

Parts & Service
Operators



TCV 5000

*Super Truck Turf Care Vehicle
Model 31-000*

SN: DT310012

October 2010

Product Support:

Hwy 55 & Poplar Ave; Cameron WI 54822

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

CONTENTS

Introduction

Introduction	1-5
Introduction	1
Safe Practices	2
Specifications	3
Setup	4
Controls & Instruments	5

Service

Service	6-15
Operation	6-7
Maintenance	8-9
Wheel Creep	10
Adjustments	10
Service Chart	11-12
Storage	14-15

Diagrams

Diagrams	16-19
Wiring Diagram	16-17
Hydraulic Diagram	18-19

Parts

Parts	20-45
Body and Frame	20-21
Nose Cone	22-23
Front Axle	24-25
Oil and Fuel Tank	26-27
Seat Panel	28-29
Engine and Pumps	30-31
Cooler and Exhaust	32-33

Accessories

Gondola Box	34-35
Cargo Tailgate Box	36-37
15-301 Orbitrol	38-39
30-102 Eaton Pump	40-43
30-101 Eaton Motor	44-45

Reference

Reference	46-48
Decal List	46
Quick Reference	48
Warranty	

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

Read this manual and all other manuals pertaining to the Dump Truck 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 Dump Truck is located on the left main frame, by front bumper. 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.	<input type="text"/>	kW/hp <input type="text"/>
MODEL NO.	<input type="text"/>	kg/lb <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.
2. Never allow anyone to operate or service the machine or its optional equipment 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. Pick up all debris you can find before operating. 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. Disengage all drives and set park brake before starting the engine.
12. Never use your hands to search for oil leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury.
13. 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.
14. Before leaving operator's position:
 - A. Disengage all drives.
 - B. Set park brake.
 - C. Shut engine off and remove the ignition key.
 - D. If engine has to run to perform any maintenance keep hands, feet, clothing and all other parts of body away from moving parts.
15. Keep hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
16. Keep the area of operation clear of all bystanders.
17. Never carry passengers.
18. Stop engine before making repairs/adjustments or checking/adding oil to the crankcase.
19. Use parts and materials supplied by **Smithco** only. Do not modify any function or part.
20. Use caution when booms are down as they extend out beyond the center line of the machine.
21. The tank is a confined space, take precaution.

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



WEIGHTS AND DIMENSIONS

Length	128" (325 cm)
Width	72" (183 cm)
Height w/ ROPS	84" (213 cm)
Wheel Base	68" (173 cm)
Weight Empty	2355 lbs (1068 kg)

SOUND LEVEL (DBA)

At ear level	98 dBA
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ENGINE

Make	Kubota
Model#	V1505
Code / Spec#	1G994-0000
Horsepower	35.5 hp (26.6 kW)
Fuel (EMISSIONS)	No.1-D or No. 2-D, S500: Low Sulfur Diesel (LSD) less than 500 ppm or 0.05 wt. % No.1-D or No.2-D, S15: Ultra Low Sulfur Diesel (ULSD) less than 15 ppm or 0.0015 wt. %
Cooling System	Liquid Cooled
Lubrication System	Full Pressure
Alternator	15 Amp

WHEELS & TIRE

Front:	Two 20 x 11.00 x 10 Turf; 20 psi (1.4 bar)
Rear:	Two 29 x 14.00 x 15 Multi-Trac; 30 psi (2.0 bar)

SPEED

Infinitely Variable	0-10 m.p.h. (0-18 kph)
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BATTERY

	Automotive type 24F - 12 volt
BCI Group	Size 24
Cold Cranking Amps	900 minimum
Ground Terminal Polarity	Negative (-)
Maximum Length	10.25" (26 cm)
Maximum Width	6.88" (17 cm)
Maximum Height	10" (25 cm)

FLUID CAPACITY

Crankcase Oil	See Engine Manual
Fuel	7 gallon (26.5 liters)
Hydraulic Fluid	10 gallon (37.8 liters)
Grade of Hydraulic Fluid	SAE 10W-40 API Service SJ or higher Motor Oil

SET UP

The Dump Truck arrives from **Smithco** setup and ready for service. Depending on freight conditions battery may need to be installed.

1. Check the tire pressure. The front tires are 20 psi (1.4 bar) and rear tires are 30 psi (2.0 bar).
2. Battery is located under seat. This is a negative grounding system.

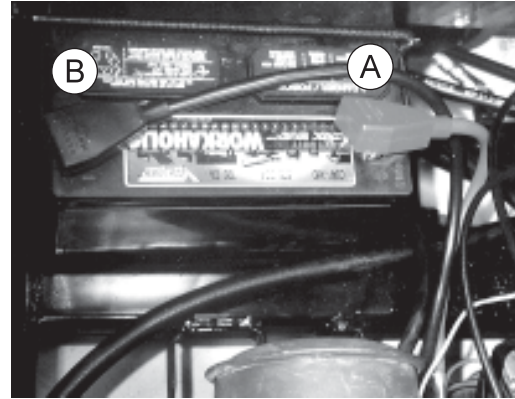


Connecting battery cables to the wrong post could result in personal injury and/or damage to the electrical system. Make sure battery and cables do not interfere or rub on any moving part. Connect red positive (+) cable (A) to battery first. When disconnecting remove black negative (-) cable (B) first.

3. Check hydraulic fluid level in tank located under the seat. Remove cap and add SAE 10W-40 API Service SJ or higher motor oil if necessary. Fluid level should be about 2-2 $\frac{1}{2}$ " (5-6.4 cm) from the top of the tank when cold. DO NOT OVERFILL.
4. Fill fuel tank, located on right side, with No. 2 diesel



Fuel is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running or an enclosed area, fumes are explosive and dangerous to inhale. DO NOT SMOKE while filling the fuel tank. DO NOT OVERFILL



5. Machine should be greased before starting, refer to *Maintenance* for grease fitting location.
6. Read operating instructions before starting.

FUEL

CHECK EMISSION REGULATIONS OF YOUR AREA

With Emission control now in effect diesel fuel specification type and sulfur content % (ppm) used must be in compliant with all applicable emission regulations for the area in which the engine is operated.

Use of diesel fuel with sulfur content less than 0.10% (1000 ppm) is strongly recommended.

If high sulfur fuel is used, change oil and oil filters twice as often.

DO NOT USE Fuels that have sulfur content greater than 1.0% (10000 ppm).

Diesel fuels specified in EN 590 or ASTM D975 are recommended.

Since KUBOTA diesel engines of less than 56kW (75 hp) utilize EPA Tire 4 and Interim Tier 4 Standards, the use of low sulfur fuel or ultra low sulfur fuel is mandatory for these engines, when operated in US EPA regulated areas. Therefore, use No.2-D S500 or S15 diesel fuel as a alternative toe No. 2-D for ambient temperatures below -10°C (14° F).



- A. Hour Meter - The hour meter indicates hours of machine operation. It operates only when the ignition switch is on.
- B. Speedometer - The Speedometer indicates ground speed of the vehicle in miles per hour and kilometers per hour.
- C. Oil Light - The oil light should come on when the ignition is on without the engine running and go out when the engine is running. The oil light will light when the oil pressure is low. If oil light should come on, shut engine off immediately and find the cause.
- D. Water Temperature Light - Temperature light will come on and a buzzer will sound when the engine starts to overheat.
- E. Glow Plug - When ignition is turned on, glow plug lights when ready to start.
- F. Ignition Switch - The ignition switch has three positions: Off - Run - Start.
- G. Tilt Steering - Hold lever down and adjust steering wheel to desired position and release lever.
- H. Lights - This rocker switch turns lights on by pushing on the top and off by pushing on the bottom.
- I. Cup Holder - Holds standard cup.
- J. Hand Throttle - The hand throttle is used to regulate engine speed.
- K. Park Brake Toggle Switch - This toggle switch will engage park brake. Lift toggle cover and move switch forward. **DO NOT ENGAGE WHILE IN MOTION.**

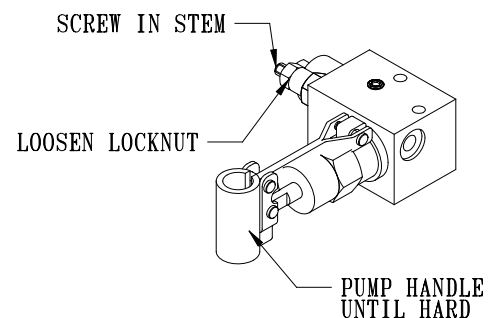


TOWING

When it is necessary to move the dump truck without the engine running, there are 2 things that need to be done. First, the bypass valve built into hydrostatic pump must be "open" by turning it 1/4 turn to open. The valve is located on the back 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. Secondly, the hand brake needs to be manually released. The hand brake is located under the engine. To manually release the brake you must loosen the locknut and screw in the stem to the bottom. Tighten the lock nut and pump handle until hard.

MANUAL BRAKE HAND PUMP MANIFOLD

The hand brake is located under the engine. The hand brake is connected to the seat switch and automatically engages when operator gets up from the seat. So when machine is not being driven, the machine is locked down. If engine is not running or you are towing the machine you will have to manually release the brake. **To manually release the brake** you must loosen the locknut and screw in the stem to the bottom. Tighten the lock nut and pump handle until hard.



OPERATION

Before operating the Smithco Dump Truck, become familiar with all controls and functions. Also complete all maintenance requirements and read all safety warnings. Knowing the Dump Truck thoroughly, how it operates, and by doing the prescribed maintenance steps, you can expect trouble free operation for years to come.

SAFETY

Operator needs to always be the concern of an operator of a moving vehicle or any machine with moving parts.

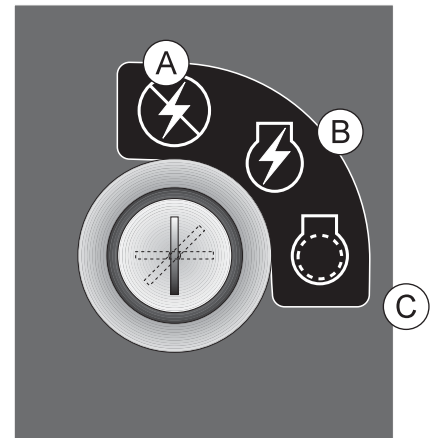
1. Keep all shields and guards in place.
2. Keep the parking brake engaged any time the operator is away from the vehicle or whenever service is performed.
3. Always wear the necessary protective clothing and equipment.
4. Turn engine off when refueling or performing maintenance not specifically requiring engine power.

DAILY CHECKLIST

1. Check the engine oil level. Add as needed. **DO NOT OVERFILL.** Refer to engine owner's manual for oil grade and procedure.
2. Tire pressure should be 20 psi (1.4 bar) on front and 30 psi (2.0 bar) on back.
3. Inspect the electrical system and battery cables for loose connections or frayed wiring. Replace any faulty equipment or tighten if loose.
4. Check hardware for loose or missing nuts, bolts, screws, etc., and tighten or replace as needed.
5. Inspect hydraulic lines for damage or leaks. Never use hands to inspect for leaks.
6. Check the hydraulic fluid level. The hydraulic fluid tank is located under the seat. The fluid level should be 2"-2½" (5 - 6.4 cm) from the top of the tank when cold. Use only SAE 10W-40 API Service SJ or higher Motor Oil.
7. Inspect the steering, throttle and shift linkages for good hookups and clear travel.
8. Check controls for smooth, proper working operation. Lubricate as needed.
9. Check anti-vibration mounts on engine frame.

STARTING THE ENGINE

1. Make sure both fuel flow valves are 'On'. They are located on the fuel tank.
2. The ignition switch is located on the dashboard. Insert the key (A) and turn clockwise to (B). When glow plug light goes off Turn key to (C) until the engine starts. Release the key and it will return to the run position (B).
3. Allow engine to idle and warm up before selecting direction of travel.



STOPPING THE ENGINE

NOTE: If the engine has been running under high power, let it run at slow idle speed a few minutes to cool the engine down, before turning the ignition switch to the OFF position.

1. Move the throttle lever to "slow" and turn ignition key to the "off" position.
2. Remove the ignition key and engage the park brake.



Never leave the vehicle unattended with the engine running. Always bring the vehicle to a complete stop, engage park brake, turn key off and remove key.

HILLSIDE OPERATION

Do NOT stop or start suddenly on any slope. Be especially cautious when changing direction. Do NOT operate on slopes greater than 10°.

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

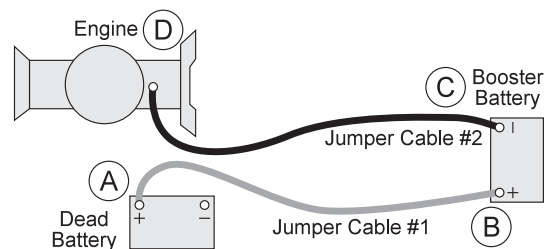
**WARNING**

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.



MAINTENANCE



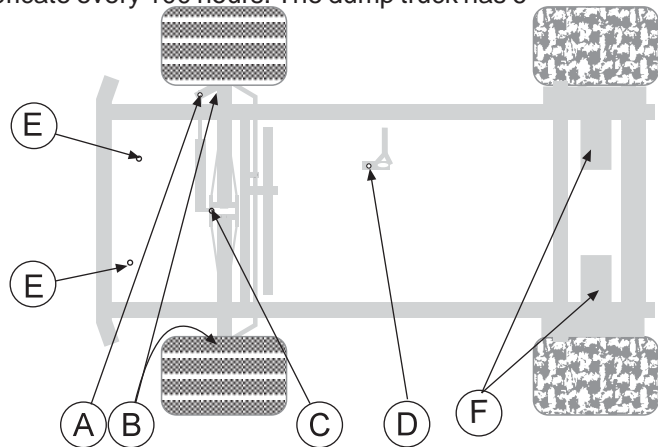
Before servicing or making adjustments to machine, stop engine and remove key from ignition.

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

LUBRICATION

Use No. 2 General purpose lithium base grease and lubricate every 100 hours. The dump truck has 6 grease fittings.

- A. One on the rod end of hydraulic cylinder.
- B. One on each the right and left spindles.
- C. One on the center front pivot.
- D. One on the idler arm.
- E. One on each of the pedal relays.
- F. One on each planetary drive.



ELECTRICAL CONNECTIONS

Use dielectric grease on all electrical connections.

AIR CLEANER ON ENGINE

Since the air cleaner on this engine is a dry type, never apply oil to it.

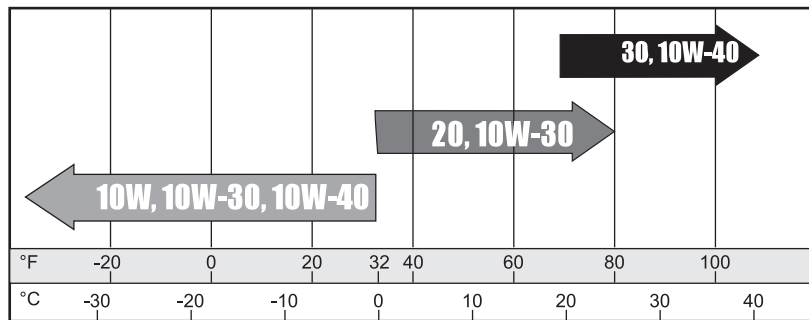
1. Open evacuator valve (see engine manual) once a week to remove large particles of dust and dirt.
2. Wipe the inside of the air cleaner with a cloth if it gets wet or dirty.
3. Avoid touching the element except when cleaning.
4. When dust adheres to the element, gently tap element on flat surface.
5. When carbon or oil adheres to the element clean according to engine manual.
6. Replace the element every year or every 6 months.
7. **IMPORTANT** - Make sure wing bolt for the element is tight enough. If it is loose, dust and dirt may be sucked in, wearing down the cylinder liner and piston ring, resulting in poor power output.

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

ENGINE OIL

With strict emission control regulations now in effect, the CF-4 and CG-4 engine oils have been developed for use with low sulfur fuels, for On-Highway vehicle engines. When Non-Road engines run on high sulfur fuel, it is advisable to use a "CF or better" classification engine oil with Total Base Number (a minimum TBN of 10 is recommended).

Check the engine oil before starting or more than 5 minutes after stopping the engine. If oil level is low, remove oil filler plug and add new oil to the prescribed level. Do not overfill. Engine oil should be MIL-L2104C or have properties of API Classifications CD grades or higher. Change the type of Engine oil according to the ambient temperature.



Starting Temperature Range Anticipated Before Next Oil Change

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.
3. Oil level should be 2-2½" (5-6.4cm) from top of the tank when fluid is cold. Do not overfill.
4. After changing oil, run the machine for a few minutes. Check oil level and for leaks.
5. Always use extreme 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 the natural color of the fluid has become 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 immediately after fluid is cool and find the cause. Take fluid level readings when the 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 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 the tank fill area as to which type you put in.

TIRE PRESSURE

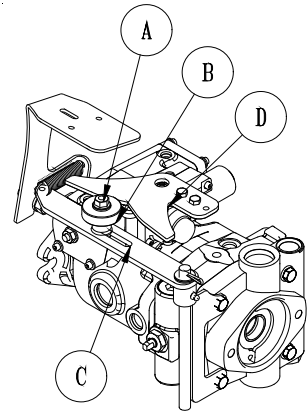
Caution must be used when inflating a low tire to recommended pressure. Over inflating can cause tires to explode. Front tires should be 20 psi (1.4bar) and rear tires should be 30 psi (2.0bar). Improper inflation will reduce tire life considerably.

WHEEL CREEP

WHEEL CREEP

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

1. Lift up and support machine so rear wheels are off the ground and can turn freely.
2. In the engine compartment, the hydrostatic pump is on the right side. The shift arm (D) is on top of the pump. The idler arm (B) has a bearing that rides in the vee of the shift arm. Loosen bolt (A).
3. With engine running, move bearing (B) so it centers on the shift arm (D) and 'wheel creep' stops.
4. Tighten all fasteners and test by using foot pedal linkage to see that 'creep' is removed.
5. Turn engine off and lower machine.



ADJUSTMENTS

SAFETY INTERLOCK SWITCH

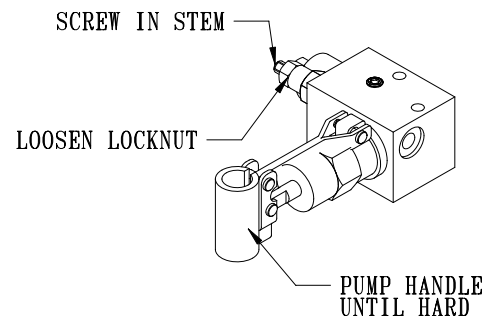
To adjust the interlock switch on the back hydrostatic pump loosen the set screw on the front half of the switch, with the ignition switch OFF. With a continuity tester connected across the switch, it should light with the shift arm centered. Move the shift arm to the right or left and the light should go off. By turning the back half of the switch clockwise it will reduce the amount of travel on the shift arm that is required for the light to remain on. The light must be on ONLY with the shift arm centered.

TOWING

When it is necessary to move the dump truck without the engine running, there are 2 things that need to be done. First, the bypass valve built into hydrostatic pump must be "open" by turning it $\frac{1}{4}$ turn to open. The valve is located on the back 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. Secondly, the hand brake needs to be manually released. The hand brake is located under the engine. To manually release the brake you must loosen the locknut and screw in the stem to the bottom. Tighten the lock nut and pump handle until hard.

MANUAL BRAKE HAND PUMP MANIFOLD

The hand brake is located under the engine. The hand brake is connected to the seat switch and automatically engages when operator gets up from the seat. So when machine is not being driven, the machine is locked down. If engine is not running or you are towing the machine you will have to manually release the brake. **To manually release the brake** you must loosen the locknut and screw in the stem to the bottom. Tighten the lock nut and pump handle until hard.



SERVICE CHART



Before servicing or making adjustments to the machine, stop engine, 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 50 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 100 hours	Check the battery fluid level and cable connections. Change hydraulic filter Check engine for leaks or loose parts. Check air cleaner. Check tire pressure (20 psi front (30 psi) rear). Torque the wheel lug nuts. (64-74 ft/lb (87-100 Nm)) Grease Machine. Check Planetary for oil. Check belt tension (where needed)
Every 200 Hours	Ceck radiator hoses.
	Change the engine oil and filter. Change oil filter Change hydraulic filter Clean battery terminals
Every 400 hours	Replace Fuel Filter
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 SERVICE CHART

Duplicate this page for routine use

Maintenance 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 (20-30 psi)							
Check the Instrumentation							
Inspect electrical system for frayed wires							
Check neutral start							
Change oil filter.							
Change oil.							
Lubricate Machine							
Ensure all warning decals are intact.							

Areas of Concern		
Inspection Performed by:		
Item	Date	Information

Service

STORAGE

NOTE: To prevent damage from freezing, pour window washer fluid into spray systems tank and operate pump to circulate mix through gun and hose back to tank. Open boom control to circulate through rest of spray system.

UP TO ONE MONTH

1. While engine is running, treat upper cylinders by spraying engine fogging agent into the air intake (NOT through air cleaner) for about two minutes. Fogging agent can be obtained from your local after market supplier. Open throttle for short burst of speed, shut off ignition and allow engine to come to a stop while continuing to spray fogging agent into air intake.
2. Leave spark plugs in holes or seal spark plug holes with suitable threaded metal plugs and cover all openings into engine with suitable non-hygroscopic material.
3. Check coolant protection. Store machine indoors in dry area.

TWO MONTHS

1. Clean the exterior surfaces of the engine.
2. Change the oil and filter while the engine is still warm from operation.
3. Drain coolant from the radiator. Open cock at the bottom of the radiator, and remove the pressure cap to drain water completely. Leave the cock open. Hang a not written "No Water" on the pressure cap. Since water freezes when temperature drops below 0°C (32° F) it is important that no water is left in the machine.
4. Remove battery from the engine, adjust the electrolyte level, and recharge it. Store battery in a dry dark place.
5. Store machine in a clean, dry place.

EXTENDED STORAGE

1. Check for any damaged parts or missing decals. Replace as needed.
2. Drain crankcase completely and refill with recommended engine oil or equivalent.
3. Run engine until completely out of gasoline, then restart and run on stabilizer mixed with unleaded gasoline for at least 10 minutes.
4. While engine is still running and at completion of above run, treat upper cylinders by spraying fogging agent into the air intake for about two minutes. Open throttle for short burst of speed, shut off ignition and allow engine to come to a stop while continuing to spray fogging agent into air intake (NOT through air cleaner).
5. Lubricate all grease points.
6. Check coolant protection and level.
7. Clean exterior surface of engine.
8. Leave spark plugs in holes or seal spark plug holes with suitable threaded metal plugs.
9. Seal all openings in engine and accessories with non-hygroscopic material. Mask off all areas to be used for electrical contact.
10. Tape all openings and make sure all surfaces are dry. Then spray all taped openings, all engine accessories including ignition wiring, and all exterior surfaces of engine with Insulation Compound.
11. Disconnect, remove and clean battery. Check electrolyte level. Charge the battery and store in a cool dry place (NOT directly on cement).
12. Put blocks or stands under the machine to take weight off tires.

AFTER STORAGE

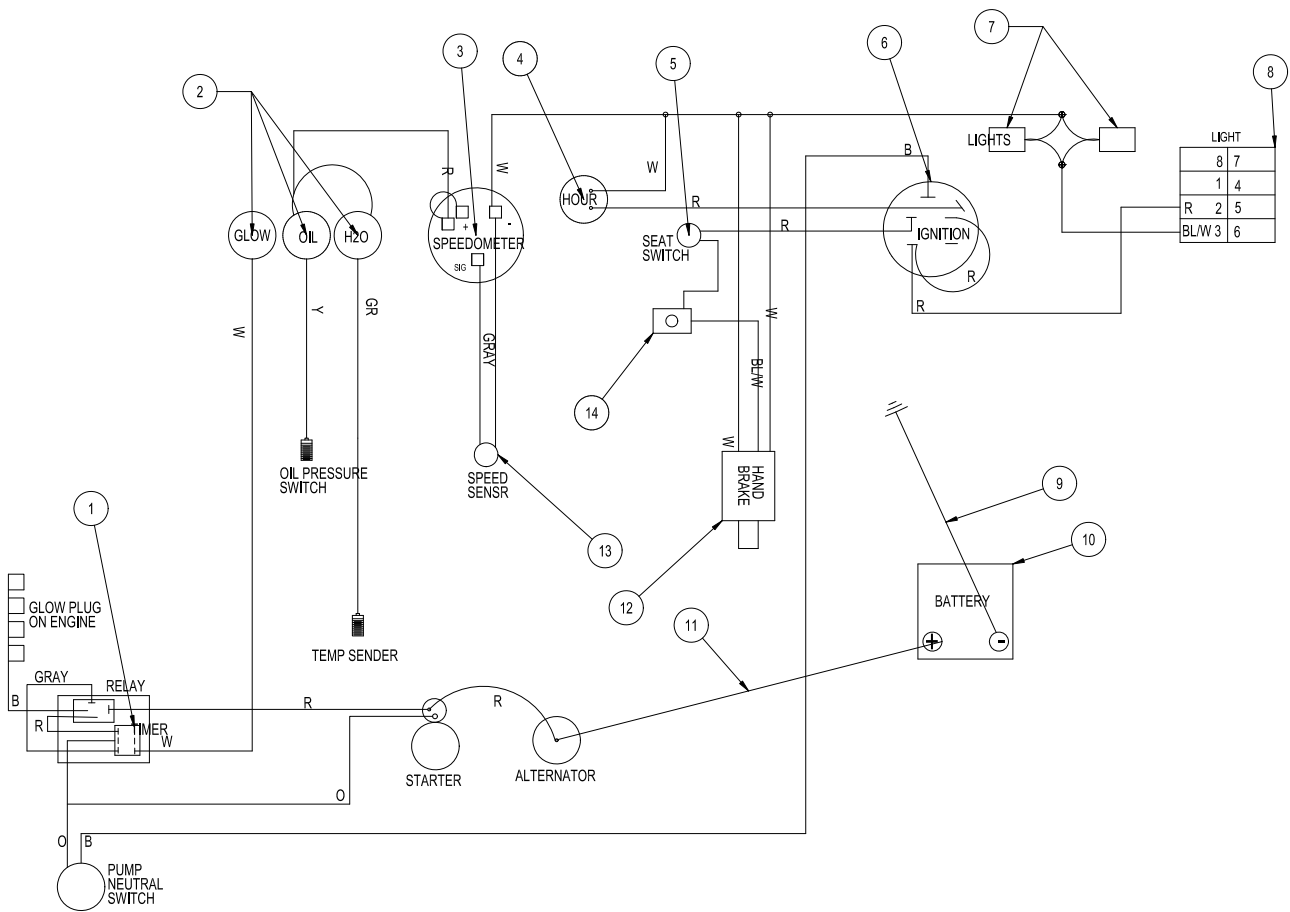
1. Check for any damaged parts or missing decals. Replace as needed.
2. Lubricate all grease points.
3. Clean exterior surface of engine.
4. Replace spark plugs if previously removed.
5. Remove all tape and obstructions from exterior engine surfaces.
6. Charge and replace battery.
7. Check tire pressure.
8. Remove blocks or supports from under the machine.
9. Check engine oil level and coolant level and lubricate all grease points.
10. Fill fuel tank.
11. Check belt tension.
12. Run engine approximately 5 minutes before putting the engine under load.

WIRING DIAGRAM

Color Code Chart

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

Diagrams

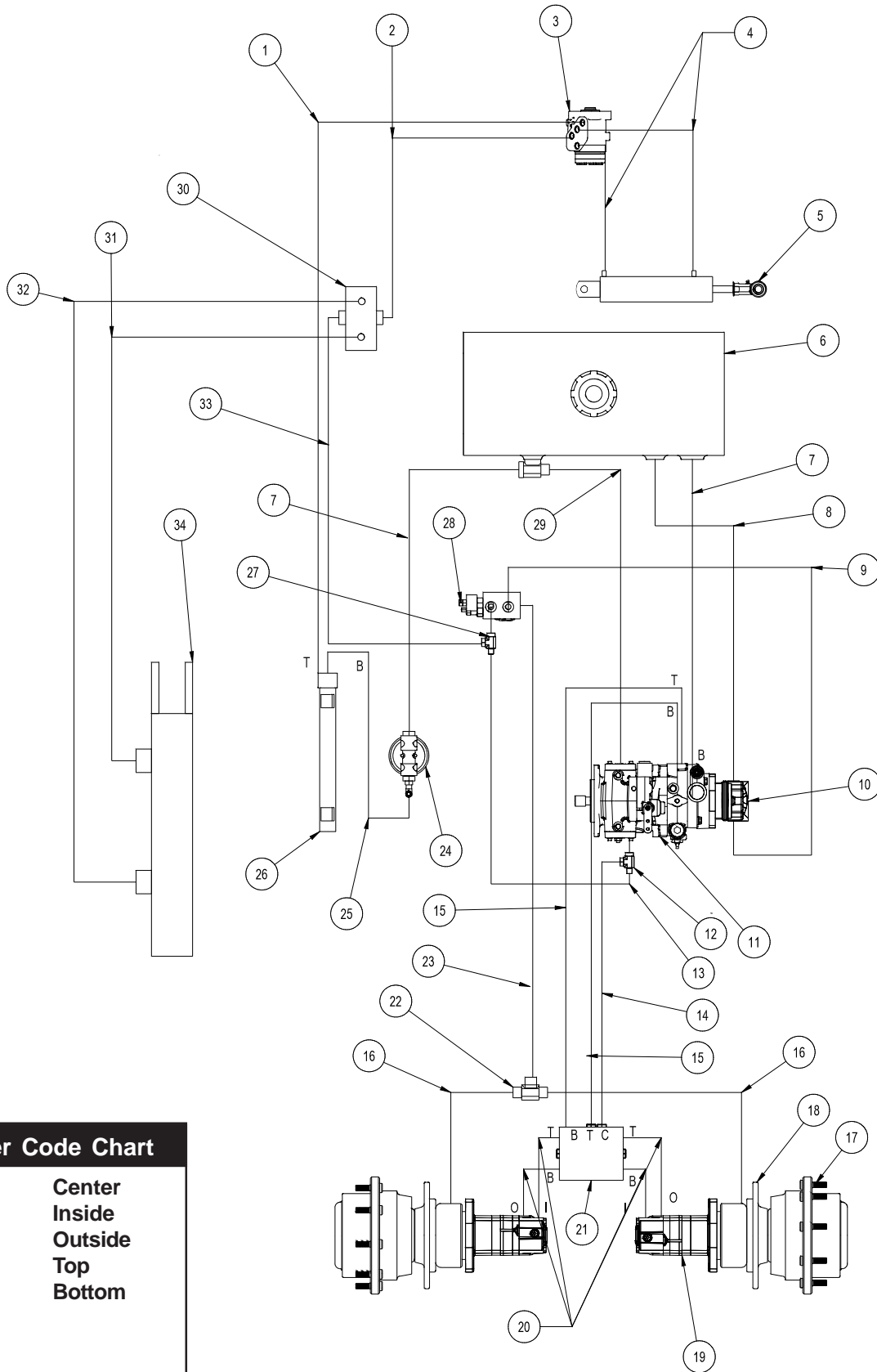


WIRING DIAGRAM

REF#	PART#	DESCRIPTION	QUANTITY
1	77-223	Timer	1
	30-042-06	Relay	1
2	50-359	Warning Light	3
3	10-556	Speedometer	1
4	12-017	Hour Meter	1
5	14-292	Seat Switch	1
6	13-488	Ignition Switch	1
7	17-524	Lights	2
	10-421	Pigtail	2
8	15-725	Mount Panel End	1
	15-727	Switch Actuator	1
	15-782	Rocker Switch, Unlit	1
9	48-147	Ground Battery Cable	1
10	33-216	Battery	1
11	78-325	Positive Battery Cable	1
12	30-104	Manual Hand Brake	1
13	16-883	Speed Sensor	1
14	12-003	PArk Brake Toggle Switch	1
	30-143	TOGGLE Switch Guard	1
NA	30-053	Main Wire Harness	1
NA	30-054	Engine Wire Harness	1

HYDRAULIC DIAGRAM

Use dielectric grease on all electrical connections.



Letter Code Chart

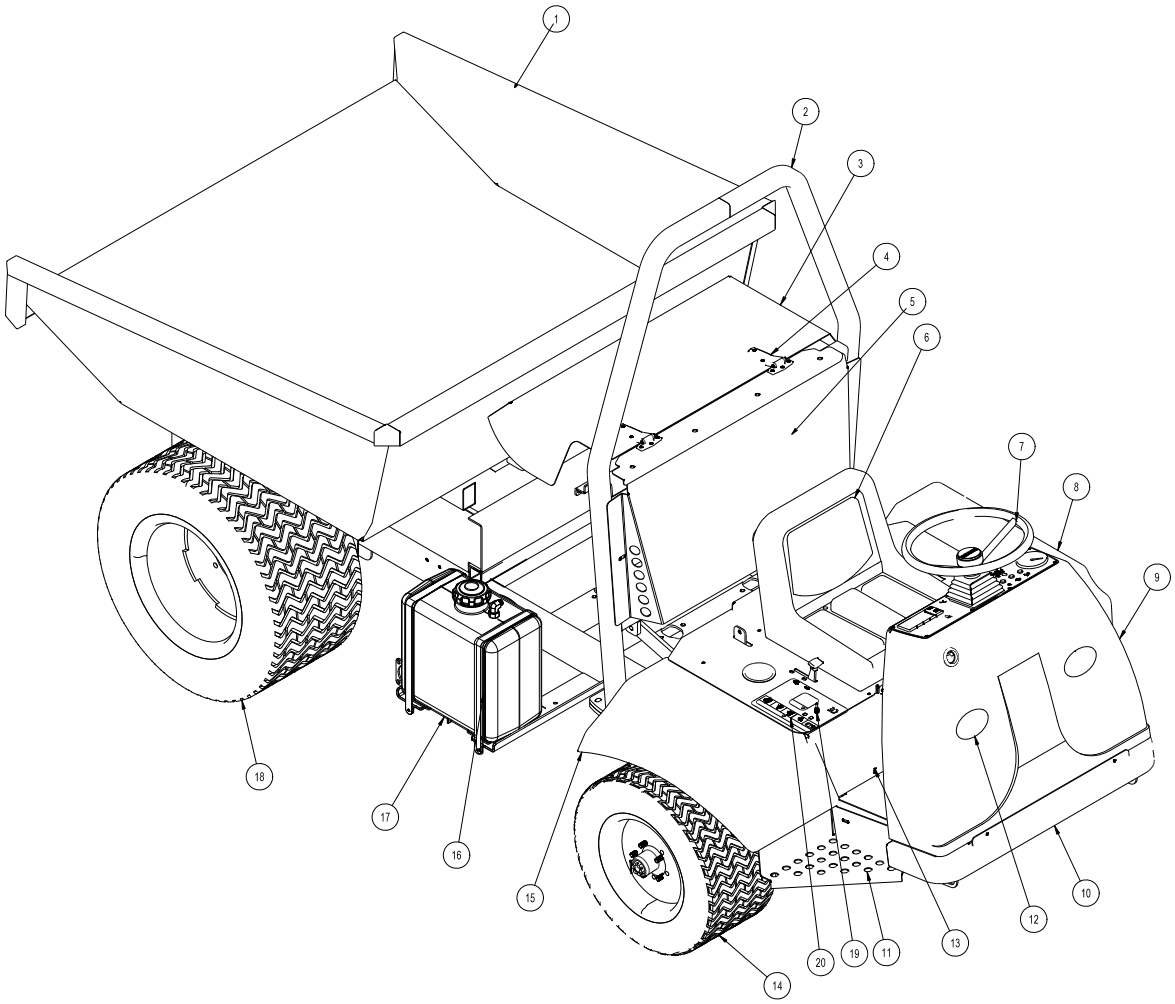
C	Center
I	Inside
O	Outside
T	Top
B	Bottom

HYDRAULIC DIAGRAM PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	30-092	Hydraulic Hose	1
2	30-091	Hydraulic Hose	1
3	15-301	Orbitrol	1
4	30-094	Hydraulic Hose	2
5	15-839	Hydraulic Cylinder	1
	14-531	Seal Kit	1
	18-171	3/8 Seal Loc Adapter	2
6	30-025	Oil Tank	1
	13-747	Filler Breather	1
	13-586-03	Neck	1
7	8833-9	Suction Hose	2
	18-222	Hose Clamp	4
8	8833-13	Suction Hose	1
	18-222	Hose Clamp	1
9	30-093	Hydraulic Hose	1
10	30-098	Gear Pump	1
11	30-102	Eaton Closed Loop Pump	1
12	18-405	Run Tee	1
13	30-086	Hydraulic Hose	1
14	30-085	Hydraulic Hose	1
15	30-090	Hydraulic Hose	2
16	30-087	Hydraulic Hose	2
17	30-099	Wheel Drive	2
18	30-100	Hydraulic Release Brakes	2
19	30-101	Eaton Wheel Motors	2
20	30-089	Hydraulic Hose	4
21	30-103	Hot Oil Shuttle Manifold	1
22	18-395	Union Tee	1
23	30-088	Hydraulic Hose	1
24	60-215	Oil Filter Assembly	1
	60-334	Replacement Element	1
25	8833-23	Suction Hose	1
	18-222	Hose Clamp	2
26	30-105	Oil to Air Heat Exchanger	1
27	18-308	Swivel Tee	1
28	30-104	Brake and Manual Hand Pump Manifold	1
29	8917-15.5	Suction Hose	1
	18-040	Hose Clamp	2
30	31-043	Single Bank Valve	1
31	31-021	Hydraulic Hose	1
32	31-020	Hydraulic Hose	1
33	31-019	Hydraulic Hose	1
34	72-040	Hydraulic Cylinder	1

BODY & FRAME DRAWING

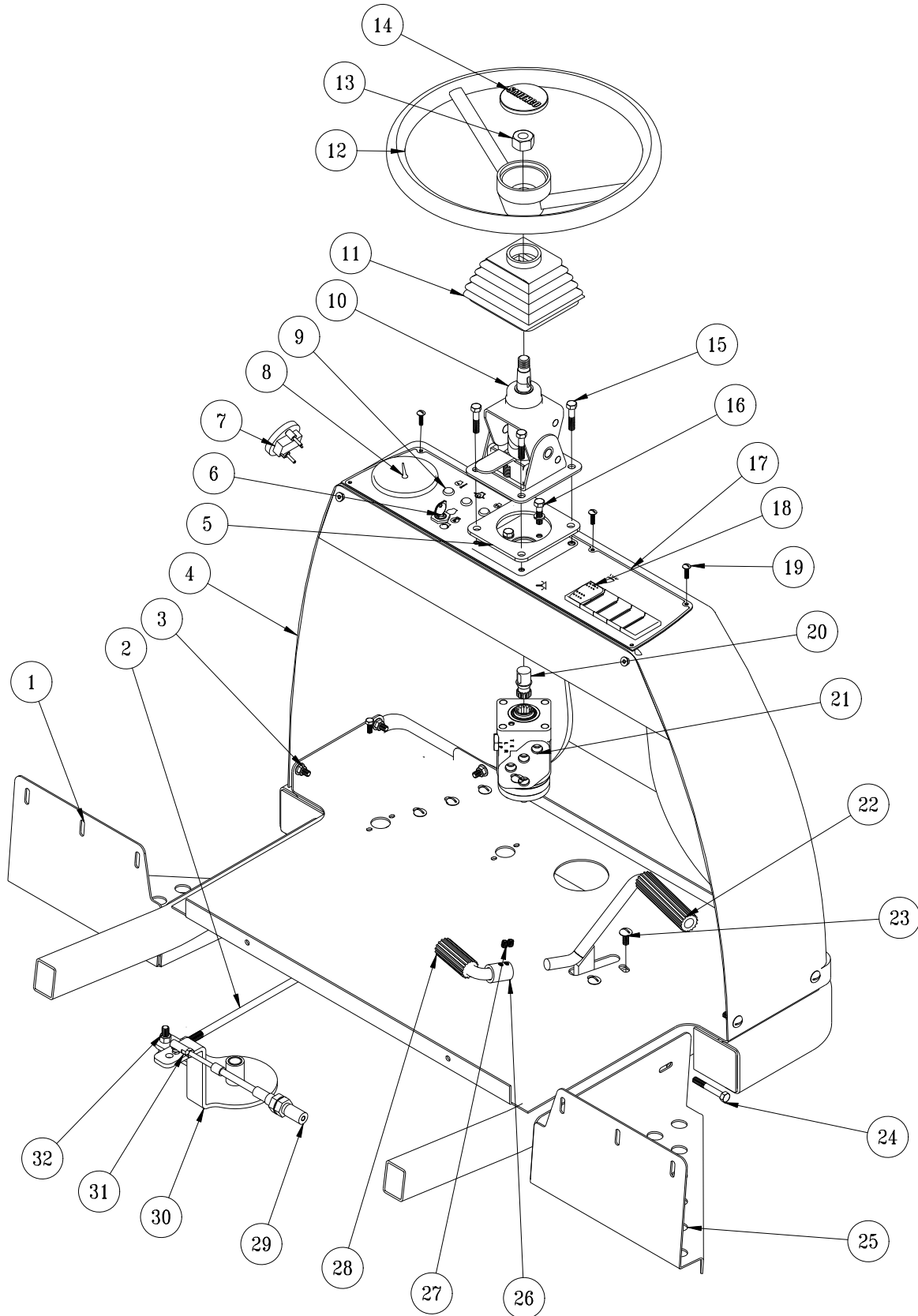
Diagrams



BODY & FRAME PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	31-015	Gondola Dump Box (Optional)	1
2	30-030	Roll Bar	1
3	30-075	Engine Hood	1
4	27-055	Flush Hinge	2
5	31-016	Back Panel	1
6	14-270	Seat	1
	14-292	Seat Switch	1
7	13-718	15" Steering Wheel	1
	13-726	Center Cap	1
8	30-114	Left Front Fender	1
9	15-822	Nose Cone (Fiberglass)	1
	50-400	Rubber Grommet	1
10	31-025	Main Frame	1
11	17-524	Oval Light	2
	10-421	Pigtail	2
12	30-065	Front Panel	1
	27-055	Flush Hinge	1
13	15-752	Left Step	1
	15-751	Right Step	1
14	43-124	Turf Tread Tire and Wheel	2
	43-123-01	Tire	2
	43-058-02	Wheel	2
	HNL-12-20	Lug Nut 1/2 - 20	14
15	30-121	Right Front Fender	1
16	73-051	Fuel Tank Strap	2
17	73-049	Fuel Tank	1
	73-050	Cap with Gauge	1
18	30-048-01	Rear Tire	2
	30-048-02	Rear Wheel	2
	HNL-12-20	Lug Nut 1/2 - 20	14
19	12-003	Park Brake Toggle Switch	1
	30-143	Toggle Switch Guard	1
20	30-097	Decal, Control Panel	1
	30-022	RH Side Panel	1

NOSE CONE DRAWING

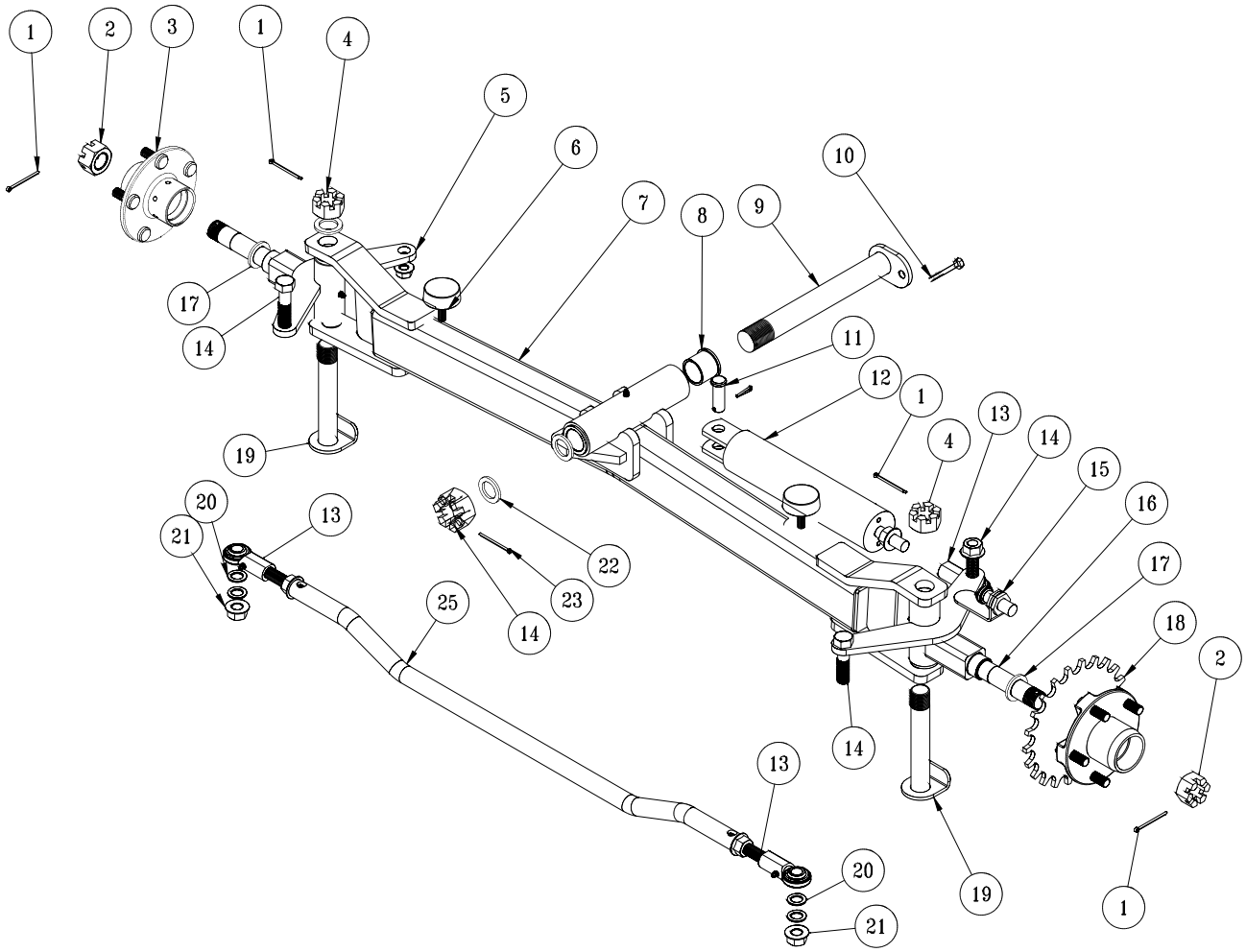


Parts

NOSE CONE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	15-751	Right Step	1
2	30-049	Control Rod	1
3	HSTP-516-18-150	Machine Screw $5/16$ - 18 x $1\frac{1}{2}$	7
	HNFL-516-18	Flange Lock Nut $5/16$ - 18	7
4	15-822	Nose Cone (Fiberglass)	1
5	15-844	Steering Spacer	1
6	13-488	Key Switch	1
7	12-017	Hour Meter	1
8	10-556	Speedometer	1
9	50-359	Warning Indicator Lights	3
10	76-362	Tilt Steering Column	1
11	76-364	Square Boot	1
12	13-718	Steering Wheel	1
13	HNJ-58-18	Jam Nut $5/8$ - 18	1
14	13-726	Center Cap	1
15	HB-516-18-125	Bolt $5/16$ - 18 x $1\frac{1}{4}$	4
	HNFL-516-18	Flange Lock Nut $5/16$ - 18	4
16	HBM-6-1-16	Metric Bolt	4
	HWLM-6	Metric Lock Washer	4
17	15-754	Dash Panel	1
	15-725	Mount Panel End	1
	15-729	Mount Panel Middle	3
	15-730	Panel Blanks	4
	31-026	Decal, Dashboard	1
18	15-725	Mount Panel End	1
	15-727	Switch Actuator	1
	15-782	Rocker Switch, Unlit	1
19	HSM-10-32-100	Machine Screw 10 - 32 x 1	6
	HWLM-6	Lock Washer #6	6
	HNFL-10-32	Flange Lock Nut 10-32	6
20	48-187	Stub Shaft	1
21	15-301	Orbitrol	1
	7-867	#6 SAE Adapter	4
22	76-299	Pedal Pad	1
	76-296	Pedal Mount	2
23	HSTP-516-18-075	Machine Screw $5/16$ - 18 x $3/4$	4
	HNFL-516-18	Flange Lock Nut $5/16$ - 18	4
24	13-731	Singel Bank Valve	1
25	15-752	Left Step	1
26	15-820	Foot Pedal Assembly	1
	HG-14-28-180	Grease Fitting $1/4$ - 28 x 180°	2
	HMB-12-14	Machine Bushing $1/2$ x 14GA	5
27	HSSH-516-18-038	Socket Head Set Screw, $5/16$ - 18 x $3/8$	2
28	15-821	Reverse Pedal	1
	76-332	Pedal Pad	1
29	13-632	Push Pull Cable	1
30	15-692	Pedal Relay	1
31	18-115	Ball Joint $1/4$ NF	1
	HN-14-20	Nut $1/4$ - 20	2
	HWL-14	Lock Washer $1/4$	1
32	21-173	Ball Joint $3/8$ - 24	2
	HWL-38	Washer $3/8$	2
	HN-38-24	Nut $3/8$ - 24	4

FRONT AXLE DRAWING



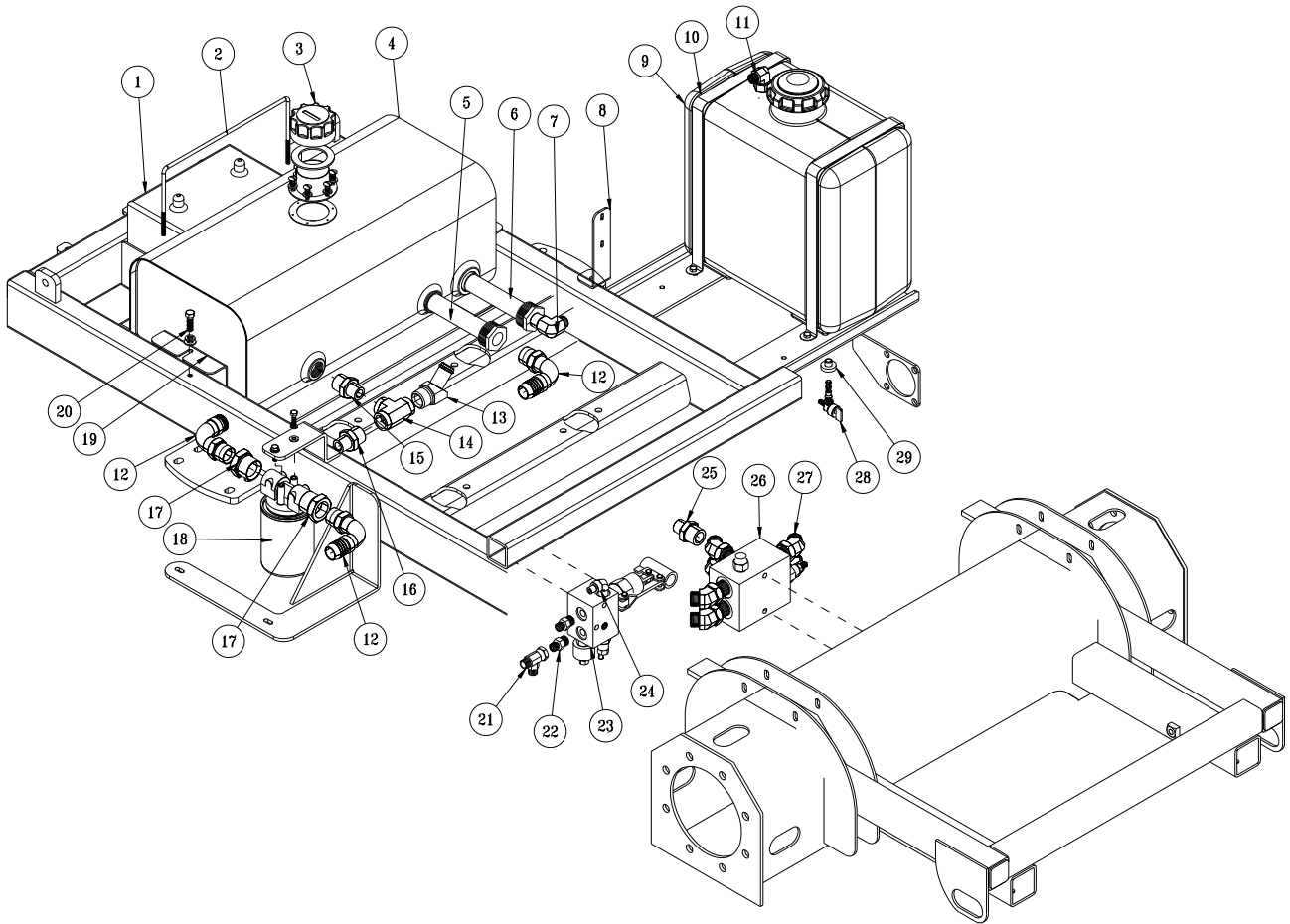
Parts

FRONT AXLE PARTSLIST

REF#	PART#	DESCRIPTION	QUANTITY
1	HP-18-150	Cotter Pin $\frac{1}{8}$ - $1\frac{1}{2}$	2
2	HNJ-58-18	Jam Nut $\frac{5}{8}$ - 18	2
3	30-071	Hub Assembly	1
4	HNAR-100-14	Slotted Jam Nut 1 - 14	2
5	30-070	Left Spindle	1
6	50-081	Rubber Insulator	2
7	30-039	Front Axle	1
8	18-153	Bushing	2
9	14-344	Axle Pin	1
10	HB-516-18-125	Bolt $\frac{5}{16}$ -18 x $1\frac{1}{4}$	1
	HNTL-516-18	Lock Nut $\frac{5}{16}$ -18	1
11	HCP-58-175	Clevis Pin $\frac{5}{8}$ x $1\frac{3}{4}$	1
	HP-18-100	Cotter Pin $\frac{1}{8}$ x 1	1
12	15-839	Hydraulic Cylinder	1
	14-531	Seal Kit	1
13	18-154	Rod End	3
	HG-14-28-90	Grease Fitting $\frac{1}{4}$ - 28 x 90°	3
14	HB-58-11-250	Bolt $\frac{5}{8}$ - 11 x $2\frac{1}{2}$	3
15	16-883	Magnetic Sensor	1
16	30-069	Right Spindle	1
17	HMB-100-10	Machine Bushing 1 x 10GA	6
18	30-072	Hub with Sprocket	1
19	16-076	King Pin	2
20	HMB-58-14	Machine Bushing $\frac{5}{8}$ x 14GA	6
21	HNTL-58-11	Lock Nut $\frac{5}{8}$ -11	3
22	HMB-114-10	Machine Bushing $1\frac{1}{4}$ x 10GA	2
23	HP-18-200	Cotter Pin $\frac{1}{8}$ x 2	1
24	HNAT-114-12	Axle Nut $1\frac{1}{4}$ - 12	1
25	15-690	Tie Rod	1

OIL AND FUEL TANK DRAWING

Parts

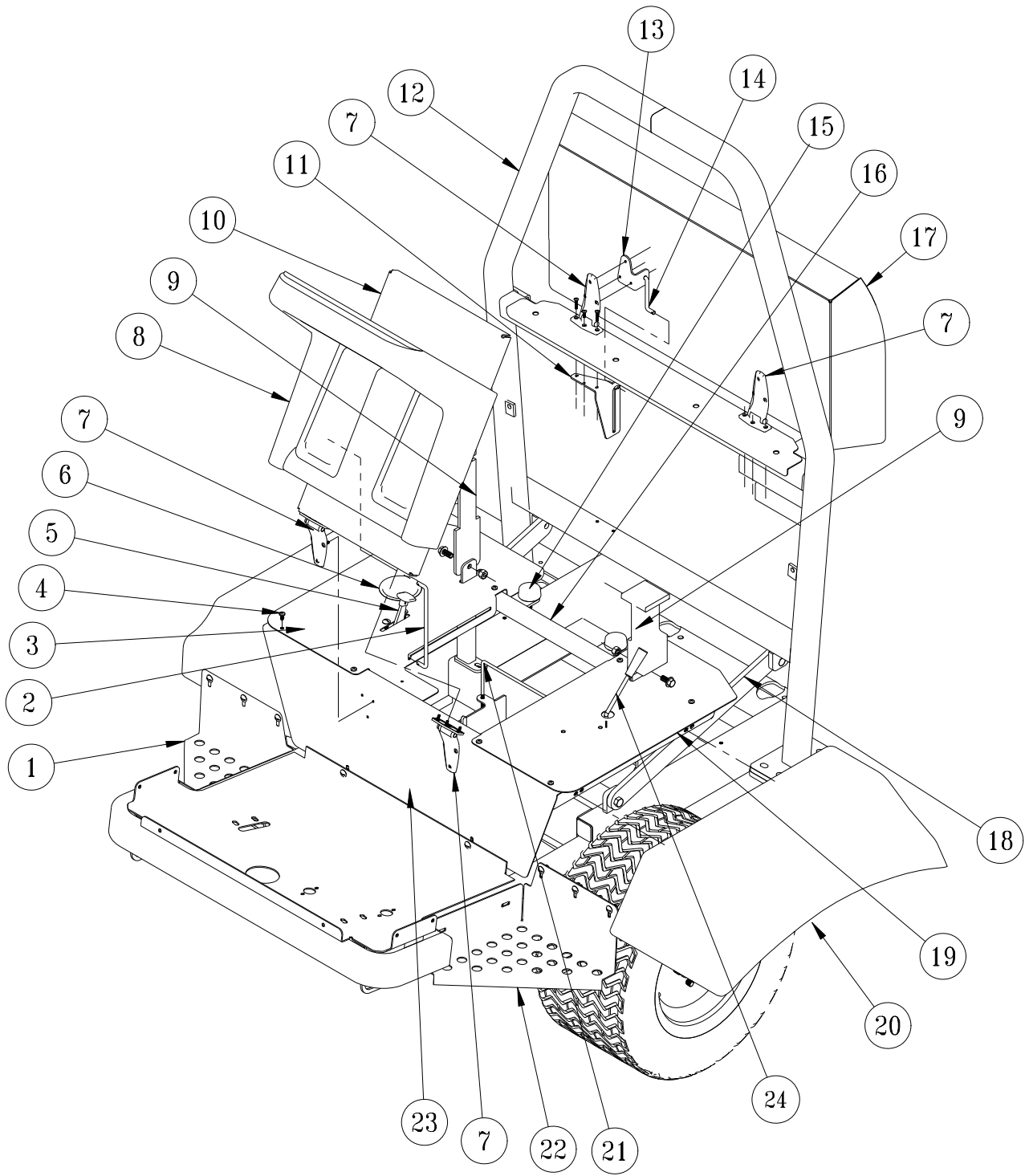


OIL AND FUEL TANK PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	33-216	Battery	1
2	30-074	Battery Hold Down	1
	HNW-14-20	Wing Nut 1/4 - 20	2
3	13-747	Filler Breather	1
	13-586-03	Fuel Tank Neck	1
	HSM-10-32-063	Machine Screw #10-32 x 5/8	6
	HWL-10	Lock Washer #10	6
4	30-025	Oil Tank	1
	18-069	Pipe Plug	1
5	60-213	Strainer	1
6	18-433	Strainer	1
7	18-398	90° Barb Fitting	1
8	30-132	Fuel Pump Mount	1
9	73-049	Fuel Tank	1
	73-050	Cap with Gauge	1
10	73-051	Fuel Tank Strap	2
	HB-14-20-075	Bolt 1/4 - 20 x 3/4	2
	HB-14-20-150	Bolt 1/4 - 20 x 1 1/2	2
	HNFL-14-20	Flange Lock Nut 1/4 - 20	4
11	30-125	Top Draw Tube	1
	9025-44	3/16 Fuel Hose 44"	
12	18-397	90° Hose Barb Fitting	3
13	18-407	5/8 45° Hose Barb Fitting	1
14	18-399	Tee	1
15	18-400	Pipe Nipple	1
16	18-250	Barb Fitting	1
17	18-396	Reducer	2
18	60-215	Oil Filter Assembly	1
	60-334	Replacement Filter	1
19	30-063	Oil Tank Holddown	2
20	HB-38-16-125	Bolt 3/8 - 16 x 1 1/4	2
	HWL-38	Lock Washer 3/8	2
	HW-38	Washer 3/8	2
21	18-308	Swivel Tee	1
22	18-306	Straight Thread Connector	2
23	30-104	Manual Brake Pump Manifold	1
24	18-171	Seal Lock Elbow	1
25	18-321	Straight thread Connector	1
	23-126	Oring plug	1
26	30-103	Hot Oil Shuttle Manifold	1
27	18-393	Elbow	6
28	26-054	Bushing Insert	1
29	26-055	Shut Off Valve	1

SEAT PANEL DRAWING

Parts

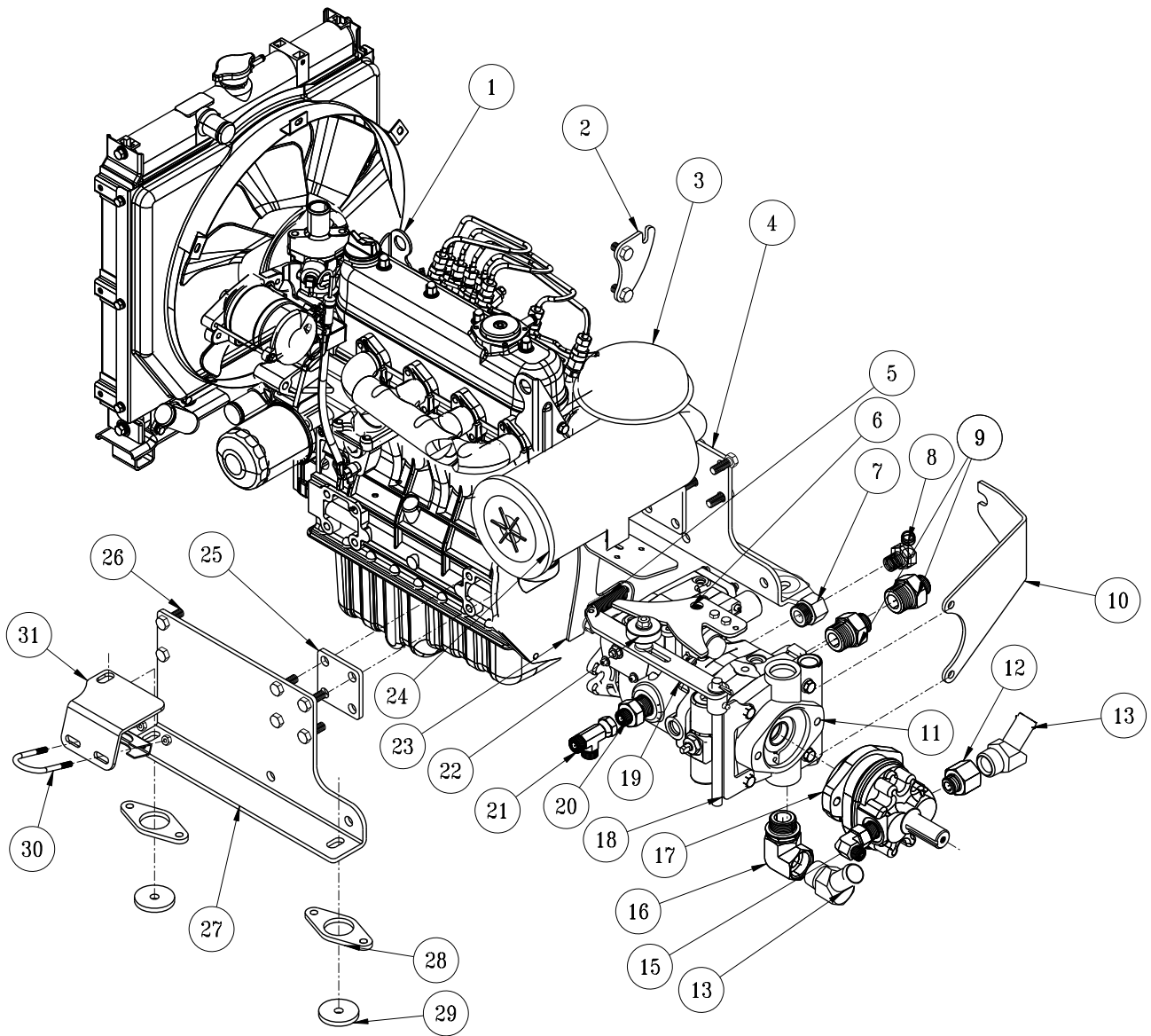


SEAT PANEL PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	15-751	Step - RH	1
2	15-786	Hood Rod	1
	HW-38	Flat Washer, $\frac{3}{8}$	4
	HP-18-075	Cotter Pin, $\frac{3}{8} \times \frac{3}{4}$	2
3	30-022	Side Panel - RH	1
4	HSDPS-14-100	Pan Head Drill Screw, $\frac{1}{4} \times 1$	8
5	34-160	Throttle Cable	1
	34-160-01	Inner Cable	1
	42-766	Throttle Bracket	1
	HSTP-14-20-075	Phillips Head Machine Screw, $\frac{1}{4} - 20 \times \frac{3}{4}$	2
	HNFL-14-20	Flange Lock Nut, $\frac{1}{4} - 20$	2
	HSM-10-32-063	Machine Screw, #10 - $32 \times \frac{5}{8}$	4
	HNFL-10-32	Flange Lock Nut, #10 - 32	4
6	15-781	XL Drink Cup Holder	1
7	27-055	Flush Mount Hinge	4
	HSM-10-32-063	Machine Screw, #10 - $32 \times \frac{5}{8}$	24
	HNFL-10-32	Flange Lock Nut, #10 - 32	24
8	14-519	Seat, White	1
9	76-198-03	Seat Belt	1
	HB-716-14-100	Hex Bolt, $\frac{7}{16} - 14 \times 1$	2
	HW-716	Flat Washer, $\frac{7}{16}$	2
	HNTL-716-14	Lock Nut, $\frac{7}{16} - 14$	2
10	15-714	Seat Panel	1
	HLC-A-58	Loom Clamp, $\frac{5}{8}$	2
11	30-056	Lower Hood Bracket	1
12	30-030	Roll Bar	1
	HB-12-13-200	Hex Bolt, $\frac{1}{2} - 13 \times 2$	8
	HW-12	Flat Washer, $\frac{1}{2}$	16
	HNTL-12-13	Lock Nut, $\frac{1}{2} - 13$	8
13	30-055	Upper Hood Bracket	1
14	30-057	Hood Rod	1
	HP-18-075	Cotter Pin, $\frac{1}{8} \times \frac{3}{4}$	2
15	50-081	Rubber Bumper	2
	HNFL-38-16	Flange Lock Nut, $\frac{3}{8} - 16$	4
16	30-045	Seat Frame	1
	HB-38-16-500	Hex Bolt, $\frac{3}{8} - 16 \times 5$	2
	HNFL-38-16	Flange Lock Nut, $\frac{3}{8} - 16$	2
17	30-075	Engine Hood	1
18	30-032	Roll Bar Brace	2
	HB-12-13-200	Hex Bolt, $\frac{1}{2} - 13 \times 2$	4
	HW-12	Flat Washer, $\frac{1}{2}$	4
	HNTL-12-13	Lock Nut, $\frac{1}{2} - 13$	4
19	31-024	Side Panel - LH	1
20	30-114	LH Fender	1
	HSTP-516-18-075	Phillips Head Machine Screw, $\frac{5}{16} - 18 \times \frac{3}{4}$	2
	HSTP-516-18-100	Phillips Head Machine Screw, $\frac{5}{16} - 18 \times 1$	3
	HNFL-516-18	Flange Lock Nut, $\frac{5}{16} - 18$	5
21	30-074	Battery Holddown	1
	HNW-14-20	Wing Nut, $\frac{1}{4} - 20$	2
22	15-752	Step - LH	1
	HB-516-18-350	Hex Bolt, $\frac{5}{16} - 18 \times 3\frac{1}{2}$	2
	HNFL-516-18	Flange Lock Nut, $\frac{5}{16} - 18$	2
23	30-065	Front Panel	1
	HB-516-18-100	Hex Bolt, $\frac{5}{16} - 18 \times 1$	2
	HNFL-516-18	Flange Lock Nut, $\frac{5}{16} - 18$	2
24	31-043	Singel Bank Valve	1
	31-017	Valve Mount	1

ENGINE AND PUMPS DRAWING

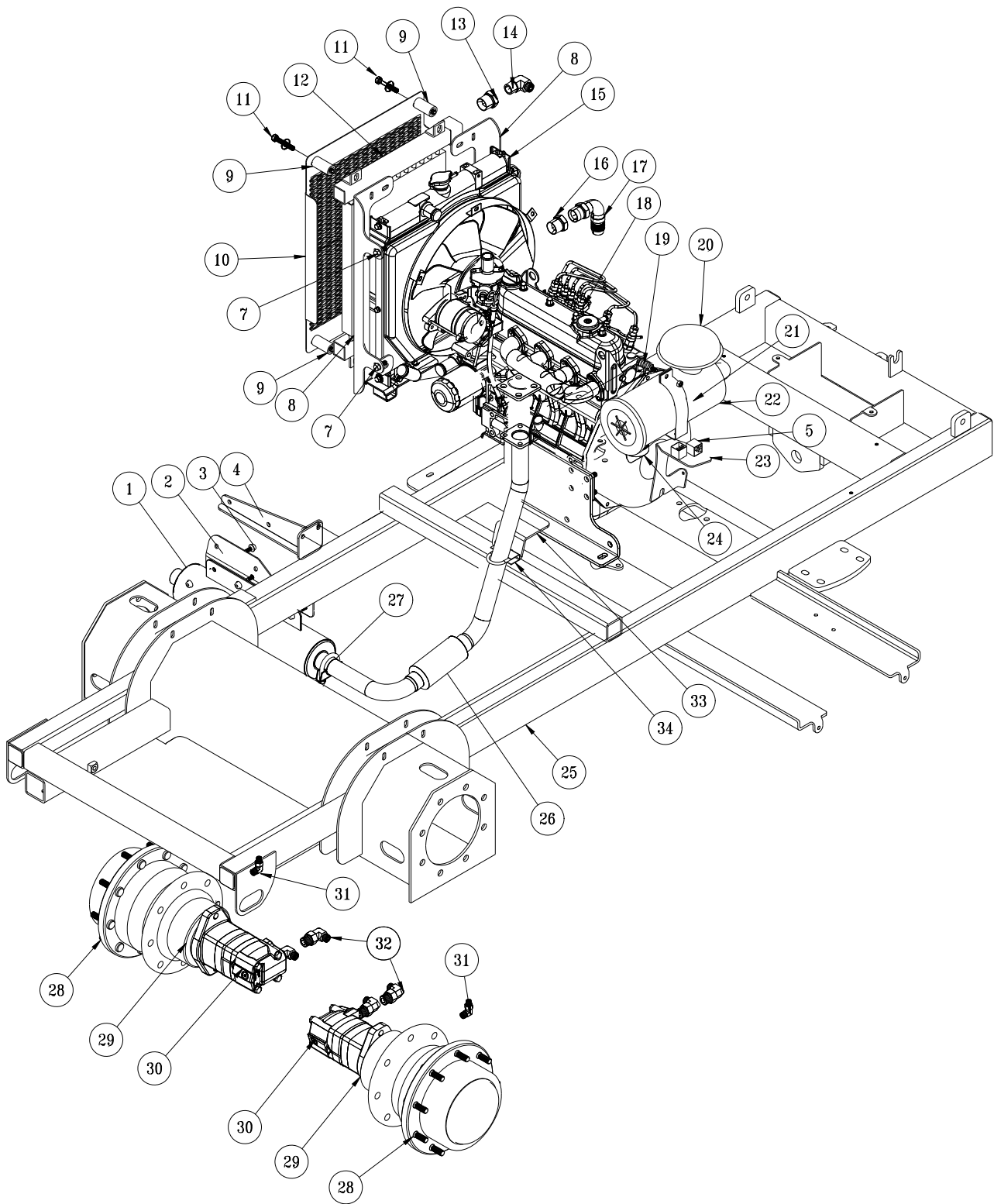
Parts



ENGINE, AND PUMPS PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	30-042	Kubota Diesel Engine 33.5 HP	1
	23-145	O'ring	1
2	30-033	Throttle Cable Mount	1
	HBM-8-1.25-25	Bolt #8-1.25 x 25	2
	HWLM-8	#8 Lock Washer	2
3	42-004-02	Air Cleaner Cap	1
4	30-041	Right Engine Mount	1
5	48-109	Spring	1
6	30-037	Shift Arm	1
	HB-14-20-075	Bolt 1/4 - 20 x 3/4	2
	HNCL-14-20	Center Lock Nut 1/4 - 20	2
7	18-333	Adapter	1
8	23-143	Connector	1
9	18-403	Adapter	2
10	30-031	Cable Mount	1
11	30-102	Eaton Closed Loop Pump	1
12	18-349	Straight Thread Reducer	1
13	23-190	45° Elbow 3/4 MPT	2
15	18-350	3/8 Elbow	1
16	23-191	Elbow	1
17	30-098	Gear Pump	1
	30-098-01	Seal Kit	1
18	30-029	Centering Arm Mount	1
19	30-082	Idler Arm	1
	HMB-12-14	Machine Bushing 1/2 -14GA	
	HP-18-075	Cotter Pin 1/8 x 3/4	1
20	18-404	Adapter	1
21	18-405	Run Tee	1
22	14-266	Ball Bearing	1
	42-212	Shift Arm Spacer	1
	HB-38-16-200	Bolt 3/8 -16 x 2	1
	HW-38	Washer 3/8	2
	HN-38-16	Nut 3/8 - 16	1
23	30-036	Timer Spring Mount	1
	HB-12-13-125	Bolt 1/2 - 13 x 1 1/2	1
	HWL-12	Lock Washer 1/2	1
24	30-042-02	Air Cleaner	1
	30-042-05	Element	1
25	30-038	Kubota Spacer	2
26	HBM-10-1.5-30	Bolt #10 - 1.5 x 30	12
	HWLM-10	#10 Lock Washer	12
27	30-040	Left Engine Mount	1
28	30-042-01	Engine Insulators	4
	HB-38-16-100	Bolt 3/8 - 16 x 1	8
	HNFL-38-16	Flange Lock Nut 3/8 - 16	8
29	30-064	Motor Washers	4
	HB-716-14-300	Bolt 7/16 - 14 x 3	4
	HW-716	Washer 7/16	4
	HNTL-716-14	Lock Nut 7/16	4
30	50-111	Muffler Clamp	1
31	31-042	Muffler Support	1

COOLER AND EXHAUST DRAWING



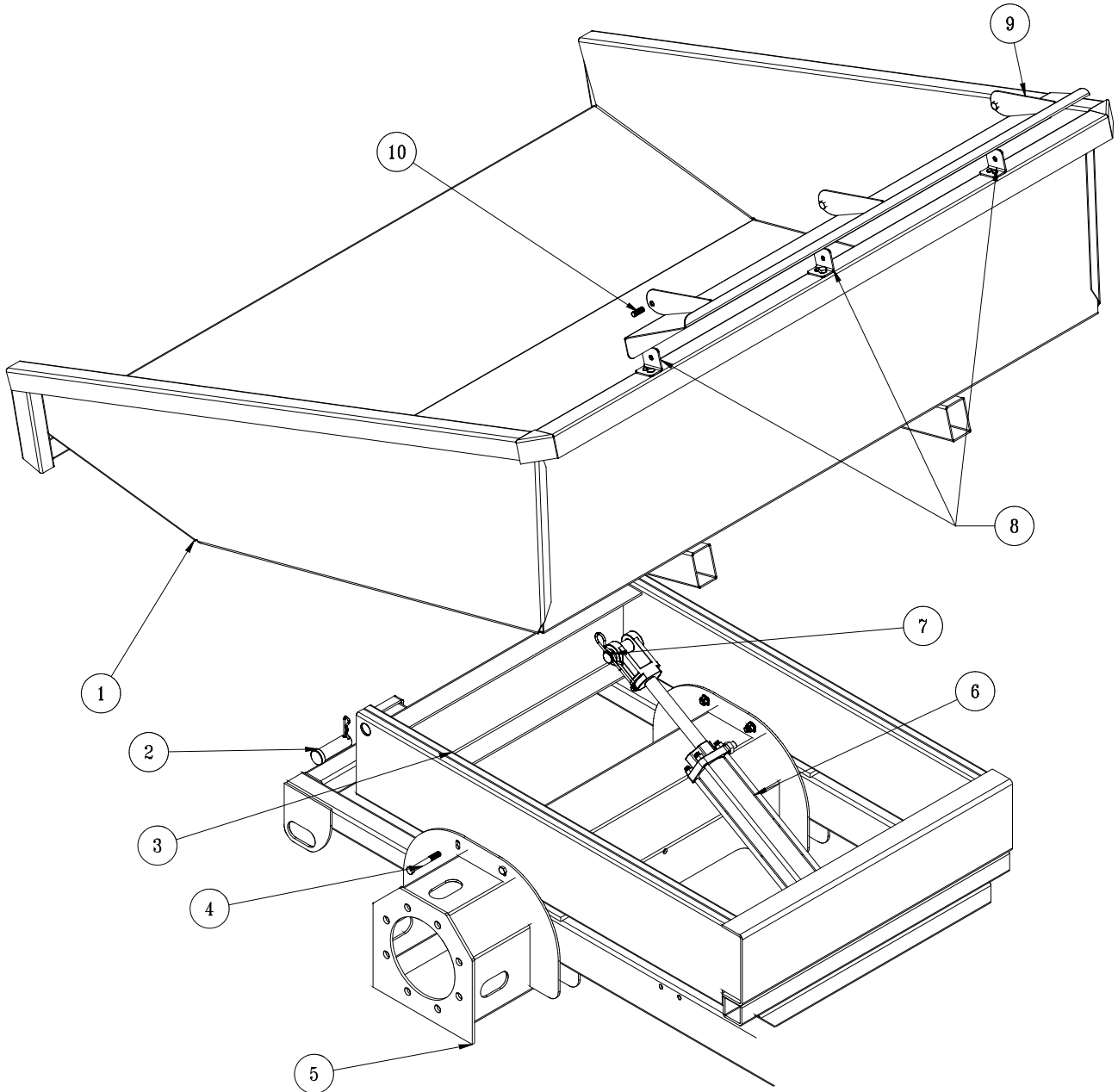
Parts

COOLER AND EXHAUST PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	30-133	Muffler	1
2	31-034	Muffler Hanger	1
3	HBFL-516-18-075	Flange Bolt, $\frac{5}{16}$ - 18 x $\frac{3}{4}$	4
	HNFL-516-18	Flange Nut, $\frac{5}{16}$ - 18	4
4	31-012	Muffler Mount	1
5	30-042-06	Relay (part of engine)	1
6	77-223	Timer (part of engine)	1
7	HBM-6-1-16	Metric Bolt M6 - 1 - 16	4
	HWLM-6	Metric Washer M6	4
	HW-14	Washer $\frac{1}{4}$	4
8	30-028	Cooler Mount	2
9	60-406	Spacer	4
10	30-043	Oil Cooler Cover	1
11	HB-38-16-275	Bolt $\frac{3}{8}$ - 16 x $2\frac{3}{4}$	4
	HNFL-38-16	Flange Lock Nut $\frac{3}{8}$ - 16	4
12	30-105	Thermal Transfer Heat Exchanger	1
13	18-107	Pipe Thread Reducer	1
14	18-402	$\frac{3}{4}$ x 90° Hose Barb	1
15		Radiator	1
16	18-408	Tube End Reducer	1
17	18-397	90° Hose Barb	1
18	30-042	Kubota 33.5 HP Diesel Engine	1
19		Hardware	
20	42-004-02	Air Cleaner Cap	1
21	30-042-03	Clamp	1
22	30-042-02	Air Cleaner Body	1
	30-042-05	Element	1
	30-042-07	Inlet Hose	1
23	30-036	Timer/Spring Mount	1
24	30-042-04	Evacuator Valve	1
25	31-025	Main Frame	1
26	30-134	Manifold Pipe	1
	77-217	Exhaust Manifold gasket	1
27	50-111	Muffler Clamp	1
28	30-099	Auburn Wheel Drive	2
29	30-100	Micro Spring Hydraulic Brakes	2
30	30-101	Eaton 2000 Series Hydraulic Motor	2
	30-101-11	Seal Kit	2
31	18-394	Elbow	2
32	18-301	Straight Thread Elbow	4
33	31-042	Muffler Support	1
34	50-111	Muffler Clamp	1

31-015 GONDOLA DUMP BOX DRAWING

Parts

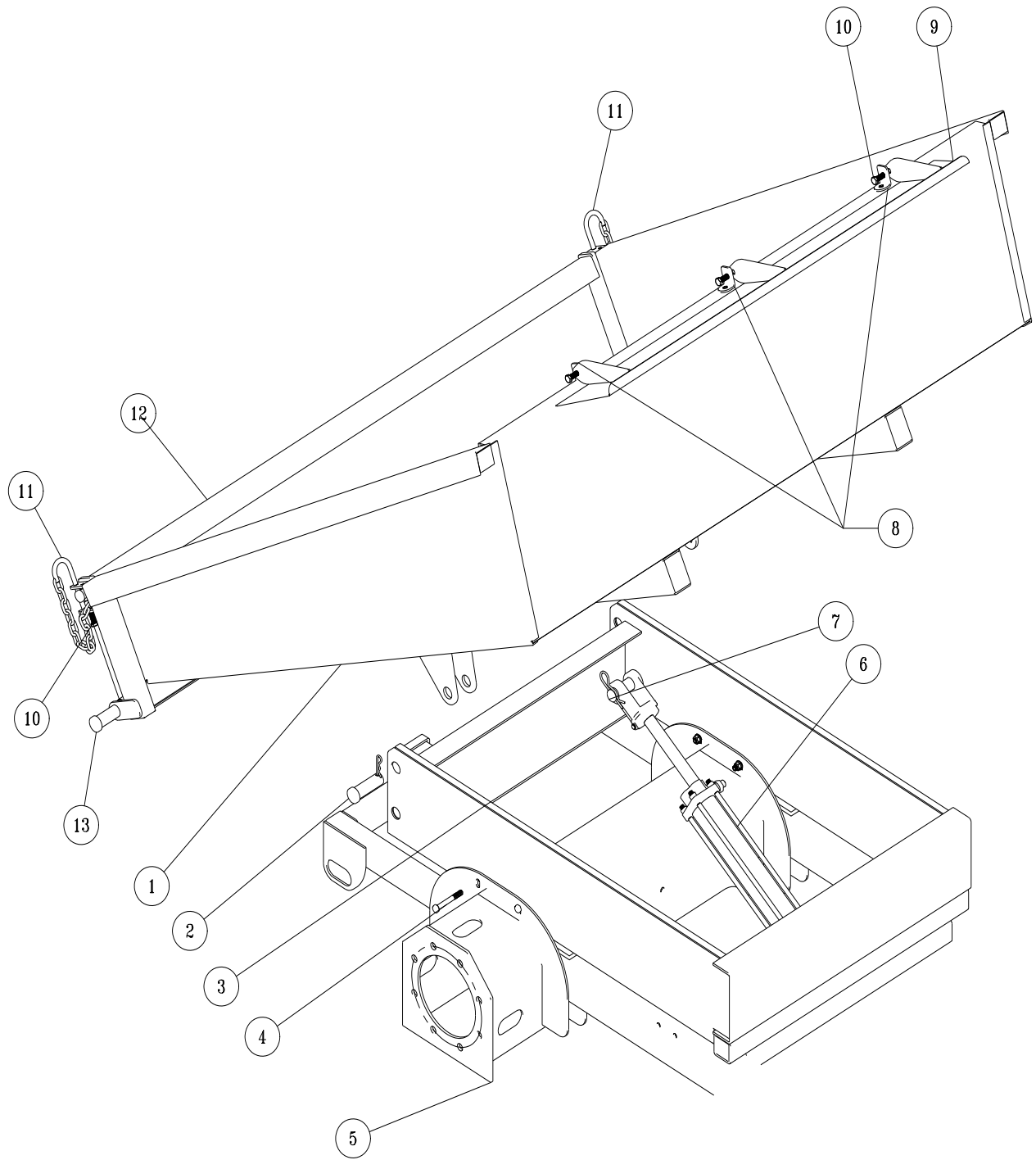


31-015 GONDOLA DUMP BOX PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	31-035	Dump Box	1
2	HCP-100-325	Clevis Pin 1 x 3 ¹ / ₄	2
	HHP-18	Bridge Pin 1 ¹ / ₈	1
3	31-011	Box Base	1
4	HB-38-16-300	Bolt, 3 ³ / ₈ -16 x 3	4
	HNTL-38-16	Lock Nut, 3 ³ / ₈ - 16	4
5	31-025	Main Frame	1
6	72-040	Hydraulic Cylinder	1
	72-040-01	Seal Kit	1
	23-184	Fitting	2
7	72-040-02	Clip and Pin(come with cylinder)	2
8	31-014	Dump Guard Hinge	3
	HB-38-16-100	Bolt, 3 ³ / ₈ -16 x1	6
	HNFL-38-16	Flange Lock Nut, 3 ³ / ₈ - 16	6
9	31-013	Dump Guard	1
10	HB-38-16-100	Bolt, 3 ³ / ₈ -16 x 1	3
	HNFL-38-16	Flange Lock Nut, 3 ³ / ₈ - 16	3

31-028 CARGO TAILGATE BOX DRAWING

Parts

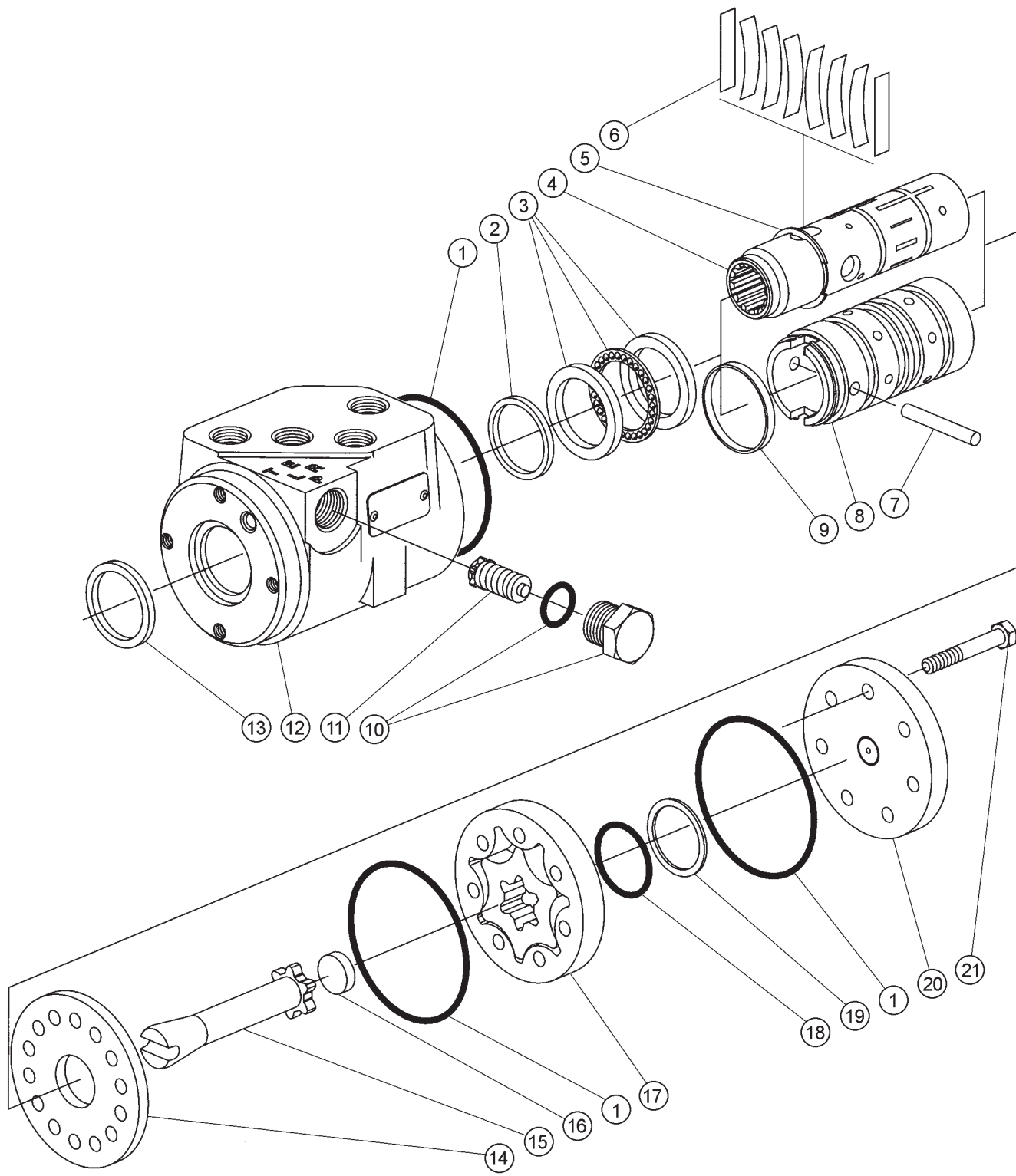


31-028 CARGO TAILGATE BOX PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	31-036	Cargo Box	1
2	HCP-100-325	Clevis Pin 1 x 3 ¹ / ₄	2
	HHP-18	Bridge Pin 1 ¹ / ₈	1
3	31-011	Box Base	1
4	HB-38-16-300	Bolt, 3 ³ / ₈ -16 x 3	4
	HNTL-38-16	Lock Nut, 3 ³ / ₈ - 16	4
5	31-025	Main Frame	1
6	72-040	Hydraulic Cylinder	1
	72-040-01	Seal Kit	1
	23-184	Fitting	2
7	72-040-02	Clip and Pin(come with cylinder)	2
8	31-031	Dump Guard Hinge	3
9	31-030	Dump Guard	1
10	HB-38-16-100	Bolt, 3 ³ / ₈ -16 x1	8
	HNFL-38-16	Flange Lock Nut, 3 ³ / ₈ - 16	8
11	31-032	Tailgate Lock	2
12	31-029	Tailgate	1
13	HCP-34-250	Clevis pin 3 ³ / ₄ x 2 ¹ / ₂	2
	31-033	3 ³ / ₄ " Shaft Collar	2

15-301 ORBITROL DRAWING

Parts



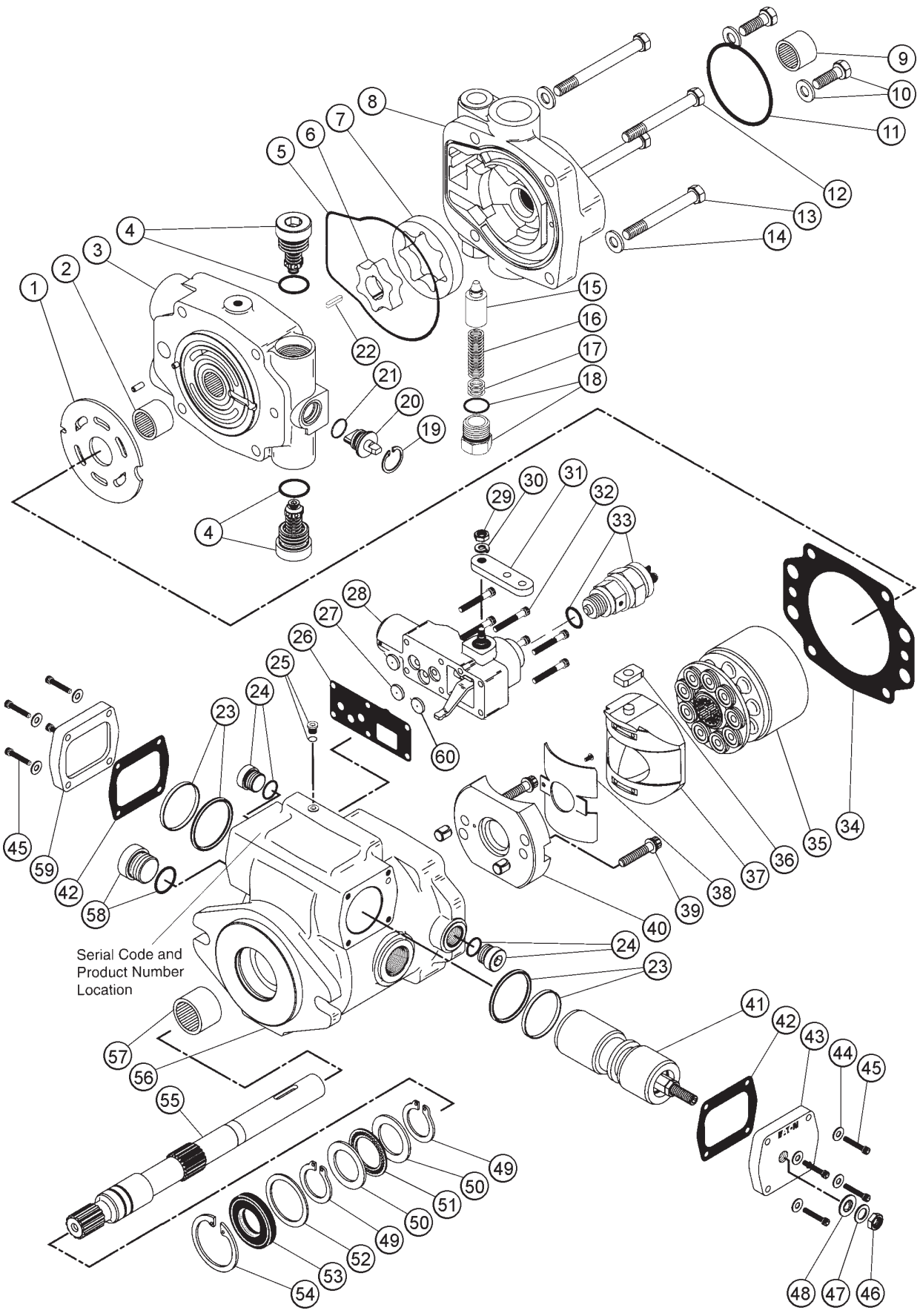
15-301 ORBITROL PARTS LIST

REF #	PART #	DESCRIPTION	QUANTITY
1*		O-Ring Seal	3
2*		Quad Seal	1
3	15-301-14	Bearing Kit	1
		Bearing Race	2
		Bearing	1
4		Spool	1
5	15-301-13	External Retaining Ring	1
6	15-301-15	Spring Centering Kit (Includes Ref# 9)	1
		Spring Spacer	2
		Centering Spring	6
		Spring Retaining Ring	1
7	15-301-08	Pin	1
8		Sleeve	1
9		Retainer	1
10	15-301-11	Plug and O-ring	1
*		O-Ring Seal	1
		Plug	1
11	15-301-12	Relief Valve/Check (1015 psi (70 bar))	1
12		Housing	1
13*		Dust Seal	1
14	15-301-06	Wear Plate	1
15	15-301-07	Drive	1
16	15-301-05	Spacer	1
17	15-301-04	Gerotor	1
18*		O-Ring	1
19*		Seal	1
20	15-301-03	End Cap	1
21	15-301-02	Cap Screw	7
*	15-301-01	Seal Kit	

15-301 ORBITROL SPECIFICATIONS

Maximum System Pressure	1015 psi (70 bar)
Maximum Back Pressure	150 psi (10 bar)
Maximum System Operating Temperature.	200°F (93°C)
Maximum Flow	4 gpm (15 lpm)
Maximum Temperature Differential between Steering Unit and System.	50°F (28°C)
Input Torque Powered	15-25 lb/in @ 100 psi tank pressure (2-3 Nm @ 7 bar)
Input Torque Maximum Non-powered	60 lb/ft (81 Nm)
Rotation Limits	None
Fluid	SAE 10W-40 API Service SJ or higher Motor Oil
Check Valve for Manual Steering	Yes
Relief Valve Setting	1015 psi (70 bar)
Ports	$\frac{9}{16}$ - 18 SAE O-Ring 4 Ports
Displacement	61 cu. in/ R (100 cu cm/R)

30-102 EATON PUMP DRAWING



Serial Code and Product Number Location

Parts

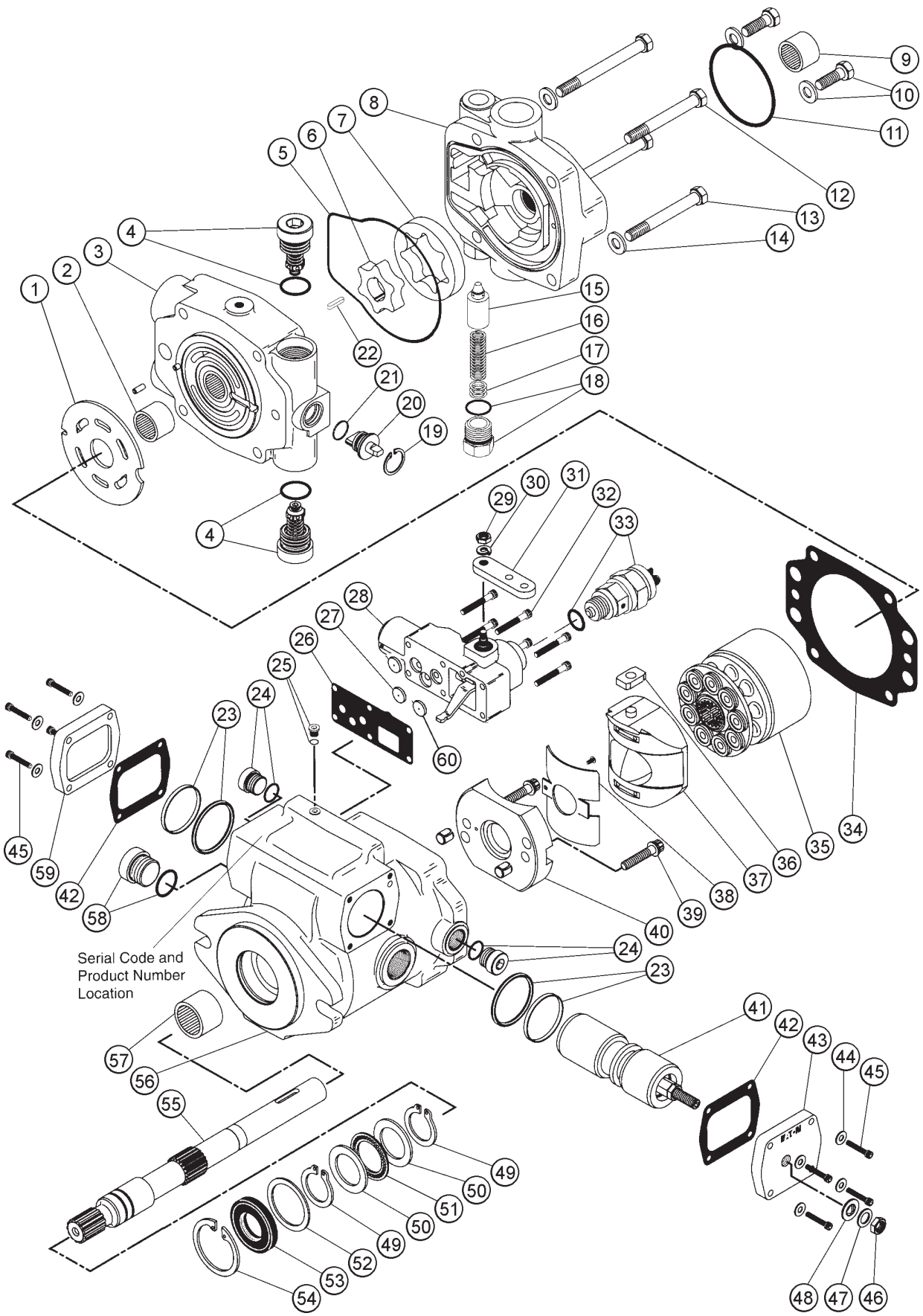
30-102 EATON PUMP PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	33-058-16	Valve Plate (CW Rotation)	1
2	33-058-26	Bearing (Press Fit)	1
3	33-058-25	Back Plate Assembly	1
4	33-058-12	Relief Valve S/A	2
*		O-Ring	2
5*		Molded O-Ring	1
6	33-058-38	Inner Ring Gerotor	1
7	33-058-39	Outer Ring Gerotor	1
8	33-058-35	Charge Pump Adapter Assembly	1
9	33-058-46	Bearing (Press Fit)	1
10		Bolt and Washer	2
11*		O-Ring	1
12	33-058-14	Cap Screw $\frac{3}{8}$ - 16 x 4	2
13	33-058-13	Cap Screw $\frac{3}{8}$ - 16 x $3\frac{1}{2}$	2
14	33-058-44	Washer	4
15	33-058-50	Poppet	1
16	33-058-49	Spring	1
17	33-058-48	Shims	As Required
18	33-058-47	Plug	1
*		O-Ring	1
19*		Retaining Ring	1
20	33-058-41	Dump Valve Actuator	1
21*		Quad-Ring	1
22	33-058-34	Key	1
23*		Seal Sub-Assembly	2
24	33-058-32	Plug S/A	2
*		O-Ring	2
25	33-058-19	Plug Sub-Assembly	1
*		O-Ring	1
26*		Control Housing Gasket	1
27	33-058-40	Control Valve Orifice	1
28	33-058-37	Servo Control Assembly	1
29	33-058-29	Nut	1
30	33-058-30	Lockwasher	1
31	33-058-36	Control Arm	1
32	33-058-15	Cap Screw	6
33	33-058-45	Interlock Switch	1
34*		Housing Gasket	1
35	33-058-04	Rotating Kit Assembly	1
36	33-058-06	Servo Piston Follower	1
37	33-058-09	Cam Plate S/A	1
38	33-058-22	Bushing	1
39	33-058-24	Cap Screw	2
40	33-058-20	Cradle Sub-Assembly	1
41	33-058-05	Servo Piston Assembly	1
42*		Cover Plate Gasket	2
43	33-058-08	Cover Plate	1
44	33-058-43	Washer	8
*	33-058-01	Seal Repair Kit	

(Continued on next page)



30-102 EATON PUMP DRAWING



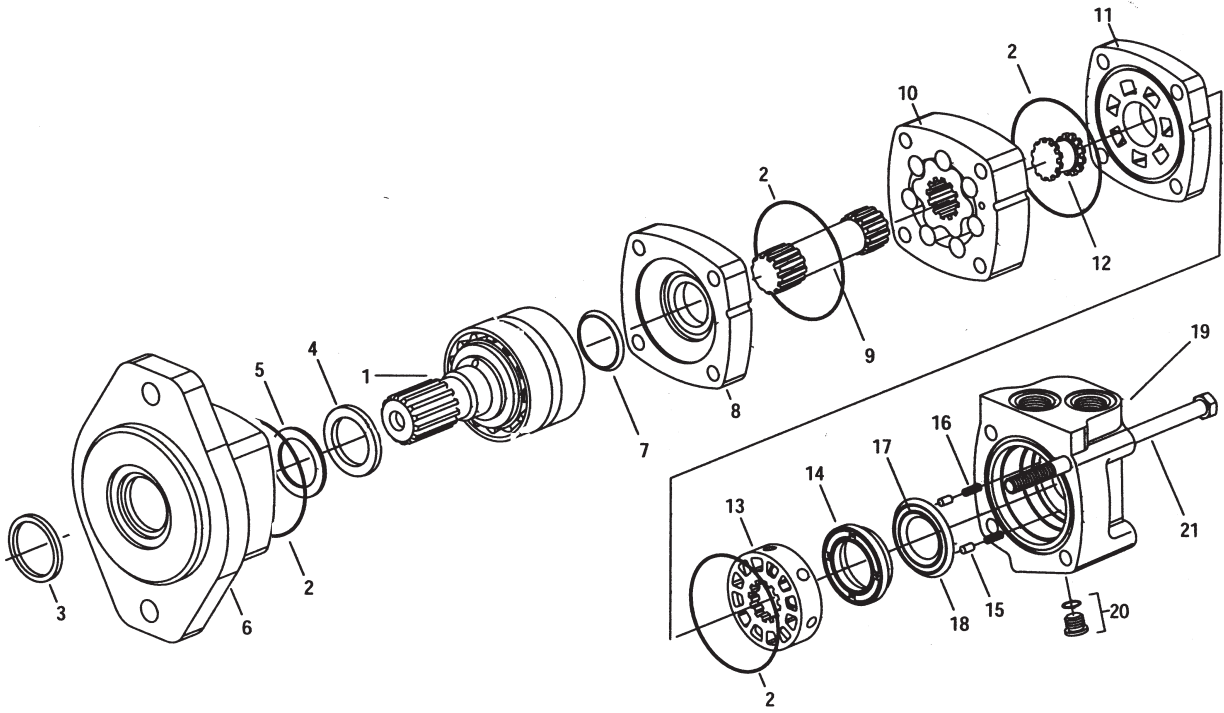
Serial Code and Product Number Location

Parts

30-102 EATON PUMP PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
45	33-058-03	Cap Screw #10 - 24 x 1	8
46	33-058-02	Jam Nut	1
47	33-058-42	Washer	1
48*		Seal Washer	1
49*		Retaining Ring	2
50	33-058-10	Thrust Race	2
51	33-058-11	Thrust Bearing	1
52	33-058-31	Washer	1
53*	33-058-52	Shaft Seal	1
54*		Retaining Ring	1
55	33-058-28	Drive Shaft	1
56	33-058-17	Housing Assembly	1
57	33-058-18	Bearing (Press Fit)	1
58	33-058-33	Plug S/A	1
*		O-Ring	1
59	33-058-07	Cover Plate	1
60	33-058-51	Control Valve Orifice	2
*	33-058-01	Seal Repair Kit	

30-101 EATON MOTOR DRAWING



Parts

30-101 EATON MOTOR PARTS LIST

REF#	PART#	DESCRIPTION	QUANTITY
1	30-101-01	Shaft and Bearing Kit (7/8 splined 13T)	1
2*		Seal	4
3*		Exclusion Seal	1
4*		Shaft Seal	1
5*		Back Up Ring	1
6	30-101-02	Bearing Housing	1
7*		Shaft Face Seal	1
8	30-101-03	Wear Plate	1
9	30-101-04	Main Drive	1
10	30-101-05	Geroler	1
11	30-101-06	Valve Plate	1
12	14-207	Valve Drive	1
13	14-208	Valve	1
14	30-101-07	Balance Ring	1
15	14-210	Balance Ring Pin	2
16	14-209	Compression Spring	2
17*		Inner Face Seal	1
18*		Outer Face Seal	1
19	30-101-08	Valve Housing	1
20	30-101-09	Plug Assembly	1
*		O-ring	1
21	30-101-10	Cap Screw	4
*	30-101-11	Seal Kit	1 per

DECAL LIST

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

16-088	Decal, Moving Parts Hot	Seat Panel
16-228	Decal, Over the Road towing	Front Seat Panel
25-277	Decal, Battery Warning	Battery
25-279	Decal, Safety Warning	Belt Guard
25-286	Decal, Pinch Point	Both Sides of Seat Panel
25-298	Decal, Warning Hot	Cooler Guard, Above Muffel on Tank Side, Panel Behind Seat
25-321	Decal, Refuel w/ Diesel	Front Right Tank
25-356	Decal, Tire Pressure 20psi	Front Tires
25-371	Decal, Diesel	Sides of Engine Cover
25-372	Decal, 4" Star	Rear Tank, Computer Cover
25-376	Decal, 98 dBA	Panel Behind Seat
25-380	Decal, Tire Pressure 30psi	Rear Tires
27-077	Decal Smithco	Steering Wheel
27-093	Decal, Hydraulic Oil Level	Oil Tank
31-026	Decal, Dashboard	Dashboard
30-117	Decal, Ultra Fuel	Fuel Tank
30-097	Decal, Side Control Panel	Right Side Panel
34-147	Decal, Smithco Logo	Nose Cone
30-037	Decal, TCV 5000	Sides of Dump/Cargo Box
30-112	Decal, Speed Control	Hang Tag

QUICK REFERENCE REPLACEMENT PARTS

REPLACEMENT FILTERS

60-215	Hydraulic Oil Filter Assembly
60-334	Oil Filter
30-042-05	Air Cleaner Cartridge
13-488	Key Switch
30-042-08	Fuel Filter Element
30-042-09	Engine Oil Filter
77-217	Exhaust Muffler Gasket

SEAL KITS

15-301	Power Steering Orbital Motor
15-301-01	Seal Kit
15-839	Steering Cylinder
14-531	Seal Kit
30-101	Wheel Motors
30-101-11	Seal Kit
30-102	Hydrostatic Pump
33-058-01	Seal Kit
30-098	Gear Pump
30-098-01	Seal Kit
72-040	Hydraulic Cylinder
72-040-01	Seal Kit
72-040-02	Pin with Clips (2 per Cylinder)
31-043	Single Bank Valve
13-731-01	Seal Kit

FLUIDS

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

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 cov-ered.



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 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 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

