

Parts & Service



SweepStar 48
48-000-C
SN: GH5093

July 2007
Revised September 2008

Product Support:

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Reference

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

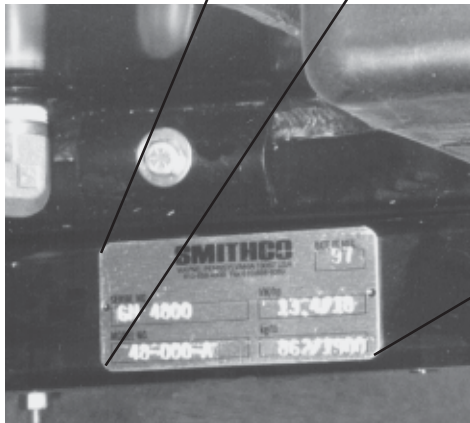
Read this manual and all other manuals pertaining to the Sweep Star 48 carefully as they have safety, operating, assembly and maintenance instructions. Failure to do so could result in personal injury or equipment damage.

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 Sweep Star 48 is located on the right main frame, in front of the oil and gas tanks. Refer to engine manual for placement of engine serial number.

For easy access record your Serial and Model numbers here.

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



Information needed when ordering replacement parts:

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

SAFE PRACTICES

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

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 FOR SWEEP STAR 48 HIGH LIFT

WEIGHTS AND DIMENSIONS	HIGH LIFT
Length	121" (307 cm)
Width	60" (153 cm)
Height with Hopper Down	63" (160 cm)
Height with Hopper Up	126" (320 cm)
Wheel Base	70" (179 cm)
Weight	1900 lbs(862 kg)
SOUND LEVEL (DBA)	
At ear level	90 dba
At 3 ft (0.914 m)	91 dba
At 30 ft (9.14 m)	76 dba
ENGINE	
Make	Kohler
Model#	CH25
Type / Spec#	CH730-0100
Horsepower	25 Hp (19 kw)
Fuel	Unleaded 87 Octane
	Gasoline Minimum
Cooling System	Air Cooled
Lubrication System	Full Pressure
Alternator	15 Amp
WHEELS & TIRE	Front: One 18 x 9.50 x 8 Multi-rib
	Rear: Two 24 x 12.00 x 12 NHS (20 psi max)
	Castor: 9 x 3.50 - 4
BRAKES	Dynamic Through Hydrostat
PARK BRAKE	Hand Operated Lever, Discs on Rear Axle
SPEED	
Forward Speed	0 to 10 mph (0-16kph)
Reverse Speed	0 to 4 mph (0-6 kph)
BATTERY	12 Volt Automotive IBS type 45-50
Cold Cranking Amps	48 minimum
Ground Terminal Polarity	Negative (-)
Maximum Length	9" (23cm)
Maximum Width	5.38" (14cm)
Maximum Height	9" (23cm)
FLUID CAPACITY	
Crankcase Oil	See Engine Manual
Fuel	5 gallon (19 liters)
Hydraulic Fluid	5 gallon (19 liters)
Grade of Hydraulic Fluid	SAE 10W-40 API Service SG Motor Oil

OPTIONAL EQUIPMENT

- 48-084 48" Brush Reel Kit (includes pillow blocks and pulley drive)
- 48-085 48" Finger Reel Kit (includes pillow blocks and pulley drive)
- 48-120 Dust and Filtration pack - High lift





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



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 Sweep Star 48 has eleven grease fittings.

- One on the top of each tower. (High Lift Only)
- One on the center of park brake relay on rear axle.
- One on hydrostatic pedal under the floorboard.
- One on the pillow block bearing on each end of finger/brush reel.
- One on castor wheel mount bracket.
- One on reel clutch relay.
- One on reel clutch belt tightener.
- One on rod end of the tailgate cylinder. (High Lift Only)

Every 500 hours of operation, separate the hydrostatic pump from the engine, clean the splined areas and lightly grease the male portion of the pump spline. Use either Dow Corning® G-N Metal Assembly Paste or #77 Assembly Paste (Kohler # 25 357 12-s).

As you remount the pump to the engine, be certain the mating surfaces are clean and free of any foreign material, and that the pump is correctly aligned.

HYDRAULIC OIL

1. Use SAE 10W-40 API Service SG motor oil.
2. For proper warranty, change oil every 500 hours or annually, whichever is first and change the 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" (5 - 6.4 cm) from top of fill neck 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 now 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 SG when hot (above 90°F (33°C)) and SAE 10W API Service SG 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.



TIRE PRESSURE

Caution must be used when inflating a low tire to recommended pressure. Over inflating can cause tires to explode. Front and rear tires and castor wheel should be 20 psi (1.4bar) maximum. Improper inflation will reduce tire life considerably.

WHEEL MOUNTING PROCEDURE

REAR WHEELS

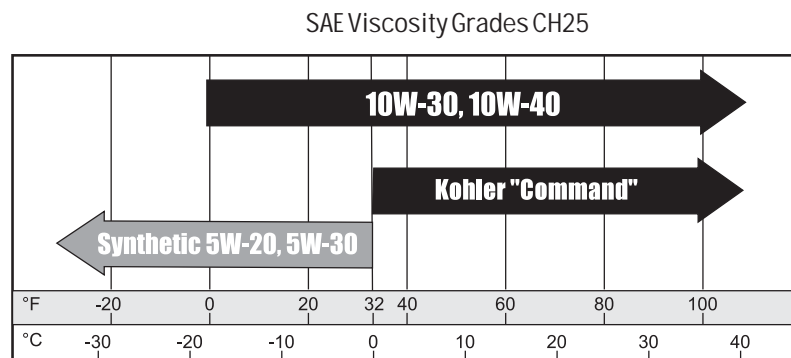
1. Set park brake. Turn machine off and remove key.
2. Block one of the other wheels.
3. Loosen nuts slightly on wheel to be removed.
4. Jack up machine being careful not to damage underside of machine.
5. Remove nuts, remove wheel.
5. Place new wheel on hub lining up bolt holes.
6. Torque nuts to 64-74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

FRONT WHEEL

1. Set park brake. Turn machine off and remove key.
2. Block one of the other wheels.
3. Remove cotter pins from each end of the axle.
4. Remove axle nuts, machine bushings and axle locks.
5. Jack up front of machine being careful not to damage underside of machine.
6. Wheel and axle will come out of slots in the u-bracket, pull wheel forward.
7. Place new wheel on hub lining up bolt holes.
8. Torque nuts to 64-74 ft/lb (87-100Nm) using a cross pattern. Retorque after first 10 hours and every 200 hours thereafter.
9. Place wheel back on front fork. Tighten all bolts.
10. Lower machine to ground and remove blocks and jack.

ENGINE OIL

Change and add oil according to charts below. Do not overfill. Use a high quality detergent oil. For Kohler engine use oil classified "For Service SG or SH".



Starting Temperature Range Anticipated Before Next Oil Change

MAINTENANCE (CONTINUED)

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.



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.

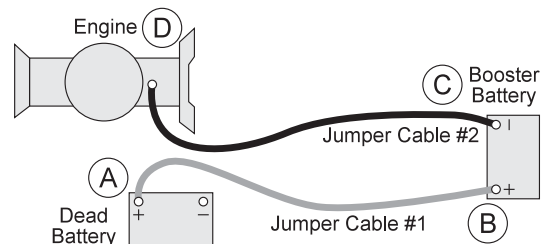
JUMP STARTING



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.

TOWING

When it is necessary to move the Sweep Star 48 without engine running, the bypass valve built into hydrostatic pump must be "open" by turning it counterclockwise. 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. Tow slowly. 2 m.p.h. or less.

The bypass valve is a $\frac{3}{8}$ diameter shaft with a $\frac{11}{64}$ hole for inserting something for leverage so you can turn it. On the high lift it is on the top of the hydrostatic. On the ground level dump it is on the bottom of the hydrostatic.

FILTERPACK

Filter pack can be removed and cleaned by shaking or use a low pressure water hose. Filter will disintegrate if cleaned under high pressure.

TAILGATE

Must raise hopper to open and close tailgate to disengage the locks.



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



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

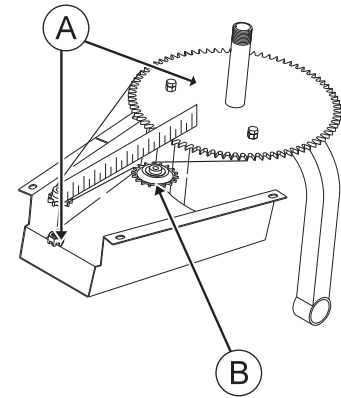
The suggested maintenance checklist is not offered as a replacement for the manufacturer's engine manual but as a supplement. You must adhere to the guidelines established by the manufacturer for warranty coverage. In adverse conditions such as dirt, mud or extreme temperatures, maintenance should be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

Maintenance Service Interval	Maintenance Procedure
After the first 5 operating hours	Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm)) Change the engine oil and filter.
After the first 20 operating hours	Replace hydraulic filter
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 100 hours	Change the engine oil and filter. Change hydraulic filter 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 200 Hours	Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm))
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.



PARK BRAKE ADJUSTMENT

By turning knob on end of park brake lever you can tighten or loosen brake a small amount. To tighten turn the knob clockwise. To loosen turn counter clockwise. If this is not enough turn clevis on the rear of the brake cable to adjust length of cable. Do not adjust the clevis on the front of the machine.



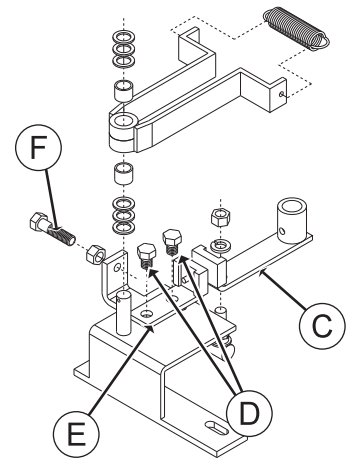
STEERING CHAIN ADJUSTMENT

Steering Sprockets (A) should be level with each other. Check with straight edge. Make any adjustments. Slide Idler Pulley (B) so that it is snug onto the chain. Tighten all nuts and bolts in place.

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 the unit so rear wheels are off the ground and can turn freely.
2. Below seat of machine, on the bottom of the hydrostatic transmission is the shift arm (C). Loosen bolts (D).
3. With engine running, move stop (E) so it moves shift arm (C) to center and wheel creep stops.
4. Tighten all fasteners and test by using foot pedal linkage to see that the 'creep' is removed.
5. The reverse speed is controlled by bolt (F). Turn clockwise to reduce reverse speed and counter clockwise to increase speed.
6. Turn the engine off and lower the machine.



RUBBER FINGERS AND NYLON BRUSHES

In normal use, rubber fingers and nylon brushes wear out and require replacement. They will break, dislodge, and wear prematurely if used in less than ideal conditions.

STORAGE

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

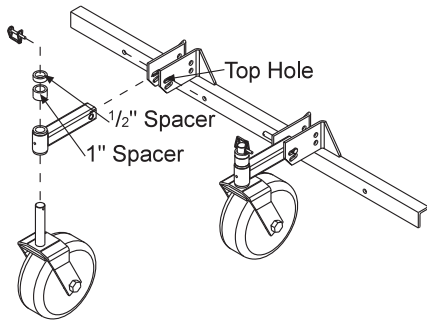
1. Before storing clean machine thoroughly.
2. Check bolts and nuts, tighten as necessary.
3. Make all repairs that are needed and remove any debris.
4. Remove the battery, adjust the electrolyte level and recharge it. Store the battery in a dry, dark place.
5. Store in a clean and dry area, but NOT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

REEL HEIGHT ADJUSTMENT

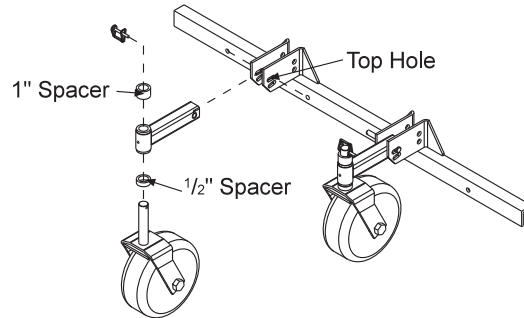
Below are the various ways that the Sweep Star 48 castor wheels can be adjusted to accommodate for the finger/brush reel height. By changing the two spacers around on the castor wheel fork you can experience a range of ground clearances on the finger/brush reel. Keep both castor wheels at the same height.



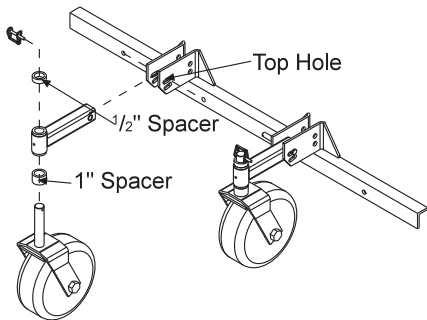
These clearances change as the brush and finger reels wear.



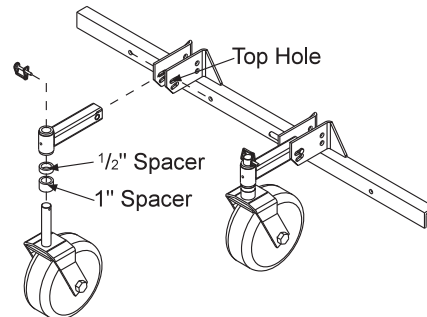
No Spacer
Top Hole
Ground Clearance
Brush Reel $\frac{7}{8}$ "
Finger Reel $\frac{1}{2}$ "



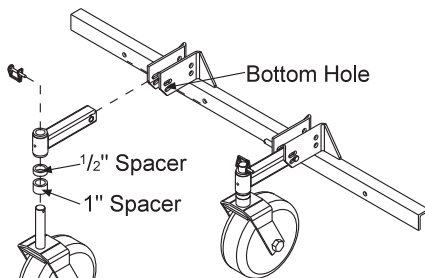
$\frac{1}{2}$ " Spacer
Top Hole
Ground Clearance
Brush Reel $\frac{3}{4}$ "
Finger Reel $1\frac{1}{8}$ "



1" Spacer
Top Hole
Ground Clearance
Brush Reel $\frac{5}{8}$ "
Finger Reel $1\frac{1}{4}$ "



1" Spacer
 $\frac{1}{2}$ " Spacer
Top Hole
Ground Clearance
Brush Reel $1\frac{1}{8}$ "
Finger Reel $1\frac{7}{16}$ "

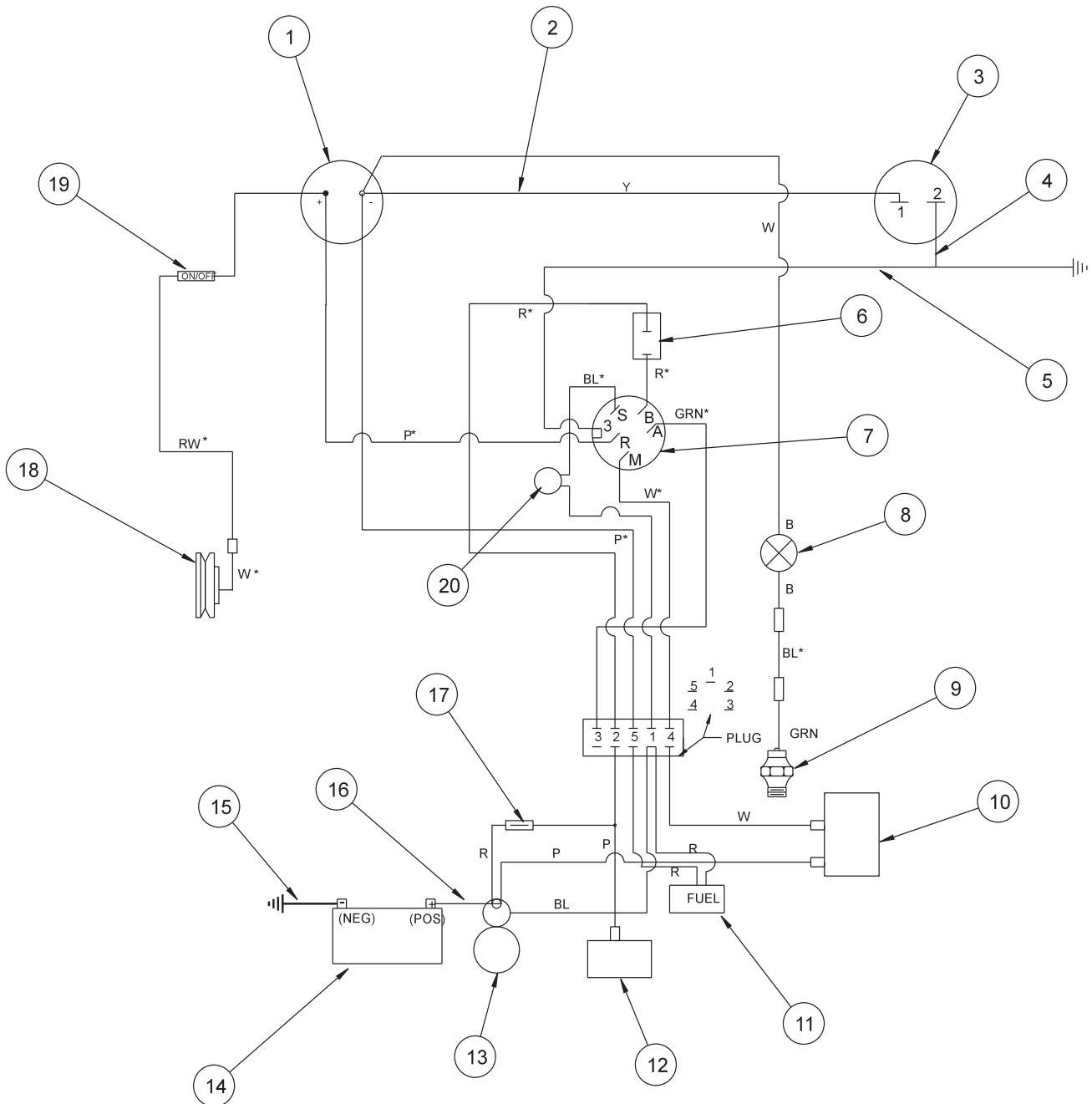


1" Spacer(2 per)
 $\frac{1}{2}$ " Spacer(1 per)
Bottom Hole
Ground Clearance
Brush Reel $1\frac{1}{2}$ "
Finger Reel $1\frac{7}{8}$ "

WIRING DIAGRAM

Color Code Chart

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

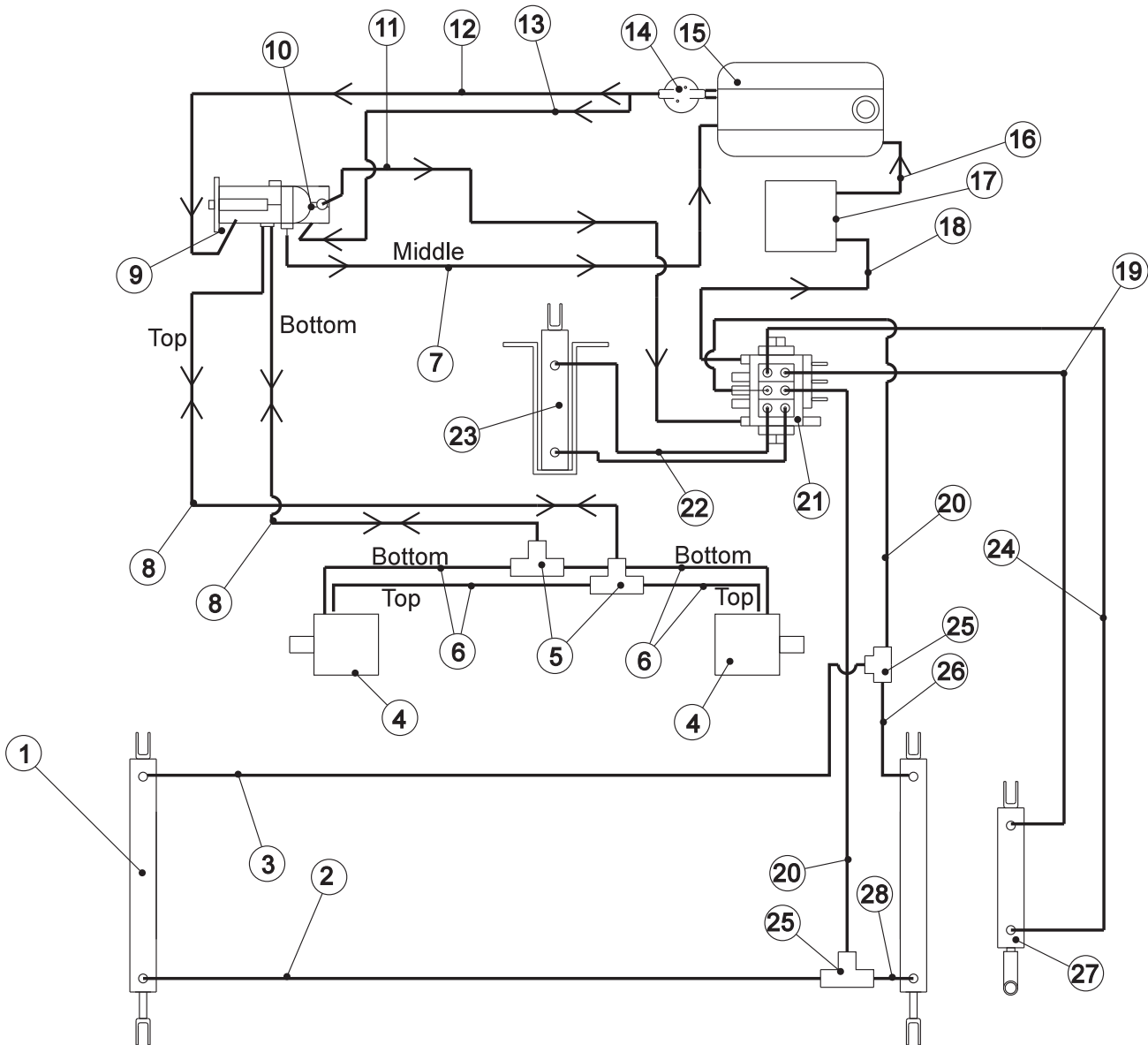


Diagrams

WIRING DIAGRAM PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	22-003	Ammeter	1
2	76-269	Power Wire to Hour Meter	1
3	12-017	Hour Meter	1
4	76-259	Ground Wire for Hour Meter	1
5	77-209	Ground Wire for Ignition Switch	1
6	34-146	Panel Mount Circuit Breaker	1
	34-145	Circuit Breaker Boot	1
7	13-288	Key Switch with Hardware (Kohler #25 099 04)	1
	76-310	Key Switch	1
8	50-359	Warning Indicator Light	1
9		Oil Sender (Part of Engine)	
10		Ignition Module (Part of Engine)	
11		Fuel Shut-Off Solenoid (Part of Engine)	
12		Rectifier (Part of Engine)	
13		Starter (Part of Engine)	
14	22-073	Battery	1
	48-166	Battery Hold-down	1
15	48-147	Black Battery Cable	1
16	48-157	Red Battery Cable	1
	8892-46.5	Hose Wrap 1/4 x 46 1/2	1
17		Wire With Fuse (Part of Engine)	
		Fuse AGC 30	
18	76-337	Electric Clutch	1
	17-271	Pigtail	1
19	15-314	Toggle Switch	1
	15-472	Switch Boot	1
20	14-292	Seat Switch	1
*	76-392	Wire Harness (Includes all wire color with *)	1
	48-144	Circuit Breaker Wire (starter to wire harness)	1

HYDRAULIC DIAGRAM (HIGH LIFT)



76-023 3-Bank Hydraulic Valve

Relief Valve set at

2000 PSI(137.93 Bar)

76-322 Hydrostat Pump

Displacement

Variable to .913 in³/R(15 cc³/R)

14.23 GPM(53.85LPM) at 3600 RPM

Max Operating Speed

3600 RPM

Rated Pressure

3000 PSI(206.8 Bar)

Max Pressure

4500 PSI(310 Bar)

Max Inlet Vacuum

5 in Hg(.17 Bar)

Max Inlet Temperature

220°F(104°C)

Max Allowable Case Pressure 25 PSI(1.72 Bar)

76-323 Gear Pump

Displacement

.366 in³/R(6 cm³/R) 5.7GPM(21.6 IPM)

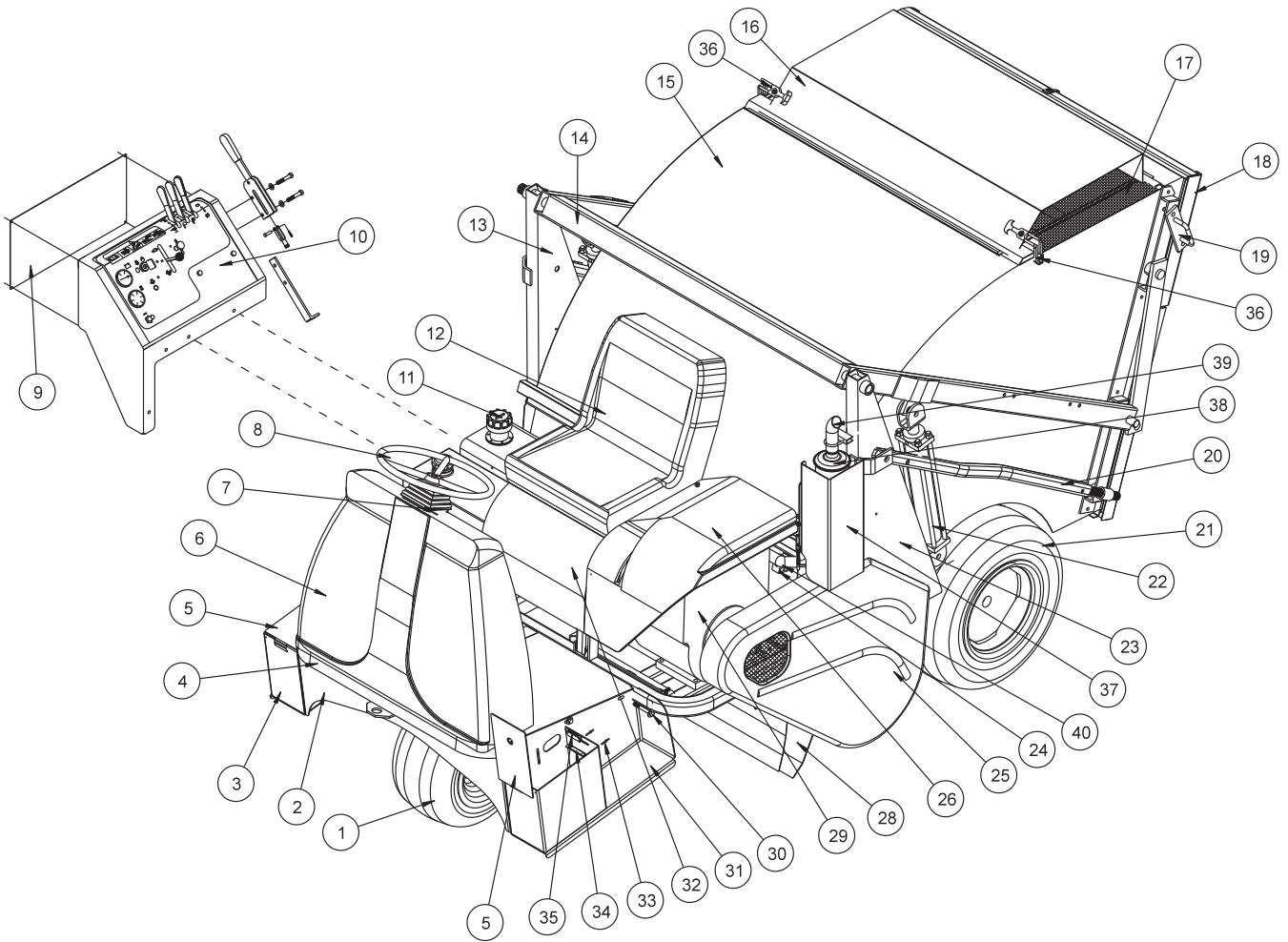


HYDRAULIC DIAGRAM PARTS LIST (HIGH LIFT)

REF#	PART#	DESCRIPTION	QUANTITY
1	76-242	Hydraulic Cylinder	2
2	48-012	Hydraulic Hose	1
3	48-013	Hydraulic Hose	1
4	48-137	Wheel Motor	2
5	34-057	Tee	2
6	48-015	Hydraulic Hose	4
7	8810-19	Hose $\frac{5}{8}$ ID	1
	18-077	Hose Clamp	2
	8895-22	Hose Wrap 22"	1
8	48-016	Hydraulic Hose	2
	8895-44	Hose Wrap 44"	2
9	76-322	Hydrostatic Pump	1
10	76-323	Gear Pump (replacement; no repair)	1
11	48-020	Hydraulic Hose	1
	8895-40	Hose Wrap 40"	1
12	8810-07	Hose $\frac{5}{8}$ ID x 7"	1
	18-077	Hose Clamp	2
	8895-8	Hose Wrap 8"	1
13	8832-19	Hose $\frac{3}{4}$ ID x 19"	1
	18-040	Hose Clamp	2
	8895-22	Hose Wrap 22"	1
14	48-083	Oil Filter	1
	48-083-01	Filter Element (replacement only)	1
15	60-473	Oil Tank	1
16	48-062	Hydraulic Hose	1
	8895-67	Hose Wrap 67"	1
17	34-105	Oil Cooler	1
18	48-021	Hydraulic Hose	1
	8895-92	Hose Wrap 92"	1
19	48-018	Hydraulic Hose	1.
	8895-73	Hose Wrap 73"	1
20	76-115	Hydraulic Hose	2
	8895-74	Hose Wrap 74"	2
21	76-023	3-Bank Hydraulic Valve	1
22	48-019	Hydraulic Hose	2
	8895-54.5	Hose Wrap 54.5"	2
23	75-634	Hydraulic Cylinder	1
24	48-017	Hydraulic Hose	1
	8895-73	Hose Wrap 73"	1
25	18-173	Tee $\frac{3}{8}$ Junction Union	2
26	48-014	Hydraulic Hose	1
27	75-714	Hydraulic Cylinder	1
28	27-065	Hydraulic Hose	1

BODY AND FRAME DRAWING

Diagrams



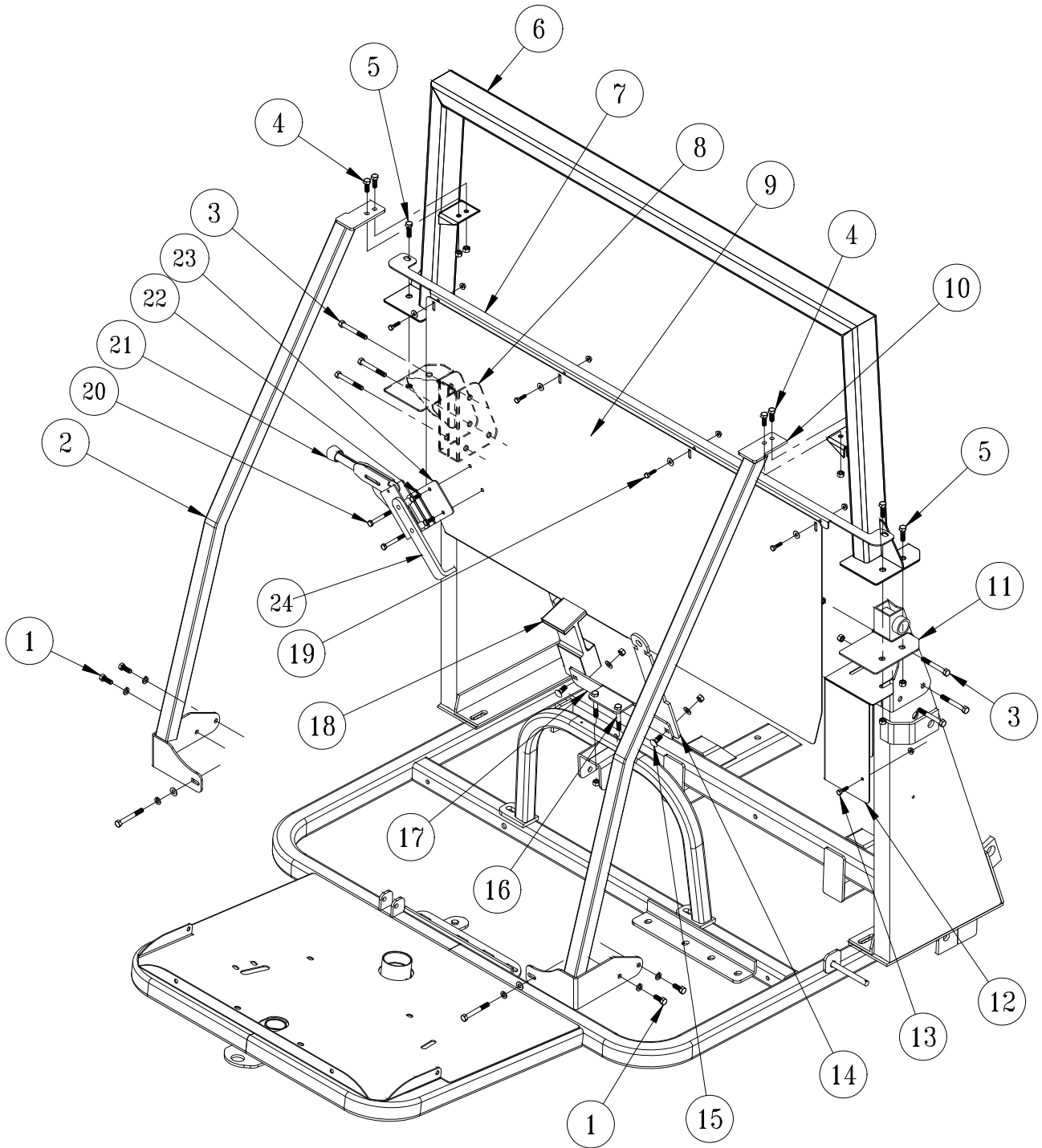
BODY AND FRAME PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	60-130	Tire and Wheel	1
	60-130-01	Tire 18 x 9.5 x 8	1
	60-130-02	Wheel	1
2	48-158	Front Cover	1
	HB-14-20-075	Bolt 1/4 - 20 x 3/4	4
	HW-14	Washer 1/4	4
	HNFL-14-20	Flange Whiz Lock Nut 1/4 -20	4
3	48-161	Left Step	1
4	48-173	Main Frame	1
5	48-159	Battery Box Cover	2
	8803-10	Black Trim 10" (along side closest to machine)	2
6	76-264	Nose Cone	1
	76-354	2 1/2 # ABC Dry Chemical Fire Extinguisher	1
7	76-362	Mini Tilt Steering Mechanism	1
	76-364	Tilt Steering Boot (comes with 76-362)	1
8	13-718	Steering Wheel	1
	13-726	Steering Wheel Cap	1
	HNJ-58-18	Cap Nut 5/8 - 18	1
9	76-214	Side Panel	1
10	76-265	Console	1
11	60-473	Oil Tank	1
	13-747	Filler Breather	1
12	14-519	High Back Seat	1
	42-098	Plastic Spacer	4
13	48-008	Right Tower	1
14	48-044	Arm Pivot Tube	1
15	48-007	Hopper	1
16	48-004	Hopper Screen Cover	1
17	48-022	Hopper Screen	1
18	48-005	Tailgate	1
	48-023	Tailgate Screen	1
19	48-053	Tailgate Hinge	2
20	48-061	Hopper Dump Arm	2
21	10-114	Tire and Wheel	2
	10-114-01	Tire 24 x 12.00 x 12	2
	10-114-02	Wheel	2
22	76-242	Lift Cylinder	2
23	48-009	Left Tower	1
24	48-029	Grass Chute	1
25	48-112	Belt Guard	1
	48-047	Side Belt Guard Tab	1
26	48-111	Engine Cover	1
28	48-028	Front Baffle	1
29	48-194	Engine Kohler CH25	1
30	HB-38-16-300	Bolt 3/8 -16 x 3	3
	HW-38	Washer 3/8	3
	HNTL-38-16	Lock Nut 3/8 - 16	3
31	48-160	Right Step	1
	8803-10	Black Trim 10"	1
32	48-026	Seat Support	1
33	HRS-18-050	Rivet 1/8 x 1/2	4
	HW-6	Washer #6	4
34	48-165	Magnet Bracket	2
35	48-164	Magnet	2
36	15-437	Latch	2
	HRS-316-1125	Steel Pop Rivet 3/16 x 1 1/8	6
37	48-217	Outer Muffler Cover	1
38	15-371	Muffler	1
39	48-201	Tail Pipe	1
40	48-199	Exhaust Pipe	1



ROLL OVER PROTECTION DRAWING

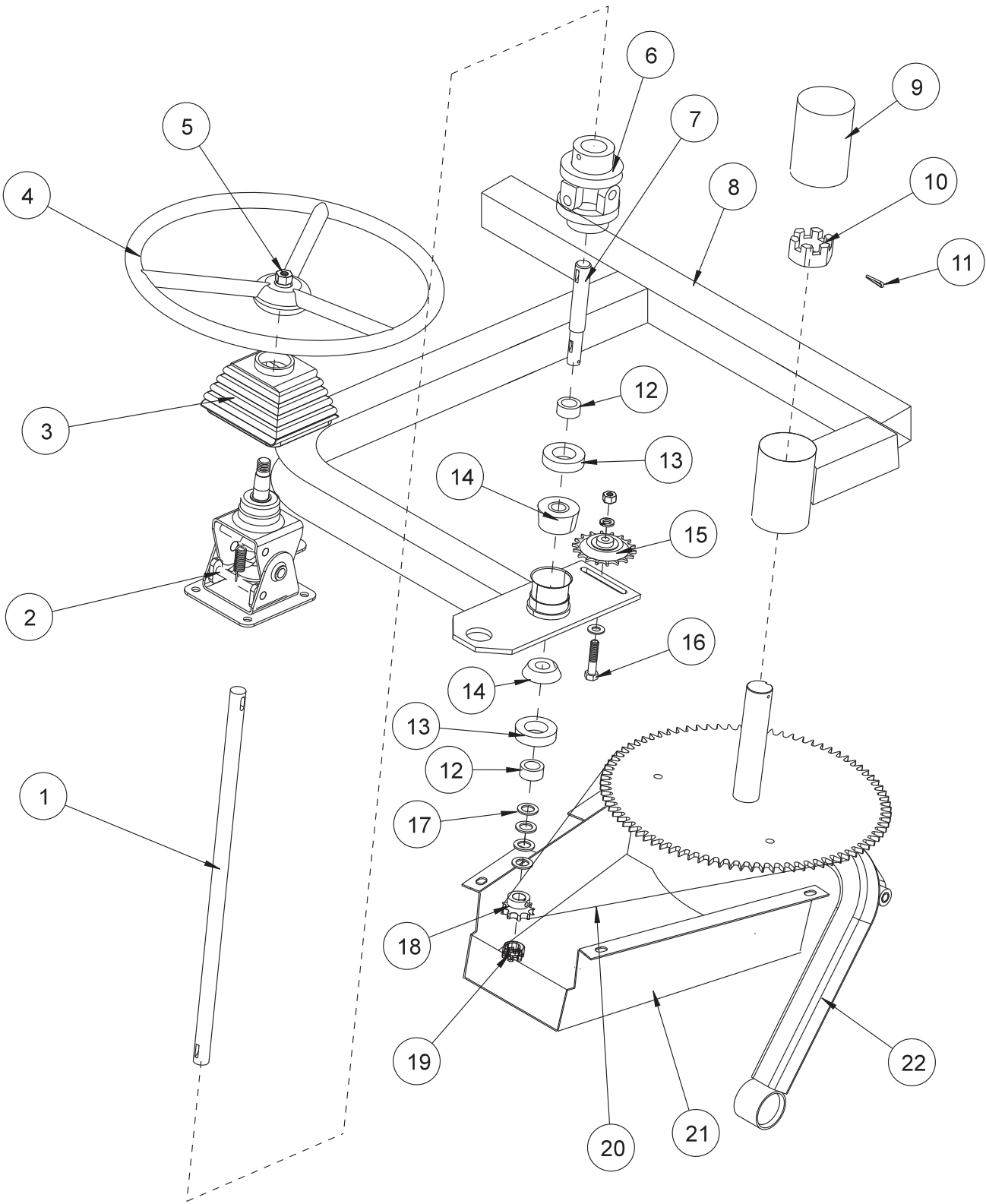
Parts



ROLL OVER PROTECTION PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-100	Bolt, $\frac{3}{8}$ - 16 x 1	4
	HWL-38	Lock Washer, $\frac{3}{8}$ - 16	4
2	48-210	Left Support Bar	1
3	HB-12-13-300	Bolt, $\frac{1}{2}$ -13 x 3	6
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ -13	6
4	HB-38-16-100	Bolt, $\frac{3}{8}$ - 16 x 1	4
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ -16	4
5	HB-12-13-125	Bolt, $\frac{1}{2}$ -13 x $1\frac{1}{4}$	4
	HNTL-12-13	Lock Nut, $\frac{1}{2}$ - 13	4
6	48-208	Roll Bar	1
7	48-225	Hopper Guard Support	1
	8803-6	Trim, 6"	1
8	48-207	Left Hand Mount	1
	25-286	Decal, Pinch Point	3
9	48-226	Hopper Guard	1
	16-088	Decal, Moving Parts/Hot	2
	25-286	Decal, Pinch Point	2
10	48-209	Right Support Bar	1
11	48-206	Right Hand Mount	1
12	48-224	Muffler Shield	1
13	HB-14-20-100	Bolt, $\frac{1}{4}$ - 20 x 1	1
	HNFL-14-20	Lock Nut, $\frac{1}{4}$ - 20	1
14	76-198-03	Seat Belt	1
15	HBCL-38-16-100	Carriage Bolt, $\frac{3}{8}$ - 16 x 1	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ - 16	2
	HW-38	Flat Washer, $\frac{3}{8}$	2
16	HB-38-16-250	Bolt, $\frac{3}{8}$ - 16 x $2\frac{1}{2}$	2
	HNTL-38-16	Lock Nut, $\frac{3}{8}$ -16	2
17	48-204	Seat Belt Bracket	1
18	76-198-03	Seat Belt	1
19	HB-14-20-100	Bolt, $\frac{1}{4}$ - 20 x 1	4
	HNFL-14-20	Lock Nut, $\frac{1}{4}$ - 20	4
	HW-14	Flat Washer, $\frac{1}{4}$	4
20	HB-516-18-225	Bolt, $\frac{5}{16}$ -18 x $2\frac{1}{4}$	2
	HNFL-516-18	Flange Lock Nut $\frac{5}{16}$ -18	2
21	60-106	Brake Lever	1
22	HB-516-18-075	Bolt, $\frac{5}{16}$ -18 x $\frac{3}{4}$	2
	HNFL-516-18	Flange Lock Nut $\frac{5}{16}$ -18	2
23	48-234	Park Brake Bracket	1
24	76-224	Park Brake Cable Bracket	1

STEERING DRAWING



Parts

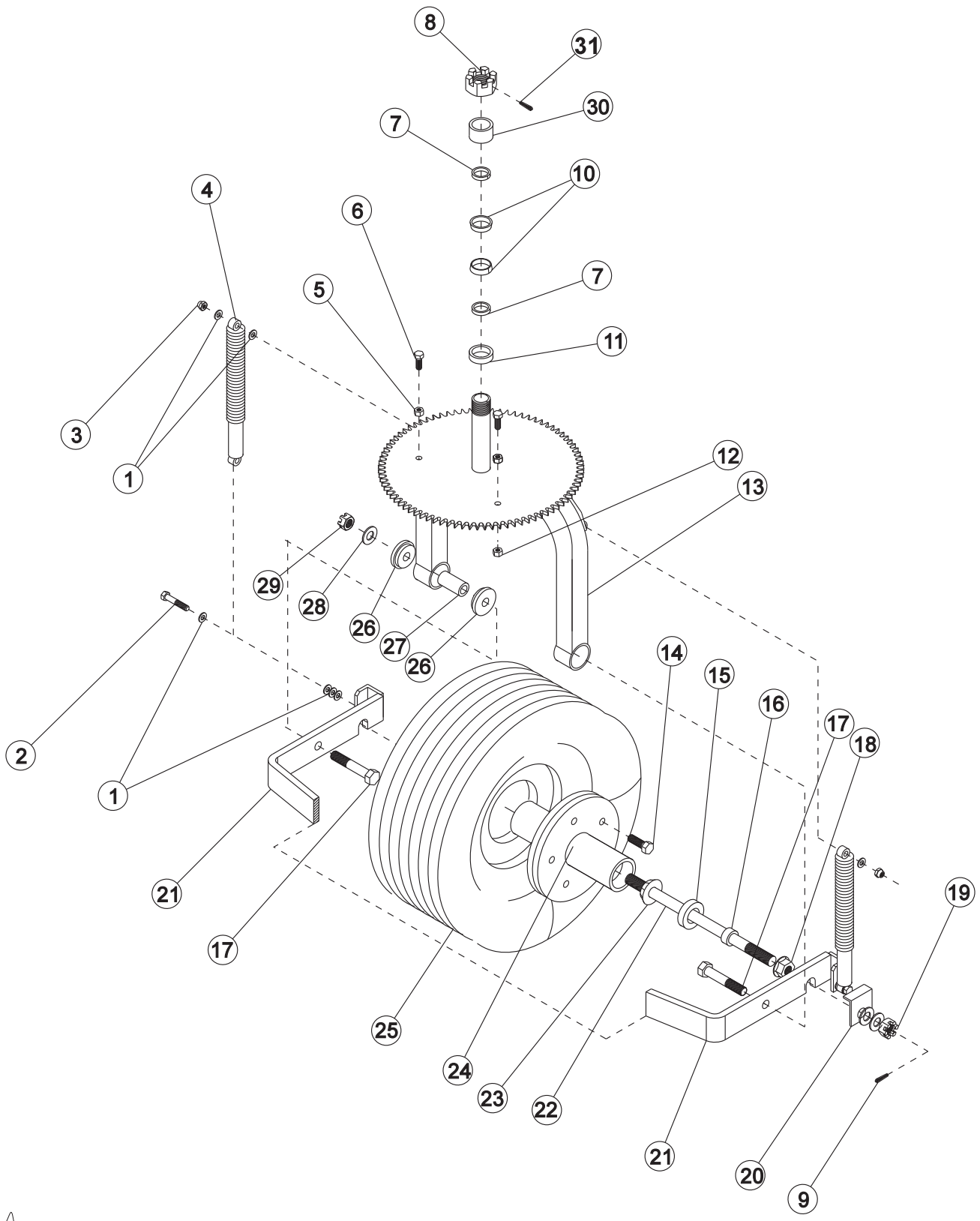
STEERING PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	48-186	Steering Shaft	1
	HWK-316-075	Woodruff Key $\frac{3}{16} \times \frac{3}{4}$	1
2	76-362	Tilt Steering Mechanism	1
3	76-364	Tilt Steering Boot (comes with 76-362)	1
4	13-718	Steering Wheel	1
	13-726	Steering Wheel Cap	1
5	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
6	75-833	Universal Joint	1
	HSSHS-516-18-038	Socket Head Set Screw $\frac{5}{16}$ - 18 x $\frac{3}{8}$	4
7	75-813	Bottom Steering Shaft	1
	HWK-316-075	Woodruff Key $\frac{3}{16} \times \frac{3}{4}$	1
8		Main Frame	
9	76-301	Rubber Cap	1
10	HNAT-114-12	Thick Axle Nut $1\frac{1}{4}$ - 12	1
11	HP-18-200	Cotter Pin $\frac{1}{8} \times 2$	1
12	11-040	Spacer $\frac{3}{4}$	2
13	11-039	Seal	2
14	11-038	Bearing Cup and Cone	2
15	76-156	Idler Sprocket	1
16	HB-38-16-175	Bolt $\frac{3}{8}$ - 16 x $1\frac{3}{4}$	1
	HW-38	Washer $\frac{3}{8}$	1
	HWL-38	Lockwasher $\frac{3}{8}$	1
	HN-38-16	Nut $\frac{3}{8}$ - 16	1
17	HMB-58-14	Machine Bushing $\frac{5}{8}$ - 14	as Req'd
18	76-153	Sprocket	1
	HWK-316-063	Woodruff Key $\frac{3}{16} - \frac{5}{8}$	1
19	HNA-58-18	Axle Nut $\frac{5}{8}$ - 18	1
	HP-18-100	Cotter Pin $\frac{1}{8} \times 1$	1
20	8827-59	Roller Chain	1
	18-032	Master Link #40	1
21	75-803	Chain Guard	1
	HSTP-516-18-100	Truss Machine Screw $\frac{5}{16}$ - 18 x 1	4
	HW-516	Washer $\frac{5}{16}$	4
	HWL-516	Lockwasher $\frac{5}{16}$	4
	HN-516-18	Nut $\frac{5}{16}$ - 18	4
22	76-155	Front Fork	1



FRONT FORK DRAWING

Parts

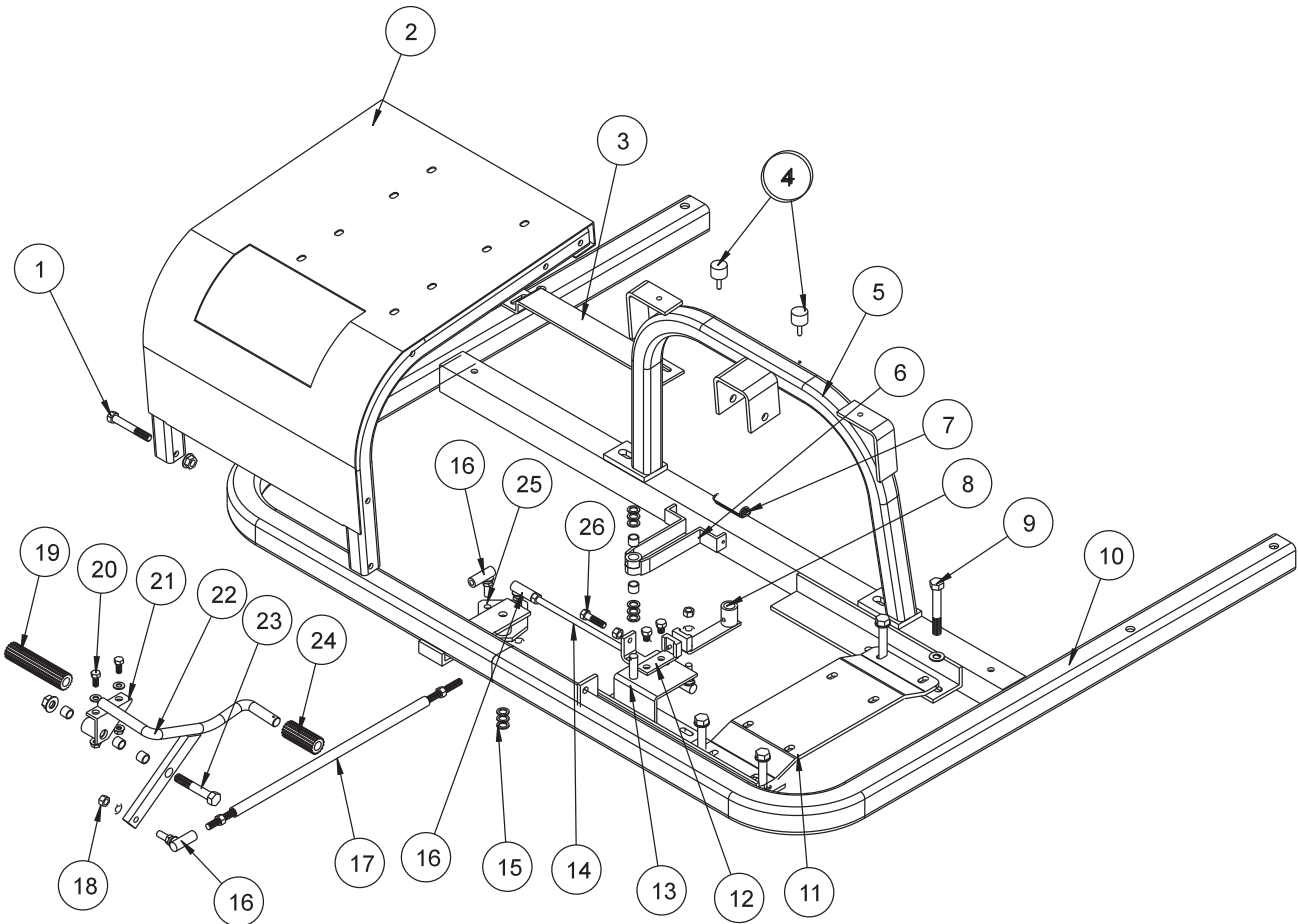


FRONT FORK PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HW-38	Washer $\frac{3}{8}$ (as Req'd)	14
2	HB-38-16-200	Bolt $\frac{3}{8}$ - 16 x 2	2
	HNTL-38-16	Locknut $\frac{3}{8}$ - 16	2
3	HB-38-16-250	Bolt $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HNTL-38-16	Locknut $\frac{3}{8}$ - 16	2
4	75-715	Shock Absorber	2
	75-864	Bushing (comes with shock)	2 per shock
5	HN-38-16	Nut $\frac{3}{8}$ - 16	2
6	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
7	20-142	Grease Seal $1\frac{1}{4}$	2
8	HNAT-114-12	Thick Axle Nut $1\frac{1}{4}$ - 12	1
9	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	2
10	20-143	Bearing Cup and Cone $1\frac{1}{4}$ ID	2
11	20-141	Spacer $1\frac{5}{8}$ OD x $1\frac{1}{4}$ ID x $\frac{7}{16}$	1
12	HNCL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
13	76-155	Front Fork	1
14	27-022-02	Bolt Stud $\frac{1}{2}$ - 20 x $1\frac{1}{2}$	5
	HNL-12-20	Lug Nut $\frac{1}{2}$ - 20	5
15	11-039	Grease Seal $1\frac{1}{8}$ ID	2
16	11-040	Spacer $1\frac{1}{8}$ OD x $\frac{3}{4}$ ID x $\frac{17}{32}$	2
17	HB-58-18-350	Bolt $\frac{5}{8}$ - 18 x $3\frac{1}{2}$	2
18	HNJ-34-16	Jam Nut $\frac{3}{4}$ - 16	2
19	HNA-34-16	Axle Nut $\frac{3}{4}$ - 16	2
20	60-511	Axle Lock	2
21	60-510	U-Bracket	1
22	60-407	Front Axle	1
23	11-038	Bearing Cup and Cone $\frac{3}{4}$ ID	2
24	11-010	Wheel Hub	1
25	60-130	Wheel and Tire	1
	60-130-01	Tire 18 x 9.5 - 8 6 Ply	1
	60-130-02	Wheel	1
	8839	Windshield Washer Fluid	28 pints
26	60-128	Rubber Bushing	4
27	60-406	Spacer 1 OD x $\frac{5}{8}$ ID x 2	2
28	HW-58	Washer $\frac{5}{8}$	2
29	HNTL-58-18	Lock Nut $\frac{5}{8}$ - 18	2
30	76-158	Spacer Seal	1
31	HP-18-200	Cotter Pin $\frac{1}{8}$ x 2	1



LINKAGE DRAWING

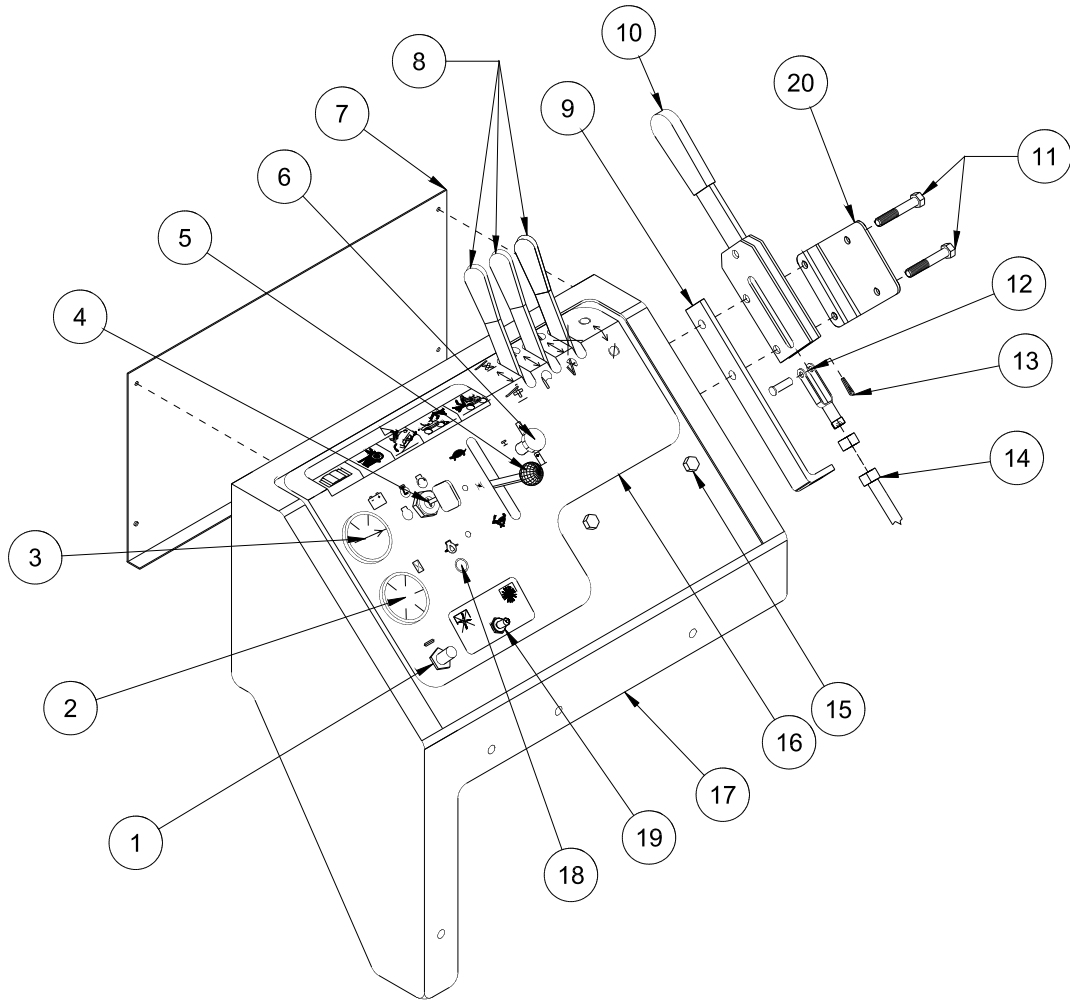


Parts

LINKAGE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-38-16-250	Bolt $\frac{3}{8}$ - 16 x 2 $\frac{1}{2}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
2	48-026	Seat Panel	1
3	48-163	Filter Bracket	1
	HB-516-18-300	Bolt $\frac{5}{16}$ - 18 x 3	1
	HW-516	Washer $\frac{5}{16}$	1
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	1
4	15-013	Rubber Bumper	2
5	48-056	Seat Support	1
6	34-038	Centering Arm	2
	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14GA	6
	18-234	Bushing (part of 34-038)	2
7	21-212	Spring	1
8	48-196	Shift Arm	1
	HRP-14-150	Roll Pin $\frac{1}{4}$ x 1 $\frac{1}{2}$	1
	HRS-316-050	Rivet $\frac{3}{16}$ x $\frac{1}{2}$	1
	8946-1	Plastic Wear Strip	1
9	HB-516-18-350	Bolt $\frac{5}{16}$ - 18 x 3 $\frac{1}{2}$	4
	HW-516	Washer $\frac{5}{16}$	4
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 16	4
10		Main Frame	
11	48-192	Engine Mount	1
12	13-624	Stop w/ Plastic Wear Strip	1
	HRS-316-050	Rivet $\frac{3}{16}$ x $\frac{1}{2}$ (part of 13-624)	1
	8946-1	Plastic Wear Strip (part of 13-624)	1
	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
13	48-034	Centering Arm Mount Bracket	1
	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
	HP-18-075	Cotter Pin $\frac{1}{8}$ x $\frac{3}{4}$	1
14	48-198	Foot Pedal Rod	1
	HN-38-24	Nut $\frac{3}{8}$ - 24	2
15	HMB-12-14	Machine Bushing $\frac{1}{2}$ - 14GA	3
16	21-173	Ball Joints	4
17	76-282	Foot Pedal Rod	1
	HN-38-24	Nut $\frac{3}{8}$ - 24	2
18	HN-38-24	Nut $\frac{3}{8}$ - 24	4
	HWL-38	Lock Washer $\frac{3}{8}$	4
19	76-299	Pedal Pad	1
20	HB-516-18-075	Bolt $\frac{5}{16}$ - 18 x $\frac{3}{4}$	2
	HW-516	Washer $\frac{5}{16}$	2
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	2
21	76-296	Pedal Mount	1
	18-234	Bushing (part of 76-296)	2
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180° (part of 76-296)	1
22	48-059	Foot Pedal	1
	18-234	Bushing (part of 48-059)	1
23	HB-12-13-300	Bolt $\frac{1}{2}$ - 13 x 3	1
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	1
24	76-332	Pedal Pad	1
25	75-791	Shift Relay	1
	10-007	Bushing (part of 75-791)	1
	HP-18-075	Cotter pin $\frac{1}{8}$ x $\frac{3}{4}$	1
26	HSSQ-38-16-150	Square Head Set Screw $\frac{3}{8}$ - 16 x 1 $\frac{1}{2}$	1
	HN-38-16	Nut $\frac{3}{8}$ - 16	1

CONSOLE DRAWING

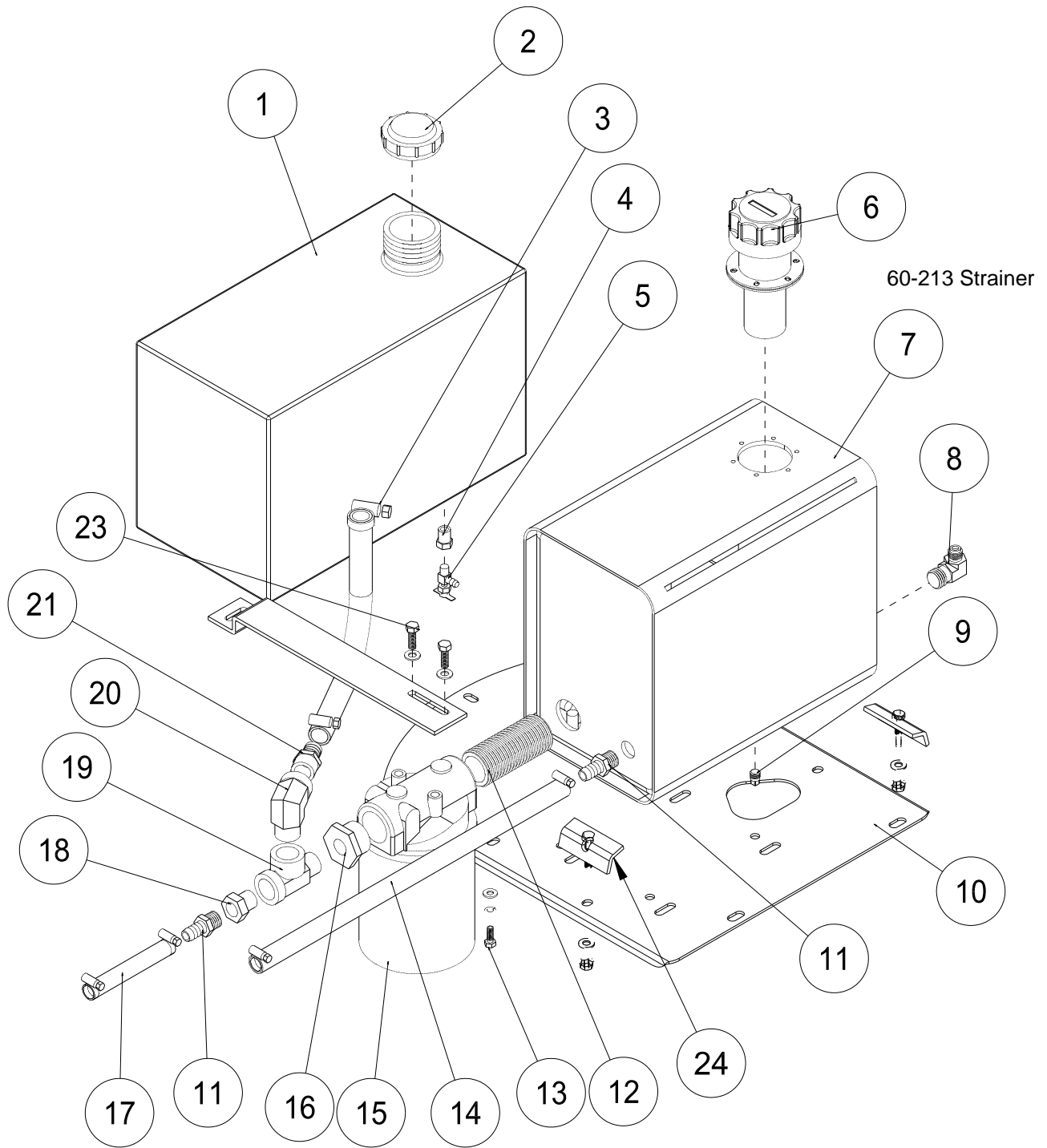


Parts

CONSOLE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	34-146	Panel Mount Circuit Breaker	1
	34-145	Circuit Breaker Boot	1
2	12-017	Hour Meter	1
3	22-003	Ammeter	1
4	13-288	Key Switch (with hardware Kohler# 25 099 04)	1
	76-310	Key Set	1
5	34-160	Throttle 48"	1
	34-159	Throttle Mounting Bracket	1
	HSM-10-32-063	Machine Screw 10 - 32 x $\frac{5}{8}$	6
	HWL-10	Lockwasher 10	6
	HN-10-32	Nut 10 - 32	6
6	80-020	Choke Cable	1
7	76-214	Side Panel	1
	HSA-8-075	Tapping Screw #8 x $\frac{3}{4}$	4
8	76-309	Valve Handle (with Linkage Kit)	1
	76-023	Hydraulic Valve (3 bank)	1
9	76-224	Park Brake Handle Mount	1
10	60-106	Brake Lever	1
11	HB-516-18-225	Bolt $\frac{5}{16}$ - 18 x $2\frac{1}{4}$	2
	HNFL-516-18	Flange Lock Nut $\frac{5}{16}$ - 18	2
12	11-100	Linkage Yoke $\frac{5}{16}$	1
13	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
	HCP- 516-100	Clevis Pin $\frac{5}{16}$ x 1	1
14	60-347	Brake Cable	1
	HN-516-24	Nut $\frac{5}{16}$ -24	2
	60-536	Bellows (one each end of brake cable)	2
15	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1 (holds 76-023 Valve)	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
16	76-199	Decal, Control Panel	1
17	76-265	Console	1
18	50-359	Warning Indicator Light	1
19	15-314	Electric Clutch Switch	1
	15-472	Switch Boot	1
20	48-234	Park Brake Bracket	1
	HB-516-18-075	Bolt $\frac{5}{16}$ - 18 - $\frac{3}{4}$	2
	HNFL-516-18	Folange Lock Nut $\frac{5}{16}$ - 18	2

FUEL AND OIL TANK DRAWING



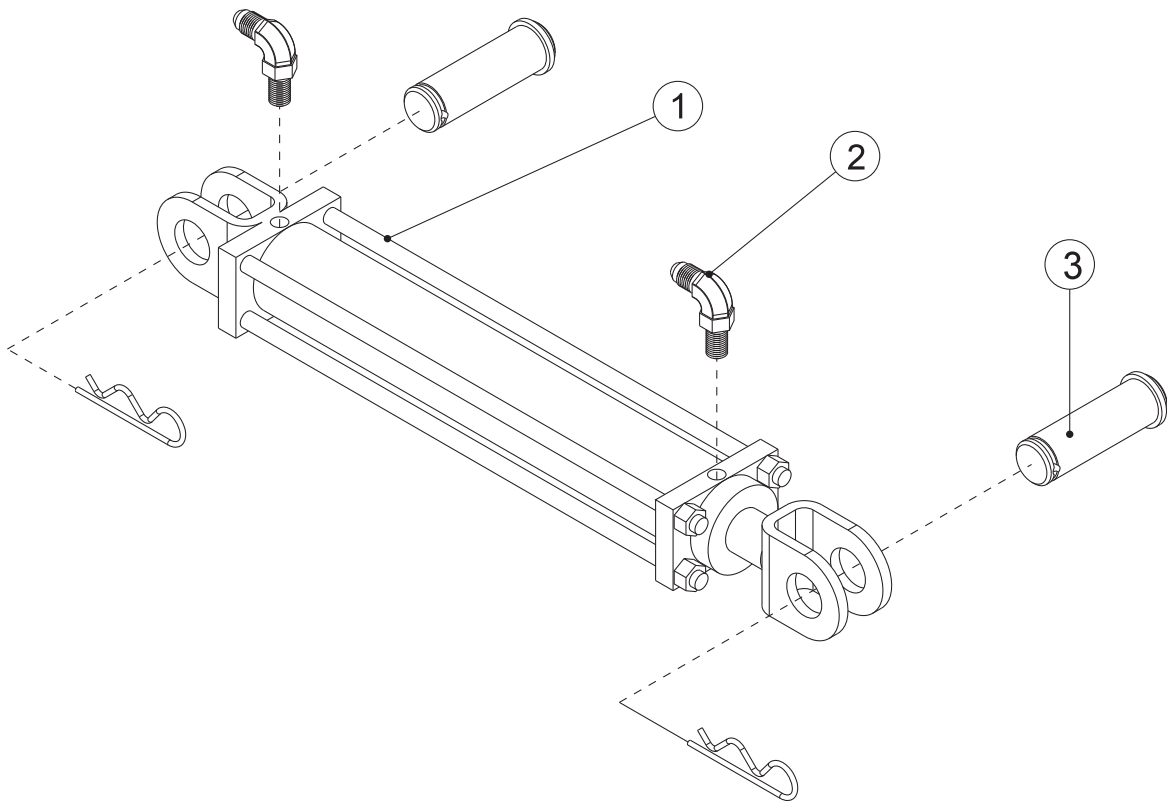
Parts

FUEL AND OIL TANK PARTSLIST

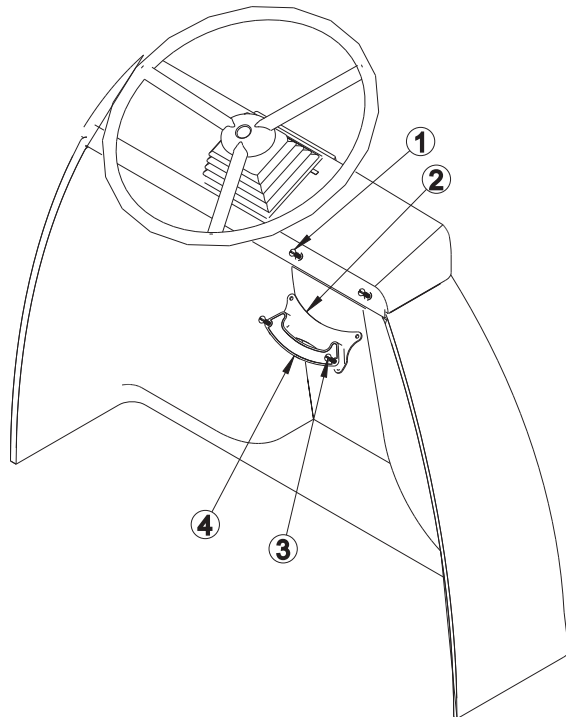
REF#	PART#	DESCRIPTION	QUANTITY
1	15-491	Gas Tank	1
2	15-492	Cap with Gauge	1
3	8832-19	3/4" Hose	1
	18-040	Clamp	2
4	18-042	Reducer Bushing	1
5	15-039	Fuel Valve	1
6	13-747	Filler Breather	1
	13-586-03	Neck	1
	HSM-10-32-063	MachineScrew #10 - 32 x 5/8	6
	HWL-10	Lock Washer #10	6
7	60-473	Oil Tank	1
8	17-019	Male Elbow	1
9	18-118	Pipe Plug 1/8	1
10	76-221	Tank mount	1
11	23-139	Barb Fitting	2
12	18-236	Black Nipple	1
13	HB-14-20-075	Bolt 1/4 - 20 x 3/4	8
	HW-14	Washer 1/4	8
	HWL-14	Lock Washer 1/4	8
14	8810-19	5/8" Hose	1
	18-077	Clamp	2
15	48-083	Oil Filter	1
	48-083-01	Filter Replacement	1
16	18-260	Reducer Bushing	1
17	8810-7	5/8" Hose	1
	18-077	Clamp	2
18	18-008	Pipe Thread Reducer	1
19	18-093	Street Tee	1
20	18-140	Elbow	1
21	18-249	Barb Fitting	1
22	48-163	Filter Bracket	1
23	HB-516-18-100	Bolt 5/16 - 18 x 1	2
	HW-516	Washer 5/16	2
	HWL-516	Lock Washer 5/16	2
24	75-792	Tank Holddown	2
	HB-516-18-150	Bolt 5/16 - 18 x 1 1/2	2
	HW-516	Washer 5/16	2
	HNTL-516-18	Lock Nut 5/16 - 18	2
NOT ILLUSTRATED			
	8800-52	Fuel Hose	1
	18-186	Hose Clamp	2
	8983-60	Fire Sleeve	1
	18-222	Hose Clamp	2
	50-403	In-line Fuel Filter (replacement parts)	1



HYDRAULIC LIFT CYLINDER DRAWING



INCLINOMETER DRAWING



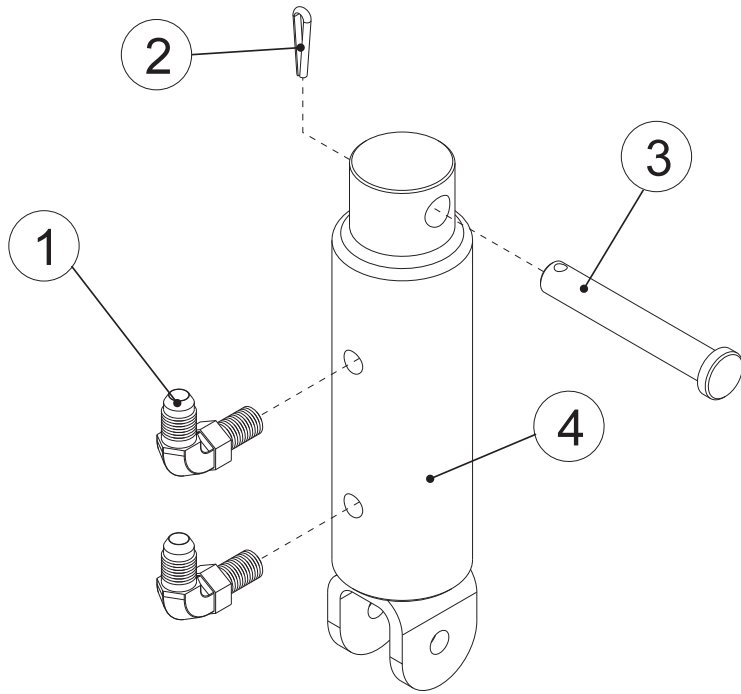
HYDRAULIC LIFT CYLINDER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	76-242	Hydraulic Cylinder	1
	76-242-01	Seal Kit	1
2	23-167	Elbow	2
3	76-242-02	Clevis pin with Clip	2

INCLINOMETER PARTS LIST

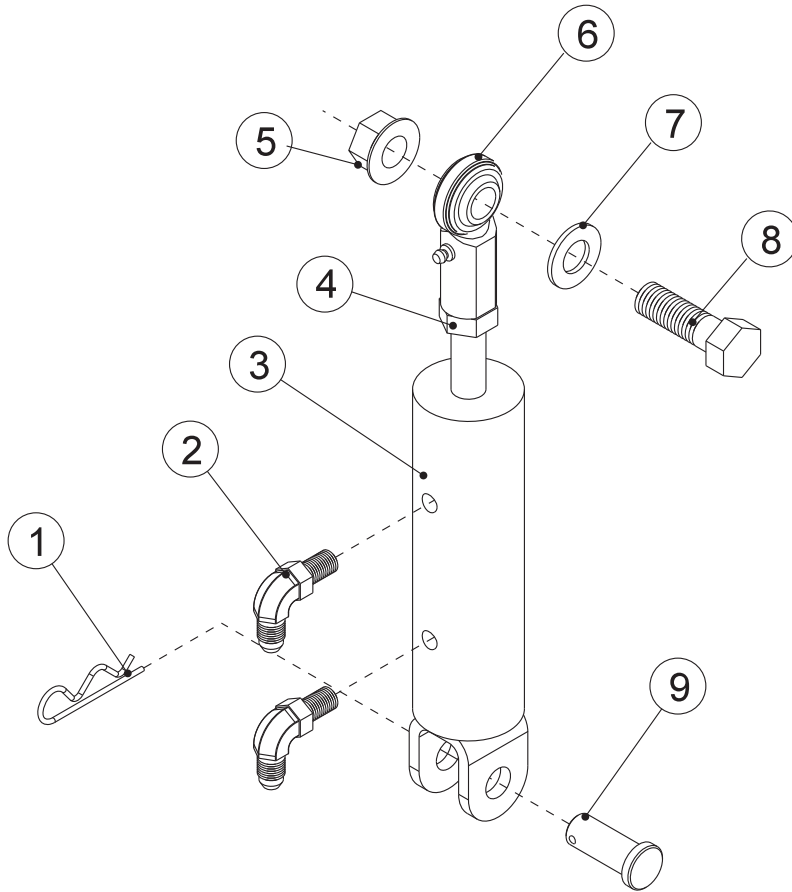
REF#	PART #	DESCRIPTION	QUANTITY
1	HSM-8-32-075	Machine Screw #8 -32 x $\frac{3}{4}$	2
	HNFL-8-32	Flange Whiz Lock Nut #8 -32	2
2	76-373	Inclinometer Bracket	1
3	HSM-8-32-100	Machine Screw #8 - 32 x 1	2
	HNFL-8-32	Flange Whiz Lock Nut #8 -32	2
4	76-372	Inclinometer	1

REEL LIFT CYLINDER DRAWING



TAILGATE CYLINDER DRAWING

Parts



REEL LIFT CYLINDER PARTS LIST

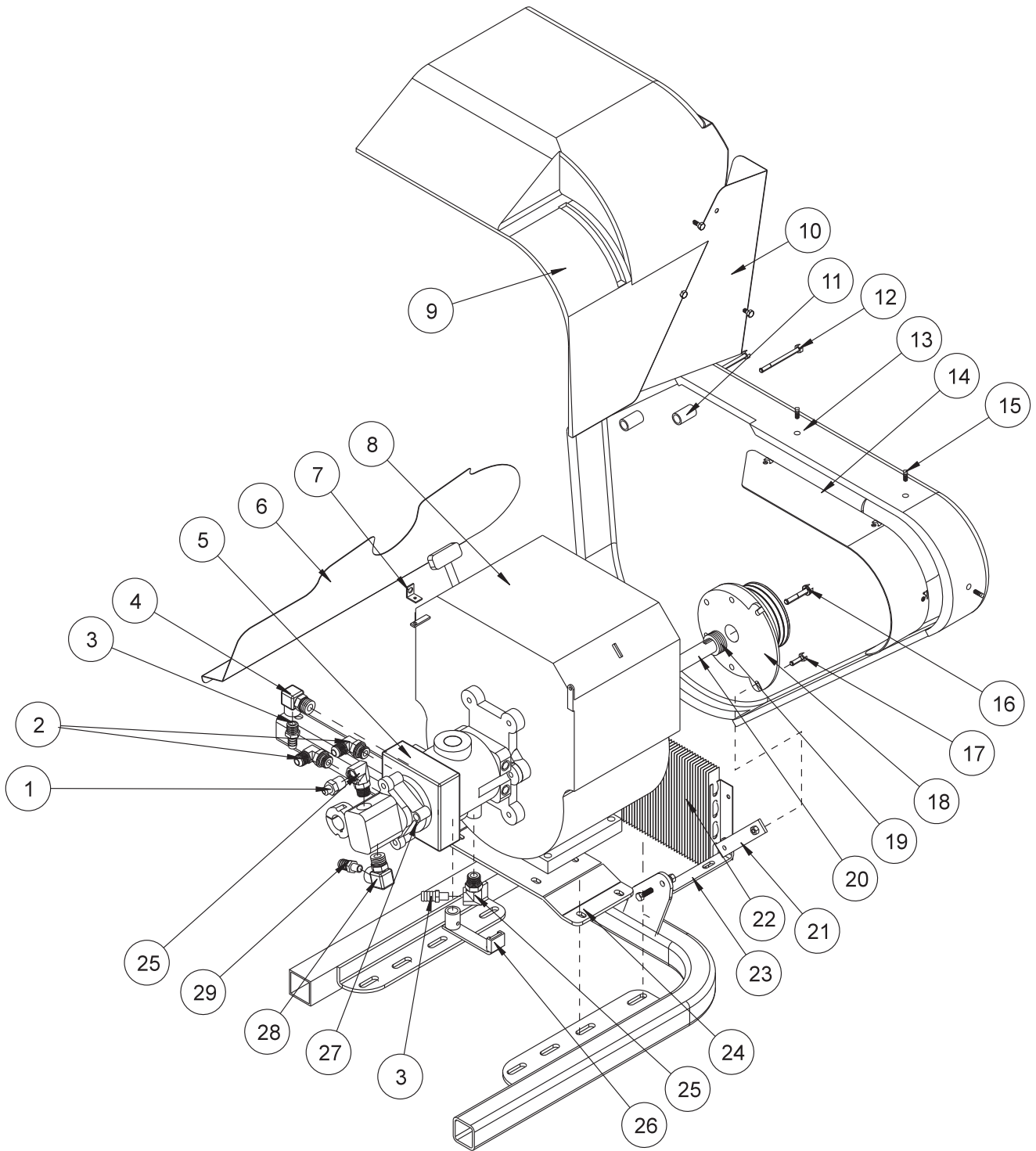
REF#	PART#	DESCRIPTION	QUANTITY
1	18-168	Elbow	2
2	HP-18-100	Cotter Pin $\frac{1}{8} \times 1$	1
3	HCP-12-350	Clevis Pin $\frac{1}{2} \times 3 \frac{1}{2}$	1
4	75-634	Hydraulic Cylinder	1
	14-268	Seal Kit	1

TAILGATE CYLINDER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HHP-18	Bridge Pin $\frac{1}{8}$	1
2	18-168	Elbow	2
3	75-714	Hydraulic Cylinder	1
	14-268	Seal Kit	1
4	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
5	HNCL -58-11	Center Lock Nut $\frac{5}{8}$ - 11	1
6	18-154	Rod End	1
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180°	1
7	HMB-58-14	Machine Bushing $\frac{5}{8}$ - 14GA	3
8	HB-58-11-200	Bolt $\frac{5}{8}$ - 11 x 2	1
9	HCP-58-175	Clevis Pin $\frac{5}{8} \times 1 \frac{3}{4}$	1

ENGINE AND EXHAUST DRAWING

Parts



ENGINE AND EXHAUST PARTS LIST

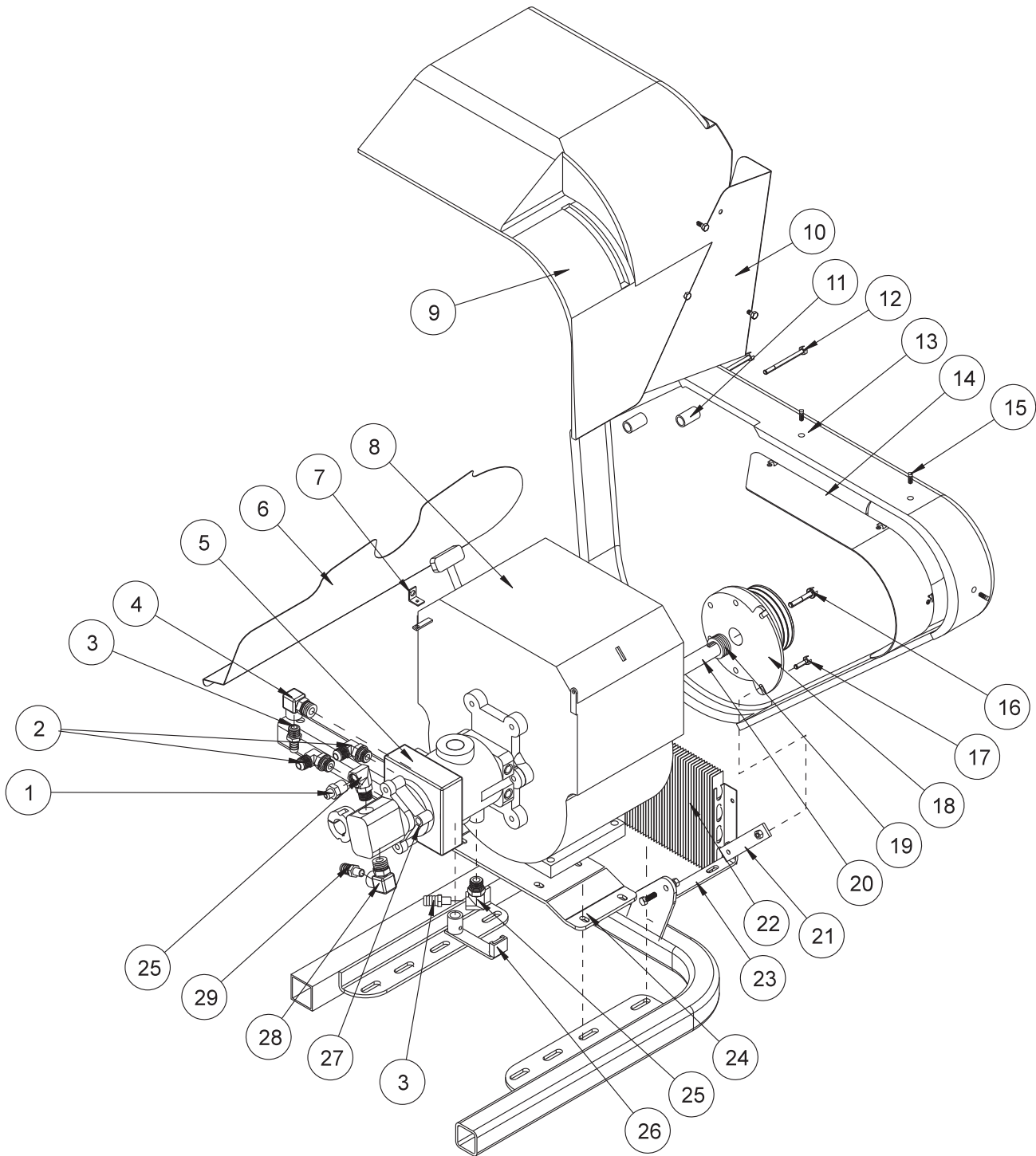
REF#	PART#	DESCRIPTION	QUANTITY
1	23-184	Male Connector	1
2	18-161	Straight Thread Elbow	2
3	23-139	Barb Fitting	2
4	23-133	Elbow	1
5	76-322	Hydrostatic Pump	1
	HSSH-12-13-175	Socket Set Screw $1/2 - 13 \times 1\ 3/4$	2
	HWL-12	Lock Washer $1/2$	2
6	48-213	Rear Engine Guard	1
	HSTP-14-20-100	Phillips Truss Head Machine Screw $1/4 - 20 \times 1$	3
	HW-14	Washer $1/4$	3
	HWL-14	Lock Washer $1/4$	3
	HN-14-20	Nut $1/4 - 20$	3
7	76-270	Cable Bracket	1
	8862	Coupler	1
	HB-14-20-075	Bolt $1/4 - 20 \times 3/4$	1
	HNTL-14-20	Lock Nut $1/4 - 20$	1
8	48-194	Engine Kohler CH25	1
	21-161	Wire Block	1
	HB-38-16-175	Bolt $3/8 - 16 \times 1\ 3/4$	4
	HW-38	Washer $3/8$	4
	HNTL-38-16	Lock Nut $3/8 - 16$	4
9	48-111	Engine Cover	1
10	48-143	Front Engine Guard	1
	HSTP-14-20-075	Phillips Truss Head Machine Screw $1/4 - 20 \times 3/4$	3
	HW-14	Washer $1/4$	3
	HWL-14	Lock Washer $1/4$	3
	HN-14-20	Nut $1/4 - 20$	3
11	48-171	Spacer	2
12	HB-516-18-350	Bolt $5/16 - 18 \times 3\ 1/2$	2
	HW-516	Washer $5/16$	2
	HWL-516	Lockwasher $5/16$	2
13	48-112	Belt Guard	1
	48-080	Belt Guard Screen	1
	48-047	Side Belt Guard Tab	1
14	48-168	Guard Extension	1
	78-274	Cage Nuts	3
15	HSTP-14-20-075	Phillips Truss Head Machine Screw $1/4 - 20 \times 3/4$	3
16	HB-38-16-200	Bolt $3/8 - 16 \times 2$	1
	HWL-38	Lockwasher $3/8$	1
17	HB-516-18-100	Bolt $5/16 - 18 \times 1$	1
	HNTL-516-18	Lock Nut $5/16 - 18$	2
18	76-337	Electric Clutch	1
	17-271	Pigtail	1
19	HMB-100-10	Machine Bushing $1 \times 10GA$	4
20	48-172	Front Drive Shaft (comes with engine)	1
	HKSQ-14-150	Machine Key $1/4 \times 1/4 \times 1\ 1/2$	1
21	76-340	Clutch Strap	1
22	34-105	Oil Cooler	1
	48-170	Rear Cooler Bracket	1
	HB-38-16-250	Bolt $3/8 - 16 \times 2\ 1/2$	1
	HNFL-38-16	Flange Whiz Lock Nut $3/8 - 16$	1

(Continued on next page)



ENGINE AND EXHAUST DRAWING

Parts

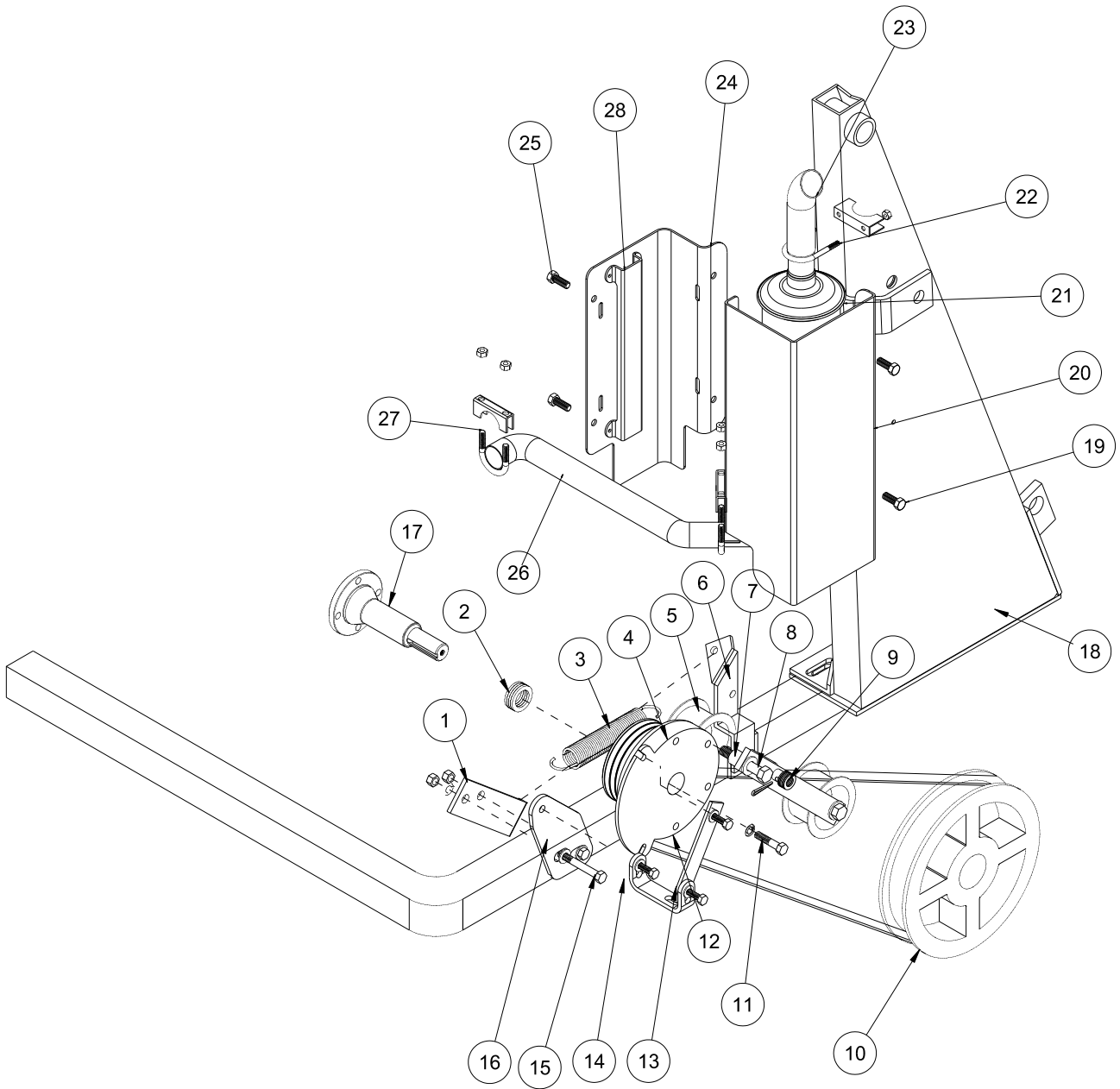


ENGINE AND EXHAUST PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
23	48-169	Front Cooler Bracket	1
	HB-516-18-100	Bolt $\frac{5}{16}$ -18 x 1	1
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	1
24	48-192	Engine Mount	2
25	23-127	Elbow	2
26	48-196	Shift Arm	1
	8946-1	Plastic Wear Strip	1
	HRS-316-050	Rivet $\frac{3}{16}$ X 1 $\frac{1}{2}$	1
	HRP-14-100	Roll Pin $\frac{1}{4}$ X 1	1
27	76-323	Gear Pump (replacement only; no repair)	1
28	23-130	Elbow	1
29	18-133	Barb Fitting	1

ELECTRIC CLUTCH DRIVEN BELT DRIVE & MUFFLER DRAWING

Parts

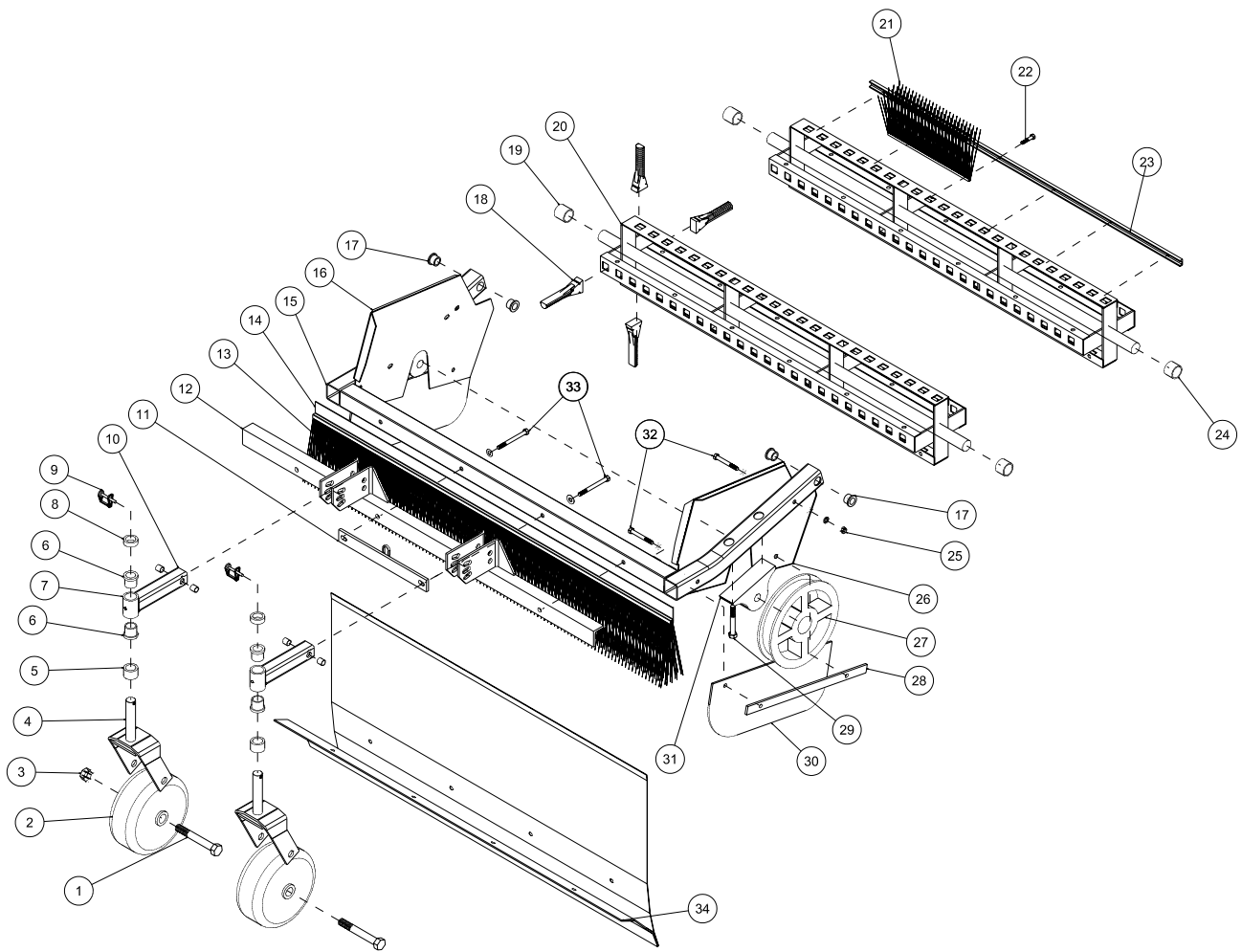


ELECTRIC CLUTCH DRIVEN BELT DRIVE & MUFFLER PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	48-038	Spring Bracket	1
2	HMB-100-10	Machine Bushing 1 x 10GA	4
3	21-445	Spring	1
4	76-337	Electric Clutch	1
	17-271	Pigtail	1
5	16-013	Idler Pulley	2
6	76-217	Idler Arm	1
7	76-298	Spacer	2
8	HB-12-13-300	Bolt $\frac{1}{2}$ - 13 x 3	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
9	HMB-12-14	Machine Bushing $\frac{1}{2}$ x 14GA	5
	HP-18-150	Cotter Pin $\frac{1}{8}$ x $1\frac{1}{2}$	1
10	76-102	Pulley	1
	76-102-01	Hub $1\frac{1}{4}$ ID	1
	HKSQ-14-150	Machine Key $\frac{1}{4}$ x $\frac{1}{4}$ x $1\frac{1}{2}$	1
	76-200	Belt	1
11	HB-38-16-200	Bolt $\frac{3}{8}$ - 16 x 2	1
	HWL-38	Lock Washer $\frac{3}{8}$	1
12	76-340	Clutch Strap	1
13	HB-516-18-100	Bolt $\frac{5}{16}$ - 18 x 1	3
	HW-516	Washer $\frac{5}{16}$	3
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	3
14	48-169	Front Cooler Bracket	1
15	HB-38-16-300	Bolt $\frac{3}{8}$ - 16 x 3	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
16	76-338	Clutch Mount	1
17	48-172	Front Drive Shaft (comes with engine)	1
18	48-009	Left Tower	1
19	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	2
	HW-38	Washer $\frac{3}{8}$	2
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
20	48-217	Outer Muffler Cover	1
	9013-30	Heat reflective Sheet	1
21	15-371	Muffler	1
	48-216	Hose Clamp	2
22	50-111	Muffler Clamp	1
23	48-201	Tailpipe	1
24	48-218	Inner Muffler Cover	1
25	HB-14-20-075	Bolt $\frac{1}{4}$ - 20 x $\frac{3}{4}$	2
	HW-14	Washer $\frac{1}{4}$	2
	HWL-14	Lockwasher $\frac{1}{4}$	2
	78-274	Cage Nuts	2
26	48-199	Exhaust Pipe	1
	48-214	Exhaust Wrap	120"
	18-222	Hose Clamp	2
27	18-220	Muffler Clamp	2
28	48-219	Muffler Spacer	1
	HRS-316-1125	Rivet $\frac{3}{16}$ x $1\frac{1}{8}$	4

FINGER / BRUSH REEL DRAWING

Parts

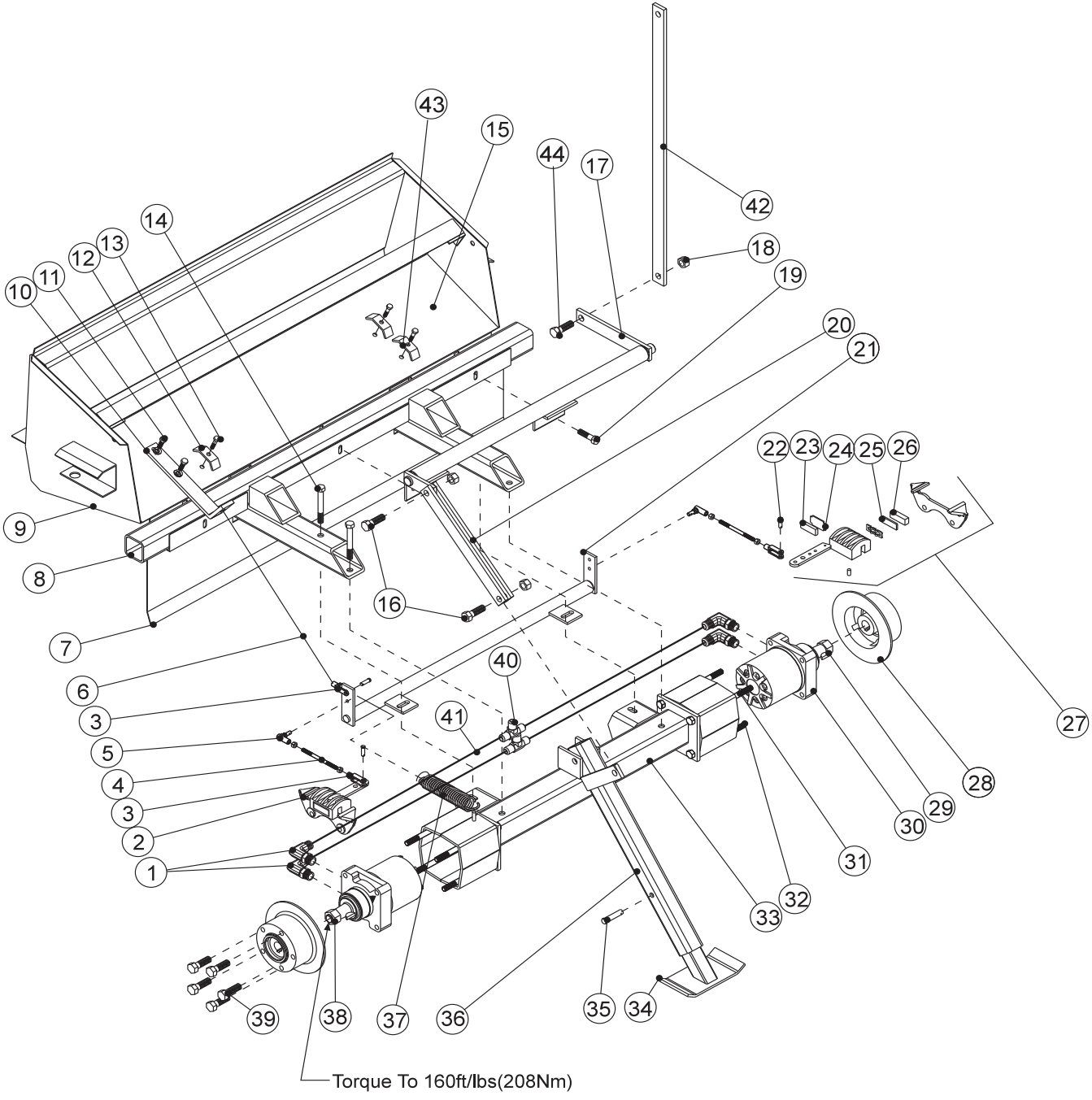


FINGER / BRUSH REEL PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HB-34-10-550	Bolt $\frac{3}{4}$ - 10 x $5\frac{1}{2}$	2
2	33-435	Tire and Wheel	2
3	HNTL-34-10	Nut $\frac{3}{4}$ - 10	2
4	48-046	Castor Fork	2
5	29-585	Spacer Height Adjustment 1"	2
6	18-223	Bushing (part of 77-171)	4
7	77-171	Arm	2
	HG-14-28-180	Grease Fitting $\frac{1}{4}$ - 28 x 180°	1
8	29-584	Spacer Adjustment $\frac{1}{2}$ "	2
9	29-541	Lock Pin	2
10	20-019	Bushing (part of 77-171)	4
11	48-048	Beater Chain Bracket	1
	HCP-12-225	Clevis Pin $\frac{1}{2}$ - $2\frac{1}{4}$	2
	HHP-18	Bridge Pin $\frac{1}{8}$	2
12	48-045	Castor Frame	1
	HCP-12-225	Clevis Pin $\frac{1}{2}$ - $2\frac{1}{4}$	2
	HHP-18	Bridge Pin $\frac{1}{8}$	2
	HB-38-16-350	Bolt $\frac{3}{8}$ - 16 x $3\frac{1}{2}$	2
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
13	48-221	Brush	1
14	48-222	brush Channel	1
15	48-030	Beater Frame	1
16	75-799	Right Side Plate	1
17	18-221	Flange Bushing (part of 48-030)	4
18	75-506	Sweeper Finger	96
19	75-834	Spacer (right)	1
20	48-010	Finger Reel	1
21	48-086	Brush	4
22	HB-516-18-125	Bolt $\frac{5}{16}$ - 18 x $1\frac{1}{4}$	24
	HNTL-516-18	Lock Nut $\frac{5}{16}$ - 18	24
23	48-105	Clamp	4
24	75-686	Spacer (left)	1
25	HN-38-16	Nut $\frac{3}{8}$ - 16	4
	HWL-38	Lock Washer $\frac{3}{8}$	4
	HW-38	Washer $\frac{3}{8}$	8
26	75-800	Left Side Plate	1
27	76-102	Pulley with Hub	1
	76-102-01	Hub $1\frac{1}{4}$ ID	1
	HKSQ-14-150	Square Key $\frac{1}{4}$ x $1\frac{1}{2}$	1
28	76-213	Reel Guard Strap	2
	HB-516-18-100	Bolt $\frac{5}{16}$ - 18 x 1	4
	HW-516	Washer $\frac{5}{16}$	4
	HWL-516	Lock Washer $\frac{5}{16}$	4
	HN-516-18	Nut $\frac{5}{16}$ - 18	4
29	HB-12-13-350	Bolt $\frac{1}{2}$ - 13 x $3\frac{1}{2}$	4
	HW-716	Washer $\frac{7}{16}$	4
	HNTL -12-13	Lock Nut $\frac{1}{2}$ - 13	4
30	76-210	Matting	2
31	75-511	Pillow Block	2
32	HB-38-16-275	Bolt $\frac{3}{8}$ - 16 x $2\frac{3}{4}$	4
33	HB-38-16-400	Bolt $\frac{3}{8}$ - 16 x 4	2
	HW-38	Washer $\frac{3}{8}$	4
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	2
34	48-028	Front Baffle	1



REAR AXLE DRAWING



Parts

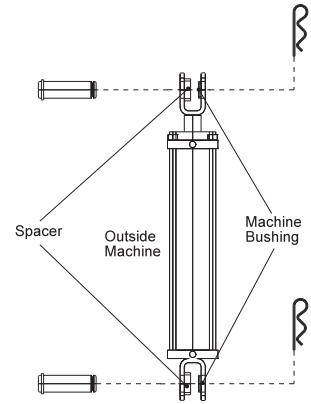
REAR AXLE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	34-122	Short Elbow	4
2	76-240	Left Caliper	1
3	11-100	Linkage Yoke ⁵ / ₁₆	3
4	76-300	Brake Rod	2
	HN-516-24	Nut ⁵ / ₁₆ - 24	6
5	21-462	Ball Joint ⁵ / ₁₆ - 24	2
6	60-347	Brake Cable	1
	60-536	Bellows	1
7	48-006	Rear Beater Panel	1
8	48-173	Main Frame	1
9	48-029	Grass Chute	1
	8947-48	Trim Seal	2
10	48-134	Brake Cable Bracket	1
11	HB-38-16-125	Bolt ³ / ₈ - 16 x 1 ¹ / ₄	2
	HW-38	Washer ³ / ₈	4
	HNTL-38-16	Lock Nut ³ / ₈ - 16	2
12	13-099	Clamp	2
13	HB-516-18-125	Bolt ⁵ / ₁₆ - 18 x 1 ¹ / ₄	1
	HWL-516	Washer ⁵ / ₁₆	1
14	HB-12-13-400	Bolt ¹ / ₂ - 13 x 4	4
	HW-716	Washer ⁷ / ₁₆	2
	HNTL-12-13	Lock Nut ¹ / ₂ - 13	4
15	48-054	Rear Baffle	1
16	HB-58-11-200	Bolt ⁵ / ₈ - 11 x 2	2
	HMB-58-14	Machine Bushing ⁵ / ₈ x 14GA	4
17	48-043	Rear Skid Pivot	1
18	HNTL-58-11	Lock Nut ⁵ / ₈ - 11	3
19	HB-38-16-350	Bolt ³ / ₈ - 16 x 3 ¹ / ₂	6
	HW-38	Washer ³ / ₈	6
	HNTL-38-16	Lock Nut ³ / ₈ - 16	3
20	48-042	Linkage Strap (short)	2
21	48-055	Brake Relay	1
22	HCP-516-100	Clevis Pin ⁵ / ₁₆ x 1	2
	HP-18-075	Cotter Pin ¹ / ₈ x ³ / ₄	2
23*		Carrier Side Pad	1
24*		Carrier Side Pad Support	1
25*		Cam Side Pad support	1
26*		Cam Side Pad	1
27	76-241	Right Caliper	1
28	76-239	Brake Disc	2
29	HWK-516-100	Woodruff Key ⁵ / ₁₆ x 1 (comes with wheel motor)	2
30	48-137	Wheel motor	2
31	HB-12-13-800	Bolt ¹ / ₂ - 13 x 8	4
	HNTL-12-13	Lock Nut ¹ / ₂ - 13	4
	HMB-12-14	Machien Bushing ¹ / ₂ x 14GA	4
32	HB-12-13-750	Bolt ¹ / ₂ - 13 x 7 ¹ / ₂	4
	HNTL-12-13	Lock Nut ¹ / ₂ - 13	4
33	48-031	Rear Axle	1
34	48-039	Rear Skid	1
35	HCP-12-225	Clevis Pin ¹ / ₂ x 2 ¹ / ₄	1
	HHP-18	Bridge Pin ¹ / ₈	1
36	48-040	Rear Pivot Arm	1
37	29-118	Zinc Plate Spring	1
38	14-265	Nut 1 - 20 (comes with wheel motor)	2
39	60-268	Lug Bolt ¹ / ₂ - 20 x 1 ⁵ / ₁₆	10
40	34-057	Tee	2
41	48-015	Hose	4
42	48-041	Linkage Strap (long)	1
43	75-614	Hose Clamp	1
44	HB-58-11-350	Bolt ⁵ / ₈ - 11 x 3 ¹ / ₂	1
*	34-101-02	Pad Kit with 2 Pads and Steel Support Plates	2 Kits per Axle

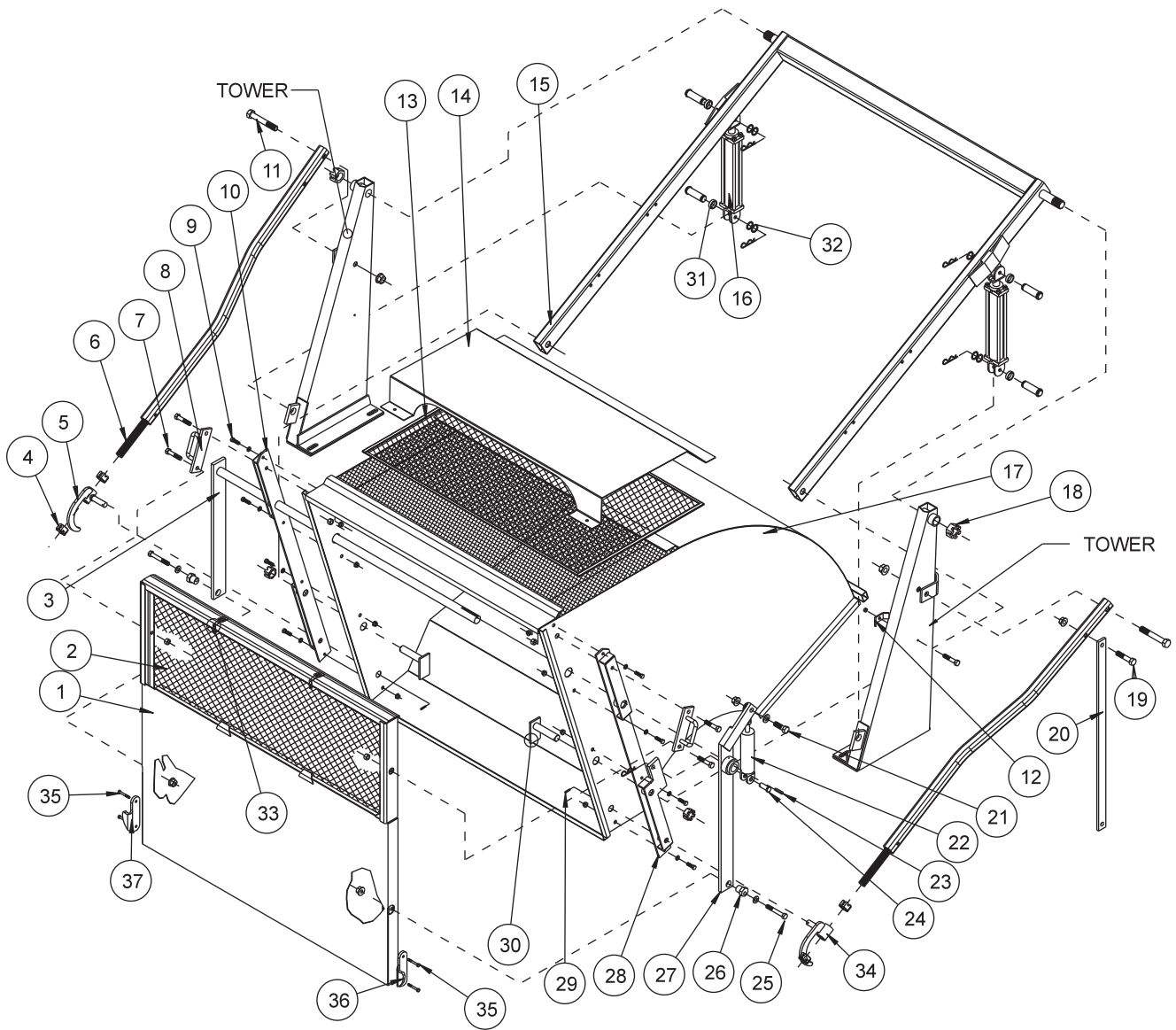


HOPPER AND TAILGATE DRAWING

48-120 Dust and Filtration Pack for High Lift
 48-064 Hopper Filter 24" x 44"
 48-065 Tailgate Filter 17" x 50"



Parts

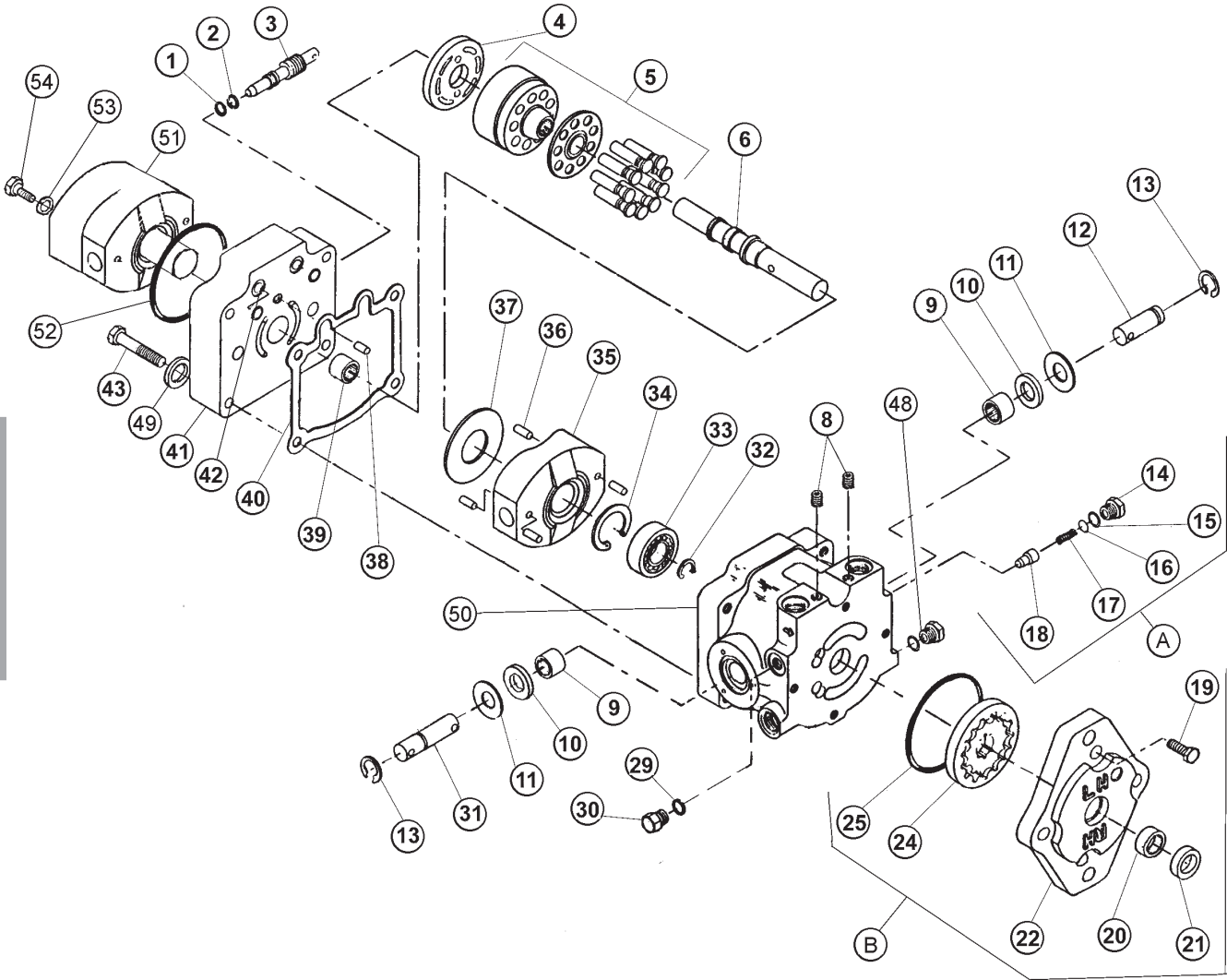


HOPPER AND TAILGATE PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	48-005	Tailgate	1
2	48-023	Tailgate Screen	1
3	48-037	Left Dump Arm	1
4	HNA-100-14	Castle Nut 1 - 14	6
5	48-153	Left Adjustment Sleeve	1
6	48-061	Hopper Dump Arm	2
	75-653	Hopper Safety Lift (not pictured)	2
	HB-38-16-225	Bolt $\frac{3}{8}$ - 16 x $2\frac{1}{4}$	4
	HNW-38-16	Wing Nut $\frac{3}{8}$ - 16	4
7	HRS-316-050	Rivet $\frac{3}{16}$ $\frac{1}{2}$	6
	HW-516	Washer $\frac{5}{16}$	4
	HRW-316	Washer $\frac{3}{16}$	4
8	48-053	Tailgate Hinge	2
9	HB-38-16-100	Bolt $\frac{3}{8}$ - 16 x 1	8
	HNTL-38-16	Lock Nut $\frac{3}{8}$ - 16	8
10	48-025	Left Hinge Strap	1
11	HB-34-10-500	Bolt $\frac{3}{4}$ - 10 x 5	2
	HNTL-34-10	Lock Nut $\frac{3}{4}$ - 10	2
12	13-099	Hose Clamp	2
	HB-516-18-125	Bolt $\frac{5}{16}$ - 18 x $1\frac{1}{4}$	2
	HWL-516	Lock Washer $\frac{5}{16}$	2
13	48-022	Hopper Screen	1
14	48-004	Hopper Screen Cover	1
15	48-044	Arm Pivot Tube	1
	48-131	Hose Guard	1
	76-159	Hose Guard Long	1
16	76-242	Hydraulic Cylinder	2
	76-242-02	Clevis Pin with Clip	4
17	48-007	Hopper	1
18	HNAT-114-12	Thick Axle Nut $1\frac{1}{4}$ - 12	2
19	HB-58-11-300	Bolt $\frac{5}{8}$ - 11 x 3	1
	HNTL-58-11	Lock Nut $\frac{5}{8}$ - 11	1
20	48-041	Linkage Strap	1
21	HB-58-11-200	Bolt $\frac{5}{8}$ - 11 x 2	2
	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	2
	HNTL-58-11	Lock Nut $\frac{5}{8}$ - 11	2
22	75-714	Hydraulic Cylinder	1
	18-154	Rod End	1
	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	1
23	HKSQ-14-150	Machine Key $\frac{1}{4}$ x $\frac{1}{4}$ x $1\frac{1}{2}$	1
	HSSH-516-18-038	Socket Set Screw $\frac{5}{16}$ - 18 x $\frac{3}{8}$	1
24	HCP-58-175	Clevis Pin $\frac{5}{8}$ x $1\frac{3}{4}$	1
	HHP-18	Bridge Pin $\frac{1}{8}$	1
25	HB-12-13-350	Bolt $\frac{1}{2}$ - 13 x $3\frac{1}{2}$	2
	HNTL-12-13	Lock Nut $\frac{1}{2}$ - 13	2
26	48-057	Tailgate Adjuster	2
27	48-036	Right Dump Arm	1
28	48-024	Right Hinge Strap	1
29	HP-316-100	Cotter Pin $\frac{3}{16}$ - 1	2
30	75-569	Swivel Pin	2
31	48-129	Spacer (inside of clevis to outside of machine)	4
32	HMB-100-10	Machine Bushing 1 x 10GA (inside clevis; inside machine)	2
33	76-319	Snap Fastener	3
	HRS-316-050	Rivet $\frac{3}{16}$ x $\frac{1}{2}$	3
34	48-148	Right Adjustment Sleeve	1
35	HB-14-20-200	Bolt $\frac{1}{4}$ - 20 x 2	4
	HNFL-14-20	Flange Whiz Lock Nut $\frac{1}{4}$ - 20	4
36	48-149	Right Hook Bracket	1
37	48-150	Left Hook Bracket	1

76-322 15 SERIES SUNDSTRAND PUMP DRAWING

NOTE: #8 is Gage Port

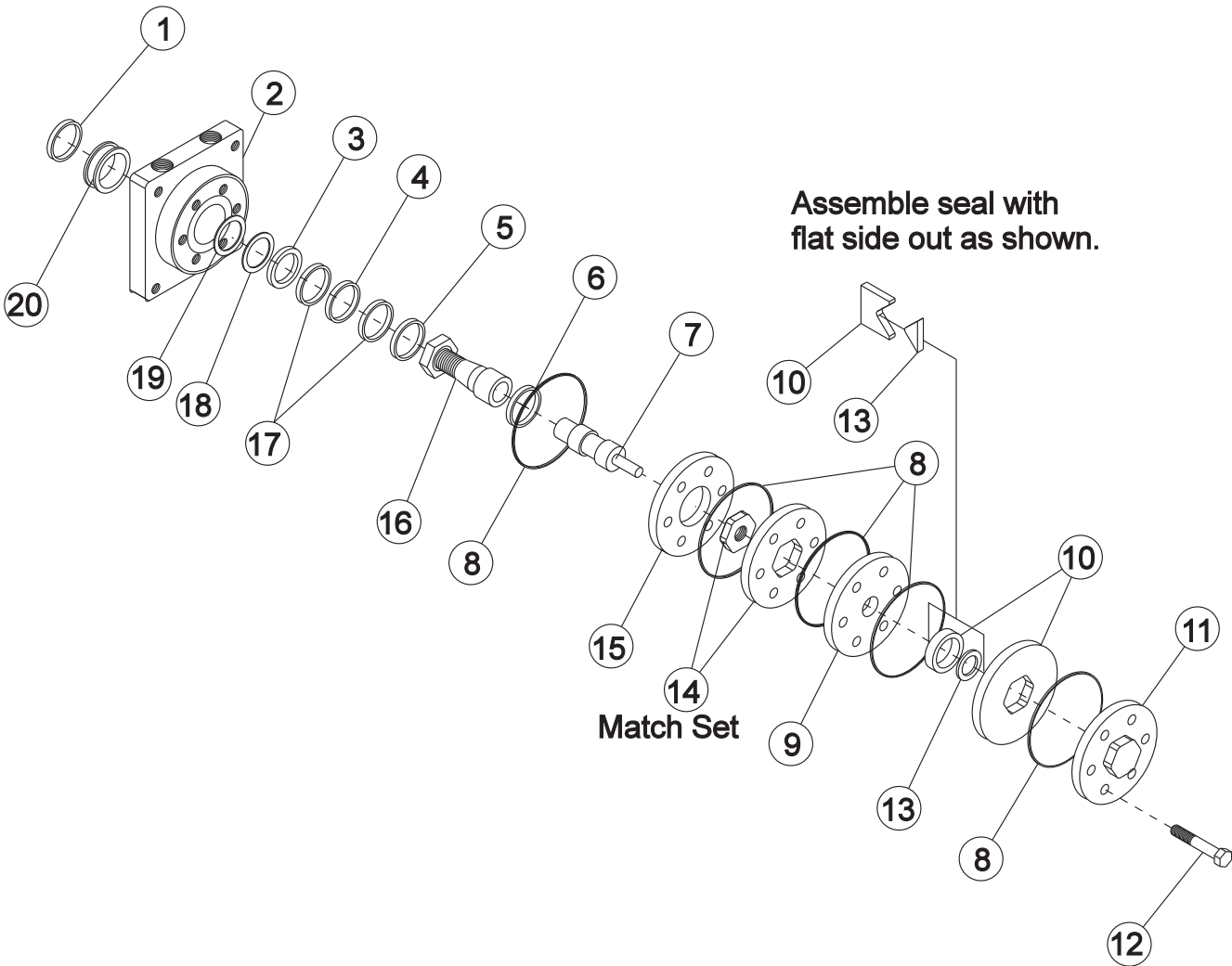


Parts

76-322 15 SERIES SUNDSTRAND PUMP PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	42-003-01	O-Ring	1
2	14-130	Ring	1
3	13-110-01	By-Pass Valve	1
4	14-115	Valve Plate	1
5	42-003-16	Cylinder Block Kit	1
6	76-322-02	Pump Shaft	1
8	13-110-05	Pipe Plug	2
9	14-069	Needle Bearing	2
10*	42-003-04	Lip Seal	2
11	42-003-05	Washer	2
12	14-212	Truncated Shaft (short 1 holes)	1
13	14-105	Retaining Ring	2
14A	13-110-10	Plug	1
15*A		O-Ring	1
16A	14-219	Shim Pack Kit	1
17A	14-234	Release Valve Spring	1
18A	14-235	Release Valve Cone	1
19B	13-110-14	Hex Head Screw	4
20B	42-003-07	Needle Bearing	1
21*B	14-054	Lip Seal	1
22B	13-110-13	Charge Pump Housing	1
24B	42-003-08	Gerotor Assembly	1
25*B		O-Ring	1
29*		O-Ring	2
30	13-110-10	Plug	1
31	14-220	Truncated Shaft (long 2 holes)	1
32	42-003-09	Retaining Ring	1
33	42-003-10	Ball Bearing	1
34	14-132	Retaining Ring	1
35	14-221	Variable Swash Plate	1
36	14-216	Spring Pin	4
37	14-114	Thrust Plate	1
38	14-215	Pin	1
39	14-217	Roller Bearing	1
40*	14-107	Gasket	1
41	76-322-01	End Cap	1
42*		O-Ring	2
43	42-003-11	Hex Head Screw	4
48	42-003-12	Plug	2
49	42-003-13	Washer	1
50	42-003-17	Housing Assembly (includes #9 & 10)	1
51†	76-323	Gear Pump	1
	When ordering Gear Pump also order # 52, 53, 54		
52	76-322-03	O-Ring	1
53	76-322-04	Washer	2
54	76-322-05	Screw	2
*	14-098	Seal Kit	1
†	76-323-01	Seal Kit	1
A	14-214	Relief Valve Kit	1
B	42-003-14	Charge Pump	1

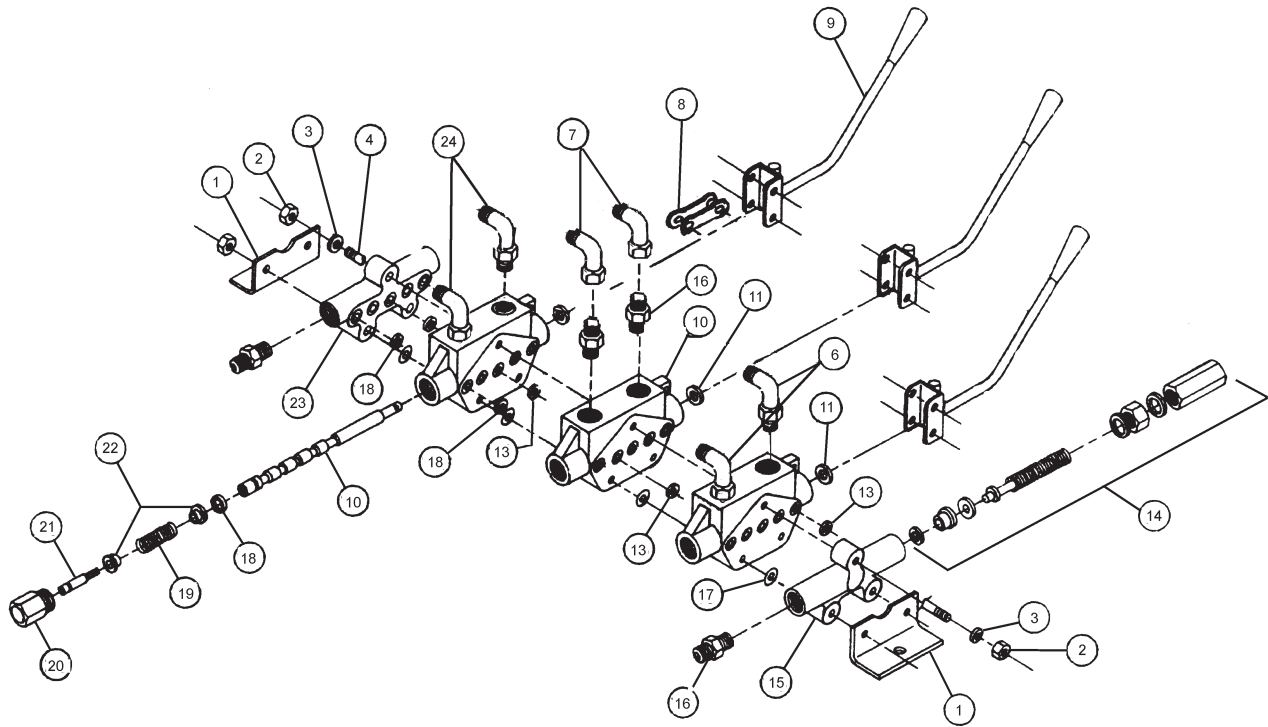
48-137 REAR WHEEL MOTOR (10.3 C.I.) DRAWING



48-137 REAR WHEEL MOTOR (10.3 C.I.) PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1*		Water & Dirt Seal	1
2	13-615-05	Service Housing Assembly (includes #4,5,17(2 Req'd) and 20)	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	48-137-01	Drive Link	1
8*		Ring Seal	5
9	13-032-31	Manifold	1
10	13-032-32	Commutator Assembly (matched set)	1
11	13-032-33	End Cover	1
12	48-137-02	Bolt	7
13*		Commutator Seal (matches with #10)	1
14	48-137-03	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

76-023 3-BANK HYDRAULIC VALVE DRAWING



Parts

76-023 3 -BANK HYDRAULIC VALVE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	76-023-03	Mounting Bracket	2
2	HN-516-18	Hex Nut ⁵ / ₁₆ - 18	6
3	HW-14	Washer ¹ / ₄	2
4	76-023-06	Tie Rod	3
6	18-168	Elbow 90°	2
7	18-202	Elbow 90°	2
8		Linkage (comes with handle)	
9	76-309	Valve Handle (sold as a set of 3)	1
10	76-023-07	Body and Spool (matching set)	3
11*		In-body O-Ring	3
13*		O-Ring	15
14	76-023-08	Inlet Kit (load check and relief, 2000 psi)	1
15		Inlet with Load Check	1
16	18-169	Adapter	4
17*		Mylar Shim	9
18*		O-Ring	3
19		Spring (type 10 spool)	3
20	76-023-01	Spring Cap	3
21	76-023-02	Spring Shaft	3
22	76-023-09	Spring Guide	6
23	76-023-10	Outlet Open Center	1
24	18-188	Elbow 90°	2
*	14-096	O-Ring Seal Kit (includes all * items)	1

This is a list of decals on the Sweep Star 48. Part number, description, and location will help in reordering decals.

16-088*	Moving Parts/Hot	Belt Guard
25-078	No Riders	Engine Cover
25-277*	Battery	Seat Panel
25-286	Pinch Point	Tailgate
25-279	Hot Hyd/Pinch Point	Belt Guard
25-308	Engine RPM	Front Engine
25-307*	Gasoline	Console Back
25-313*	Warning Grade	Dashboard
25-320*	Max Weight	Front Hopper
25-352	Bypass Valve	Hang Tag
25-356	Tire Pressure (20 psi)	All Wheels
25-362	Decal, Danger Fire	Hopper Front
27-093*	Hydraulic Oil	Console Back
34-147	Smithco Star	Hopper Sides
48-145	Sweep Star 48 H	Hopper Sides
25-374	Smithco	Tailgate
25-375	94 dBA	Seat Panel
27-077	Round Smithco	Steering Wheel
75-651	Hopper Lift Safety Bar	Lift Bars on Hopper Sides
76-199	Console Panel	Console
76-304*	Crush/Pinch Points	Front Grass Chute
76-305*	Moving Reel	Grass Chute
76-306*	Reel Arm	Next to Reel Lever
76-307*	Tower Warning	Tower Sides
76-315*	Belt	Left Side Grass Chute

* 48-136 Decal Sweeper Set (includes all * items)

QUICK REFERENCE REPLACEMENT PARTS

REPLACEMENT FILTERS

48-083-01	Hydraulic Oil Filter (High Dump)	
78-090	Oil Filter	Kohler# 12 050 01
76-311	Air Element 48-000	Kohler#24 083 03
76-312	Pre-Cleaner 48-000	Kohler#24 083 05
50-403	Fuel Filter for Kohler	

REPLACEMENT BELTS

76-200	Finger Reel Belt 2/A74
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SEAL KITS

76-023	3-Bank Hydraulic Valve
14-096	O-Ring Seal Kit
76-322	Hydrostatic Pump (High Lift)
14-098	Seal Kit
76-323	Gear Pump (non-repairable)
48-137	Wheel Motor
14-080	Seal Kit
76-242	Hydraulic Cylinder
76-242-01	Seal Kit

Both Cylinders have the part number stamped on them. Look at the rod end, it will have either a retaining ring or a spanner nut.

Cylinders with a Spanner Nut:

75-714	Hydraulic Cylinder	Use 14-268 Seal Kit
75-634	Hydraulic Cylinder	Use 14-268 Seal Kit

Cylinders with a Retaining Ring:

75-714	Hydraulic Cylinder	Use 14-254 Seal Kit
75-634	Hydraulic Cylinder	Use 14-254 Seal Kit

FLUIDS

Engine Oil Kohler	SJ or Higher	10W-30
Hydraulic Fluid	SJ or Higher	10W-40

OTHER PARTS

13-288	Key Switch Kohler	Kohler 25 099 04
	Spark Plugs	Champion® type RC 12YC or Equivalent
		Gap 0.030 (.76 mm)
		Torque 18/22 ft. lbs (24/30 Nm)
		(Kohler # 25 357 12-s)
Spline Grease	#77 Assembly Paste	
76-354	2½ # ABC Dry Chemical Fire Extinguisher	

DUST AND FILTRATION FILTERS

48-064	Hopper Filter (High Lift)
48-065	Tailgate Filter (High Lift)

The Smithco Commercial Products Two-Year Limited Warranty

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

Warranty Duration is:

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

Owner Responsibilities:

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

Instructions for Obtaining Warranty Service:

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

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

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

Telephone: 1-800-891-9435 E-Mail: ProductSupport@smithco.com

Maintenance Parts:

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

Items/Conditions Not Covered:



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



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



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



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



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



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



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



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



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

Other Legal Disclaimers:

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

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

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

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

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

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

SMITHCO, INC.

Wayne, PA 19087

