT RAKE comes mostly assembled.

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

**NOTE:**

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


Fig. 4

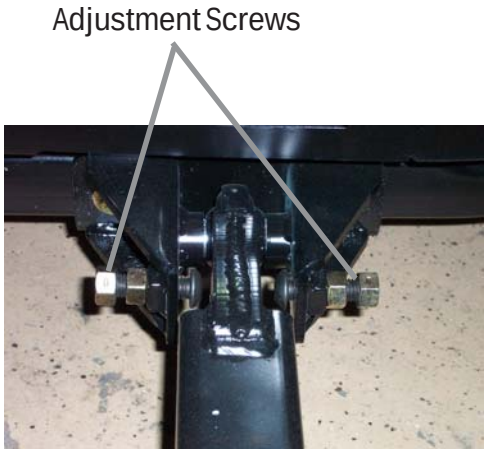
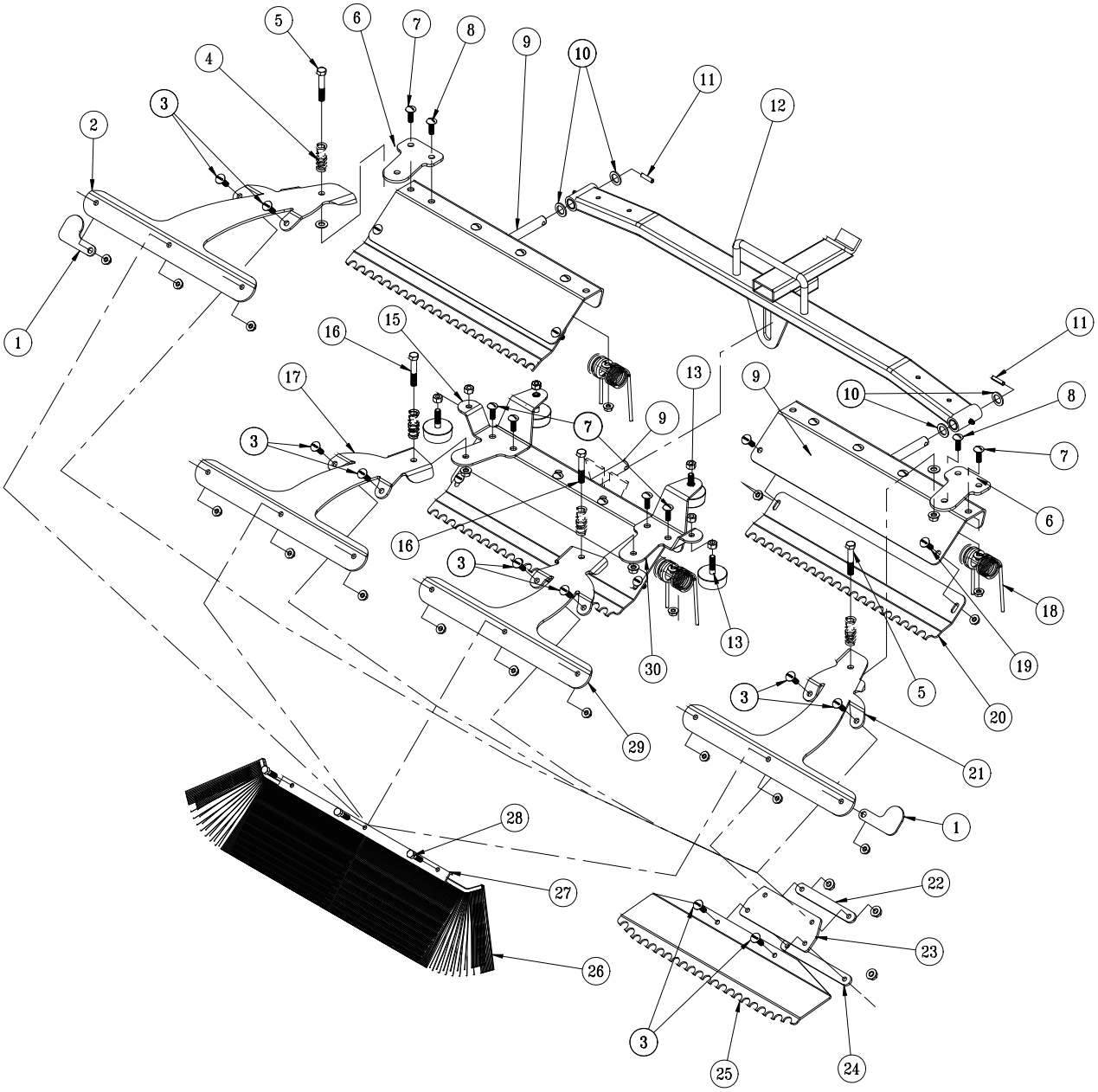



Fig. 5

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



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

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

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

Fig. 1

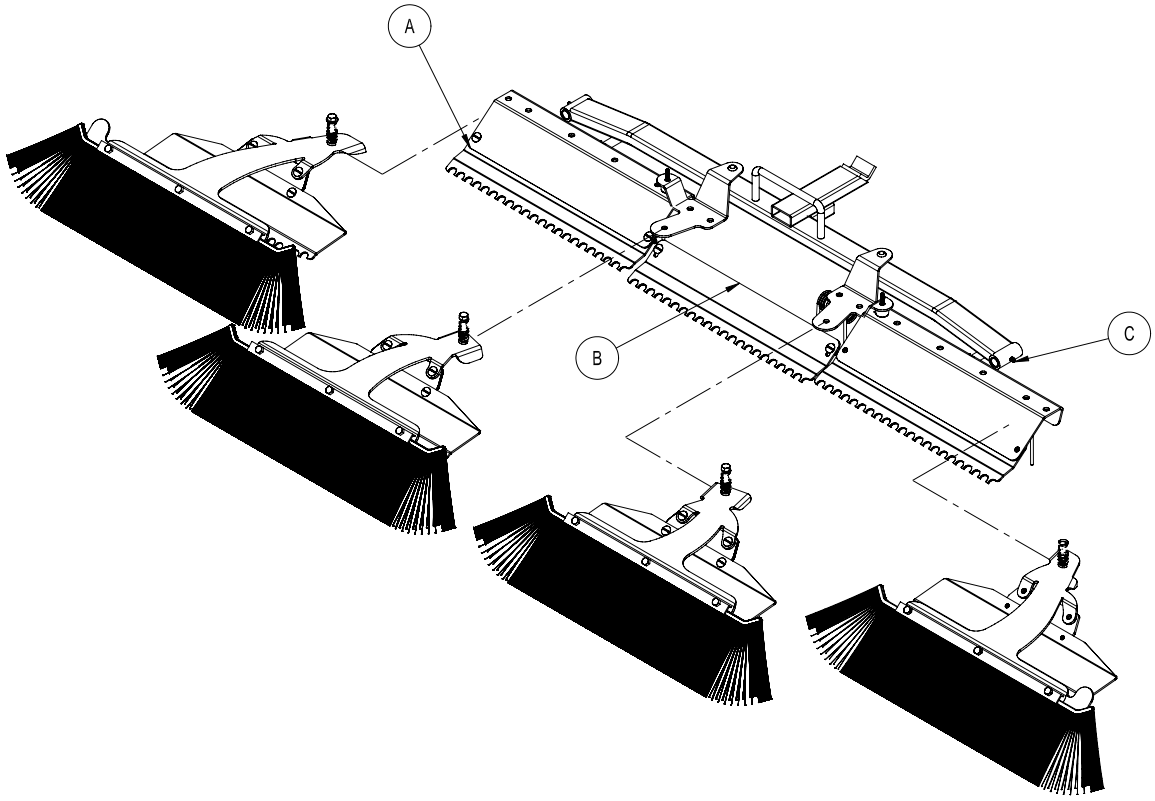



Fig. 2

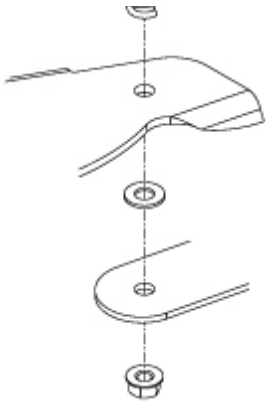


Fig. 3

Your PROBRUSH TOURNAMENT RAKE comes mostly assembled.

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

**NOTE:**

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

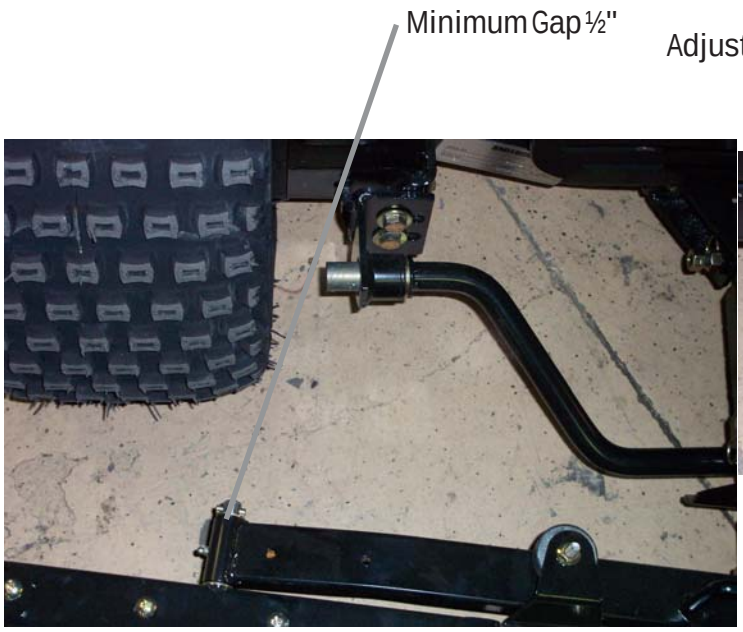



Fig. 4

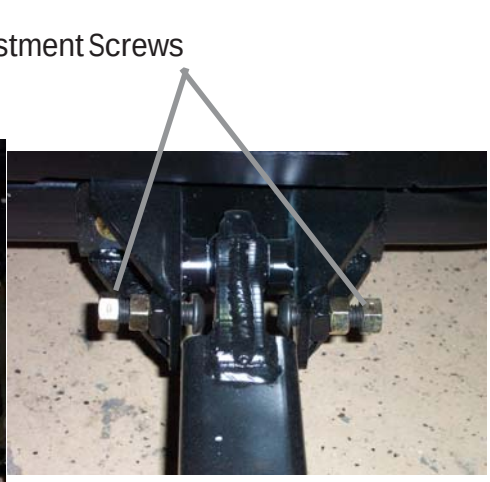
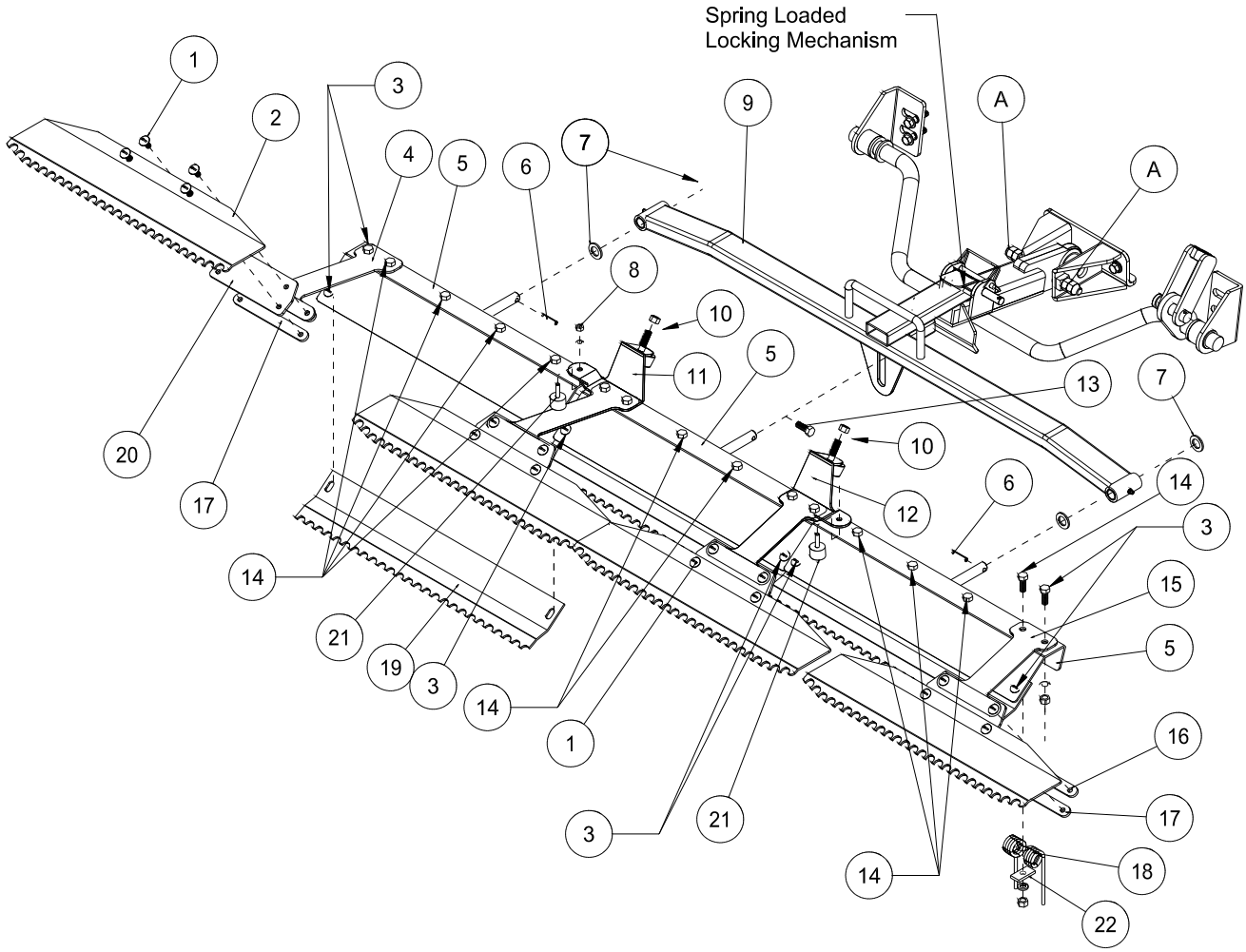



Fig. 5

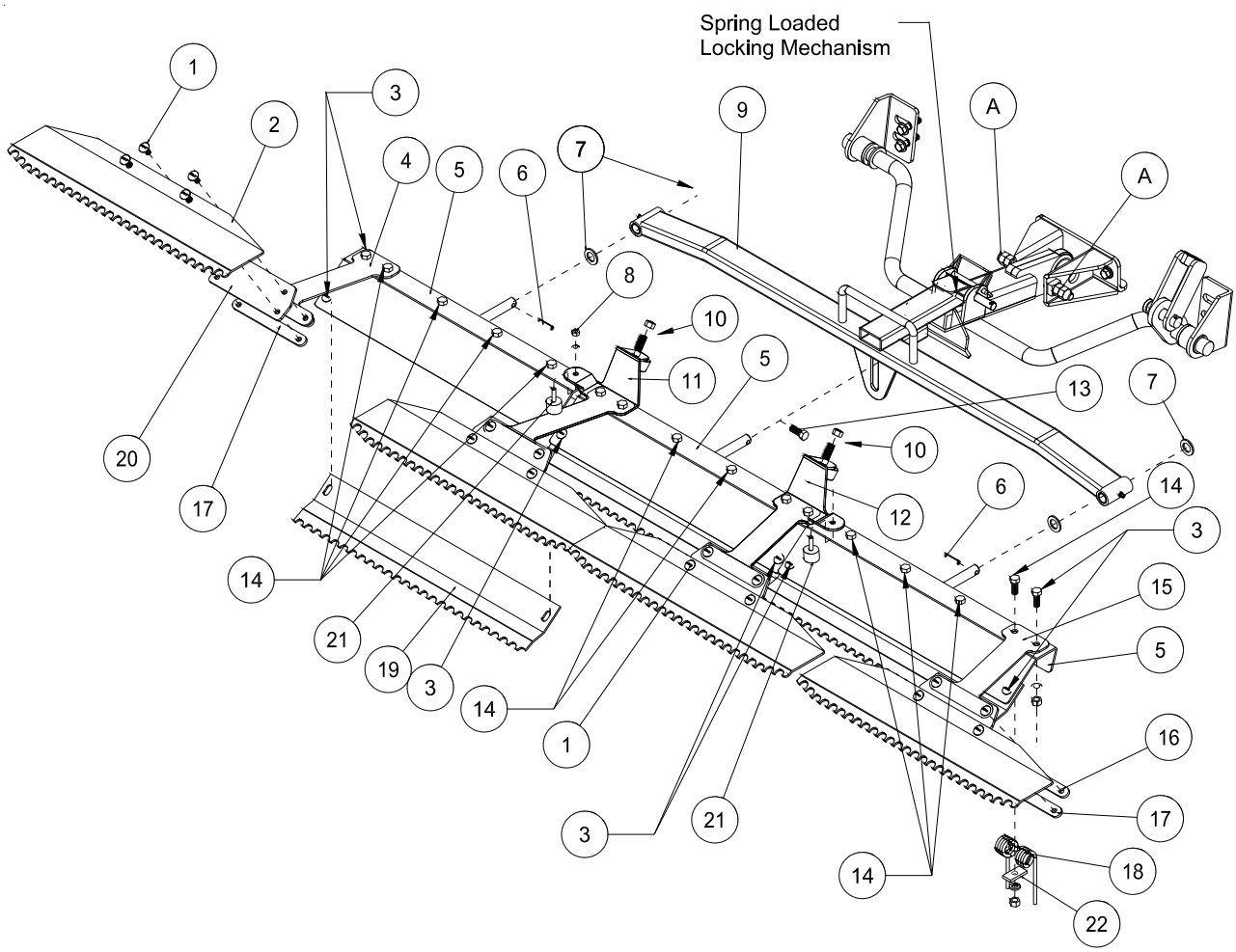
# 42-130Q 84" (213CM) MILD STEEL TOURNAMENT RAKE DRAWING



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

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HSTP-516-18-100 | Phillips Machine Screw 5/16 - 18 x 1 | 16 |
| | HNFL-516-18 | Flange 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 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 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 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 |

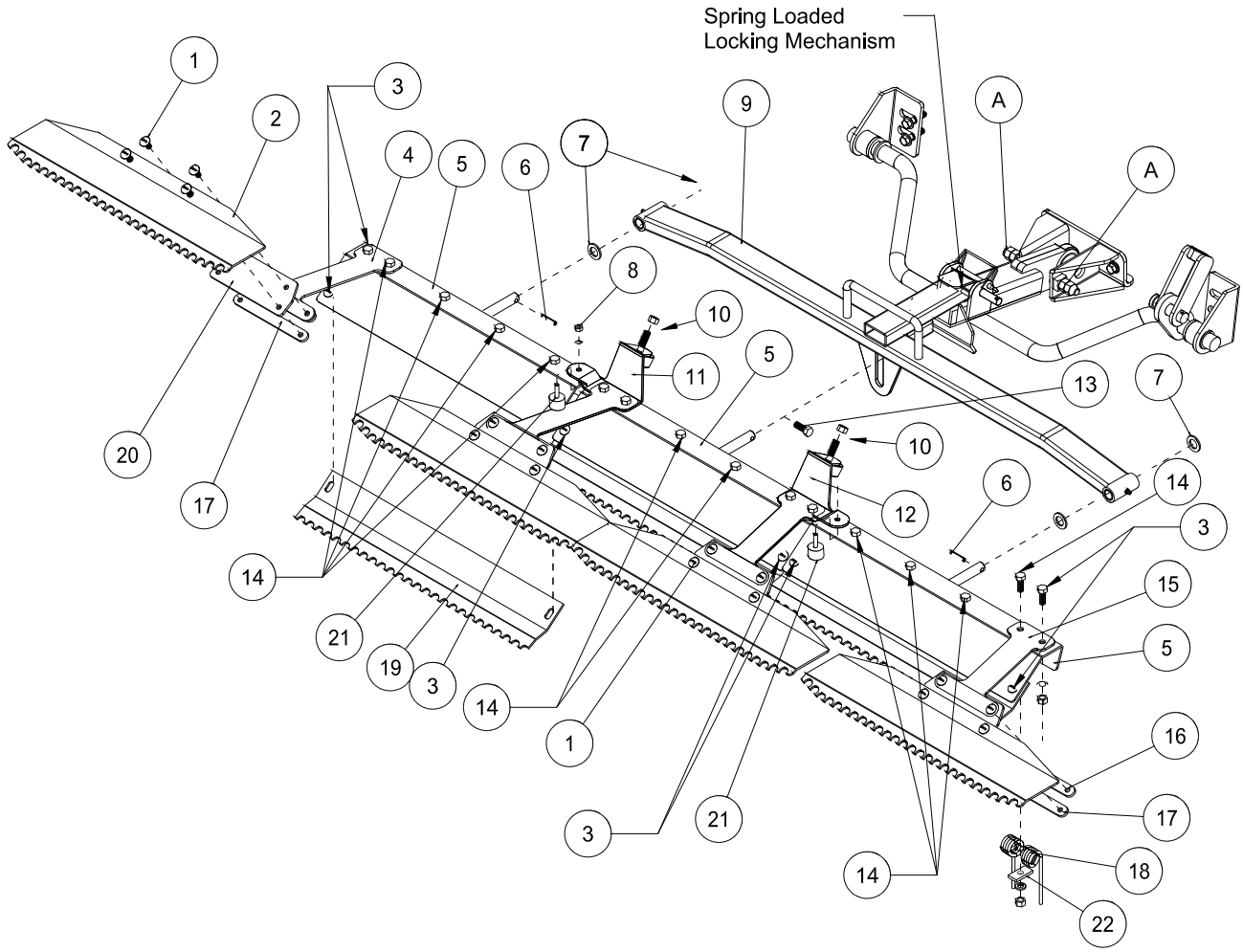
# 42-130Q 84" (213CM) MILD STEEL TOURNAMENT RAKE DRAWING



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 grommeta (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 $1^1/_4$" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the $1^1/_4$" truss head screws (Ref 21) to attach rake springs (Ref 18) to the rakes under the left outside and inside mounts and the outside and inside trowel mounts.
4. Slide a machine bushing onto outside rake frames then slide the outside rake frames (Ref 5) into the tubing on the end of the drawbar. Hold in place with another machine bushing and a roll pin (Ref 6).
5. Attach center rake (Ref 5) to draw bar (Ref 9) as shown, using $1^1/_2$ bolts and lock nuts (Ref 13) with the shaft of the center rake in the slot on the bottom of the drawbar.
6. Attach the matting (Ref 20) and the top strap (Ref 16) to the inside and outside mounts using the truss head screw $^5/_{16}$ - 18 x 1 (Ref 1). Attach four finishing blades (Ref 2) to the matting on the inside and outside mounts with the truss head screw $^5/_{16}$ - 18 x 1 (Ref 1) going through the finishing blade, matting, and bottom strap (Ref 17).
7. Place the three groomer blades (Ref 19) under the three rake assemblies as shown, using (Ref 3).
8. Attach the rake lift to the trap rake quick hitch, by sliding the the hitch into the spring loaded locking mechanism.
9. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
10. Using the adjustment bolts (Ref A) on the side of hitch, adjust the bolts until it hits the trap rake hitch. Lock jam nut so adjustment will not change.
11. Repeat steps for the left side.
12. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.

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

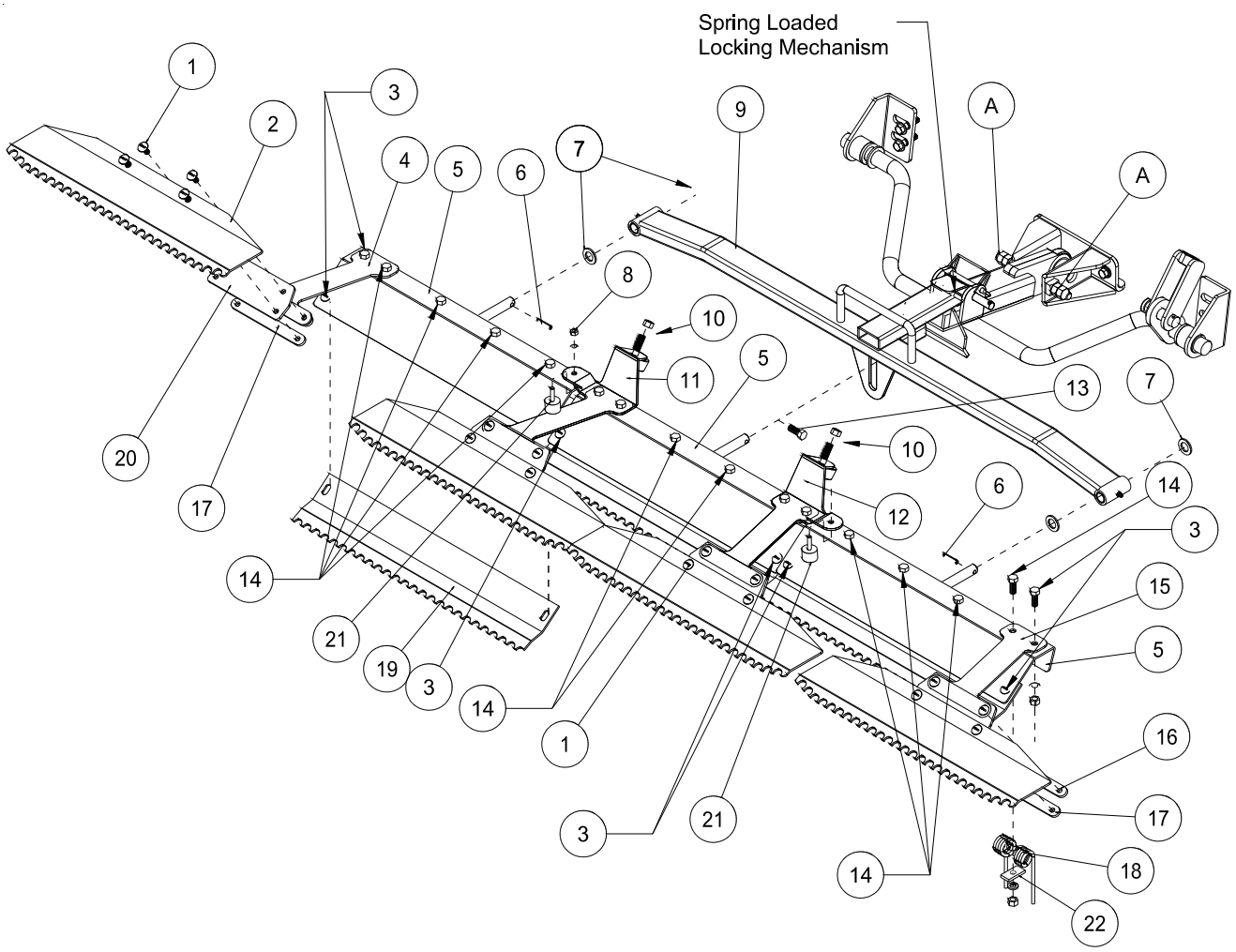
# 42-132Q 72"(183CM) MILD STEEL TOURNAMENT RAKE DRAWING



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

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HSTP-516-18-100 | Phillips Machine Screw 5/16 - 18 x 1 | 16 |
| | HNFL-516-18 | Flange 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 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 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 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 |

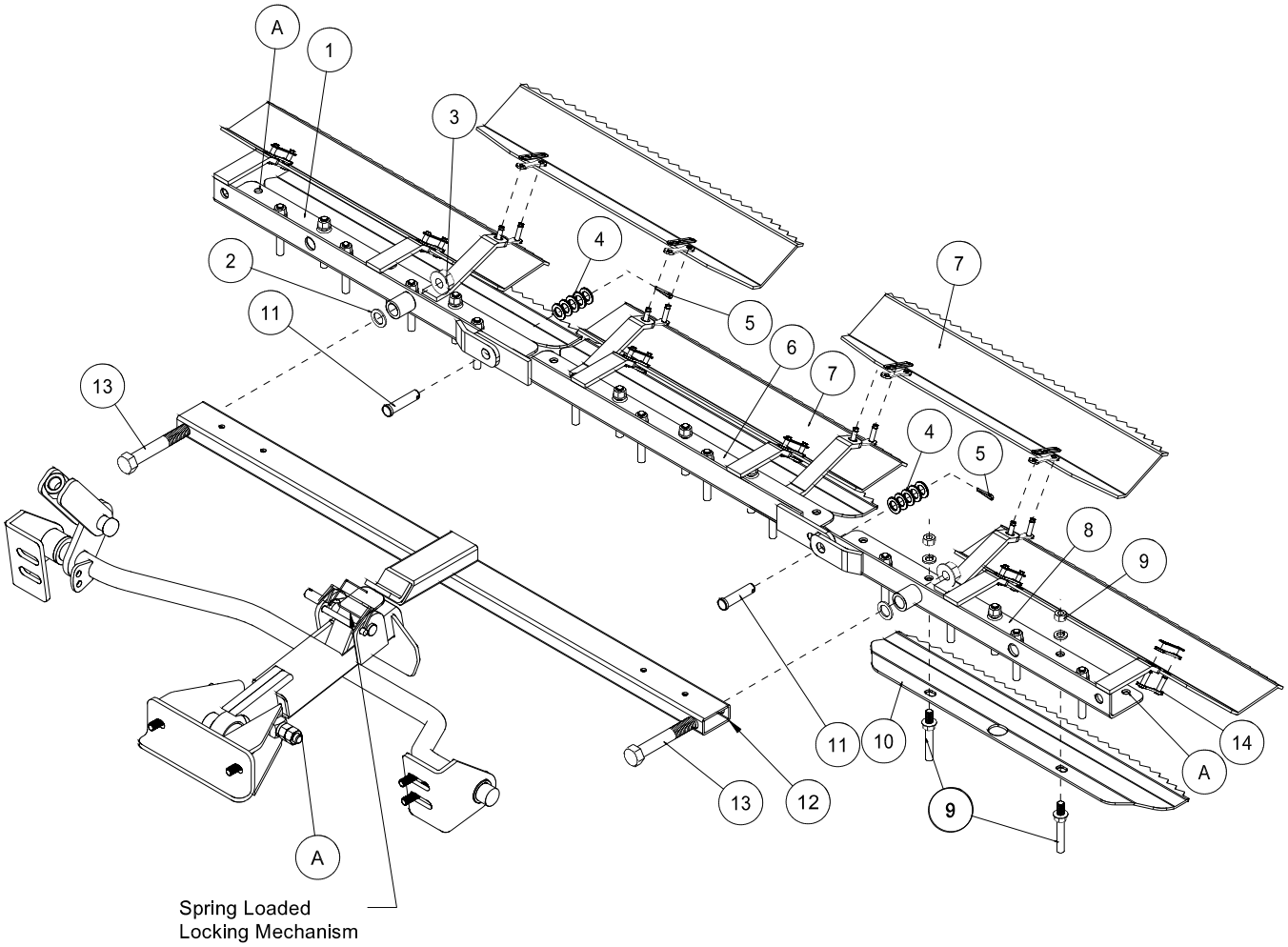
# 42-132Q 72"(183CM) MILD STEEL TOURNAMENT RAKE DRAWING



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 $1^1/_4$" truss head screws (Ref 14) on the outside hole of each rake. Use the spring holder (Ref 23) and the $1^1/_4$" truss head screws (Ref 21) to attach rake springs (Ref 18) to the rakes under the left outside and inside mounts and the outside and inside trowel mounts.
4. Slide a machine bushing onto outside rake frames then slide the outside rake frames (Ref 5) into the tubing on the end of the drawbar. Hold in place with another machine bushing and a roll pin (Ref 6).
5. Attach center rake (Ref 5) to draw bar (Ref 9) as shown, using $1^1/_2$ bolts and lock nuts (Ref 13) with the shaft of the center rake in the slot on the bottom of the drawbar.
6. Attach the matting (Ref 20) and the top strap (Ref 16) to the inside and outside mounts using the truss head screw $^5/_{16}$ - 18 x 1 (Ref 1). Attach four finishing blades (Ref 2) to the matting on the inside and outside mounts with the truss head screw $^5/_{16}$ - 18 x 1 (Ref 1) going through the finishing blade, matting, and bottom strap (Ref 17).
7. Place the three groomer blades (Ref 19) under the three rake assemblies as shown, using (Ref 3).
8. Attach the rake lift to the trap rake quick hitch, by sliding the the hitch into the spring loaded locking mechanism.
9. With the rake on the ground pull the rake to the right side until it is 2-3 inches from the tire.
10. Using the adjustment bolts (Ref A) on the side of hitch, adjust the bolts until it hits the trap rake hitch. Lock jam nut so adjustment will not change.
11. Repeat steps for the left side.
12. Turn machine on and test for operation of rake assembly by raising and lowering the rake assembly. Also with rake down, turn sharp corners to check that rake does not touch wheels.

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

# 13-438Q RAKE ASSEMBLY WITH FINISHING BLADES DRAWING



# 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 $^5/_8$ x 14GA | 2 |
| 3 | HNCL-58-11 | Lock Nut $^5/_8$ - 11 | 2 |
| 4 | HMB-12-14 | Machine Bushing $^1/_2$ x 14GA | 10 |
| 5 | HP-18-100 | Cotter Pin $^1/_8$ 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 $^1/_2$ - $1^1/_2$ | 2 |
| 12 | 43-145 | Drawbar | 1 |
| 13 | HB-58-11-400 | Bolt $^5/_8$ - 11 x 4 | 2 |
| 14 | 13-417 | Connector Link | 10 |
| * | 13-090 | Rake Teeth Kit (Studs and Hardware) | 1 |

# INSTALLATION INSTRUCTIONS

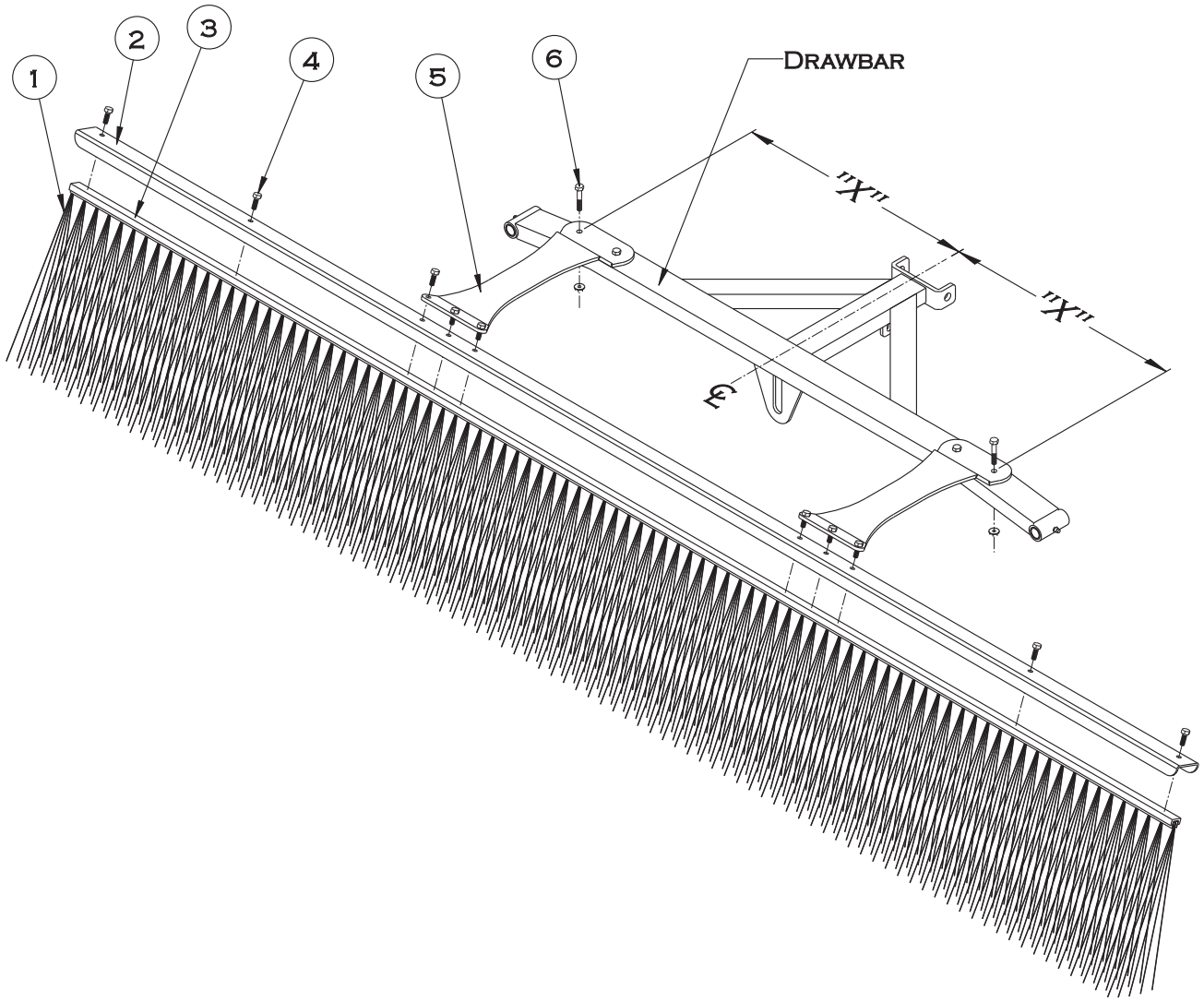
1. Bolt rake teeth (Ref 9) to frames, keeping all the same length. Leave the two outside holes on right and left rake open (Ref A).
2. Lay out rake frames (Ref 1,6 and 8). Connect them using clevis pin, machine bushing and cotter pin (Ref 11, 4 and 5).
3. Attach drawbar to left and right frames using 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.

# 13-740 SAND RAKE BRUSH KIT DRAWING

**For use with 42-130**



## 13-740 SAND RAKE BRUSH KIT PARTS LIST

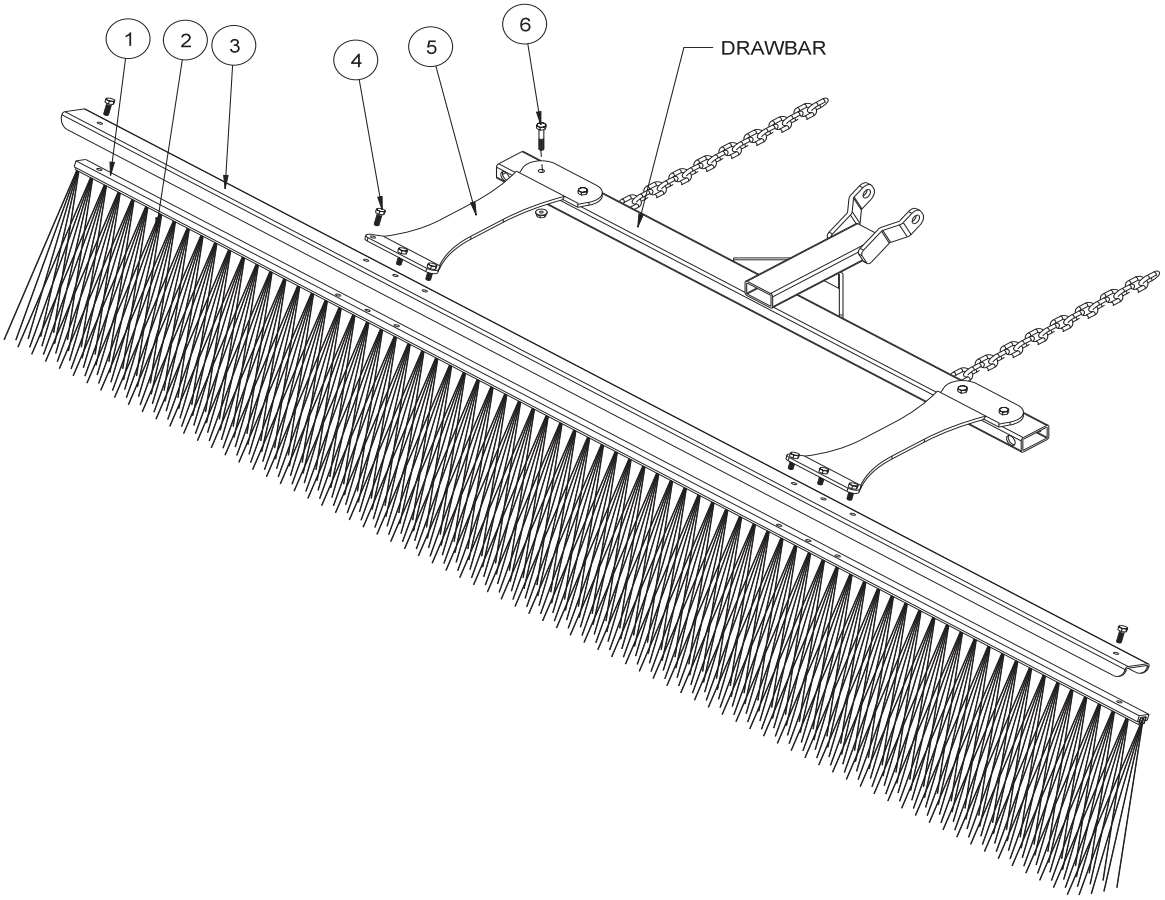
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 13-738 | Brush, 89 x 11 | 1 |
| 2 | 13-737 | Brush Channel | 1 |
| 3 | 13-739 | Brush Track | 1 |
| 4 | HB-14-20-075 | Bolt $^1/_4$ - 20 x $^3/_4$ | 10 |
| | HNFL-14-20 | Flange Whiz-Lock Nut $^1/_4$ - 20 | 10 |
| 5 | 13-681 | Mounting Brackets | 2 |
| 6 | HB-14-20-150 | Bolt $^1/_4$ - 20 x $1^1/_2$ | 4 |
| | HNFL-14-20 | Flange Whiz-Lock Nuts $^1/_4$ - 20 | 4 |

## INSTALLATION INSTRUCTIONS

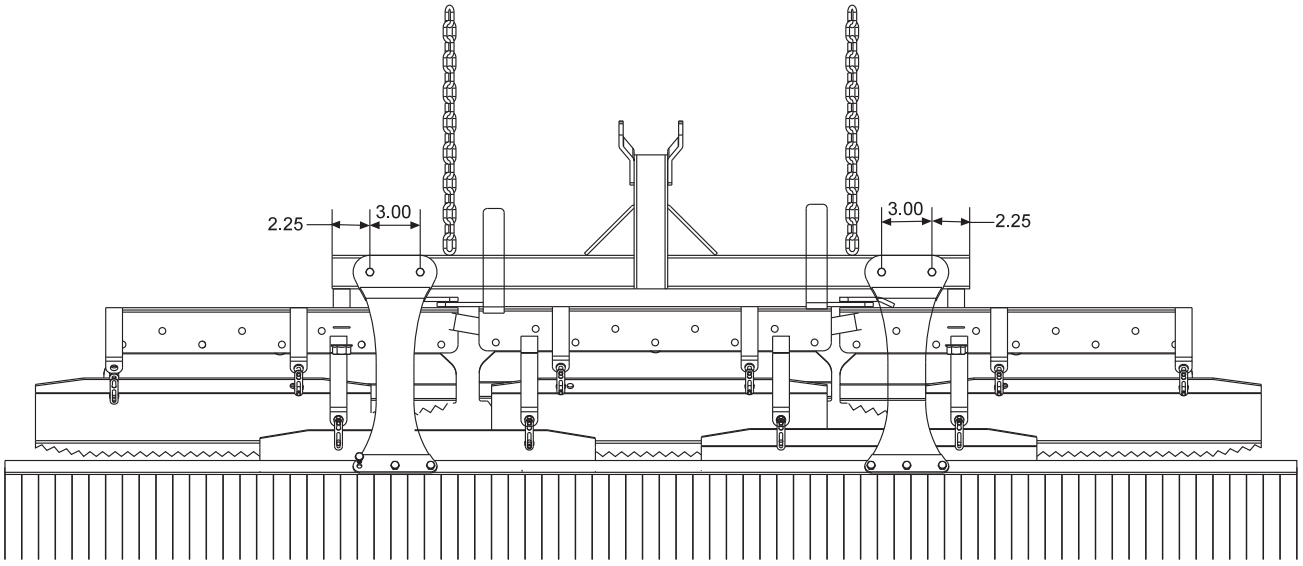
1. Place the Brush(Ref 1) into the Brush Track(Ref 3). Place the Brush Channel(Ref 2) between the brush track and the mounting brackets. Now bolt the Mounting Brackets(Ref 5) to the brush track using the ¾" bolts and flange whiz-lock nuts(Ref 4).
2. To mount the Brush Assembly(Refs 1-5) to the Rake Drawbar, 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 1½" bolts and flange whiz-lock nuts(Ref 6).

## 13-684 SAND RAKE BRUSH KIT DRAWING

**For use with 13-438**




## HOLE LOCATION



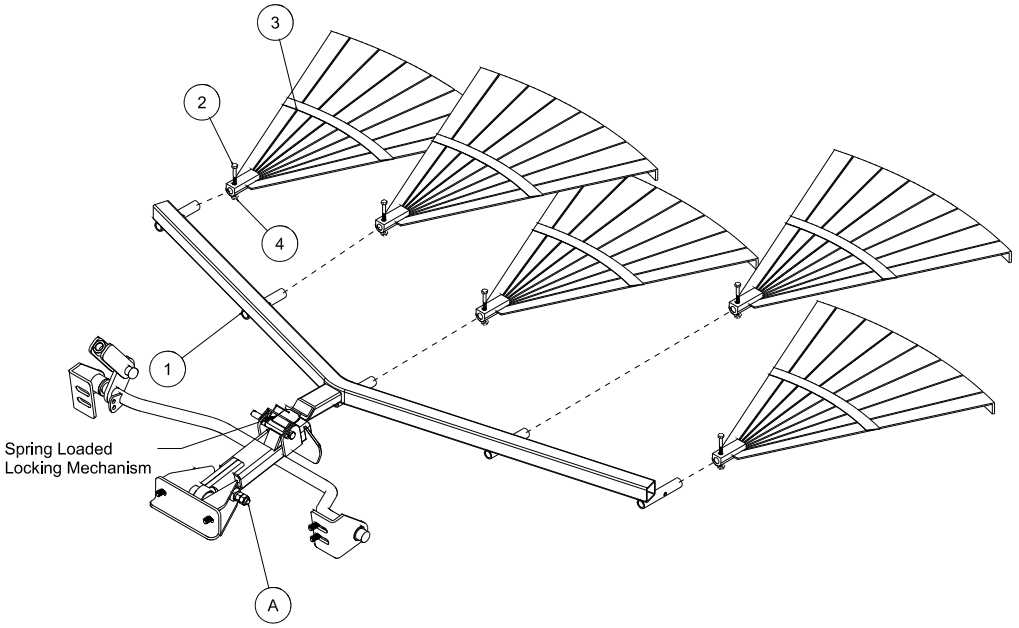
## 13-684 SAND RAKE BRUSH KIT PARTS LIST

| 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 1/4 - 20 x 3/4 | 8 |
| | HNFL-14-20 | Flange Whiz-Lock Nut 1/4 - 20 | 8 |
| 5 | 13-681 | Mounting Brackets | 2 |
| 6 | HB-14-20-150 | Bolt 1/4 - 20 x 1 1/2 | 4 |
| | HNFL-14-20 | Flange Whiz-Lock Nuts 1/4 - 20 | 4 |

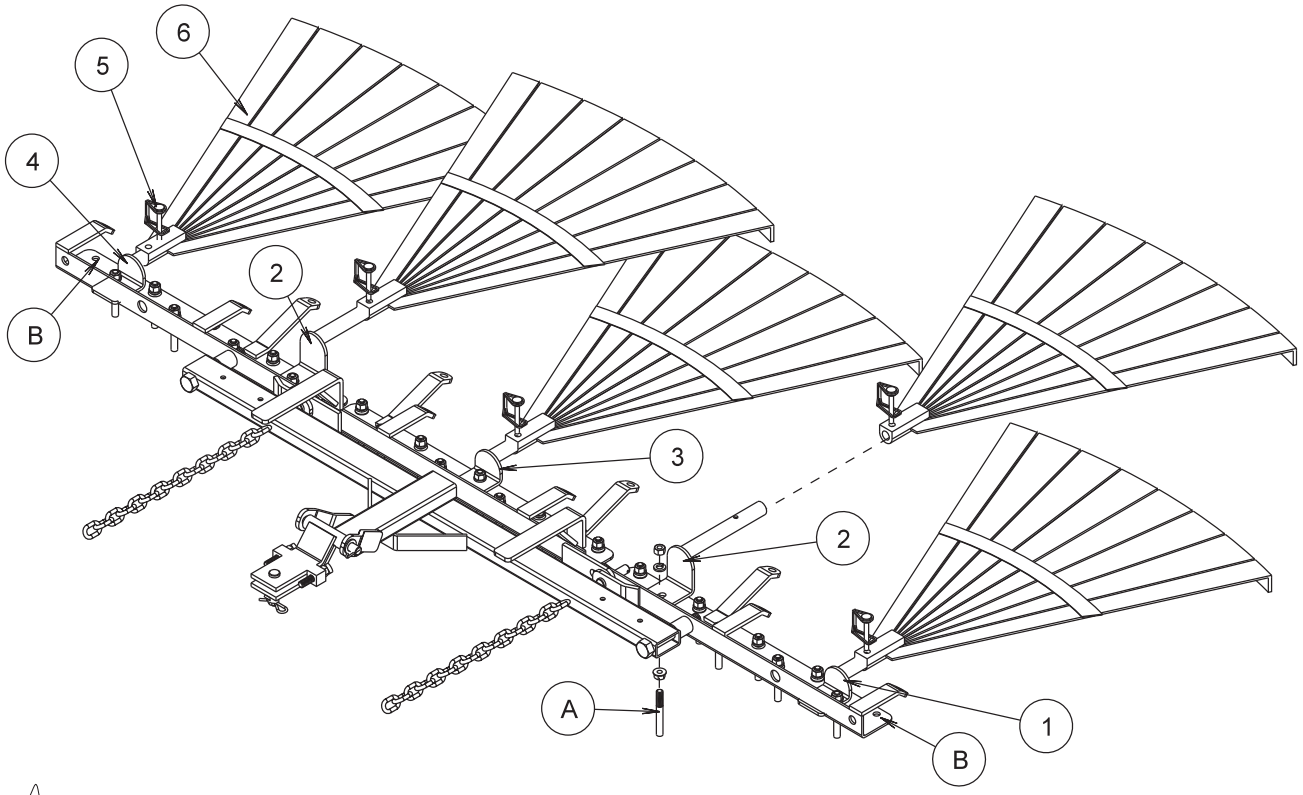
## INSTALLATION INSTRUCTIONS

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 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 1/4" in from each end and 3" apart (see drawing).
3. Mount the brush assembly to the drawbar using four 3/4" bolts and flange whiz-lock nuts (Ref 5).

## 13-298Q FAN RAKE ATTACHMENT DRAWING




## 13-319-KFAN RAKE KIT DRAWING



## 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.

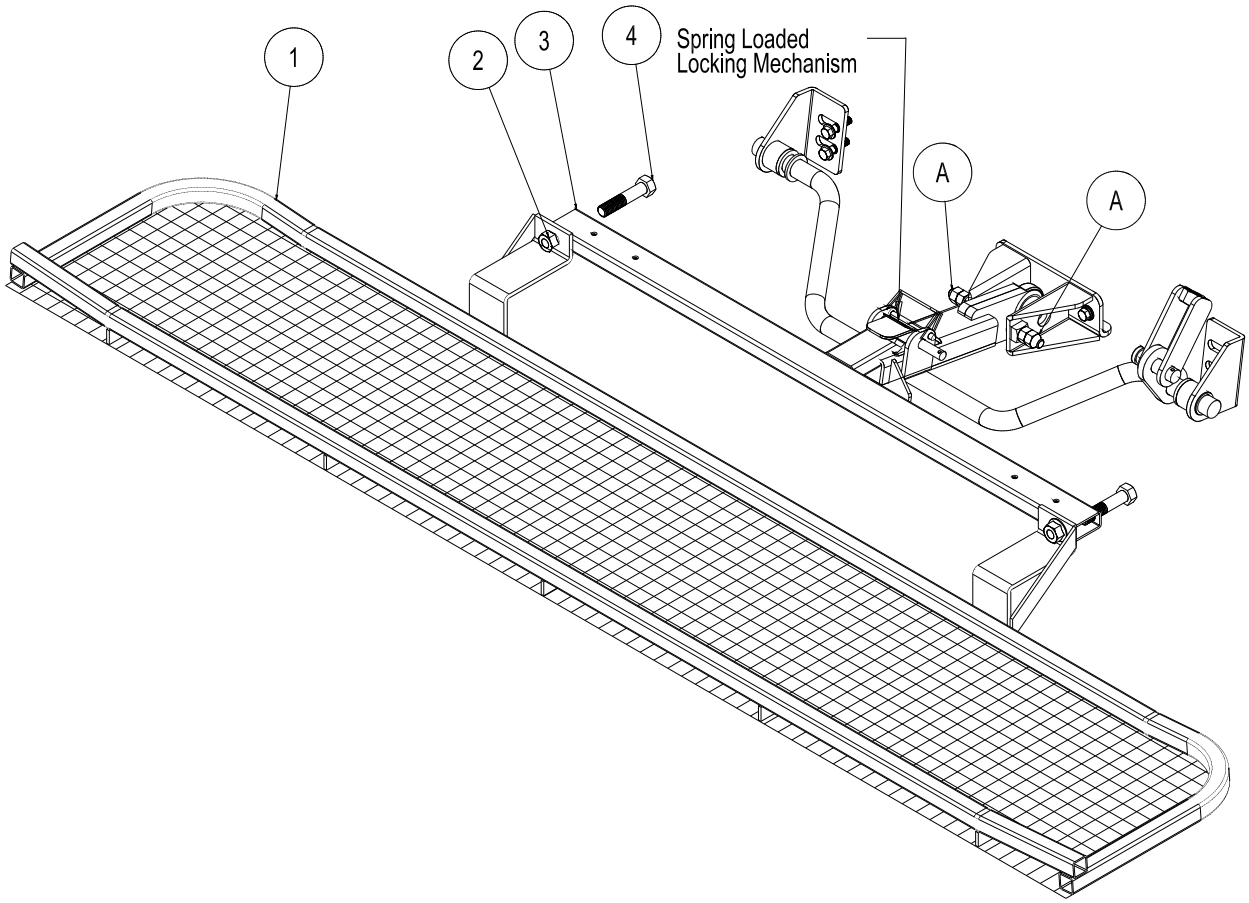
## 13-319-K FAN RAKE KIT PARTS LIST

| 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).

# 26-007Q PROFESSIONAL INFIELD FINISHER DRAWING



## 26-007Q PROFESSIONAL INFIELD FINISHER PARTS LIST

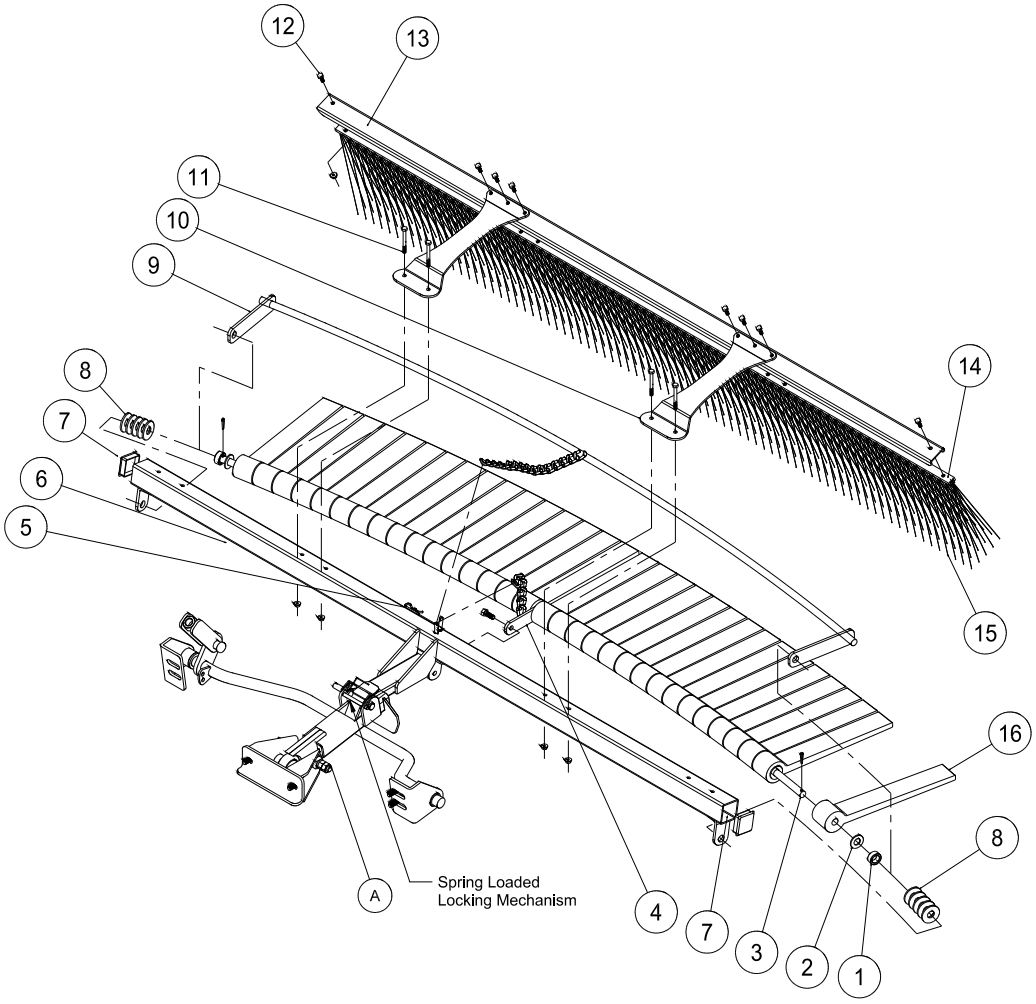
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 26-045 | Leveling Screen | 1 |
| 2 | HNCL-58-11 | Center Lock Nut $^5/_8$ - 11 | 2 |
| 3 | 43-152 | Drawbar | 1 |
| 4 | HB-58-11-300 | Bolt $^5/_8$ - 11 x 3 | 2 |

## INSTALLATION INSTRUCTIONS

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

1. Attach leveling screen (Ref 1) to 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.

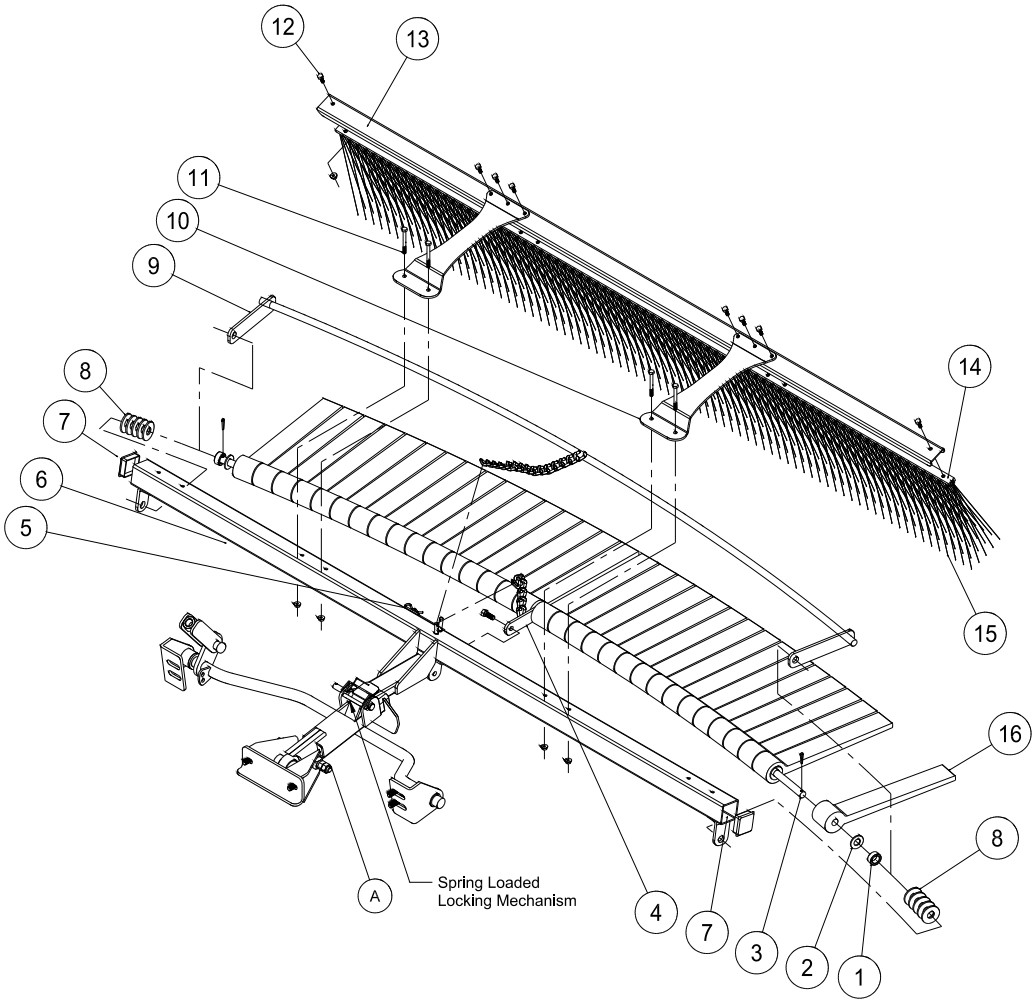
# 43-002Q FLEX ACTION FIELD FINISHER WITH BRUSH DRAWING



# 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 Q FLEX ACTION FIELD FINISHER WITH BRUSH DRAWING



# 43-002Q FLEX ACTION FIELD FINISHER WITH BRUSH INSTRUCTIONS

ASSEMBLY INSTRUCTIONS

1. Install flail bar strap (Ref 4) to center of mounting bar (Ref 3) with chain on top of flail bar strap and mounting bar bent away from you. Apply a light coat of lubricant to overall length of mounting bar.
2. Install one rasp flail (Ref 16) with knobby side down adjacent to sides of flail bar strap. Now install a flat washer (Ref 2) so it sits adjacent with the outside of the rasp flail. Continue to install flails with knobby sides down with washers between until you have 16 flails and washers on each side of bar strap. Force all flails tightly toward bar strap.
3. After all 32 flails have been installed, place one spacer (Ref 1) to each end of mounting bar adjacent to washer.
4. Install leveler bar (Ref 9) to mounting bar, with curved leveler bar resting on top on the smooth sides of flails. If all flails and washers do not fit snugly at this time, remove leveler bar and install enough machine bushings to ensure a snug fit. Then reinstall leveler bar.
5. Lay the frame (Ref 6) on the floor or bench with welded tabs facing up. Install ends of assembled mounting bar, with knobby sides of flails up, into welded tabs on each end of frame and secure with $^1/_8$ x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with $^3/_8$ -16 x 1 bolt and $^3/_8$ -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.

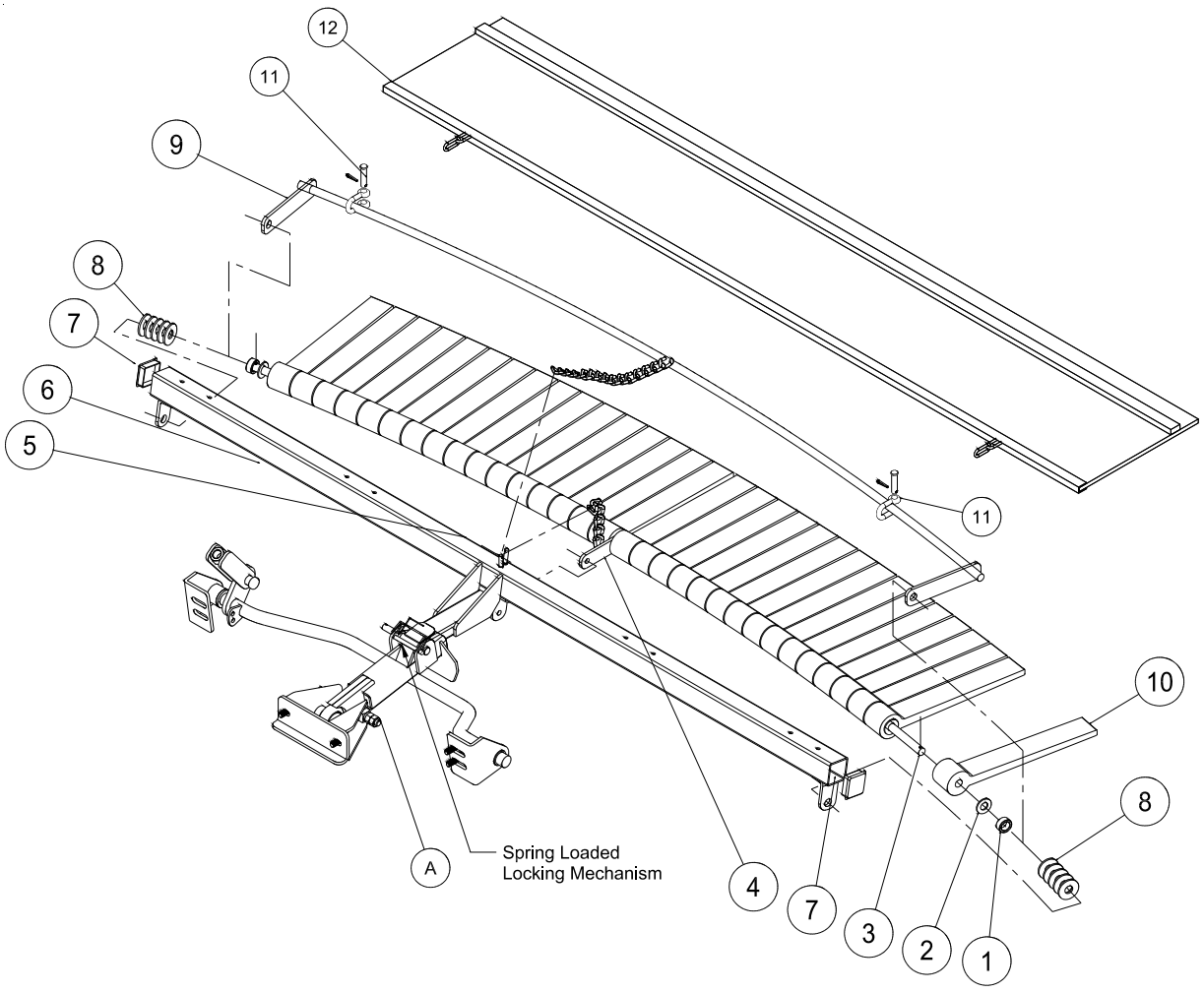
OPERATING INSTRUCTIONS

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 $^1/_4$-20 x $^3/_4$ bolts and $^1/_4$-20 flange whiz-lock nuts (Ref 12).
2. Mount the brush assembly to the frame using the (4) $^1/_4$-20 x $2^1/_2$ bolts and $^1/_4$-20 flange whiz-lock nuts (Ref 11).

# 26-008Q FLEX ACTION FIELD FINISHER DRAWING



## 26-008Q FLEX ACTION FIELD FINISHER PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 11-040 | Spacer 3/4" | 2 |
| 2 | HW-58 | Washer 5/8 | 32 |
| 3 | 26-049 | Mounting Bar | 1 |
| 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 | 26-041 | Rasp Flail | 32 |
| 11 | 21-260 | Clevis | 2 |
| 12 | 26-115 | Mesh Finisher | 1 |

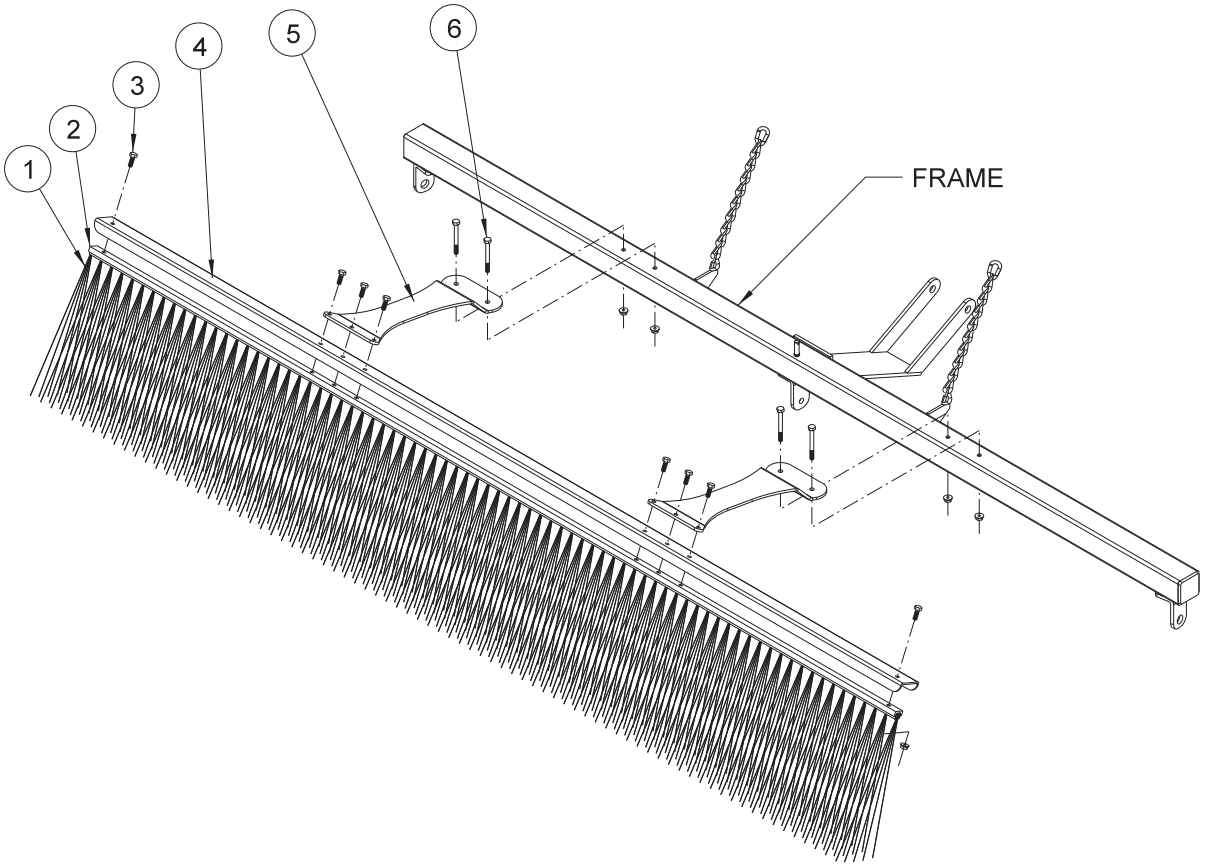
## INSTALLATION INSTRUCTIONS

1. Install flail bar strap (Ref 4) to center of mounting bar (Ref 3) with chain on top of flail bar strap and mounting bar bent away from you. Apply a light coat of lubricant to overall length of mounting bar.
2. Install one rasp flail (Ref 16) with knobby side down adjacent to sides of flail bar strap. Now install a flat washer (Ref 2) so it sits adjacent with the outside of the rasp flail. Continue to install flails with knobby sides down with washers between until you have 16 flails and washers on each side of bar strap. Force all flails tightly toward bar strap.
3. After all 32 flails have been installed, place one spacer (Ref 1) to each end of mounting bar adjacent to washer.
4. Install leveler bar (Ref 9) to mounting bar, with curved leveler bar resting on top on the smooth sides of flails. If all flails and washers do not fit snugly at this time, remove leveler bar and install enough machine bushings to ensure a snug fit. Then reinstall leveler bar.
5. Lay the frame (Ref 6) on the floor or bench with welded tabs facing up. Install ends of assembled mounting bar, with knobby sides of flails up, into welded tabs on each end of frame and secure with 1/8 x 1 cotter pin.
6. Install flail bar strap (Ref 4) to center tab on frame with 3/8 -16 x 1 bolt and 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.

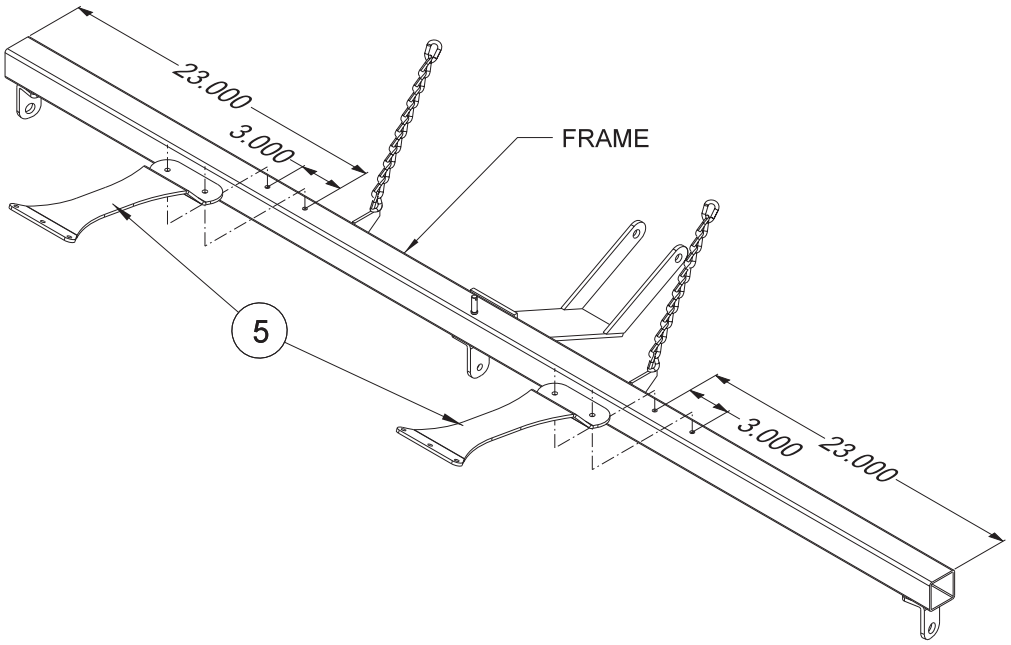
OPERATING INSTRUCTIONS

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



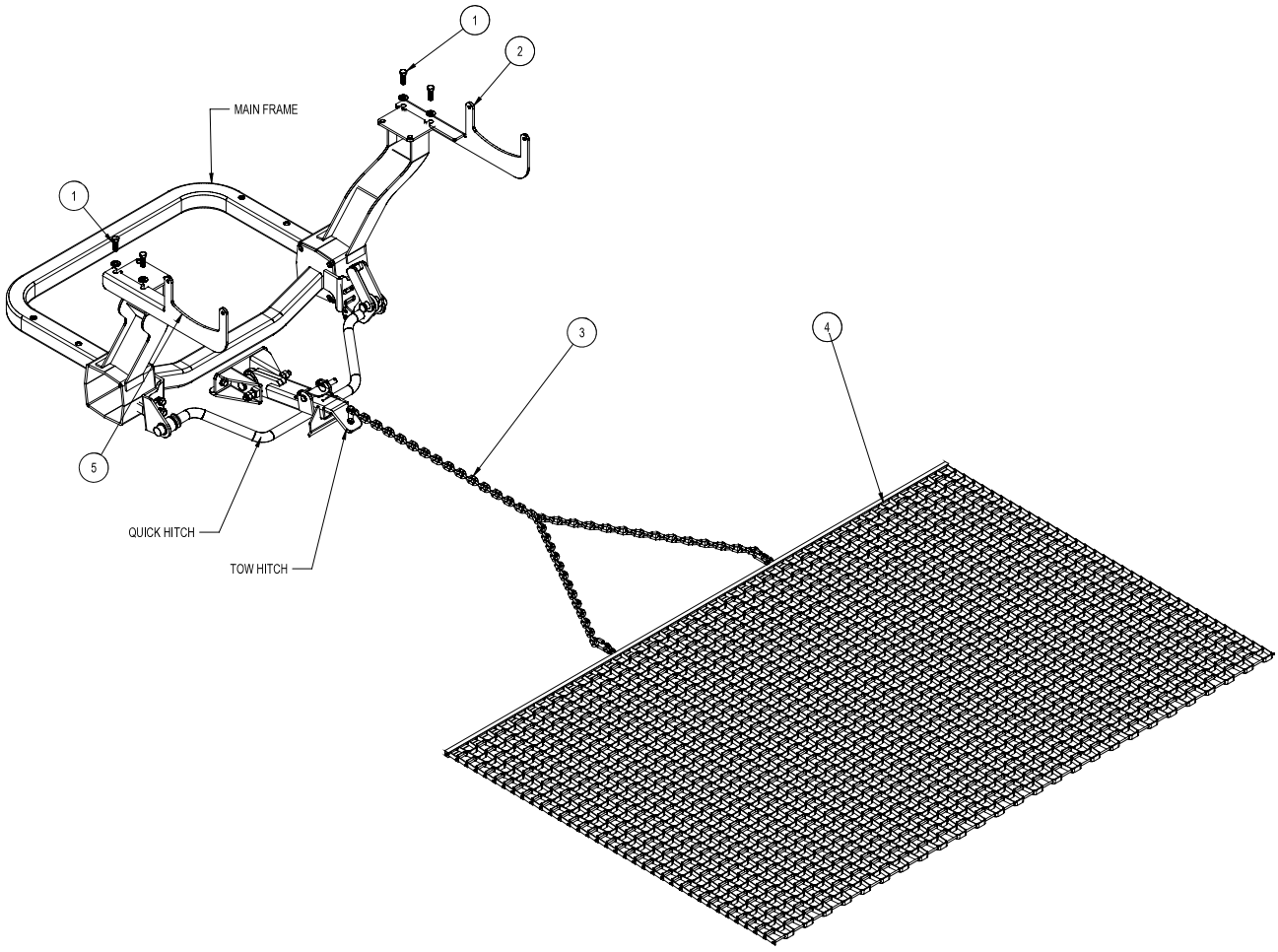
## 43-043 FINISHING BRUSH KIT PARTS LIST

| 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 Ø9/32 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



## 43-008 DRAG MAT PARTS LIST

| 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

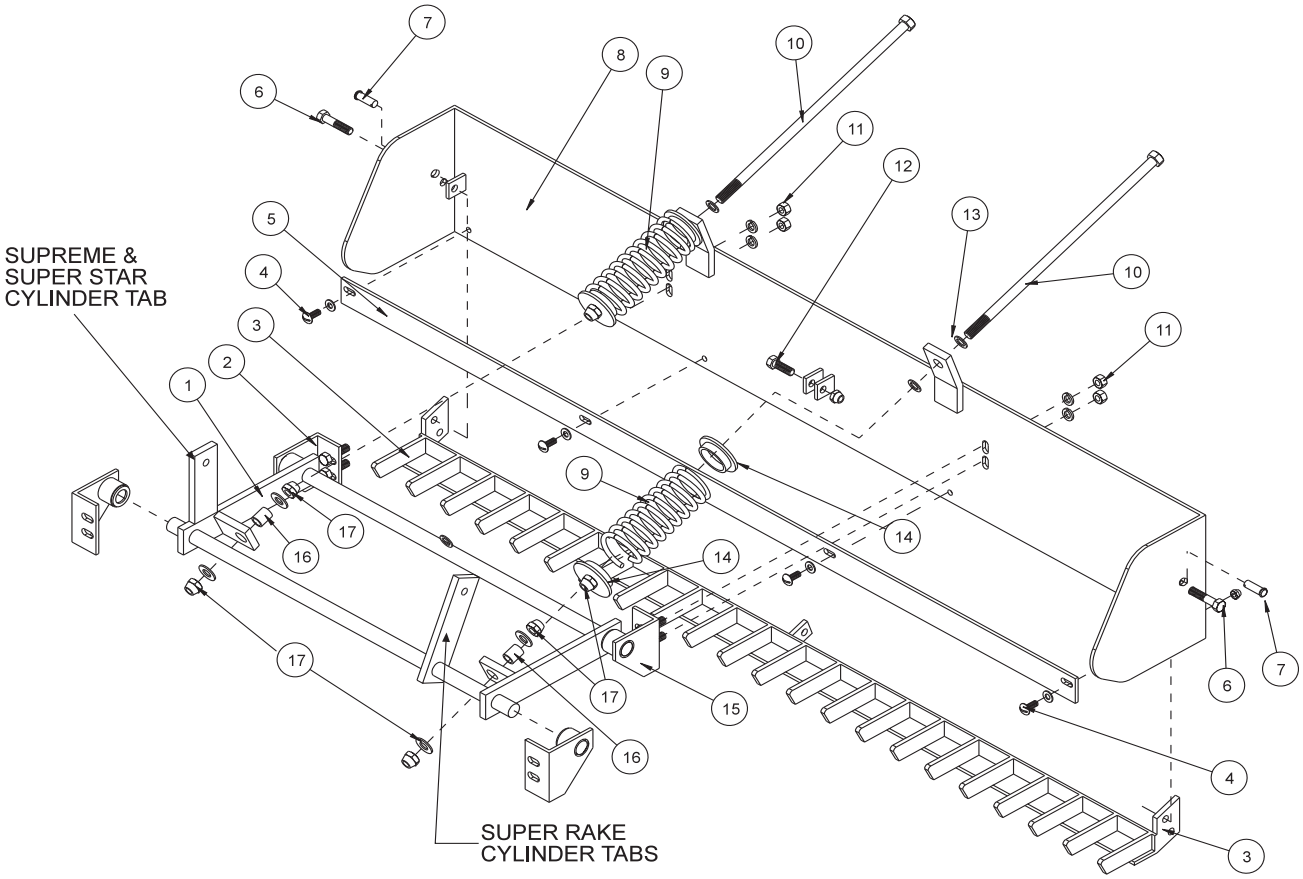
1. The Drag Mat Kit can be installed on all Super Star with or without the optional Roll Bars.

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.

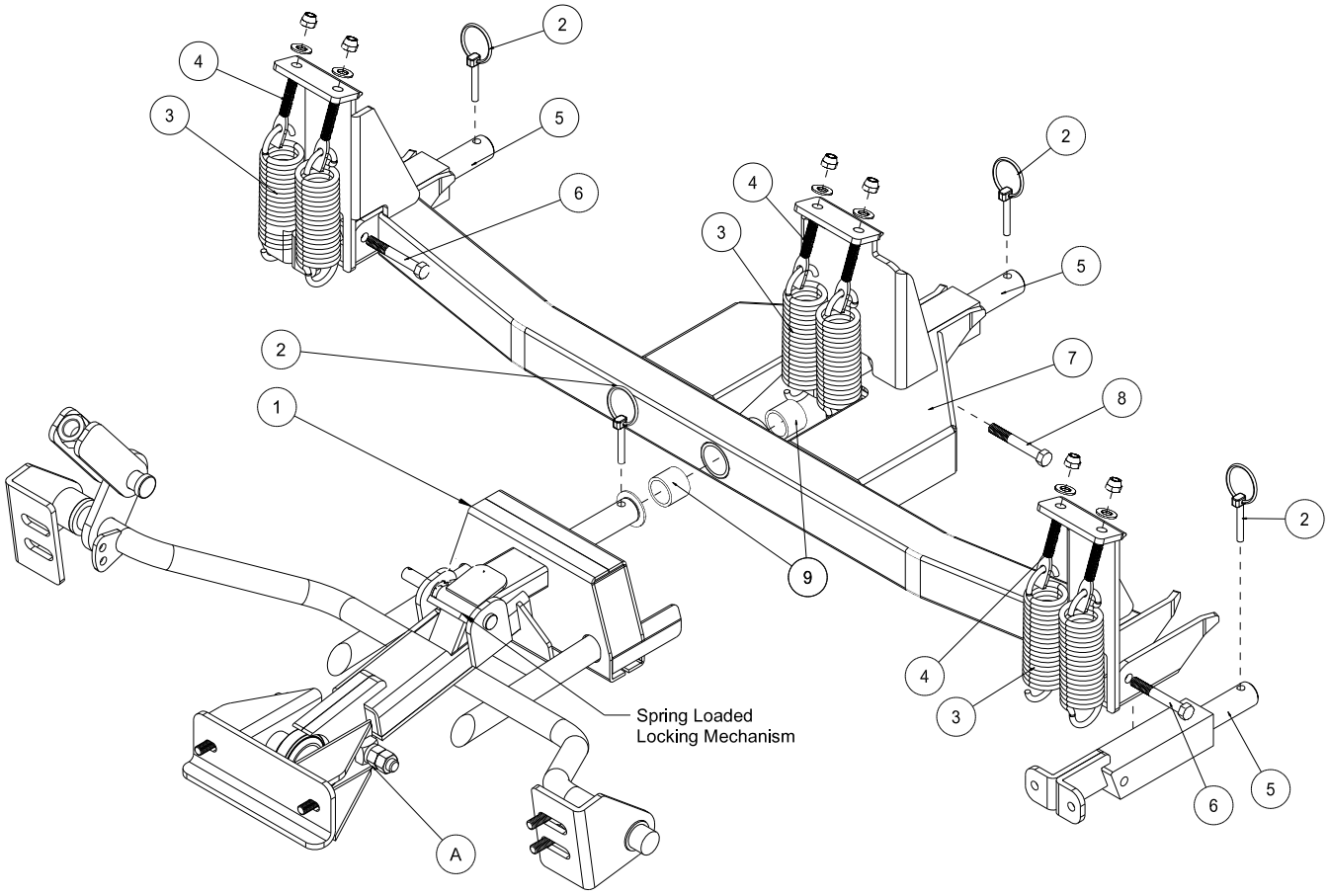
4. Install the tow hitch insert into the quick hitch. This is where the tow chain on the drag mat attaches to the machine.

# 34-191 BOX GRADER DRAWING



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

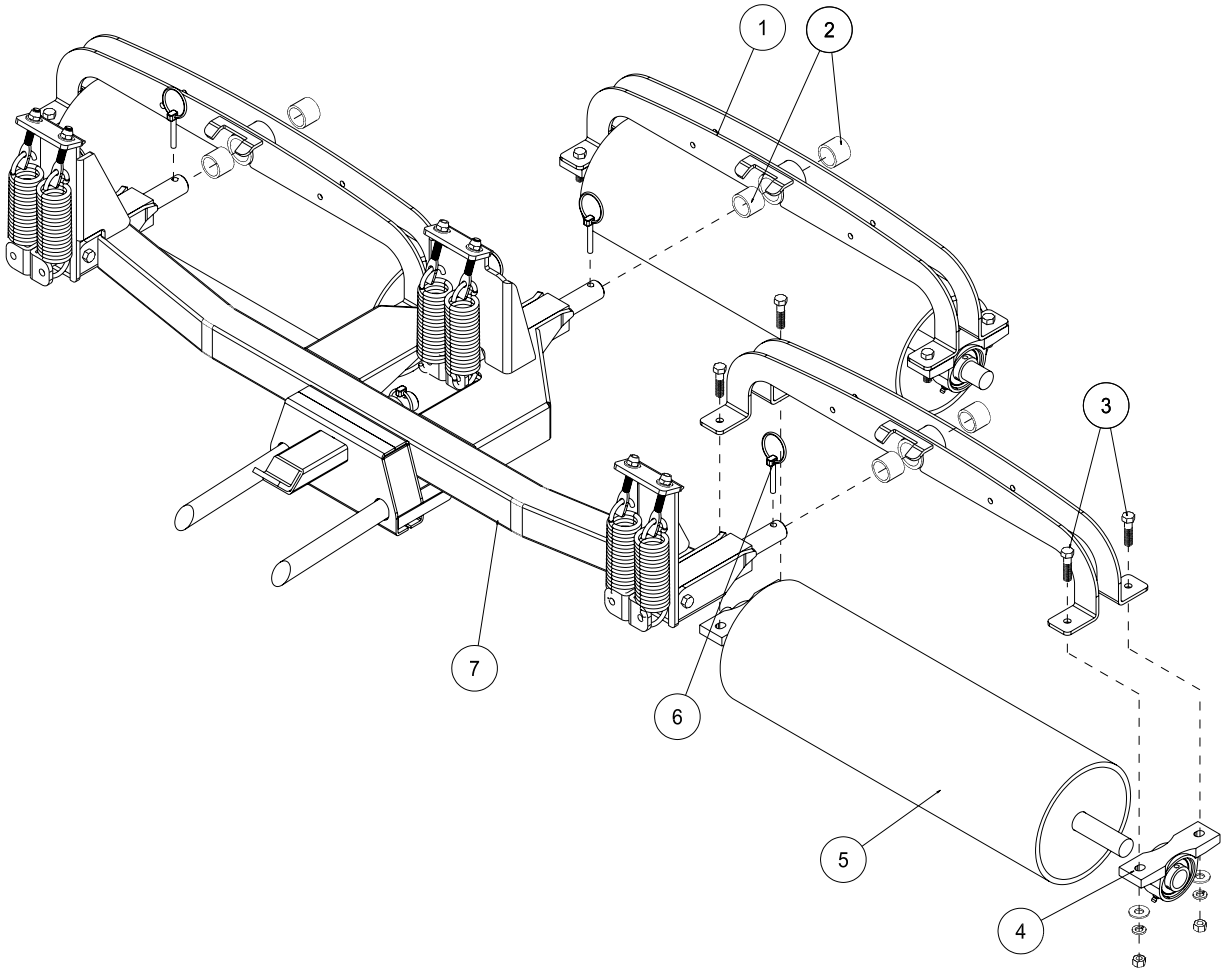
# 42-586Q GREEN STAR RBS MAIN FRAME DRAWING



# 42-586Q GREEN STAR RBS MAIN FRAME PARTS LIST

| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | 43-155 | Hitch | 1 |
| 2 | 42-539 | Lynch Pin $^{5}/_{16}$ | 4 |
| 3 | 42-536 | Spring | 6 |
| 4 | 42-537 | Spade Bolt | 6 |
| | HNTL-38-16 | Lock Nut $^{3}/_{8}$ - 16 | 6 |
| 5 | 42-576 | Spring Tower | 3 |
| 6 | HB-38-16-275 | Bolt $^{3}/_{8}$ - 16 x $2^{3}/_{4}$ | 2 |
| | HNTL-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



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

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

## ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

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

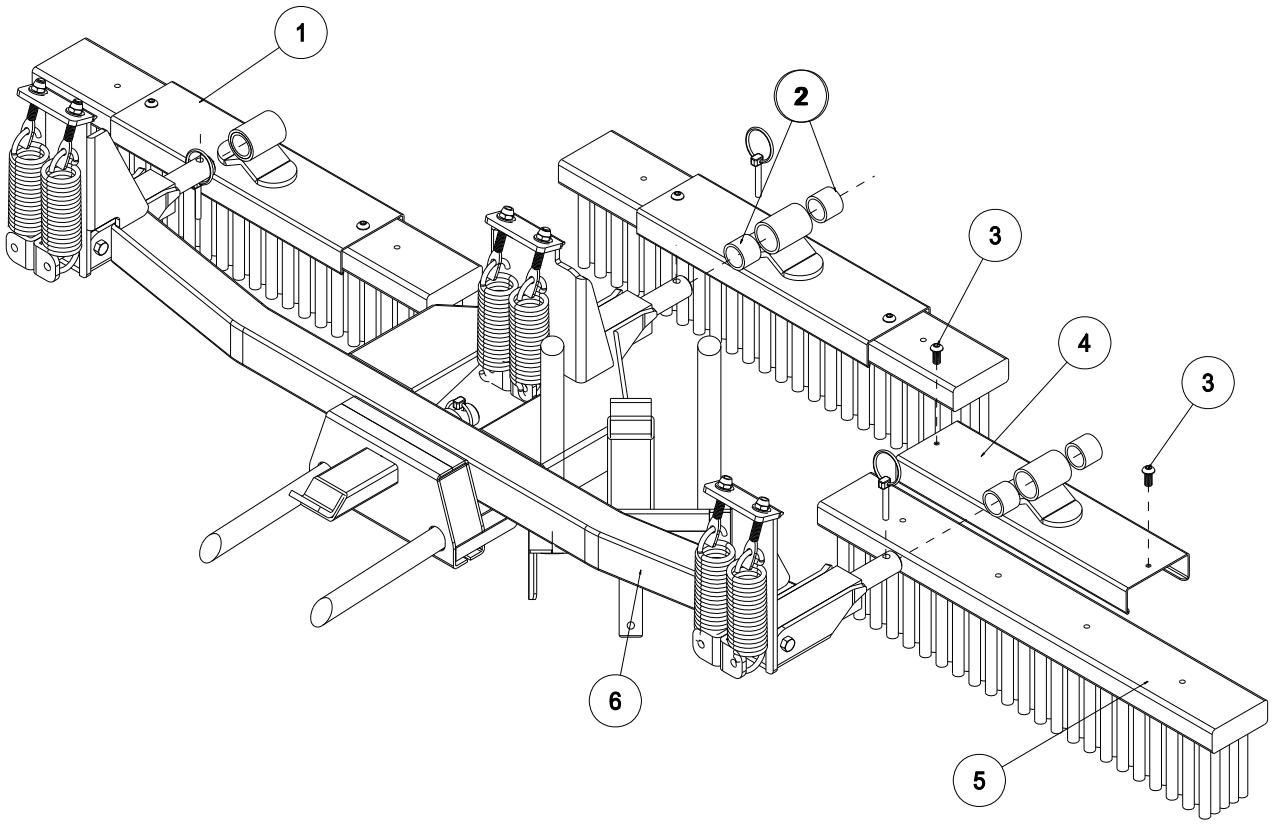
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

OPERATION

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

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

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



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

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

## ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

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

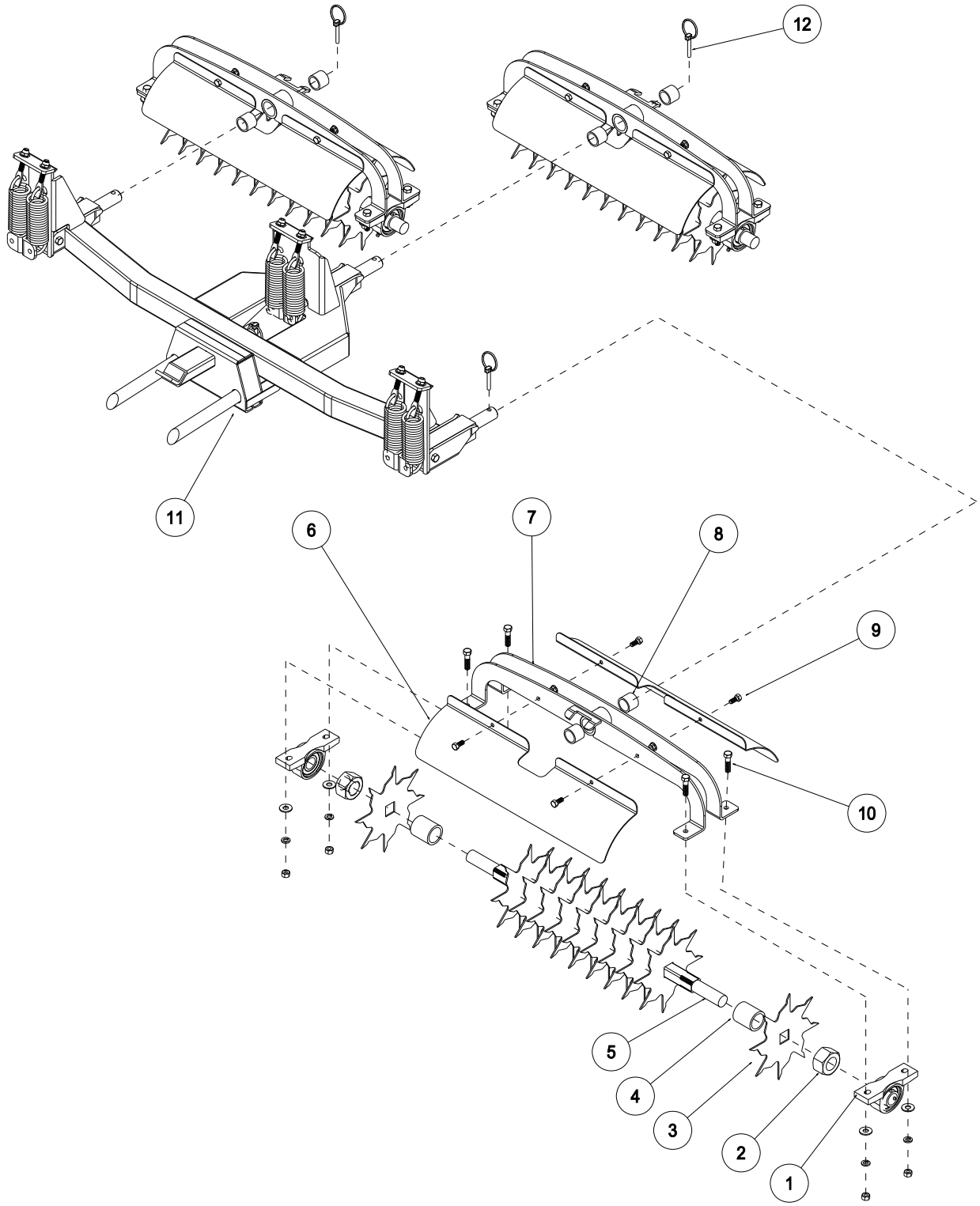
Tire pressure should be 4 psi in the front and 7 psi in the rear tire for best traction.

OPERATION

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

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

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



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

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

## ADJUSTMENTS AND OPERATION INSTRUCTIONS

ADJUSTMENT

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

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

OPERATION

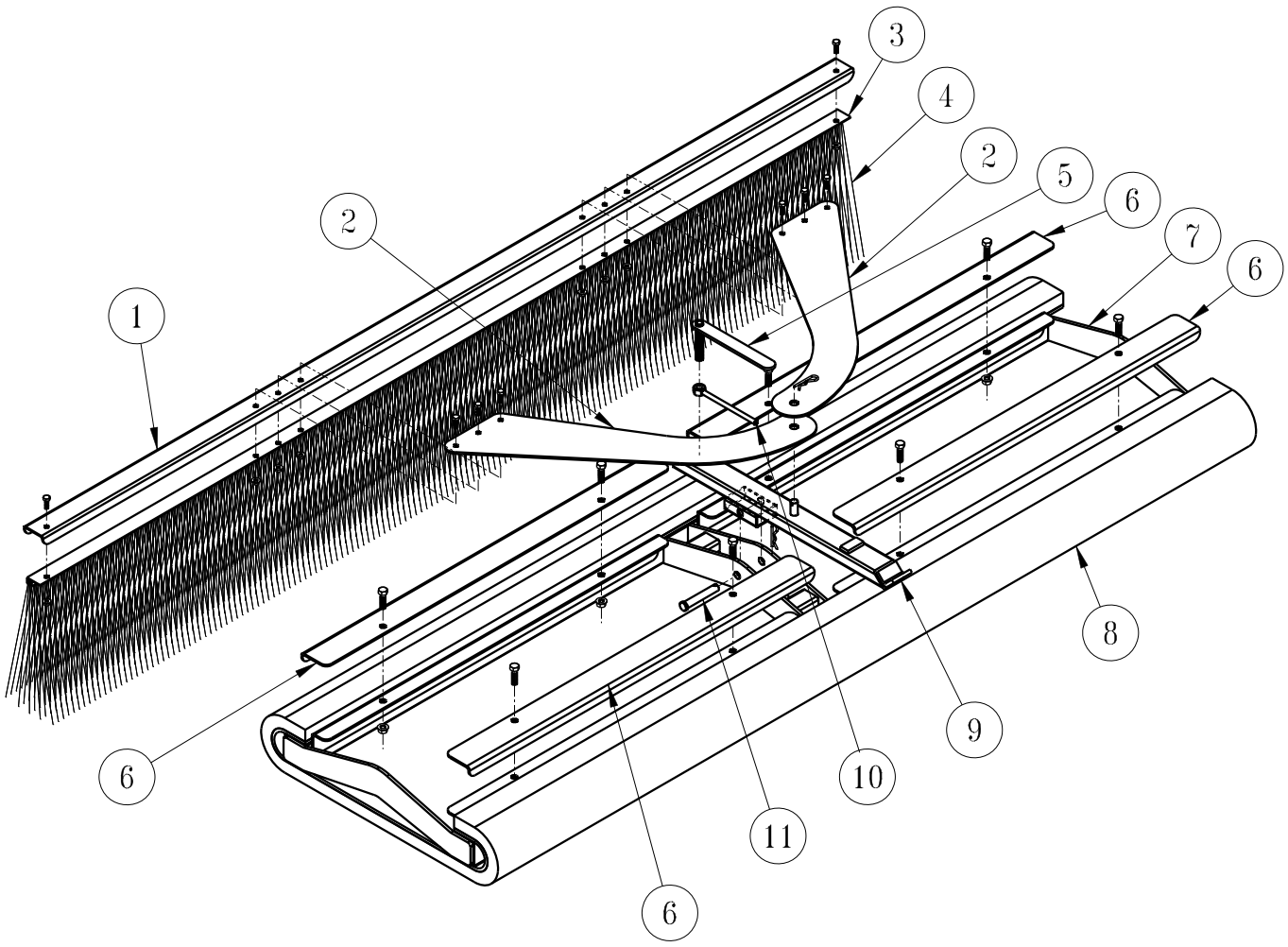
Make sure the spiker system has been installed and adjusted properly for your model of bunker rake. Always transport in fully raised position. Always remove flag pole before spiking green. Do not stop on green while spiking. Do not spike up steep slopes or loss of traction may result. Do not turn while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

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

INSTALLATION

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

# 43-009 72" COCO MAT FINISHER DRAWING



# 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.

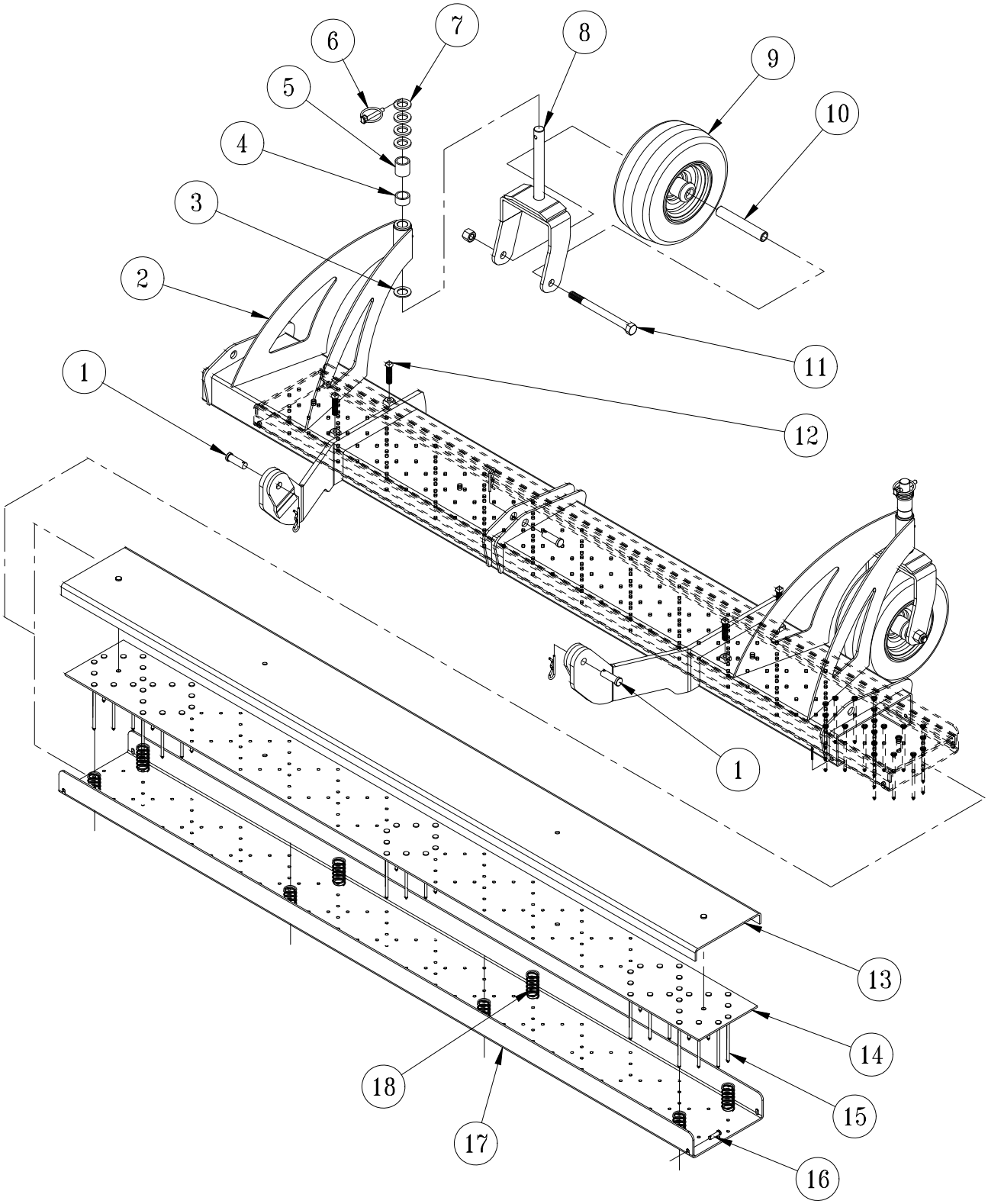
1. Start by mounting the Drawbar (Ref 9) to the Frame (Ref 7) using the Clevis Pin and Bridge Pin (Ref 11). Position the Drawbar, using either set of holes, as illustrated.
2. Next, mount the Brush assembly (Ref 1, 3 & 4) to the Brush Mount Arms (Ref 2), as illustrated, using the (6) 1/4 - 20 x 3/4 Hex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

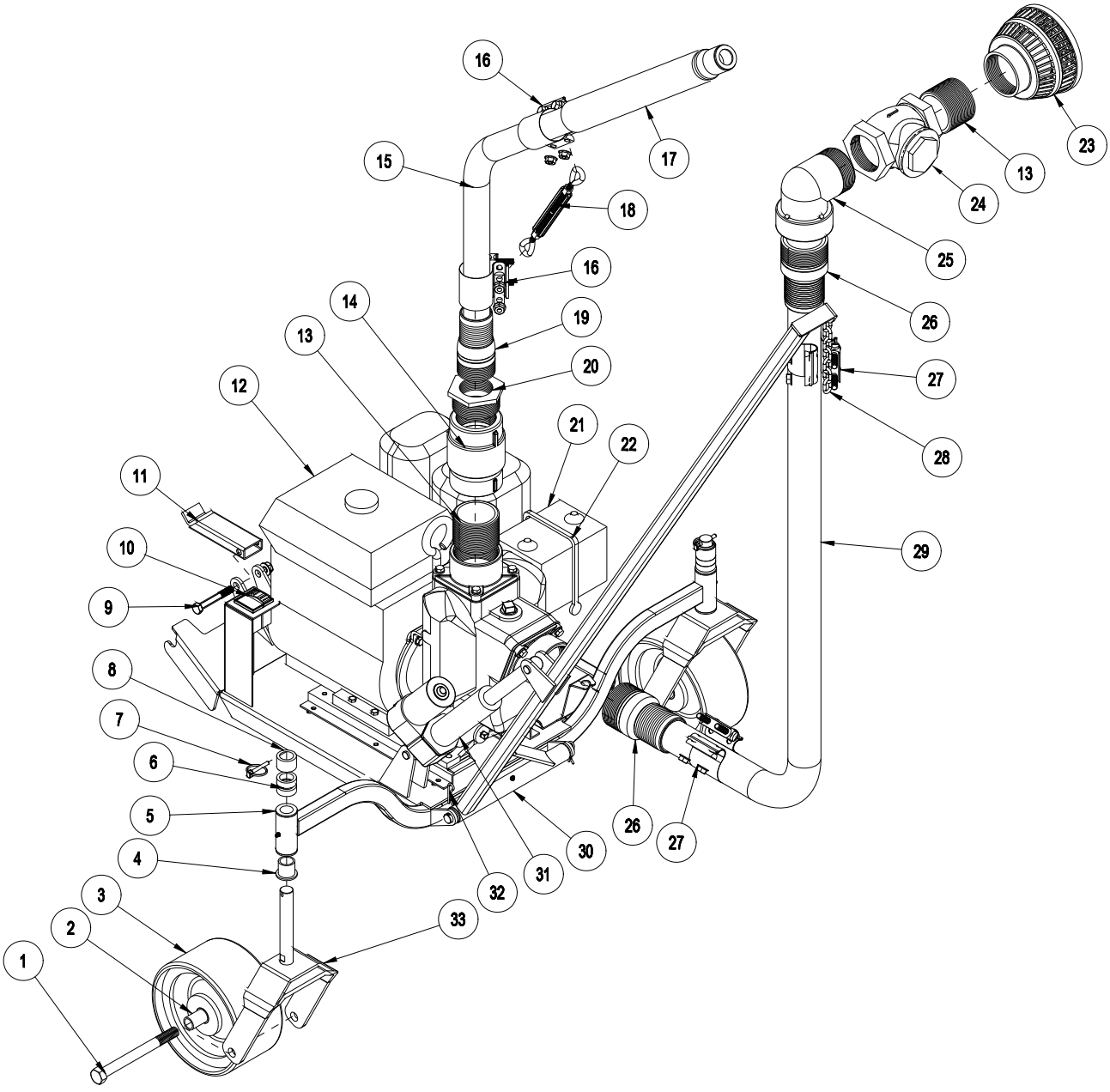
# 43-011 NAIL SCARIFIER WITH CASTOR WHEELS DRAWING



# 43-011 NAIL SCARIFIER WITH CASTOR WHEELS PARTS LIST

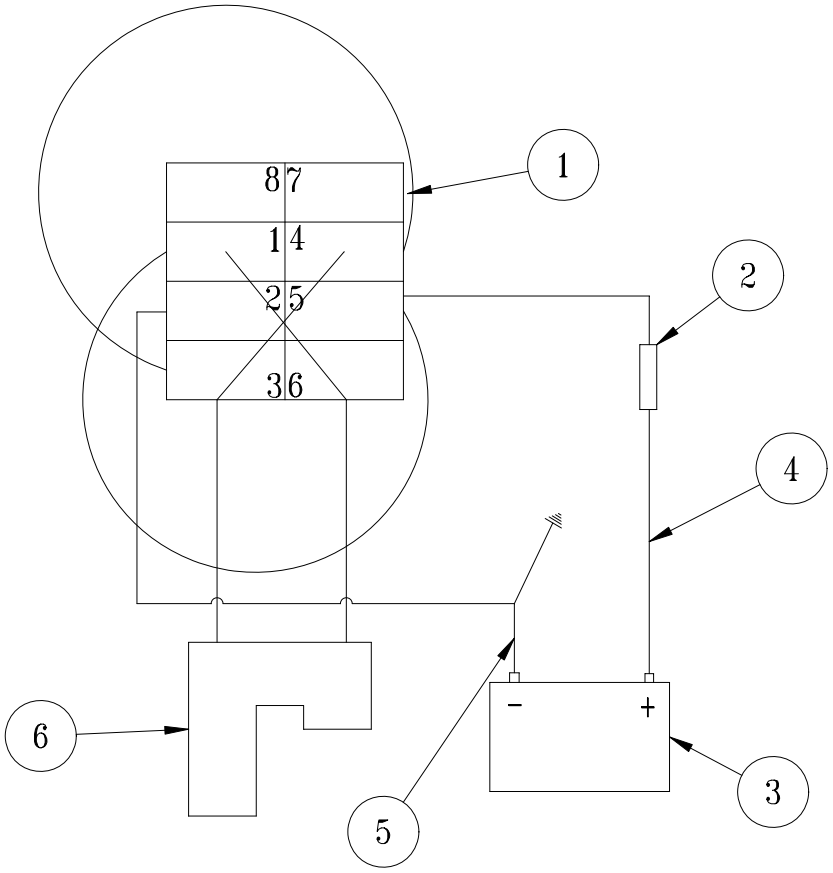
| REF# | PART# | DESCRIPTION | QUANTITY |
|---|---|---|---|
| 1 | HCP-12-200 | Clevis Pin, ½ x 2 | 3 |
| | HHP-18 | Bridge Pin, 1/8 | 3 |
| 2 | 43-171 | Nail Scarifier Frame | 1 |
| | 10-025 | Flange Bushing (Part of 43-171) | 4 |
| | HG-14-28-180 | Grease Fitting, 1/4 - 28 x 180° (Part of 43-171) | 2 |
| 3 | HMB-34-14 | Machine Bushing, ¾ x 14GA | 2 |
| 4 | 42-215 | Short Spacer | 2 |
| 5 | 42-214 | Long Spacer | 2 |
| 6 | 42-539 | Lynch Pin, ¼" | 2 |
| 7 | HMB-34-10 | Machine Bushing, ¾ x 10GA | 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, ½ - 13 x 6 | 2 |
| | HNTL-12-13 | Lock Nut, ½ - 13 | 2 |
| 12 | HSSQS-38-16-150 | SS Sq. Head Set Screw, 3/8 - 16 x 1½ | 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, ¼ x ¾ | 1 |
| | HP-332-075 | Cotter Pin, 3/8 x ¾ | 1 |
| 17 | 43-173 | Nail Plate | 1 |
| 18 | 43-175 | Compression Spring | 8 |

# TYPHOON DRAWING



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

## TYPHOON WIRING




## WIRING PARTS LIST

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

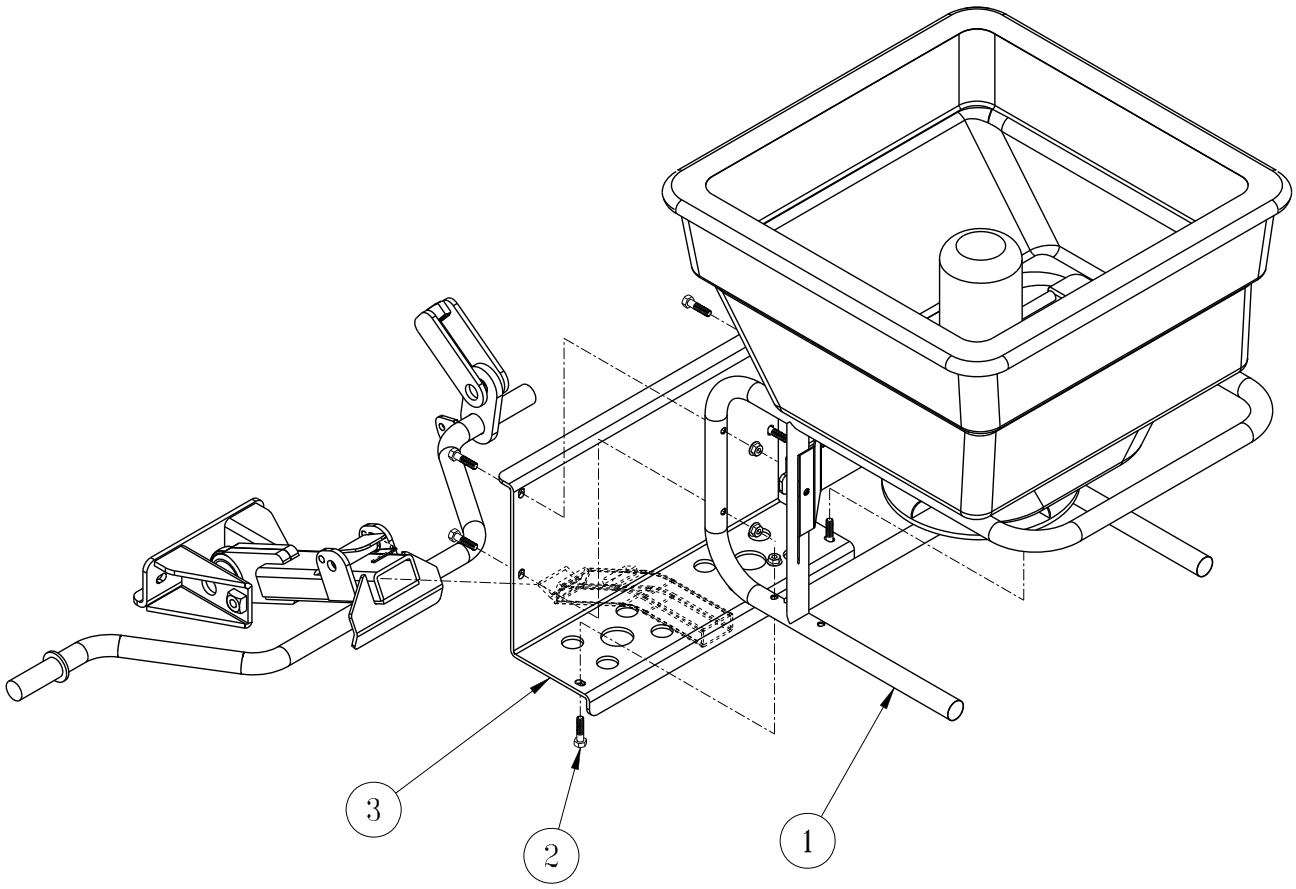

**READ ENGINE MANUAL PRIOR TO STARTING THIS MACHINE.**
**Machine is shipped with NO OIL in engine.**
**Fill Engine with oil as suggested in Engine Manual.**

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



## 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, $^{5}/_{16}$ - 18 x $1^{1}/_{4}$ | 6 |
| | HNFL-516-18 | Flange Whiz-Loc Nut, $^{5}/_{16}$ - 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) $^{5}/_{16}$ - 18 x $1^{1}/_{4}$ 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
Highway SS @ Poplar St.
Cameron, Wisconsin 54822

Telephone: 715-458-4192 E-Mail: ProductSupport@Smithco.com

## Maintenance Parts:

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

## Items/Conditions Not Covered:

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. The items/conditions listed below are not covered by this warranty:
[* File contains invalid data | In-line.JPG *] 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 cov-ered.

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

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 con-sumption 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 out-side influence. Items considered to be outside influ-ence 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 lim-ited 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


Smithco
Wayne, PA 19087 www.smithco.com