



4130278-Rev D



Parts & Maintenance Manual

Groom Master II™ Sand Trap Rake / Groomer

88008, Kubota D662-E, 3WD

88009, Briggs & Stratton Vanguard, 3WD



WARNING

If incorrectly used, this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to set up, operate, adjust, or service the machine.



When Performance Matters.™

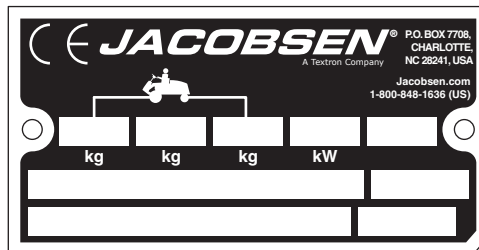
FOREWORD

This manual contains adjustment, maintenance, troubleshooting instructions and parts list for your new Jacobsen machine. This manual should be stored with the equipment for reference during operation.

Before you operate your machine, you and each operator you employ should read the manual carefully in its entirety. By following the safety, operating and maintenance instructions, you will prolong the life of your equipment and maintain its maximum efficiency.

If additional information is needed, contact your Jacobsen Dealer.

The serial plate is located on the seat pan. Jacobsen recommends you record these numbers below for easy reference.



Suggested Stocking Guide

To Keep your equipment fully operational and productive, Jacobsen suggests you maintain a stock of the more commonly used maintenance items. We have included part numbers for additional support materials and training aids.

To order any of the following material:

1. Write your full name and complete address on your order form.

2. Explain where and how to make shipment:

☐ UPS

☐ Regular Mail

☐ Overnight

☐ 2nd Day

3. Order by the quantity desired, the part number, and the description of the part.

4. Send or bring the order to your authorized Jacobsen Dealer.

Service Parts

Qty.	Part No.	Description	Qty.	Part No.	Description
	5000440	Gas Engine Oil Filter		5002644	Diesel Engine Oil Filter
	5000441	Gas Engine Air Filter		5000913	Diesel Engine Air Filter
	5000436	Gas Engine Fuel Filter		550489	Diesel Engine Fuel Filter
	5000913	Gas Remote Air Filter		522972	Hydraulic Oil Filter

Service Support Material

Qty.	Part No.	Description
	4130277	Safety & Operation Manual
	4130278	Parts & Maintenance
	3004386	Diesel Engine Parts Manual

Qty.	Description
	Service Manual

Proposition 65 Warning

This product contains or emits chemicals known to State of California to cause cancer and birth defects or other reproductive harm.

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1 SAFETY

1.1 OPERATING SAFETY



WARNING

EQUIPMENT OPERATED IMPROPERLY OR BY UNTRAINED PERSONNEL CAN BE DANGEROUS.

Familiarize yourself with the location and proper use of all controls. Inexperienced operators should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

1. Safety is dependent upon the awareness, concern, and prudence of those who operate or service the equipment. Never allow minors to operate any equipment.
2. It is your responsibility to read this manual and all publications associated with this equipment (Safety & Operation Manual, Engine Manual, and attachments/accessories instruction sheets). If the operator cannot read English it is the owner's responsibility to explain the material contained in this manual to them.
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. Never allow anyone to operate or service the machine or its attachments without proper training and instructions; or while under the influence of alcohol or drugs.
5. 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.
6. Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by Jacobsen.
7. Stay alert for holes in the terrain and other hidden hazards.
8. Inspect the area where the equipment will be used. Pick up all the debris you can find before operating. Beware of overhead obstructions (low tree limbs, electrical wires, etc.) and also underground obstacles (sprinklers, pipes, tree roots, etc.). Enter a new area cautiously. Stay alert for hidden hazards.
9. Never direct discharge of material toward bystanders, nor allow anyone near the machine while in operation. The owner/operator can prevent and is responsible for injuries inflicted to themselves, to bystanders, and damage to property.
10. Do not carry passengers. Keep bystanders and pets a safe distance away.
11. Never operate equipment that is not in perfect working order or is without decals, guards, shields, discharge deflectors, or other protective devices securely fastened in place.
12. Never disconnect or bypass any switch.
13. Do not change the engine governor setting or overspeed the engine.
14. Carbon monoxide in the exhaust fumes can be fatal when inhaled. Never operate the engine without proper ventilation or in an enclosed area.
15. Fuel is highly flammable; handle with care.
16. Keep the engine clean. Allow the engine to cool before storing and always remove the ignition key.
17. Disengage all drives and engage parking brake before starting the engine (motor). Start the engine only when sitting in operator's seat, never while standing beside the unit.
18. Equipment must comply with the latest federal, state, and local requirements when driven or transported on public roads. Watch out for traffic when crossing or operating on or near roads.
19. Local regulations may restrict the age of the operator.
20. Never use your hands to search for oil leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury.
21. Operate the machine up and down the face of slopes (vertically), not across the face (horizontally).
22. To prevent tipping or loss of control, do not start or stop suddenly on slopes. Reduce speed when making sharp turns. Use caution when changing directions.
23. Always use the seat belt when operating mowers equipped with a Roll Over Protective Structure (ROPS).
Never use a seat belt when operating mowers without a ROPS.
24. Always disconnect battery cables from battery before performing any welding operation on the groomer.

This machine is to be operated and maintained as specified in this manual. It is intended for professional use and is equipped with attachments designed to move, smooth and loosen sandy materials on golf courses and sports fields. It is not intended for use with hard compacted soil or gravel.

1.2 IMPORTANT SAFETY NOTES



This safety alert symbol is used to alert you to potential hazards.

DANGER - Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING - Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION - Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury and property damage. It may also be used to alert against unsafe practices.

NOTICE - Indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage. It may also be used to alert against unsafe practices.

For pictorial clarity, some illustrations in this manual may show shields, guards, or plates open or removed. Under no circumstances should this equipment be operated without these devices securely fastened in place.



WARNING

The Interlock System on this groomer prevents the groomer from starting unless the parking brake is engaged and traction pedal is in neutral. The system will stop the engine if the operator leaves the seat without engaging the parking brake.

NEVER operate groomer unless the Interlock System is working.



WARNING

1. Before leaving the operator's position for any reason:
 - a. Return traction pedal to neutral.
 - b. Disengage all drives.
 - c. Lower all implements to the ground.
 - d. Engage parking brake.
 - e. Stop engine and remove the ignition key.
2. Keep hands, feet, and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
3. Keep the area of operation clear of all bystanders and pets.
4. Never carry passengers, unless a seat is provided for them.

By following all instructions in this manual, you will prolong the life of your machine and maintain its maximum efficiency. Adjustments and maintenance should always be performed by a qualified technician.

If additional information or service is needed, contact your Authorized Jacobsen Dealer who is kept informed of the latest methods to service this equipment and can provide prompt and efficient service. **Use of other than original or authorized Jacobsen parts and Accessories will void the warranty.**

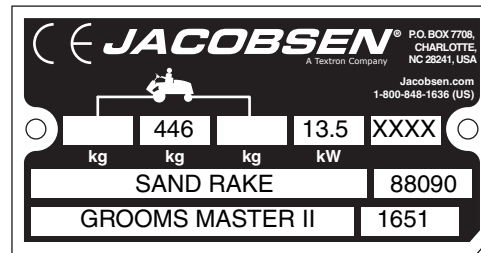
2 SPECIFICATIONS

2.1 PRODUCT IDENTIFICATION

88008 Groom Master II 3-WD Groomer,
18.5 hp diesel engine.
88009 Groom Master II 3-WD Groomer,
18 hp gasoline engine.

Serial Number An identification plate, like the one shown, listing the serial number, is attached to the frame of the groomer on the seat pan.

Always provide the serial number of the unit when ordering replacement parts or requesting service information.



Product	EEC Sound Power	Vibration M/S ²	
		Arms	Body
88008	103.6 dB	7.58	0.517
88009	101.7 dB	2.14	0.323

2.2 ENGINE

Gasoline Engine

Make Briggs & Stratton
Model Vanguard V-Twin OHV
Horsepower 18 hp (13.5 kW) @ 3600 rpm

Note: Actual sustained horsepower will likely be lower than listed in specifications due to operating limitations and environmental factors.

Displacement 34.8 cu. In. (570 cc)
Torque 26 ft. lbs. (35 Nm) @ 2600 rpm
Fuel:
Type Unleaded Gasoline
Rating Min. 85 Octane
Capacity 4.5 U.S. Gal. (17 liters)

NOTICE

Do not use hi-test gasoline or an oil-gasoline mixture. When using blended fuel, do not use a blend with more than 10% ethanol. Under no circumstances should you use a blend with methanol.

Governor Flyweight Mechanical
Lubrication:
Capacity 3.5 pints (1.4 liters)
Type SAE 10W30, SAE 30W
API Classification SF, SG, SH
Air Filter Replaceable Dual Element.
Alternator 16 amp
Cooling System Air Cooled

Diesel Engine

Make Kubota
Model D662-EB
Horsepower 19 hp (13.8 kW) @ 3600 rpm

Note: Actual sustained horsepower will likely be lower than listed in specifications due to operating limitations and environmental factors.

Displacement 40.03 cu. In. (656 cc)
Torque 26 ft. lbs. (35 Nm) @ 2600 rpm
Fuel:
Type No. 2 Diesel
Rating Min. Cetane rating 45
Capacity 4.5 U.S. Gal. (17 liters)
Governor Ball Type Governor
Low Idle 1100 RPM
High Idle 3400 RPM

Lubrication:
Capacity 3.4 quarts (3.2 liter) with filter
Type SAE 10W30, SAE 20W, SAE 30W
API Classification CD, CE
Air Filter Dry type with evacuator valve and service indicator.
Alternator 40 amp
Cooling System Liquid Cooled
Capacity 3qt. (2.8 l) 50/50 water ethylene glycol mix

2.3 GROOMER

Tires	20 x 11 - 10 tubeless	Speed:	
Pressure:.....	3-5 psi (21-34 kPa)	Forward	0 - 9.3 mph (16 kph)
Battery:		Reverse.....	0 - 3.5 mph (8 kph)
Type	12 Volt Maintenance Free	Hydraulic System:	
Group	24F	Capacity.....	3.29 U.S. gal. (12.46 liters)
Parking Brake.....	Mechanical rear wheel disk	Fluid Type	GreensCare 68
	Pedal actuated	Filter.....	Full Flow 10 micron
		Steering	Hydrostatic power steering
		Attachment Lift.....	Hydraulic Double Acting Cylinder

2.4 WEIGHTS AND DIMENSIONS

Dimensions:	Inches	(mm)	Weights:	Lbs.	(kg)
Length (Rear Rake and Front Blade)	90	(2286)	Working Weight With Rake, Less Operator		
Height - Steering Wheel Up	53	(1346)	88008	1017	(461.3)
Wheel Base.....	40	(1016)	88009	984	(446.3)
Width (With Rear Rake)	73.5	(1867)			
Turning Radius (Center of Front Tire)	52	(1321)			
Turning Radius (Inside Rear Tire)	6	(152)			

2.5 ACCESSORIES & SUPPORT LITERATURE

Contact your area Jacobsen Dealer for a complete listing of accessories and attachments.



CAUTION

Use of other than Jacobsen authorized parts and accessories may cause personal injury or damage to the equipment and will void the warranty.

Accessories

Air Blow Gun	JAC5098
Orange Touch-up Paint (12 oz. spray)	554598
Rear Rake	894134
Front Blade.....	88019
Front Blade Hydraulics	88115
Cultivator	88114
Scarifier	891717
Drag Mat	891768
Piggy Back Fan Rake	891763

Support Literature

Safety & Operation Manual.....	4130277
Parts & Maintenance Manual.....	4130278
Diesel Engine Parts Catalog.....	3004386
Service & Repair Manual	

3 ADJUSTMENTS

3.1 GENERAL



WARNING

To prevent injury, lower implements to the ground, disengage all drives, engage parking brake, stop engine and remove key from ignition switch before making any adjustments or performing maintenance.

Make sure the groomer is parked on a solid and level surface. Never work on a groomer that is supported only by the jack. Always use jack stands.

If only the front or rear of the groomer is raised, place chocks in front of and behind the wheels that are not raised.

1. Adjustments and maintenance should always be performed by a qualified technician. If proper

adjustment cannot be made, contact an authorized Jacobsen Dealer.

2. Replace, do not adjust, worn or damaged components.
3. Long hair, jewelry or loose fitting clothing may get tangled in moving parts.



CAUTION

Be careful to prevent entrapment of the hands and fingers between moving and fixed components of the machine.

4. Do not change governor settings or overspeed the engine.

3.2 FAN BELT (DIESEL ENGINES)

Inspect and adjust new belt after first ten hours of operation. Adjust every 100 hours thereafter.

1. Adjust alternator pulley so belt (**B**) deflects 9/32 to 11/32 in. (7 to 9 mm) with a 22 lb. (10 kgf) push at midspan between pulleys.
2. If tension is incorrect, loosen alternator mounting bolts (**A**) and adjust alternator until proper belt tension is achieved. Tighten hardware (**A**).

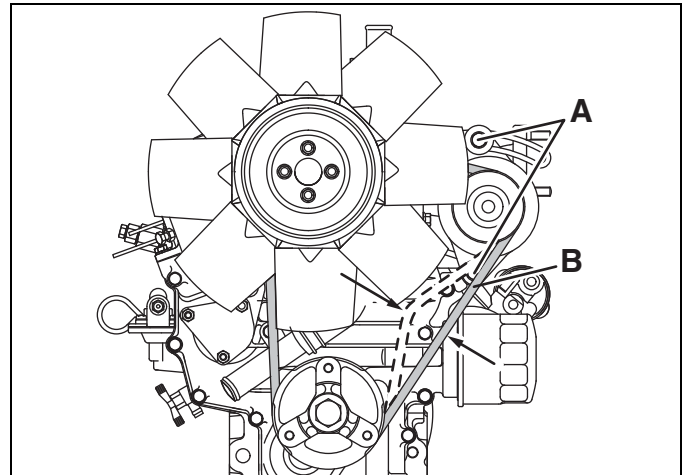


Figure 3A

3.3 NEUTRAL SWITCH

1. Place traction pedal in neutral position, engage parking brake.
2. Adjust switch (**C**) and bracket (**D**) as required until sensing portion of switch is centered under damper mounting hardware.
3. Use a meter to be certain switch contacts are closed with pedal in neutral position and open when pedal is depressed in either the forward or reverse direction.

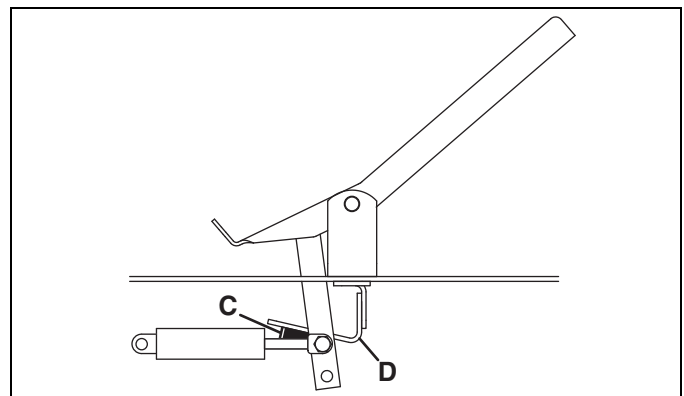


Figure 3B

3.4 NEUTRAL ADJUSTMENT (GAS UNITS)

1. Allow engine and hydraulic system to reach normal operating temperature. Move unit to a flat and level surface.
2. With engine running at full throttle, and traction pedal in neutral, release parking brake. Unit should not “creep” in either direction.
3. If unit creeps in forward direction, remove hardware **(E)** and turn rod ends **(F)** clockwise (Shorten rod) as required.
4. If unit creeps in reverse direction, remove hardware **(E)** and turn rod ends **(F)** counter-clockwise (Lengthen rod) as required.

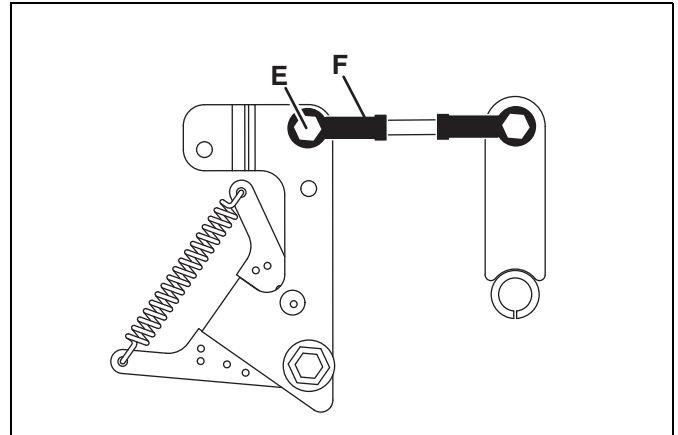


Figure 3C

3.5 NEUTRAL ADJUSTMENT (DIESEL UNITS)

1. Allow engine and hydraulic system to reach normal operating temperature. Move unit to a flat and level surface.
2. With engine running at full throttle, and traction pedal in neutral, release parking brake. Unit should not “creep” in either direction.
3. If unit creeps in forward direction, remove hardware **(E)** and turn rod ends **(F)** counter-clockwise (Lengthen rod) as required.
4. If unit creeps in reverse direction, remove hardware **(E)** and turn rod ends **(F)** clockwise (Shorten rod) as required.

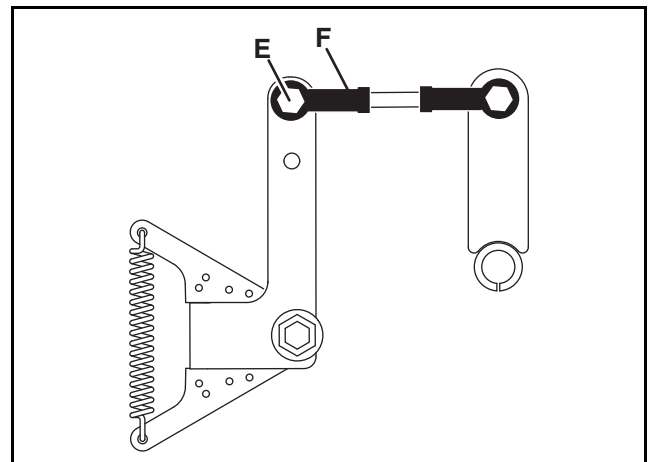


Figure 3D

3 ADJUSTMENTS

3.6 PARKING / SERVICE BRAKE

Inspect brakes pads:

whenever wheels are removed,
if groomer creeps on hills with parking brake applied,
or there is a noticeable increase in stopping distance.

To adjust brake cables:

1. Raise groomer and support the unit using jack stands or blocks so that all three wheels are slightly raised off the ground.
2. Back off nut **(G)**.
3. With the brake pedal all the way up (disengaged) turn in adjusting nut **(H)** and spin wheels slowly by hand until you feel brakes engage and wheels begin to bind.
4. Back off adjuster nut **(H)** slightly until wheels again turn freely.
5. Tighten nut **(G)** to lock adjustment in place.
6. Repeat for second cable.

Before returning unit to operation, drive groomer in a flat, open area and check operation of brakes to make sure they are operating correctly. Check parking brake to make sure it engages properly and prevents the groomer from rolling downhill.

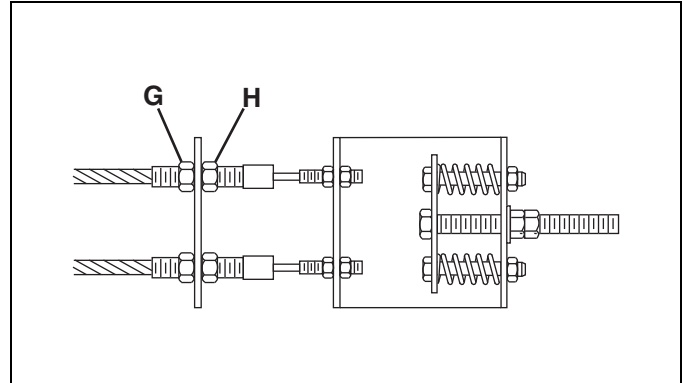


Figure 3E



3.7 TORQUE SPECIFICATION



NOTICE






All torque values included in these charts are approximate and are for reference only. Use of these torque values is at your sole risk. Jacobsen is not responsible for any loss, claim, or damage arising from the use of these charts.

Extreme caution should always be used when using any torque value.

Jacobsen uses Grade 5 bolts as standard, unless otherwise noted.

AMERICAN NATIONAL STANDARD FASTENERS			
SIZE	UNITS	 GRADE 5	 GRADE 8
#6-32	in-lbs (Nm)	20 (2.3)	—
#8-32	in-lbs (Nm)	24 (2.7)	30 (3.4)
#10-24	in-lbs (Nm)	35 (4.0)	45 (5.1)
#10-32	in-lbs (Nm)	40 (4.5)	50 (5.7)
#12-24	in-lbs (Nm)	50 (5.7)	65 (7.3)
1/4-20	in-lbs (Nm)	95 (10.7)	125 (14.1)
1/4-28	in-lbs (Nm)	95 (10.7)	150 (17.0)
5/16-18	in-lbs (Nm)	200 (22.6)	270 (30.5)
5/16-24	in-lbs (Nm)	240 (27.1)	300 (33.9)
3/8-16	ft-lbs (Nm)	30 (40.7)	40 (54.2)
3/8-24	ft-lbs (Nm)	35 (47.5)	45 (61.0)

AMERICAN NATIONAL STANDARD FASTENERS			
SIZE	UNITS	 GRADE 5	 GRADE 8
7/16-14	ft-lbs (Nm)	50 (67.8)	65 (88.1)
7/16-20	ft-lbs (Nm)	55 (74.6)	70 (94.9)
1/2-13	ft-lbs (Nm)	75 (101.7)	100 (135.6)
1/2-20	ft-lbs (Nm)	85 (115.3)	110 (149.2)
9/16-12	ft-lbs (Nm)	105 (142.4)	135 (183.1)
9/16-18	ft-lbs (Nm)	115 (155.9)	150 (203.4)
5/8-11	ft-lbs (Nm)	150 (203.4)	195 (264.4)
5/8-18	ft-lbs (Nm)	160 (217.0)	210 (284.8)
3/4-10	ft-lbs (Nm)	170 (230.5)	220 (298.3)
3/4-16	ft-lbs (Nm)	175 (237.3)	225 (305.1)
7/8-14	ft-lbs (Nm)	300 (406.8)	400 (542.4)

METRIC FASTENERS							
SIZE	UNITS	 4.8	 5.8	 8.8	 10.9	 12.9	Non Critical Fasteners into Aluminum
M4	Nm (in-lbs)	1.2 (11)	1.7 (15)	2.9 (26)	4.1 (36)	5.0 (44)	2.0 (18)
M5	Nm (in-lbs)	2.5 (22)	3.2 (28)	5.8 (51)	8.1 (72)	9.7 (86)	4.0 (35)
M6	Nm (in-lbs)	4.3 (38)	5.7 (50)	9.9 (88)	14.0 (124)	16.5 (146)	6.8 (60)
M8	Nm (in-lbs)	10.5 (93)	13.6 (120)	24.4 (216)	33.9 (300)	40.7 (360)	17.0 (150)
M10	Nm (ft-lbs)	21.7 (16)	27.1 (20)	47.5 (35)	66.4 (49)	81.4 (60)	33.9 (25)
M12	Nm (ft-lbs)	36.6 (27)	47.5 (35)	82.7 (61)	116.6 (86)	139.7 (103)	61.0 (45)
M14	Nm (ft-lbs)	58.3 (43)	76.4 (55)	131.5 (97)	184.4 (136)	219.7 (162)	94.9 (70)

3.8 SPECIFIC TORQUE

1. Ball joints: 30-35 ft-lb (40.5 - 47.2 Nm).
2. Bedknife shoe: 25 - 37 ft-lb (34 - 50 Nm).
3. Steering wheel nut: 25 - 30 ft-lb (34 - 41 Nm).
4. Wheel Bolts: 65 - 85 ft lb (88 - 115 Nm).

4 MAINTENANCE

4.1 GENERAL



WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, engage parking brake, stop engine and remove key from ignition switch to prevent injuries.

Make sure the groomer is parked on a solid and level surface. Never work on a groomer that is supported only by the jack. Always use jack stands.

1. Adjustment and maintenance should always be performed by a qualified technician. If proper adjustments cannot be made, contact an Authorized Jacobsen Dealer.
2. Inspect the equipment on a regular basis, establish a maintenance schedule and keep detailed records.
 - a. Keep the equipment clean.

- b. Keep all moving parts properly adjusted and lubricated.
- c. Replace worn or damaged parts before operating the machine.
- d. Keep all fluids at their proper levels.
- e. Keep shields in place and all hardware securely fastened.
- f. Keep tires properly inflated.

3. Long hair, jewelry or loose fitting clothing may get tangled in moving parts.
4. Use the illustrations in the Parts Catalog as reference for the disassembly and reassembly of components.
5. Recycle or dispose of all hazardous materials (batteries, fuel, lubricants, anti-freeze, etc.) according to local, state, or federal regulations.

4.2 ENGINE

IMPORTANT: A separate Engine Manual, prepared by the engine manufacturer, is supplied with this groomer. Read the engine manual carefully until you are familiar with the operation and maintenance of the engine. Proper attention to the engine manufacturer's directions will assure maximum service life of the engine. To order replacement engine manuals contact the engine manufacturer.

The proper break-in of a new engine can make a considerable difference to the performance and life of the engine.

Note: *The groomer is designed to operate most efficiently at the preset governor setting. Do not change the engine governor settings or overspeed the engine.*

During the break-in period, Jacobsen recommends the following:

Diesel Engine:

1. During the first 50 hours of operation, a new engine should be allowed to reach an operating temperature of at least 140°F (60°C) prior to operation at full load.
2. Check the engine oil level twice daily during the first 50 hours of operation. Higher than normal oil consumption is not uncommon during the initial break-in period.
3. Change engine oil and oil filter element after first 50 hours of operation.
4. Check and adjust fan and alternator belts.
5. Refer to Section 5 and Engine Manual for specific maintenance intervals.

If the injection pump, injectors or the fuel system require service, contact an authorized Jacobsen Dealer.

Gasoline Engine:

1. Drive modestly for the first 25 hours at reduced engine speed.
2. Avoid full throttle starts and rapid acceleration.
3. Allow the engine to reach operating temperature before operating at full load.
4. Change the oil and filter after the first 8 hours of operation.
5. Refer to **Section 6.1** and Engine Manual for specific maintenance intervals.

4.3 ENGINE OIL

Check the engine oil at the start of each day, before starting the engine. If the oil level is low, remove oil filler cap and add oil as required.

Diesel Engine:

Perform initial oil change after first 50 hours of operation and every 75 hours thereafter. See Engine Manual.

Use only engine oils with API classification CD/CE.

Above 77°F (25°C)	SAE 30W or SAE 10W30/10W40
32 to 77°F (0 to 25°C)	SAE 20W or SAE 10W30/10W40
Below 32° (0°C)	SAE 10W or SAE 10W30/10W40

Gas Engine:

Perform initial oil change after the first 8 hours of operation. Change oil every 50 hours thereafter.

See the Engine Manual for detailed service information.

After adding or changing oil, start and run engine at idle with all drives disengaged for 30 seconds. Shut engine off. Wait 30 seconds and check oil level. Add oil to bring up to FULL mark on dipstick.

Use only engine oils with API classification SF, SG, or SH.

Above 40° F (5° C)	SAE 30W
0 to 40° F (-18 to 5° C)	SAE 5W30 or SAE 10W30

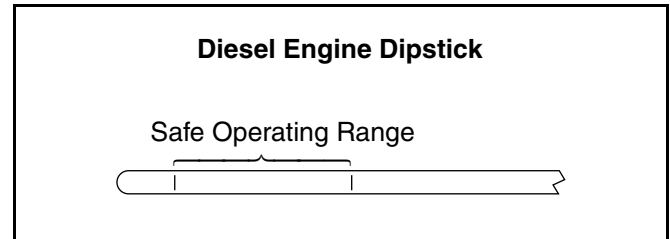


Figure 4A

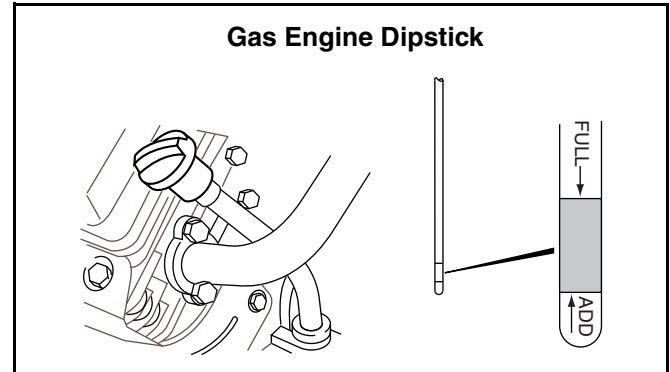


Figure 4B

Figure 4C

4.4 AIR FILTER

The gasoline powered Groom Master II uses a two stage air filtration system. The first stage consists of a heavy duty filter equipped with a filter indicator to alert the operator when a filter change is required. The second stage, mounted to the engine includes a pleated paper element and foam pre-cleaner. Diesel units use only a single stage heavy duty filter with indicator.

Do not remove the element for inspection or cleaning.

Unnecessary removal of the filter increases the risk of injecting dust and other impurities into the engine.

When service is required, first clean the outside of the filter housing, then remove the old element as gently as possible and discard.

1. Carefully clean the inside of the filter housing without allowing dust into the air intake.
2. Inspect the new element. Do not use a damaged element and never use an incorrect element.
3. Assemble the new element and make sure it seats properly.
4. Reassemble cap making sure it seals completely around the filter housing. Dust evacuator must be facing down.
5. Check all hoses and air ducts. Tighten hose clamps.

4 MAINTENANCE

4.5 GAS ENGINE AIR FILTER

1. Remove and service the foam pre-cleaner **(A)** every 25 hours. Replace if dirty or damaged.

To service pre-cleaner, wash in a liquid detergent and water. Squeeze dry in a clean cloth. Saturate in clean engine oil and squeeze out excess oil in a clean, absorbent cloth.

2. Replace the air cleaner cartridge every 100 hours, more often when operating in dusty conditions.

Note: Do not use petroleum solvents such as kerosene to clean cartridge. Do not use pressurized air to clean cartridge.

See the Engine Manual for detailed service information.

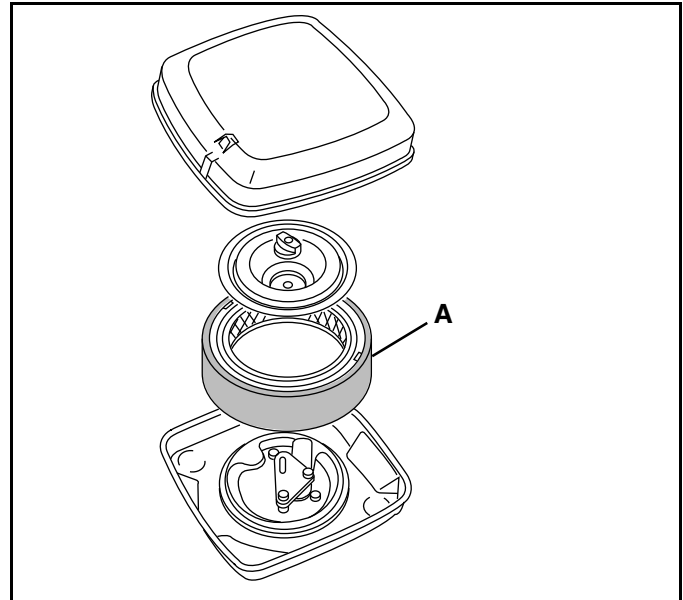


Figure 4D

4.6 FUEL

Handle fuel with care - it is highly flammable. Use an approved container, the spout must fit inside the fuel filler neck. Avoid using cans and funnels to transfer fuel.



WARNING

Never remove the fuel cap from the fuel tank, or add fuel, when the engine is running or while the engine is hot.

Do not smoke when handling fuel. Never fill or drain the fuel tank indoors.

Do not spill fuel and clean spilled fuel immediately.

Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or fuel vapors.

Be sure to reinstall and tighten fuel cap securely.

- Fill the fuel tank to within 1 in. (25 mm) of the bottom of the filler neck.

- Store fuel according to local, state or federal ordinances and recommendations from your fuel supplier.
- Never overfill or allow the tank to become empty.
- Check fuel lines and clamps every 50 hours. Replace fuel lines and clamps at the first sign of damage.

Diesel Engine:

- Use clean, fresh, #2 Diesel fuel. Minimum Cetane rating 45. Refer to Engine Manual for additional information.

Gas Engine:

- Use clean, fresh, regular grade, unleaded gasoline minimum 85 Octane.

NOTICE

Do not use hi-test gasoline or an oil-gasoline mixture. When using blended fuel, do not use a blend with more than 10% ethanol. Under no circumstances should you use a blend with methanol.

4.7 FUEL SYSTEM

Refer to **Section 6.1** for specific maintenance intervals. Before replacing any filter, thoroughly clean the filter housing and the area around the filter. Dirt must not be allowed to enter into fuel system.

For diesel engines, turn the ignition switch to the ON position to start the fuel pump, and bleed the fuel system if the fuel filter and lines have been removed, or the fuel tank has become empty. See Engine Manual.

4.8 BATTERY

Make absolutely certain the ignition switch is OFF and the key has been removed before servicing the battery.



CAUTION

Always use insulated tools, wear protective glasses or goggles and protective clothing when working with batteries. You must read and obey all battery manufacturer's instructions.

Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep vent caps and terminal covers in place.

Always disconnect battery cables from battery before performing any welding operation on the groomer.

Check the electrolyte level every 100 hours. Keep the cable ends, battery and battery posts clean.

Verify battery polarity before connecting or disconnecting the battery cables.

1. When installing the battery, always assemble the RED, positive (+) battery cable first and the ground, BLACK, negative (-) cable last.
2. When removing the battery, always remove the ground, BLACK, negative (-) cable first and the RED, positive (+) cable last.
3. Make sure battery is properly installed and secured to the battery tray.

4.9 JUMP STARTING

Before attempting to "jump start" the groomer, check the condition of the discharged battery. **Section 4.8**



WARNING

Batteries generate explosive hydrogen gas. To reduce the chance of an explosion, avoid creating sparks near battery. Always connect the negative jumper cable to the frame of the groomer with the discharged battery, away from the battery.

When connecting jumper cables:

1. Stop the engine on the vehicle with a good battery.
2. Connect RED jumper cable to the positive (+) terminal on the good battery and to the positive (+) terminal on the "discharged" battery.
3. Connect the BLACK jumper cable from the negative (-) terminal on the good battery to the frame of the groomer with the discharged battery.

After cables have been connected, start the engine on the vehicle with the good battery then start the groomer.

4.10 CHARGING BATTERY



WARNING

Charge battery in a well ventilated area. Batteries generate explosive gases. To prevent an explosion, keep any device that may create sparks or flames away from the battery.

To prevent injury, stand away from battery when the charger is turned on. A damaged battery could explode.

1. Refer to **Section 4.8**. Read the Battery and Charger's manual for specific instructions.
2. Whenever possible, remove the battery from the groomer before charging. If battery is not sealed, check that the electrolyte covers the plates in all the cells.
3. Make sure the charger is OFF. Then connect the charger to the battery terminals as specified in the charger's manual.

4. Always turn the charger OFF before disconnecting charger from the battery terminals.

4 MAINTENANCE

4.11 HYDRAULIC HOSES



WARNING

To prevent serious injury from hot, high pressure oil, never use your hands to check for oil leaks, use paper or cardboard.

Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin. If fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

1. Always lower implements to ground, disengage all drives, engage parking brake, stop engine and remove key before inspecting or disconnecting hydraulic lines or hoses.
2. Check visible hoses and tubes daily. Look for wet hoses or oil spots. Replace worn or damaged hoses and tubes before operating the machine.
3. The replacement tube or hoses must be routed in the same path as the existing hose, do not move clamps, brackets and ties to a new location.
4. Thoroughly inspect all tubes, hoses, and connections every 250 hours.

IMPORTANT: The hydraulic system can be permanently damaged if the oil becomes contaminated. Before disconnecting any hydraulic component, clean the area around the fittings and the hose ends to keep impurities out of the system.

- a. Before disconnecting any hydraulic component, tag or mark the location of each hose then clean the area around the fittings.
- b. As you disconnect the component, be prepared to assemble plugs or caps to the hose ends and open ports. This will keep impurities out of the hydraulic system and also prevent oil spills.
- c. Make sure "O" rings are clean and hose fittings are properly seated before tightening.
- d. Keep the hose from twisting. Twisted hoses can cause couplers to loosen as the hose flexes during operation resulting in oil leaks.
- e. Kinked or twisted hoses can restrict the oil flow causing the system to malfunction and the oil to overheat and also lead to hose failure.

4.12 HYDRAULIC OIL

Refer to **Section 6.1** for specific maintenance intervals.

Drain and replace the hydraulic oil after a major component failure, or if you notice the presence of water or foam in the oil, or a rancid odor (indicating excessive heat).

Always replace the hydraulic filter when changing oil.

To change hydraulic oil:

1. Clean the area around the oil cap to prevent impurities from entering and contaminating the system.
 - a. Oil temperature should be at 60° to 90°F (16° - 32°C). Do not check oil level when oil is hot.
 - b. The oil level in the hydraulic tank should always be at or above the full level mark.
2. Drain and replace the hydraulic oil every 200 hours or after a major component failure, or if you notice the presence of water, foam, or a rancid odor.
3. Remove drain plug from bottom of main tank and loosen or remove breather cap. Check and clean the breather cap, replace as necessary.
4. After oil has drained install drain plug and fill with Jacobsen Hydraulic oil.
5. Purge air from system.

- a. Operate all groomer functions for about 5 minutes to purge air out of the system and stabilize the oil level.
- b. Once the level has stabilized and the air is purged, fill the hydraulic tank to the FULL level.

4.13 HYDRAULIC OIL FILTERS

The hydraulic system is protected by one 10 micron filter.

To replace hydraulic oil filter:

1. Remove the old filter.
2. Fill new filter with oil then install new filter. Hand tighten only.
3. Operate engine at idle speed with hydraulic system in neutral for five minutes.
4. Check hydraulic oil level in reservoir and fill to FULL mark on dipstick.

4.14 ELECTRICAL SYSTEM



CAUTION

Always turn the ignition switch off and remove the negative battery cable (Black) before inspecting or working on the electrical system.

General precautions that can be taken to reduce electrical problems are listed below.

1. Make certain all terminals and connections are clean and properly secured.
2. Check the Interlock System and fuses regularly.
3. Keep the wire harness and all individual wires away from moving parts to prevent damage.
4. Make sure the seat switch harness is connected to the main wire harness.
5. Check the battery and battery charging circuit.
6. Do not wash or pressure spray around electrical connections and components.

4.15 MUFFLER AND EXHAUST



WARNING

Exhaust fumes contain carbon monoxide that is toxic and can be fatal when inhaled.

NEVER operate an engine without proper ventilation.

To protect from carbon monoxide poisoning, inspect the complete exhaust system regularly and always replace a defective muffler.

If you notice a change in the color or sound of the exhaust, stop the engine immediately. Identify the problem and have the system repaired.

Torque all exhaust manifold hardware evenly. Tighten or replace exhaust clamps.

4.16 TIRES

1. Keep tires properly inflated to prolong tire life. Check inflation pressure while the tires are cool. Inspect tread wear.
7. Check the pressure with an accurate, low pressure tire gauge.
8. Keep tires inflated to 3-5 psi - (21-34 kPa)



CAUTION

Unless you have the proper training, tools and experience, DO NOT attempt to mount a tire on a rim. Improper mounting can produce an explosion which may result in serious injury.

4 MAINTENANCE

4.17 WHEEL MOUNTING PROCEDURE



WARNING

Make sure the groomer is parked on a solid and level surface. Never work on a groomer that is supported only by the jack. Always use jack stands.

If only the front or rear of the groomer is raised, place chocks in front of and behind the wheels that are not raised.

1. Remove dirt, grease, and oil from stud thread. Do not lubricate threads.
2. Position wheel on hub and inspect to insure full contact between mounting surface of wheel and hub or brake drum.
3. Finger tighten all hardware then torque hardware in criss-cross order; always tighten nuts in the top position.
4. Check and retorque daily until torque is maintained, 85-95 ft.lbs. (115-128 Nm)

4.18 CARE AND CLEANING

Wash the groomer and implements after each use. Keep the equipment clean.

Note: Do not wash any portion of the equipment while it is hot. Do not use high pressure spray or steam. Use cold water and automotive cleaners.

1. Use compressed air to clean engine and radiator fins. A special blow gun is available through your Jacobsen Dealer.
2. Use only fresh water for cleaning your equipment.

Note: Use of salt water or effluent water has been known to encourage rust and corrosion of metal parts resulting in premature deterioration or failure. Damage of this nature is not covered by the factory warranty.

3. Do not spray water directly at the instrument panel, ignition switch, controller or any other electrical components, or at bearing housings and seals.

4. Clean all plastic or rubber trim with a mild soap solution or use commercially available vinyl/rubber cleaners.

Repair damaged metal surfaces and use Jacobsen touch-up paint. Wax the equipment for maximum paint protection.



CAUTION

Clean grass and debris from attachments, drives, muffler and engine to prevent fires.



WARNING

NEVER use your hands to clean attachments, use a brush. Attachment edges can be extremely sharp and can cause serious injuries.

4.19 RADIATOR (DIESEL ENGINES)



WARNING

To prevent serious bodily injury from hot coolant or steam blow-out, never attempt to remove the radiator cap while the engine is running. Stop the engine and wait until it is cool. Even then, use extreme care when removing the cap.



CAUTION

Do not pour cold water into a hot radiator. Do not operate engine without a proper coolant mixture. Install cap and tighten securely.

Drain and refill annually. Remove the radiator cap, open the engine block drain and the radiator drain. Empty and clean the recovery bottle.

Mix clean water with ethylene glycol based anti-freeze for the coldest ambient temperature. Read and follow the instructions on the anti-freeze container and Engine Manual. Keep radiator air passages clean. Use compressed air (30 psi maximum) to clean the fins.

Check and tighten the fan belt. Replace clamps and hoses every two years.

If you have to add coolant more than once a month, or add more than one quart at a time, have an authorized Jacobsen Dealer check the cooling system.

Check coolant level daily. Radiator should be FULL and recovery bottle should be up to the COLD mark.

4.20 STORAGE

General

1. Wash the groomer thoroughly and lubricate. Repair and paint damaged or exposed metal.
2. Inspect the groomer, tighten all hardware, replace worn or damaged components.
3. Drain and refill radiator.
4. Clean the tires thoroughly and store the groomer so the load is off the tires. If groomer is not on jack stands, check tires at regular intervals and reinflate as necessary.
5. Park machine in designated area. Engage parking brake and remove key. Never store equipment near an open flame or spark which could ignite fuel or fuel vapors. Place key in a secure location to prevent unauthorized use of equipment.
6. Keep the machine and all its accessories clean, dry, and protected from the elements during storage.

Battery

1. Remove, clean, and store battery in upright position on a non-conductive surface (wood) in a cool, dry place. To prevent accelerated discharge, do not store battery on concrete or steel surface.
2. Check and recharge battery every 60 to 90 days while in storage.
3. Store batteries in a cool, dry place. To reduce the self discharge rate, room temperature should not be above 80°F (27°C) or fall below 20°F (-7°C) to prevent electrolyte from freezing.

Engine (General)

1. While the engine is warm, remove the drain plug, drain the oil from the crankcase, and change oil filter. Install drain plug and refill with fresh oil. Let engine cool before storing.
2. After engine has cooled, check coolant level. Radiator should be full and recovery bottle should be up to the **cold** mark.
3. Clean exterior of engine. Paint exposed metal, or apply a light coat of rust preventative oil.
4. If storing indoors, drain fuel from tank.
5. Close fuel shut off valve.

Diesel Engine - Add a fuel conditioner or biocide to prevent gelling or bacterial growth in fuel. See your local fuel supplier.

Gas Engine - For engine protection Jacobsen recommends the use of a fuel additive such as STABIL®. Mix additive

following instructions on container. Run engine for a short time to circulate additive through carburetor.

Remove spark plugs and pour 1 oz. (30 ml) of engine oil into each cylinder. Replace spark plugs and crank slowly (do not start) to distribute oil in cylinder.

Note: Do not use fuel with ethanol during storage.

Attachments

1. Wash the attachments thoroughly, then repair and paint any damaged or exposed metal.
2. Lubricate all fittings and friction points.

After Storage

1. Check and reinstall battery.
2. Check or service fuel filter and air cleaner.
3. Check the radiator coolant level.
4. Check oil level in the engine crankcase and hydraulic system.
5. Fill the fuel tank with fresh fuel. Open fuel shut off valve and bleed the fuel system.
6. Make certain that the tires are properly inflated.
7. Start and operate the engine at 1/2 throttle. Allow enough time for the engine to become properly warmed and lubricated.



WARNING

Never operate the engine without proper ventilation; exhaust fumes can be fatal when inhaled.

5 TROUBLESHOOTING

5.1 GENERAL

The troubleshooting chart below lists basic problems that may occur during start-up and operation. For more detailed information regarding the hydraulic and electrical systems contact your area Jacobsen Dealer.

Symptoms	Possible Causes	Action
Engine will not start.	<ol style="list-style-type: none">1. Parking brake disengaged, traction pedal not in neutral.2. Battery low on charge or defective.3. Fuel tank empty or dirty. Fuel shut off valve closed.4. Circuit breaker blown.	<ol style="list-style-type: none">1. Check Interlock System and start-up procedure.2. Inspect condition of battery and battery connections.3. Fill with fresh fuel. Change fuel filter. Bleed fuel lines. Open fuel shut off valve.4. Reset circuit breaker.
Engine hard to start or runs poorly.	<ol style="list-style-type: none">1. Fuel level low, fuel or fuel filter dirty.2. Air cleaner dirty.3. Injectors, fuel pump.4. Engine problem.	<ol style="list-style-type: none">1. Fill with fresh fuel. Change fuel filter. Bleed fuel lines.2. Inspect and replace air filter.3. Consult engine manual.4. Consult engine manual.
Engine stops.	<ol style="list-style-type: none">1. Fuel tank empty.2. Interlocks not set before leaving operator's seat.	<ol style="list-style-type: none">1. Fill with fresh fuel and bleed fuel lines.2. Engage parking brake and traction pedal in neutral.
Engine overheating.	<ol style="list-style-type: none">1. Coolant level low.(Diesel)2. Air intake restricted.3. Water pump belt broken or loose.(Diesel)4. Engine overload.	<ol style="list-style-type: none">1. Inspect and add coolant.2. Clean cooling air intake.3. Tighten or replace belt.4. Reduce forward speed.
Battery not holding charge.	<ol style="list-style-type: none">1. Loose or corroded battery terminals.2. Low electrolyte.3. Alternator belt loose or broken.4. Charging system defective.	<ol style="list-style-type: none">1. Inspect and clean terminals.2. Refill to correct level.3. Tighten or replace belt.4. See engine manual.
Groomer does not react to traction pedal.	<ol style="list-style-type: none">1. Parking brake engaged.2. Tow Valve Open.3. Low hydraulic oil.	<p>Disengage parking brake.</p> <p>Close Tow Valve.</p> <p>Check reservoir level and fill if needed.</p>
Implement does not raise or lower.	<ol style="list-style-type: none">1. Low hydraulic oil.	<p>Check reservoir level and fill as needed.</p>
Gauges/Indicator not operating.	<ol style="list-style-type: none">1. Fuse blown.2. Loose wiring.	<p>Replace fuse, check bulb.</p> <p>Check electrical connections.</p>

6.1 GENERAL



WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, engage parking brake, stop engine and remove key from ignition switch to prevent injuries.

1. Always clean the grease fitting before and after lubricating.
2. Lubricate with grease that meets or exceeds NLGI Grade 2 LB specifications. Apply grease with a

manual grease gun and fill slowly until grease begins to seep out. Do not use compressed air guns.

3. Periodically apply a small amount of lithium based grease to the operator's seat runners.
4. For smooth operation of all levers, pivot points, and other friction points that are not shown on the lubrication chart apply several drops of SAE 30 oil every 40 hours or as required.
5. Grease steering cylinder, brake pedal and steering pivot fittings every 50 hours.

Recommended Service and Lubrication Intervals

	Every 8-10 Hours	Every 50 Hours	Every 100 Hours	Every 250 Hours	Every 400 Hours	Every 500 Hours	Every 1000 Hours	Yearly	See Section	Lubricant Type
Air Filter (Diesel)	I		AR					R	4.4	
Air Filter (Gas)	I	C	R					R	4.5	
Battery Charge			I						4.8	
Belts	I-A*		I-A			R			3.2	
Brake		I-A*		A					3.6	
Cooling System (Diesel)	I-C-A							R	4.19	IV
Electrical System		I*		I					4.14	
Engine Oil (Diesel)	I	R*	R****						4.3	II
Engine Oil (Gas)	I-R*	R							4.3	II
Engine Oil Filter		R*	R							
Fuel System		I							4.7	
Fuel Filter						R			4.7	
Grease Fittings - All		L	L			L				I
Hydraulic Hoses and Tubes	I***			I					4.11	
Hydraulic Oil	I-A			R**					4.12	III
Hydraulic Oil Filter	I	R*		R					4.13	
Muffler and Exhaust	I			I					4.15	
Radiator Screens	I-C/AR								4.19	
Tires		I-A							4.16	

A - Add or Adjust C - Clean I - Inspect L - Lubricate R - Replace AR - As Required

* Indicates initial service for new machines.

** Or every two years whichever comes first.

*** Inspect visible hoses and tubes for leaks or oil marks.

**** Replace every 75 hours

I - Manual grease gun, NLGI Grade 2 (Service Class LB).

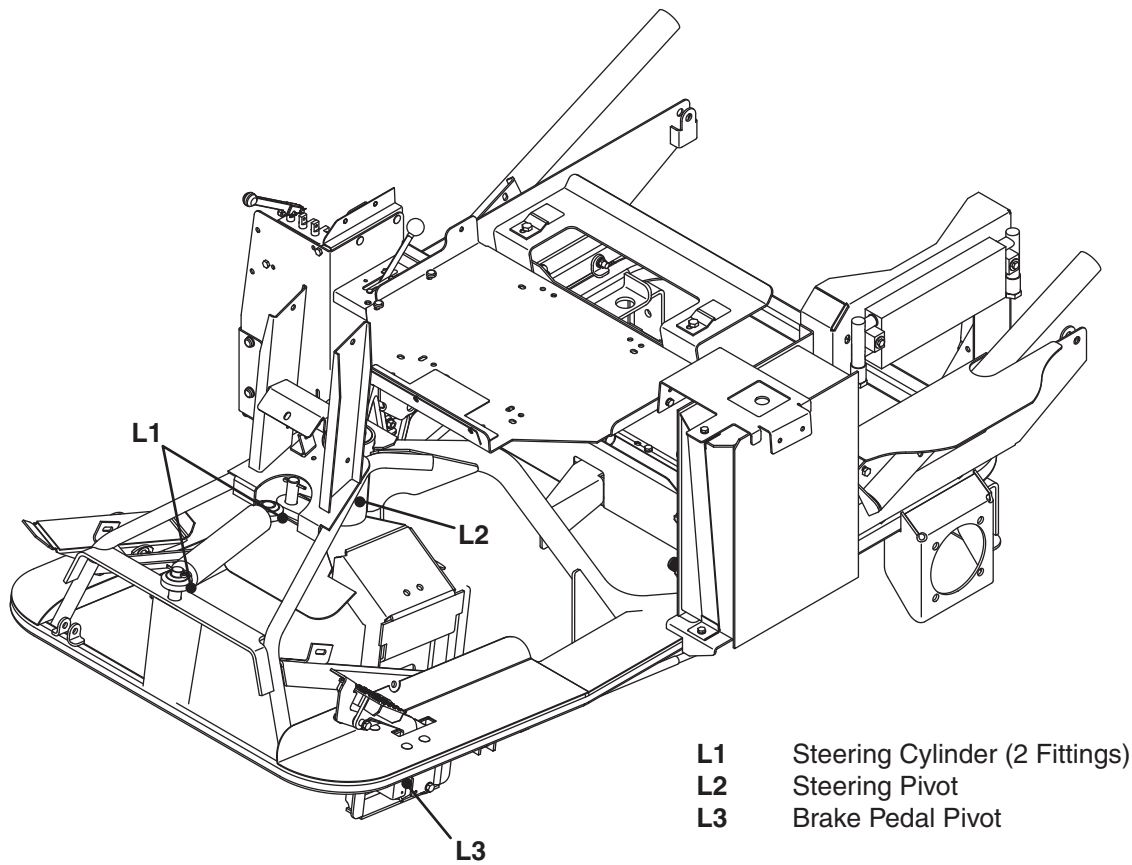
II - Engine Oil - See Section 4.3

III - Use Jacobsen hydraulic fluid: Capacity: 5 gallons (19 Liters). Order Part No. 5003103 for 5 gal. (19 liter), pail. Order Part No. 5003102 for 55 gal. (208 liter) drum

IV - Capacity: 3qt. (2.8 l) 50/50 water ethylene glycol mix

6 MAINTENANCE & LUBRICATION CHARTS

6.2 LUBRICATION CHART



7.1 HOW TO USE THE PARTS CATALOG

Abbreviations

N/S - Not serviced separately, can only be obtained by ordering main component or kit.

AR -Variable quantity or measurement is required to obtain correct adjustment.

Symbols such as ●, next to the item number, indicate that a note exists which contain additional information important in ordering that part.

Indented Items

Indented items indicate component parts that are included as part of an assembly or another component. These parts can be ordered separately or as part of the main component.

Item	Part No.	Qty	Description	Serial Numbers/Notes
● 1	123456	1	Mount, Valve	<i>Indicates a piece part</i>
2	789012	1	Valve, Lift	<i>Includes Items 3 and 4</i>
3	345678	1	• Handle	<i>Serviced part included with Item 2</i>
4	N/S	1	• Seal Kit	<i>Non serviced part included with Item 2</i>
5	901234	1	Screw, 1/4-20 x 2" Hex Head	

7.2 TO ORDER PARTS

- Write your **full** name and **complete** address on the order.
- Explain where and how to make shipment.
- Give product number, name and serial number that is stamped on the name plate or serial plate of your product.
- Order by the quantity desired, the part number, and description of the part as given in the parts list.
- Send or bring the order to an authorized Jacobsen Distributor.
- Inspect all shipments on receipt. If any parts are damaged or missing, file a claim with the carrier before accepting.
- Do not return material without a letter of explanation, listing the parts being returned. Transportation charges must be prepaid.

Use of other than Jacobsen authorized parts will void the warranty.

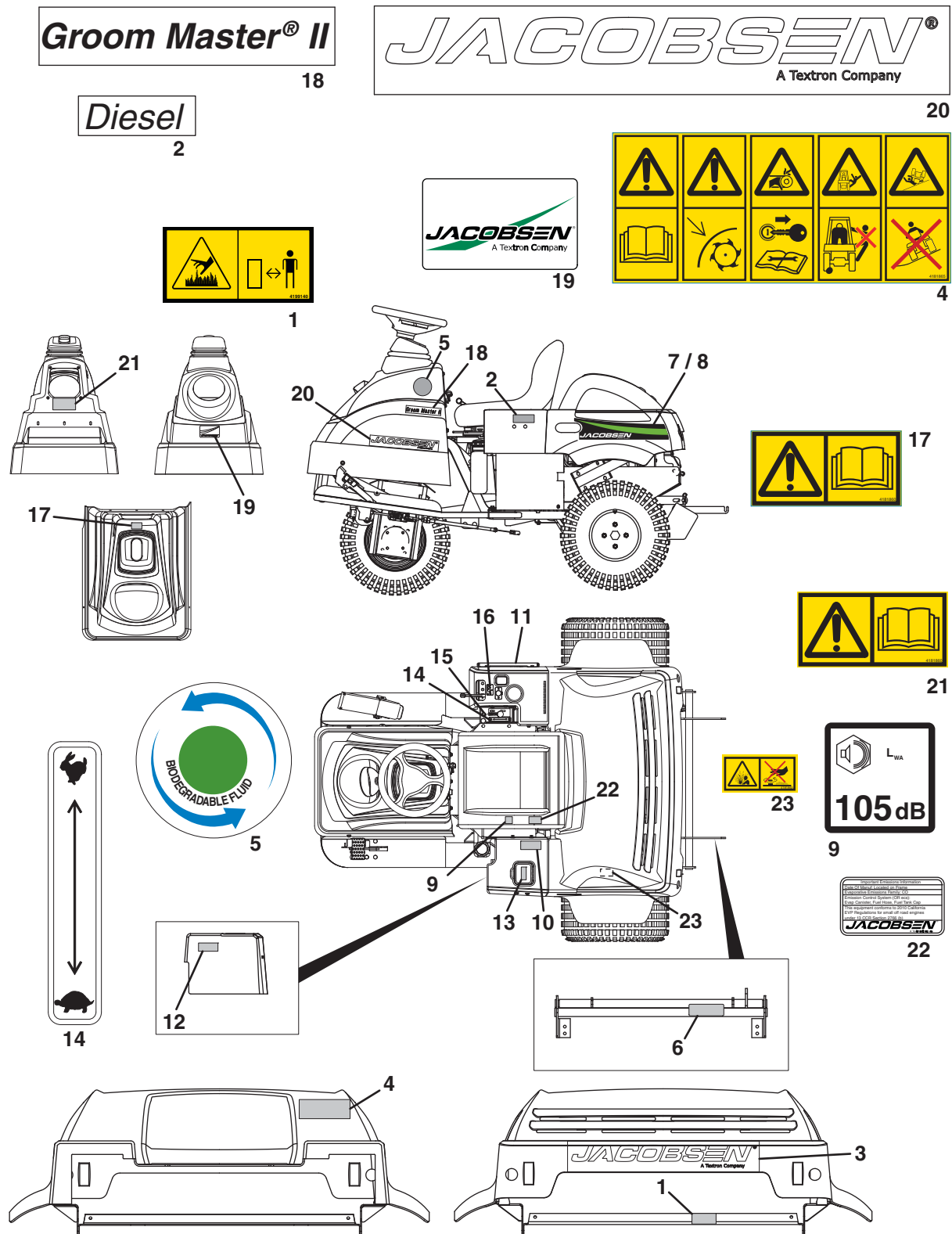
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GROOM MASTER SAND TRAP RAKE

Serial No. All

1.1 Decals



GROOM MASTER SAND TRAP RAKE



6



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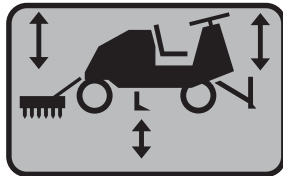
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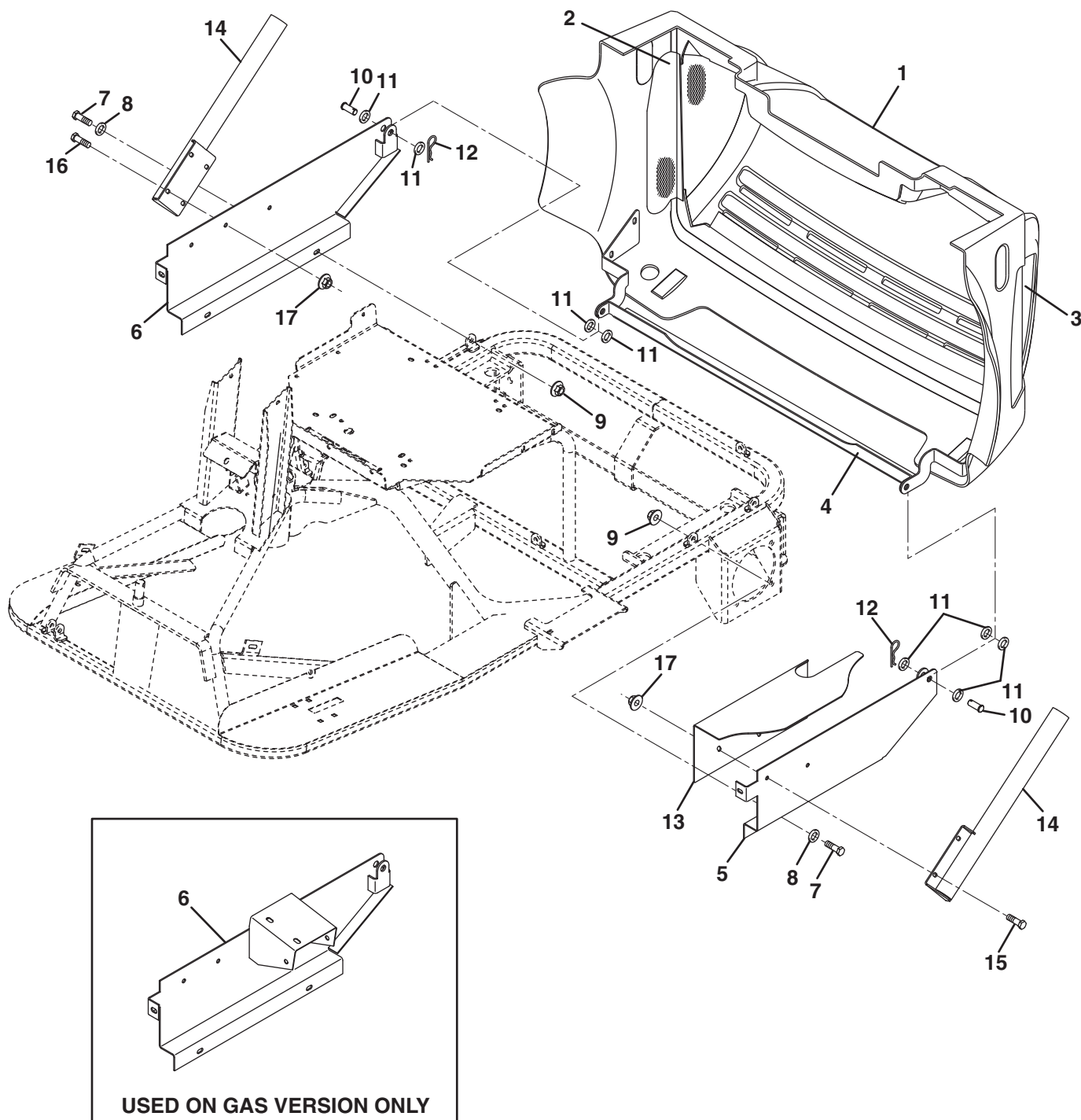
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4199140	1	Decal, Warning (Heat)	R.H. L.H.
2	4124706	1	Decal, Diesel	
3	4124793	1	Decal, Jacobsen	
4	4181865	1	Decal, Instruction	
5	4111408	1	Decal, Bio-Fluid	
6	700877	1	Decal, Warning (Pinch Points)	
7	4136217	1	Decal, Groom Master II	
8	4136218	1	Decal, Groom Master II	
9	4117468	1	Decal, 105 dB Noise	
10	4164281	1	Decal, Read Manual	
11	4181864	1	Decal, Battery	Gas Units Diesel Units
12	3002308	1	Decal, Fuel	
12	3008576	1	Decal, Fuel	
13	3008577	1	Decal, Hydraulic Oil	
14	838363	1	Decal, Throttle	
15	838364	1	Decal, Choke	Gas Units
16	4135931	1	Decal, Implement	
17	4181860	1	Decal, Warning	
18	4124711	2	Decal, Product ID - Groom Master II	Gas Units Only Diesel Units Only
19	4182386	1	Decal, Jacobsen	
20	4124789	2	Decal, Jacobsen	
21	4181860	1	Decal, Warning	
22	N/S	1	Decal, Emmissions	
23	4181862	1	Decal, Radiator Cap Warning	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

2.1 Rear Cover



GROOM MASTER SAND TRAP RAKE

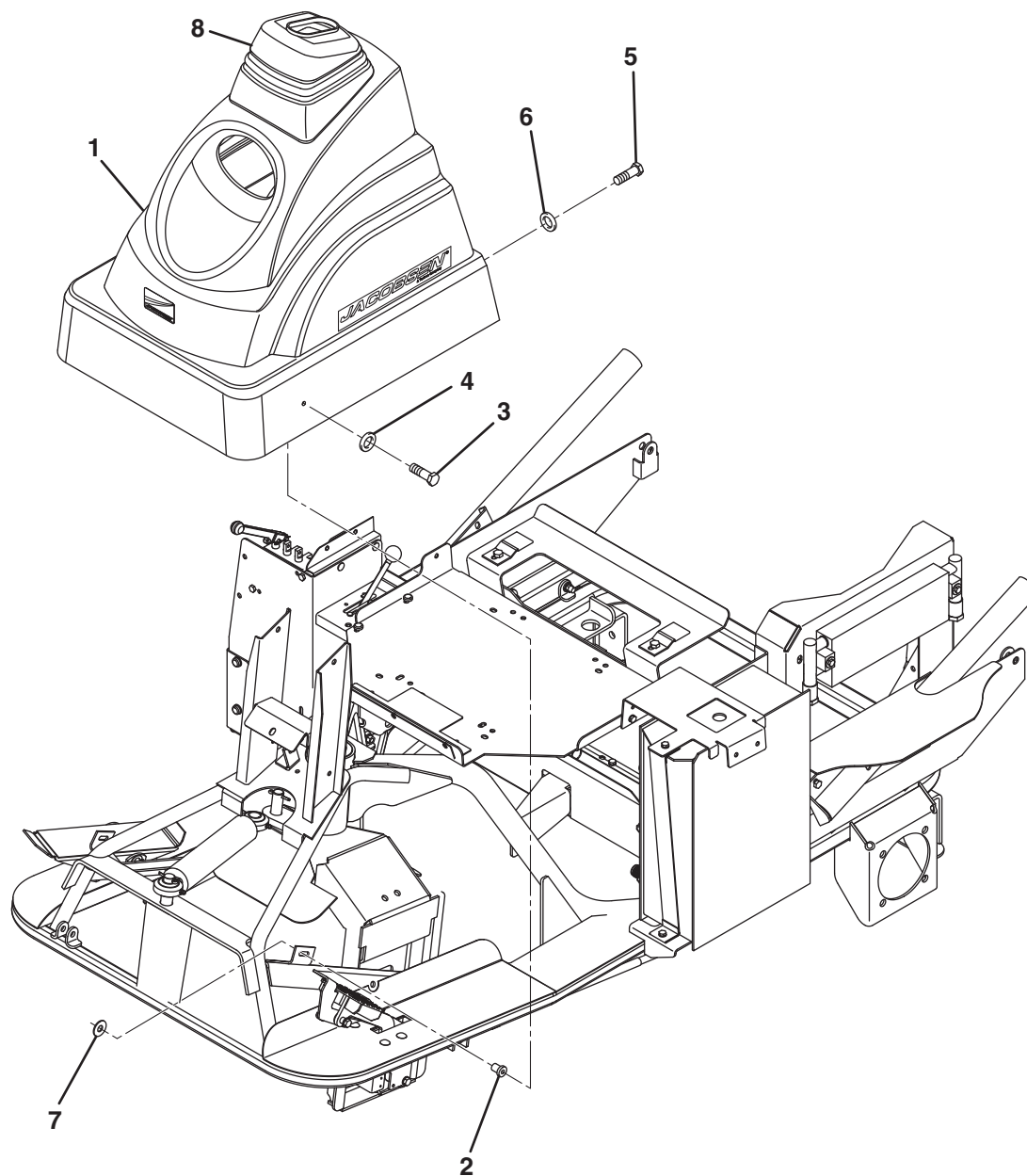
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4124563	1	Rear Cover	Includes Decals
2		NS	• Screen, Hood, Rear-Left	
3		NS	• Screen, Hood, Rear-Right	
4		NS	• Pivot, Rear Cover	
5	4114552.7	1	Panel, Left Side Body	
6	4119745.7	1	Panel, Right Side Body - Diesel	
6	4129504.7	1	Panel, Right Side Body - Gas	
7	306414	4	Screw, 3/8-16 x 1" Hex Head	
8	306981	4	Flat Washer, 3/8	
9	445796	4	Nut, 3/8-16 Spiralock Flange	
10	548458	2	Clevis Pin, 1/2 x 1-1/4"	
11	308091	8	Washer, 1/2	
12	822529	2	Hair Pin, 7/16 x 2"	
13	4132697	1	Splash Guard, Left	
14	4129629	2	Holder Assembly, Rake	
15	306450	2	Screw, 5/16-18 x 3/4" Hex Head	
16	400190	2	Screw, 5/16-18 x 1-1/4" Hex Head	
17	445795	4	Nut, 5/16-18 Spirolock Flange	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

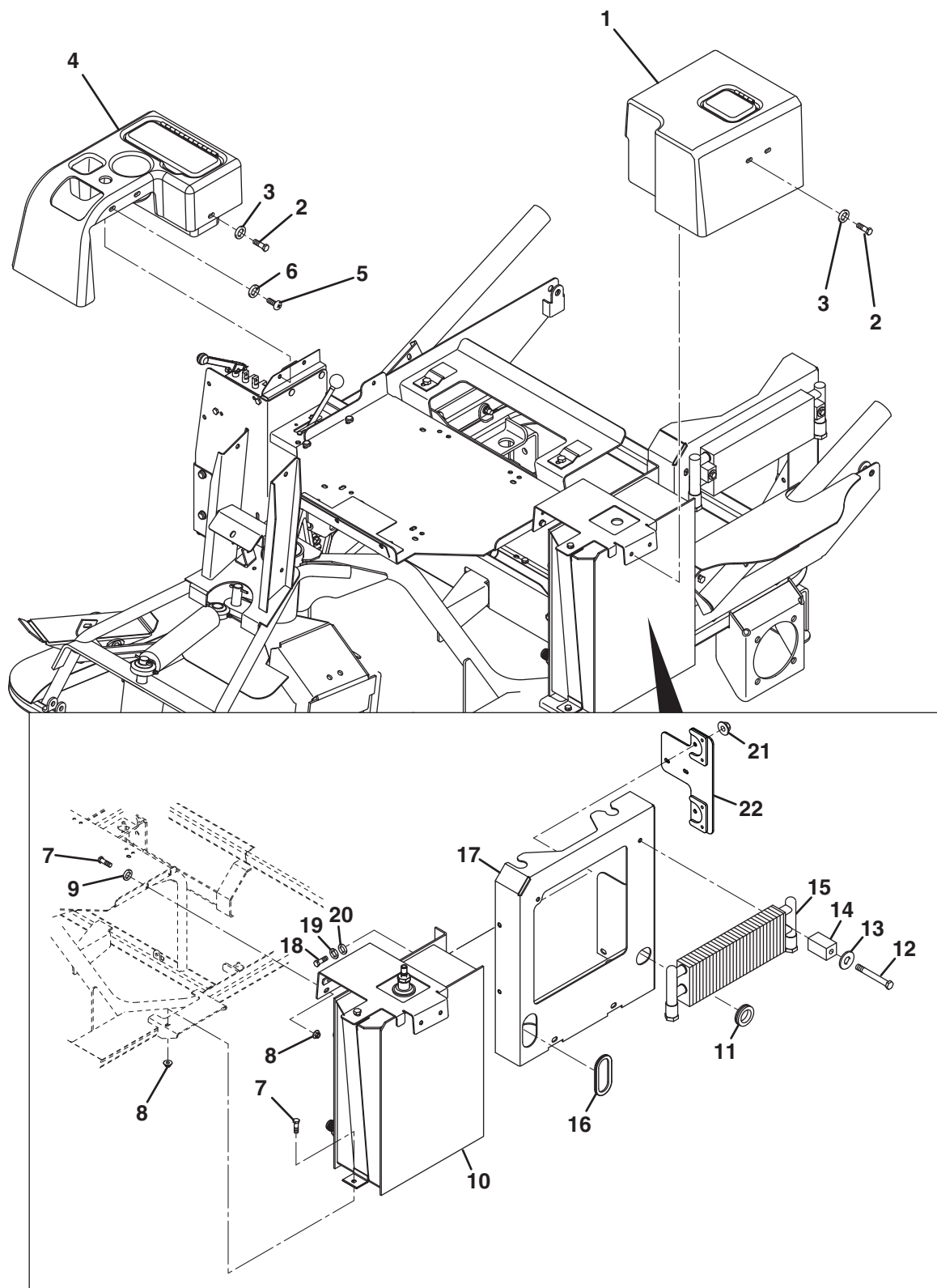
3.1 Front Cover



GROOM MASTER SAND TRAP RAKE

Serial No. All

4.1 Left/Right Hood Assembly



GROOM MASTER SAND TRAP RAKE

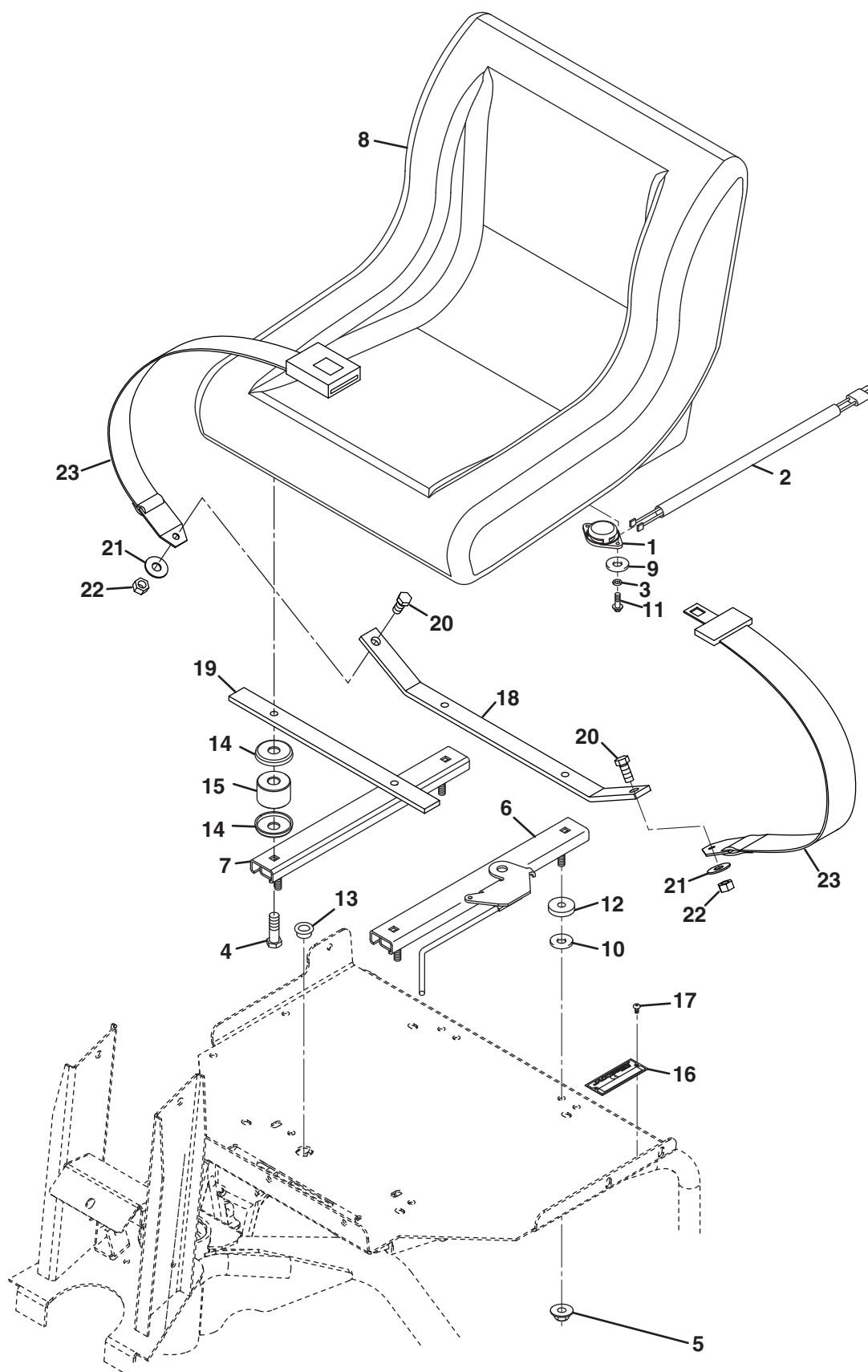
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4125545	1	Left Hood Assembly	Includes decals
2	400108	3	Screw, 1/4-20 X 3/4 Hex Head	
3	821427	4	Washer, Sealing 1/4	
4	4125546	1	Right Hood Assembly	Includes decals
5	404018	6	Screw, 1/4-20 X 3/4 Truss Head	
6	821427	5	Washer, Sealing 1/4	
7	306450	3	Screw, 5/16-18 X3/4" Hex Head	Diesel Units Only
8	445795	3	Nut, 5/15-18 Spiralock Flange	
9	453009	2	Flat Washer, 5/16	
10	4118053	1	Reservoir, Hydraulic	
11	829997	1	Grommet	
12	400196	2	Screw, 5/16-18 x 2" Hex Head	
13	452006	2	Flat Washer, 5/16	
14	832085	2	Mounting Block, Oil Cooler	
15	3008769	1	Oil Cooler, 2 Row	
16	821893	AR	Trim, Push On	
17	4130325	1	Frame, Oil Cooler	Gas Units
17	REF	1	Frame, Radiator	Diesel Units, See 22.1
18	403770	2	Screw, 5/16-18 x 3/4" Hex Flange	Serial No. 88008 - 1601 and Up Serial No. 88009 - 1601~2289
18	400188	2	Screw, 5/16-18 x 1" Hex Head	Serial No. 88009 - 2290 and Up
19	306325	2	Lockwasher, 5/16	Serial No. 88009 - 2290 and Up
20	453009	2	Flat Washer, 5/16	Serial No. 88009 - 2290 and Up
21	445795	2	Nut, 5/16-18 Spiralock Flange	Serial No. 88009 - 2290 and Up
22	4206721	1	Bracket, Check Valve	Serial No. 88009 - 2290 and Up

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

5.1 Seat Assembly



GROOM MASTER SAND TRAP RAKE

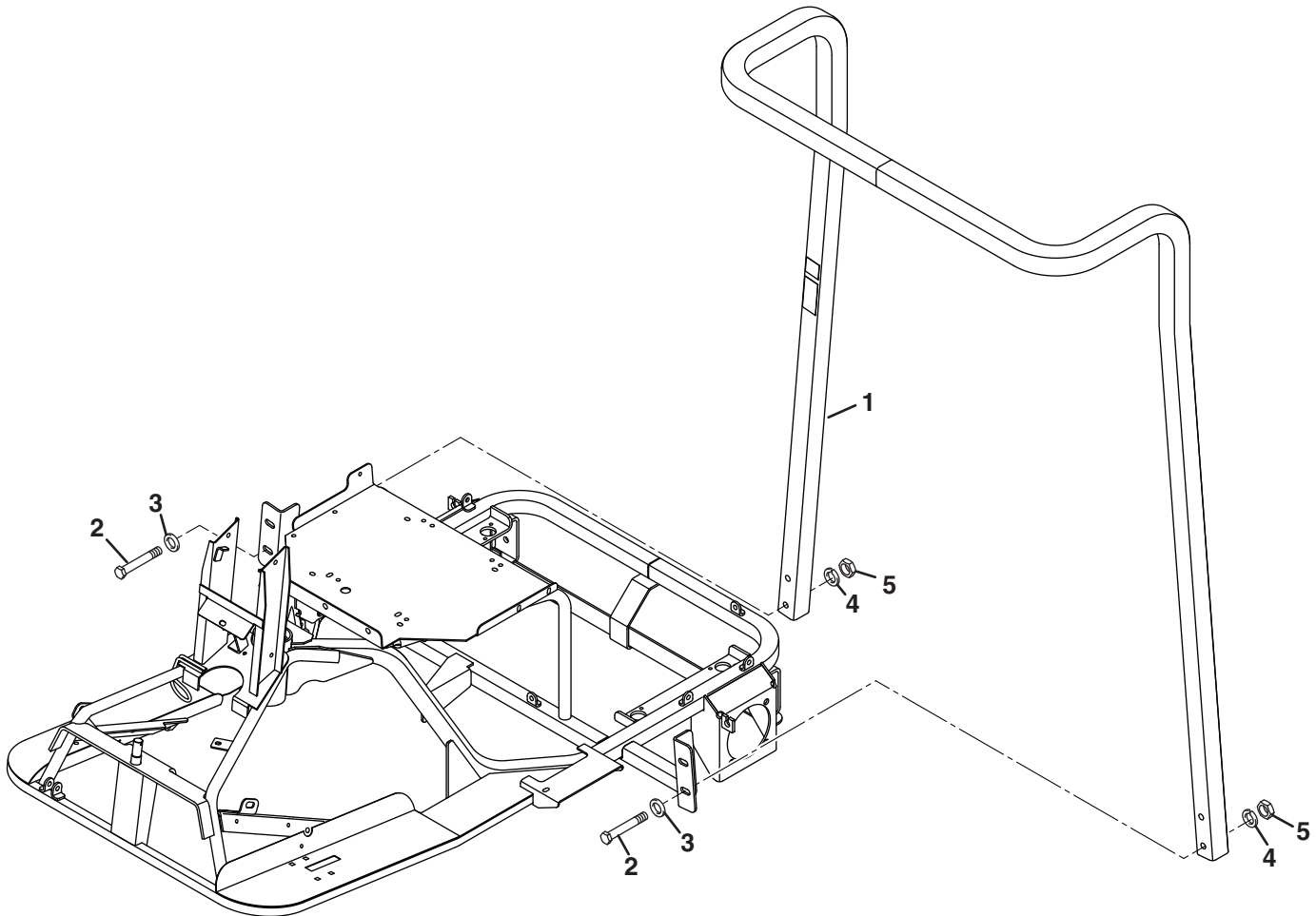
Item	Part No.	Qty.	Description	Serial Numbers/Notes
> 1	158135-01	1	Switch, Seat-milco	REFERENCE SW-4, See 32.1
2	163583	1	Wire Assembly	
3	446128	2	Lockwasher, 1/4"	
4	434032	4	Screw, 5/16-18 X 1-3/4" Socket Head	
5	445795	4	Nut, 5/16-18 Spirallock Flange	
6	523356	1	Adjuster, Latching	
7	523357	1	Adjuster, Slave	
8	547606	1	Seat Assembly	
9	548154	2	Flat Washer, .31 .75 .08 YS	
10	452006	4	Flat Washer, 5/16"	
11	800026	2	Screw, 1/4-20 X 3/4" YS PR G2	
12	831053	8	Spacer, Seat	
13	838748	1	Bushing, Flip Lok .625	
14	553887	8	Washer, Cupped 1-3/8" x 7/16"	
15	553886	4	Cushion, Radiator	
16	REF	1	Plate, "CE" Serial Number	
17	REF	2	Screw, #7 X 5/16 Round Head Drive	
18	4228640	1	Bar, Rear Mounting	
19	4211830	1	Bar, Front Mounting	
20	400370	2	Screw, 7/16-20 x 1" Hex Head	
21	452010	2	Flat Washer, 7/16	
22	444730	2	Locknut, 7/16-20 Hex Center	
23	5000629	1	Seat Belt	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

6.1 ROPS

Serial No. All

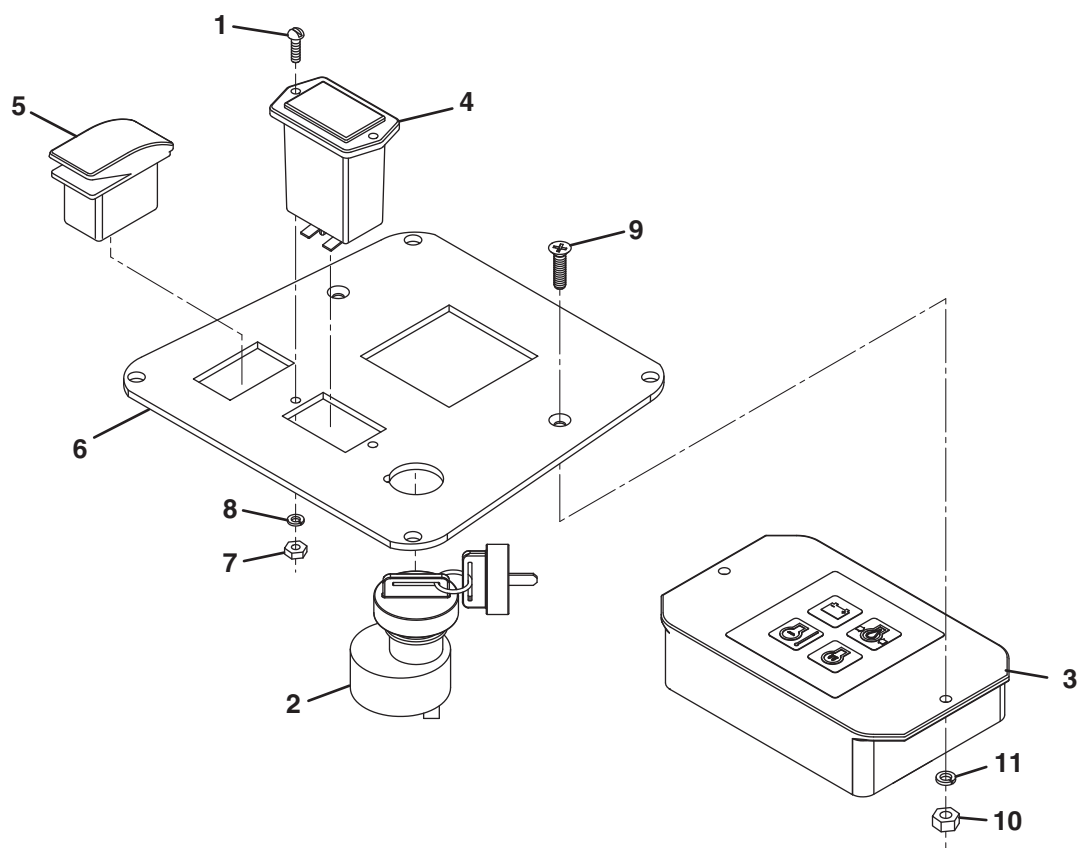


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4211824	1	ROPS	
2	400418	4	Screw, 1/2-13 x 3" Hex Head	
3	455012	4	Flat Washer, 1/2	
4	446152	4	Lockwasher, 1/2	
5	443119	4	Nut, 1/2-13 Hex	

> Change from previous revision

7.1 Control Panel

Serial No. All



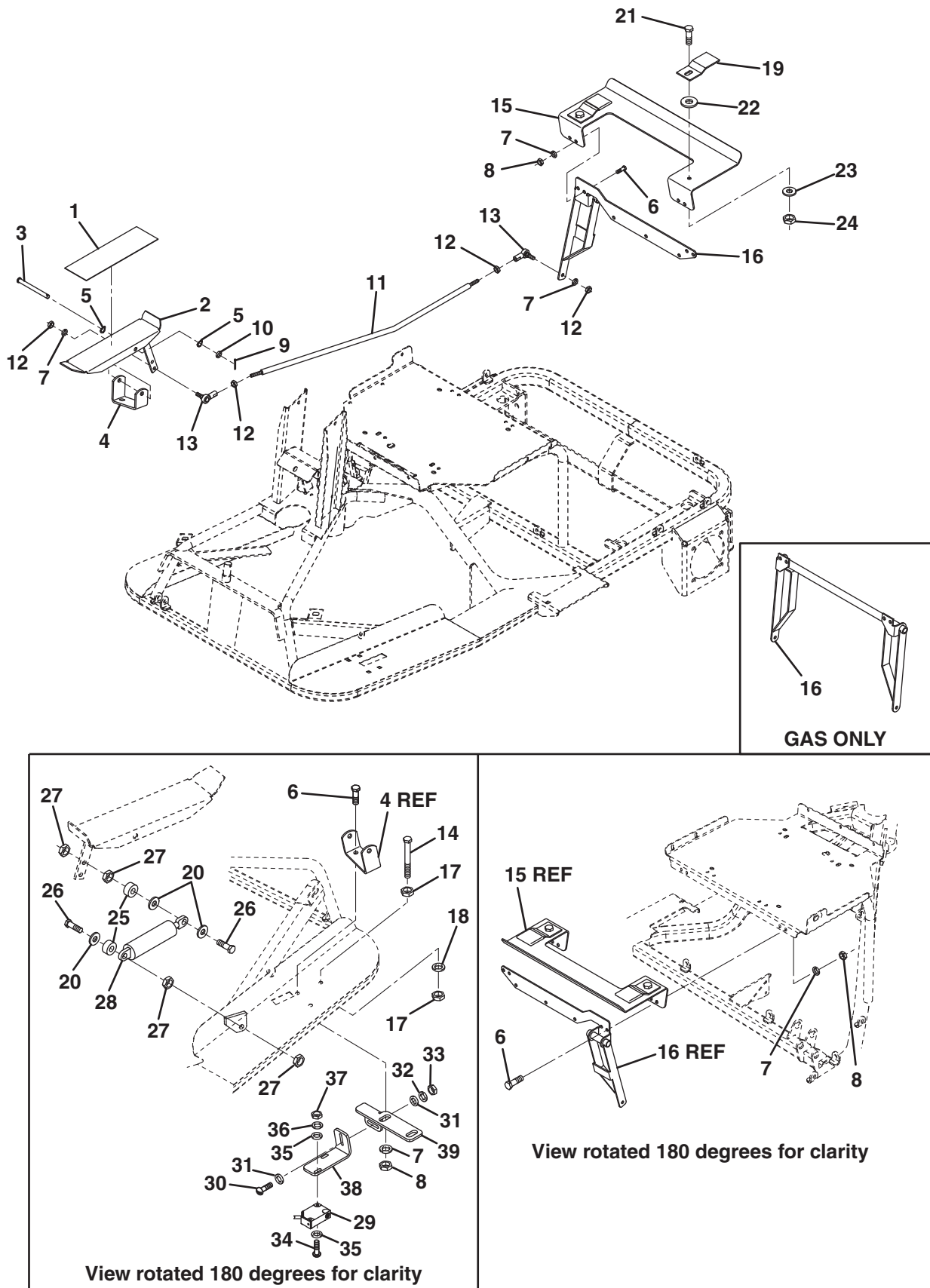
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	402006	2	Screw, #6-32 X 1/2 Round Head	REFERENCE SW-1, See 32.1 REFERENCE U-3, See 32.1 REFERENCE U-2, See 32.1 REFERENCE SW-2, See 32.1
2	4128888	1	Ignition Switch	
3	4129260	1	Controller, Box GM 2	
4	4129683	1	Hourmeter	
5	4130132	1	Switch, Light	
6	4130952	1	Panel, Instrument	
7	444304	2	Nut, #6-32	
8	446106	2	Lockwasher, #6 Heavy	
9	4131297	2	Screw, Philips Countersink	
10	444782	2	Nut, #10-24 Hex Centerlock	
11	446118	2	Lockwasher, #10 Heavy	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

8.1 Traction Control



GROOM MASTER SAND TRAP RAKE

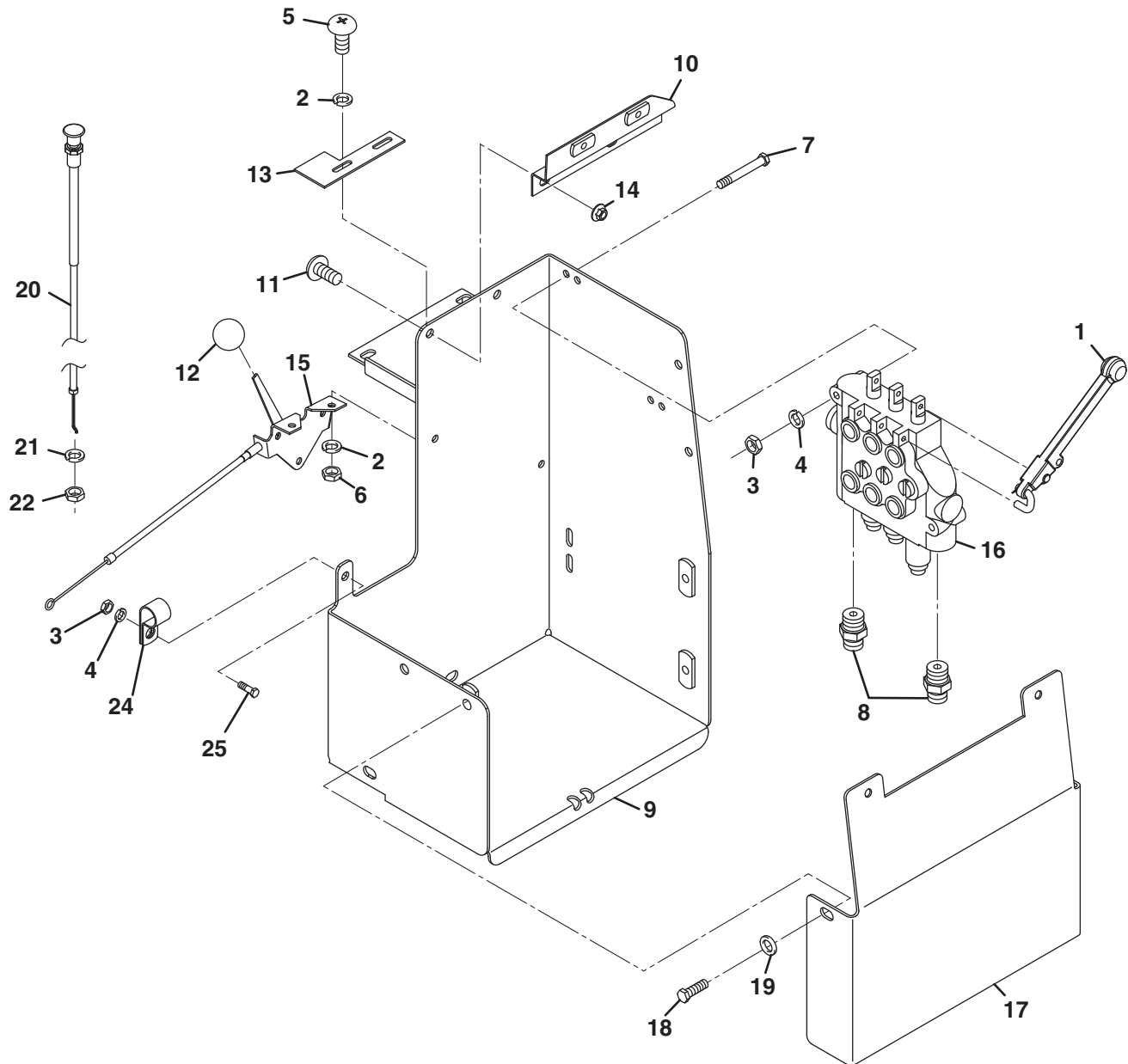
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	827284	1	Tread, Pedal	<p>Diesel Only Gas Only</p> <p>REFERENCE SW-5, See 32.1</p>
2	4136013	1	Pedal Assembly, Control	
3	827326	1	Pin, Clevis 3/8 X 4-3/16"	
4	830137	1	Bracket, Control Pedal Mounting	
5	800254	2	Lockwasher, 3/8" Heavy	
6	306450	6	Screw, 5/16-18 X 3/4 Hex Head	
7	306325	8	Lockwasher, 5/16"	
8	306932	6	Nut, 5/16-18 Hex	
9	306956	1	Pin, Cotter 1/8 X 3/4"	
10	306981	1	Flat Washer, 3/8"	
11	838229	1	Rod, Front Control	
12	306320	4	Nut, 5/16-24 Hex	
13	831586	2	Rod End, Control	
14	400278	1	Screw, 3/8-16 X 3-1/2" Hex Head	
15	4127957	1	Plate, Hood Stop	
16	4117019	1	Bellcrank Assembly, Control	
16	891494	1	Bellcrank Assembly, Control	
17	306562	2	Nut, 3/8-16 Hex Flange	
18	446140	1	Lockwasher, 3/8"	
19	4128924	2	Clamp, Cover Retaining	
20	453009	3	Washer, Flat 5/16"	
21	400188	2	Screw, 5/16-18 X 1" Hex Head	
22	3000576	2	Spacer, Nylon Hinge	
23	816446	2	Washer, Flat	
24	445795	2	Nut, 5/16-18 Spiralock Flange	
25	364528	2	Spacer	
26	400192	2	Screw, 5/16-18 X 1.50 Hex Head	
27	444718	4	Nut, Hex Lock 5/16-18	
28	4134798	1	Damper, Single Direction	
29	4125831	1	Switch, Neutral	
30	402008	2	Screw, #6-32 x 5/8" Slotted Head	
31	453004	4	Flat Washer, #8	
32	446106	2	Lockwasher, #6 Heavy	
33	444304	2	Nut, #6-32 Hex	
34	403512	2	Screw, #4-40 x 3/4" Slotted Head	
35	308404	4	Flat Washer, #4	
36	446102	2	Lockwasher, #4	
37	444302	2	Nut, #4-40 Hex	
38	4136882	1	Bracket, Sensor	
39	4136897	1	Bracket, Sensor Mount	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

9.1 Battery Box/Valve Assembly

Serial No. All



**BATTERY BOX/ VALVE ASSEMBLY
ROTATED 180 DEGREES FOR CLARITY**

GROOM MASTER SAND TRAP RAKE

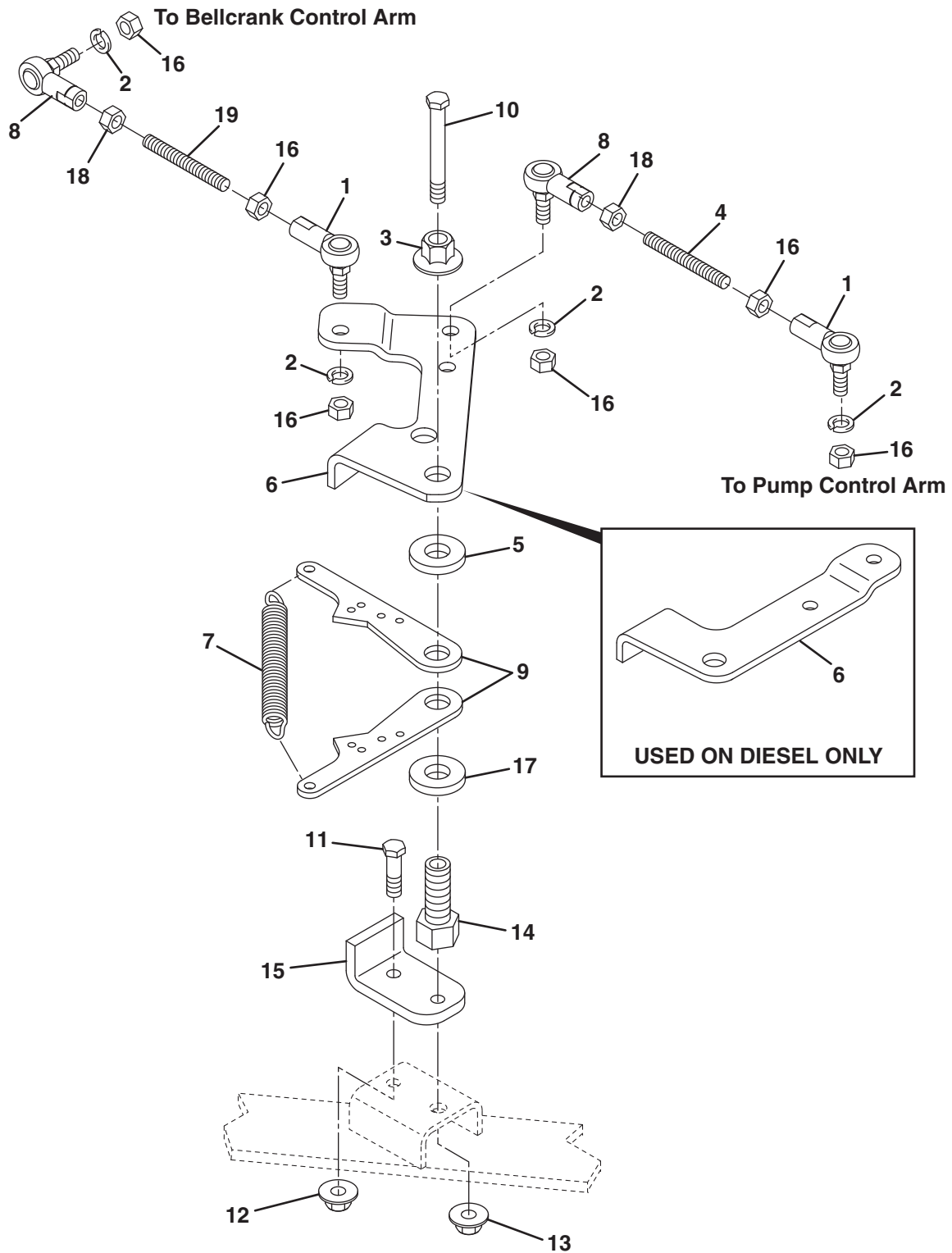
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	1002478	1	Handle, Control Valve	
2	120052	4	Lockwasher, .194 .337 .047 YS	
3	306375	3	Nut, 1/4-20 YS Hex	
4	306396	3	Lockwasher, .255 .493 .062 YS	
5	306514	2	Screw, #10-24 X 1/2 YS RS G5	
6	306531	2	Nut, #10-24 YS Hex	
7	306832	2	Screw, 1/4-20 X 2 YS Hex G5	
8	339980	2	Connector, Straight Thread	
9	4125963	1	Panel Assembly, Battery Box	
10	4126535	1	Bracket Assembly, Right Hand Hood	
11	404018	2	Screw, 1/4-20 X 3/4 Truss Head	
12	827821	1	Knob	
13	832116	1	Bracket, Throttle Stop	
14	445794	2	Nut, 1/4-20 Spiralock Flange	
15	4135816	1	Control Assembly, Hand Throttle	Diesel Units
15	4113515	1	Control Assembly, Hand Throttle	Gas Units
16	893186	1	Control Valve Assembly	
17	4127180	1	Cover Assembly, Battery	
18	306450	3	Screw, 5/16-18 X 3/4" Hex Head	
19	453009	3	Flat Washer, 5/16"	
20	830815	1	Cable, Choke	Gas Units
21	306325	1	Lockwasher, .319 .591 .078 YS	Gas Units
22	306319	1	Nut, 3/8-24 Hex	Gas Units
23	821893	AR	Trim, 12' (3.6M)	
24	366811	1	Clamp, 3/8" I.D.	
25	400106	1	Screw, 1/4-20 x 5/8" Hex Head	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

10.1 Bellcrank Assembly



GROOM MASTER SAND TRAP RAKE

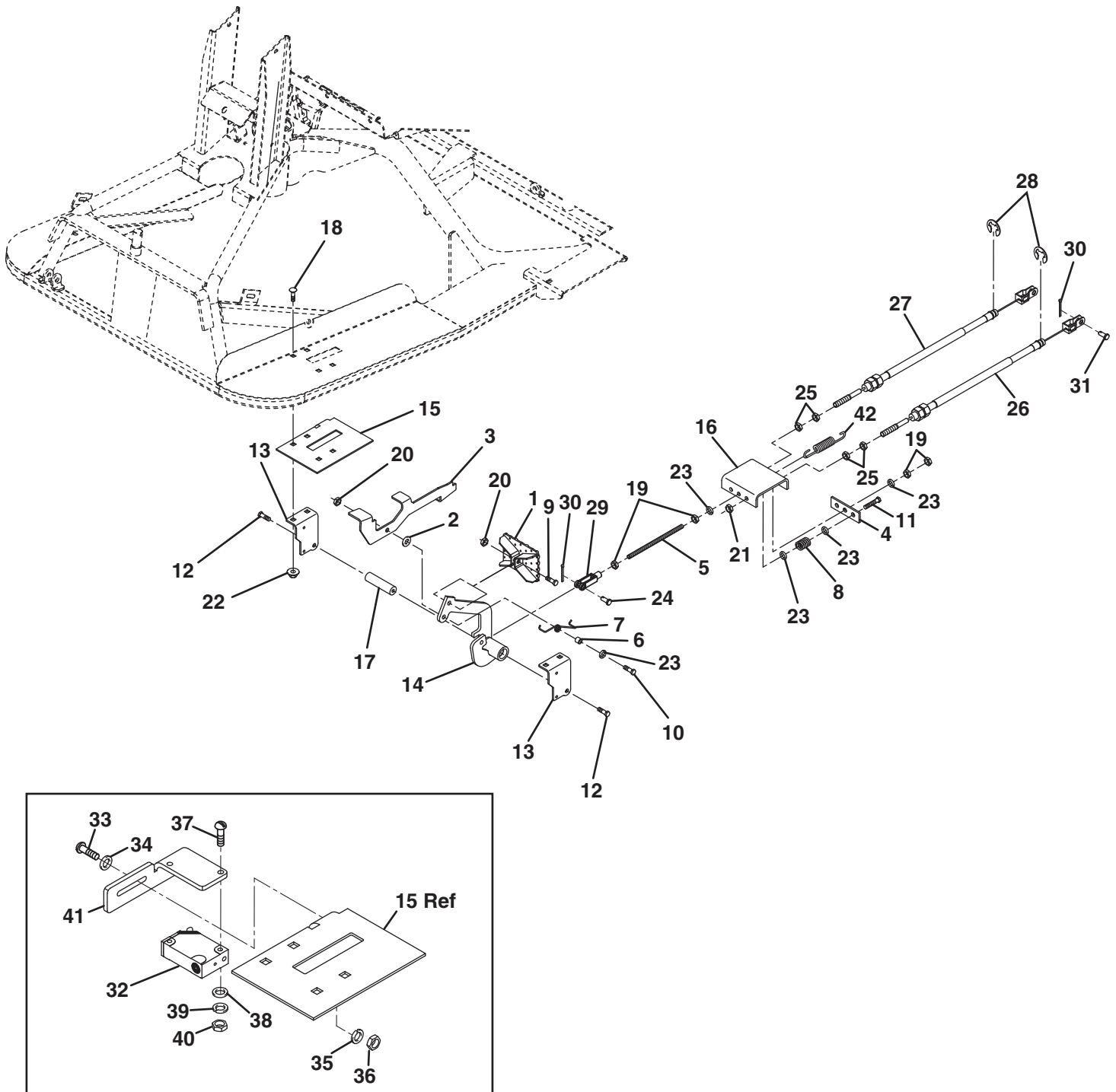
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	831586	2	End, Control Arm	
2	446136	4	Lockwasher, 5/16 Heavy	
3	800559	1	Nut, 1/2-20 CS HF GF Crownlock	
4	4136157	1	Threaded Rod, 5/16-24 x 5"	Gas Units
4	4124820	1	Threaded Rod, 5/16-24 x 3-1/2"	Diesel Units
5	809180	1	Washer, Flat .50 1.20 .19 YS	
6	523497	1	Arm, Neutral	Gas Units
6	4117787	1	Arm, Neutral	Diesel Units
7	3000693	1	Spring, Extension	
8	523253	2	End, 5/16-24 LH Control Arm	Left Hand Thread
9	4136168	2	Arm, Control Spring Retainer	Gas Units
9	827320	2	Arm, Control Spring Retainer	Diesel Units
10	400200	1	Screw, 5/16-18 X 2-1/2" Hex Head	Gas Units
10	400216	1	Screw, 5/16-18 X 2-3/4" Hex Head	Diesel Units
11	400108	1	Screw, 1/4-20 X 3/4" Hex Head	
12	445794	1	Nut, 1/4-20 Spiralock Flange	
13	445795	1	Nut, 5/16-18 Spiralock Flange	
14	523492	1	Bushing, Control Bellcrank	
15	827316	1	Stop, Neutral Control Arm	
16	443108	6	Nut, 5/16-14 Hex	
17	453017	1	Flat Washer, 1/2	
18	800543	2	Nut, 5/16-24 Left Hand Thread Nut	
19	4136156	1	Threaded Rod, 5/16-24 x 5-3/8"	Gas Units
19	4135843	1	Threaded Rod, 5/16-24 x 6"	Diesel Units

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

11.1 Brake Assembly



GROOM MASTER SAND TRAP RAKE

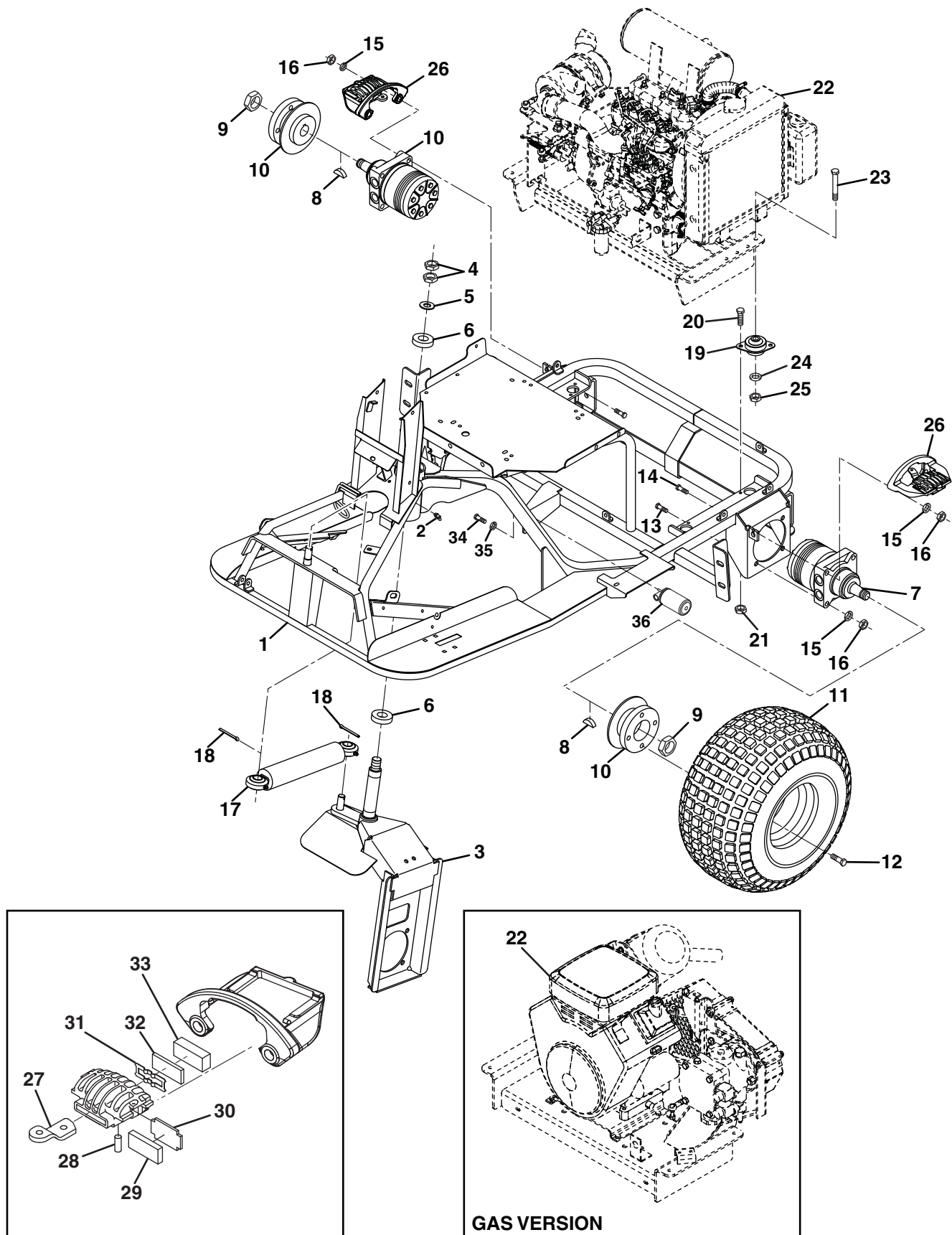
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	1003872	1	Pedal Assembly, Brake	REFERENCE SW-3, See 32.1
2	3002695	1	Washer	
3	4136760	1	Lever, Parking Brake	
4	3007854	1	Plate, Float	
5	4134855	1	Rod, Threaded	
6	3007941	1	Spacer	
7	3007942	1	Spring, Torsion	
8	351956	2	Spring, Compression	
9	400188	1	Screw, 5/16-18 X 1" Hex Head	
10	400192	1	Screw, 5/16-18 X 1-1/2" Hex Head	
11	400234	2	Screw, Cap 5/16-24 X 2"	
12	403770	2	Screw, 5/16-18 X 3/4" Hex Flange	
13	4100460	2	Arm, Brake	
14	4123982	1	Pedal, Brake Assembly	
15	4136219	1	Plate, Brake Assembly	
16	4132810	1	Frame, Equalizer	
17	4124450	1	Shaft, Turn Assist	
18	441602	4	Bolt, 5/16-18 X 3/4", Carriage	
19	443108	3	Nut, 5/16-24 Hex	
20	444718	2	Locknut, 5/16-18 Center	
21	444754	2	Locknut, 5/16-24 Center	
22	445781	4	Nut, 5/16-18 Hex Whiz-Lock	
23	453009	5	Flat Washer, 5/16"	
24	461451	1	Pin, Clevis	
25	443812	4	Nut, 3/8-24 Hex Jam	
26	4132483	1	Cable, Brake	
27	4132484	1	Cable, Brake	
28	557771	2	Snap Ring	
29	810722	1	Yoke	
30	460014	3	Pin, Cotter	
31	461493	2	Pin, Clevis	
32	4125831	1	Switch, Brake	
33	402002	2	Screw, #6-32 x 1/2" Slotted Head	
34	453004	4	Flat Washer, #8	
35	446106	2	Lockwasher, #6 Heavy	
36	444304	2	Nut, #6-32 Hex	
37	403512	2	Screw, #4-40 x 3/4" Slotted Head	
38	308404	2	Flat Washer, #4	
39	446102	2	Lockwasher, #4	
40	444302	2	Nut, #4-40 Hex	
41	4136857	1	Bracket, Brake Sensor	
42	2809837	1	Spring, Extension	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

12.1 Frame



GROOM MASTER SAND TRAP RAKE

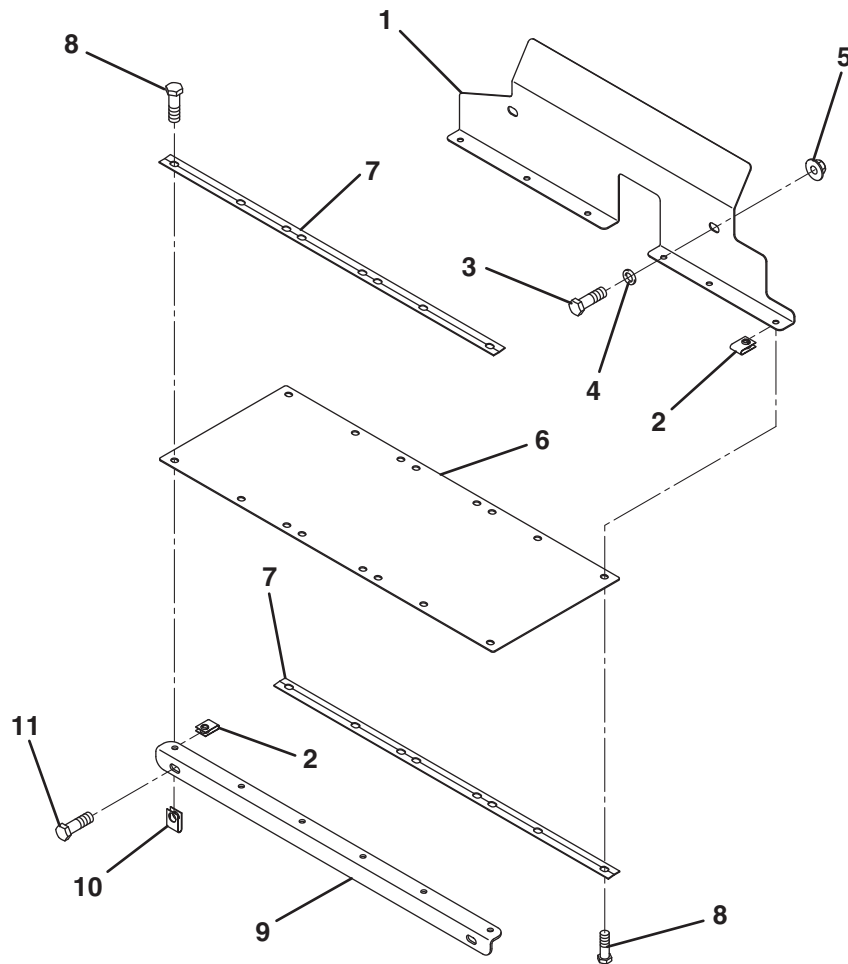
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4117047	1	Frame	
2	807443	1	• Grease Fitting, 45°	
3	4123207	1	Fork, Steering	
4	310854	2	Nut, 1-1/4, YS Hex Jam	
5	518170	1	Flat Washer, 1.005 2.00 .13 NS	
6	837429	2	Bearing, Ball	
7	4140827	2	Motor, Wheel	
	4143149	1	• Seal Kit	
8	800777	1	• Key, Woodruff	
9	800778	1	• Nut, 1-20	
10	395388	2	Hub, Wheel	
11	N/S	2	Wheel and Tire Assembly	
	360111	1	• Valve Stem	
	3008134	1	• Wheel, 10"	
	4132941	1	• Tire, 20 x 11.0-10	
12	353914	8	Bolt, Wheel	
13	400416	4	Screw, 1/2-13 x 2-1/2" Hex Head	
14	400428	4	Screw, 1/2-13 x 2-3/4" Hex Head	
15	446154	8	Lockwasher, 1/2	
16	443118	8	Nut, 1/2-13	
17	4138512	1	Cylinder, Steering	
	4137139	1	• Seal Kit	
18	460040	2	Cotter Pin, 5/32 x 1-1/4"	
19	826218	4	Mount, Engine	
20	400108	8	Screw, 1/4-20 X 3/4" Hex Head	
21	444708	8	Locknut, 1/4-20 Center	
22	REF	1	Power Assembly-Gas	
22	REF	1	Power Assmebly-Diesel	
23	400270	4	Screw, 3/816 X 2" Hex Head	
24	453010	4	Washer, Flat	
25	800292	4	Nut, 3/8-16 Centerlock	
26	1001635	2	Caliper	
27	N/S	1	• Cam	
28	557823	1	• Pivot Pin	
29	503660	1	• Carrier Side Pad	
30	557824	1	• Pad Support	
31	557825	1	• Lever Retainer Spring	
32	557826	1	• Pad Support	
33	503660	1	• Cam Side Pad	
34	300646	2	Screw, 1/4-20 x 3/4" Hex Head	
35	306396	2	Lockwasher, 1/4	
36	N/S	1	Oil Filter Assembly	
	108046	1	• Filter, Hydraulic Oil	
	547818	1	• Head, Filter	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

13.1 Splash Shield

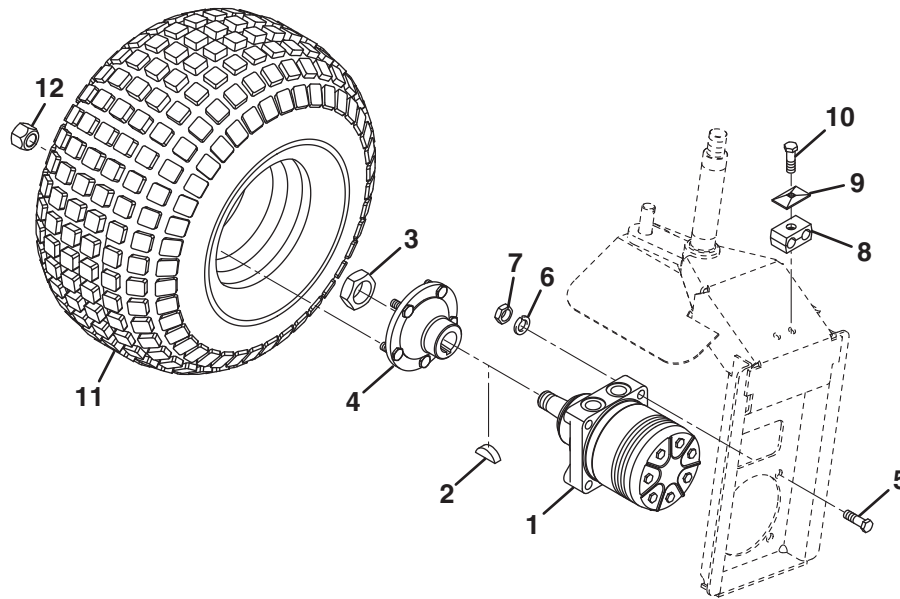


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	838205	1	Panel, Splash Shield	
2	800169	12	Nut, 1/4-20 Speed Nut	
3	306834	2	Screw, 3/8-16 X 3/4" Hex Head	
4	306981	2	Flat Washer	
5	445796	2	Nut, 3/8-16 Spiralock Flange	
6	4130598	1	Cover, Splash Shield	
7	838207	2	Strip, Mounting	
8	403769	12	Screw, 1/4-20 X 1/2" Hex Flange	
9	838208	1	Rod, Rear Control	
10	445278	2	Nut, 3/8-16 Speed Nut	
11	306414	2	Screw, 3/8-16 X 1" Hex Head	

> Change from previous revision

14.1 Steering Fork

Serial No.



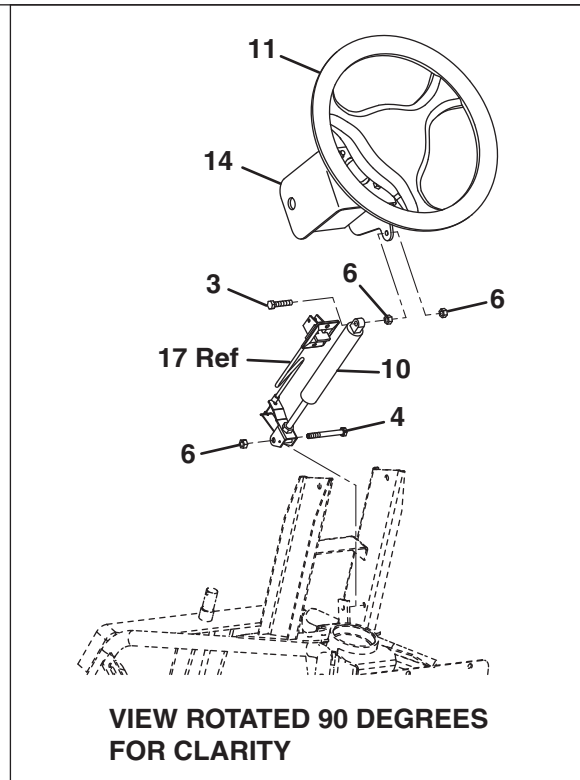
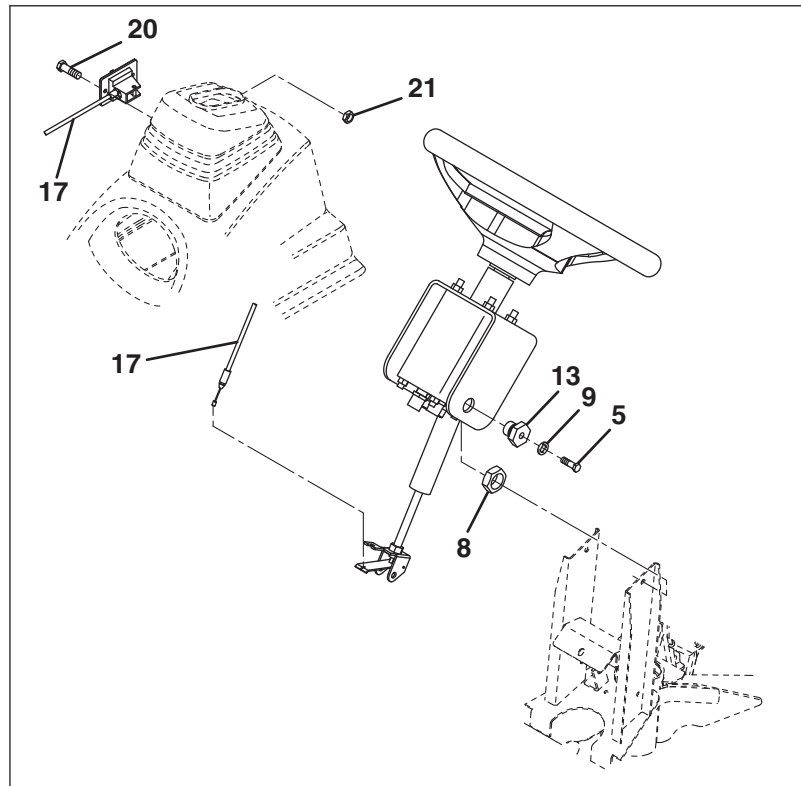
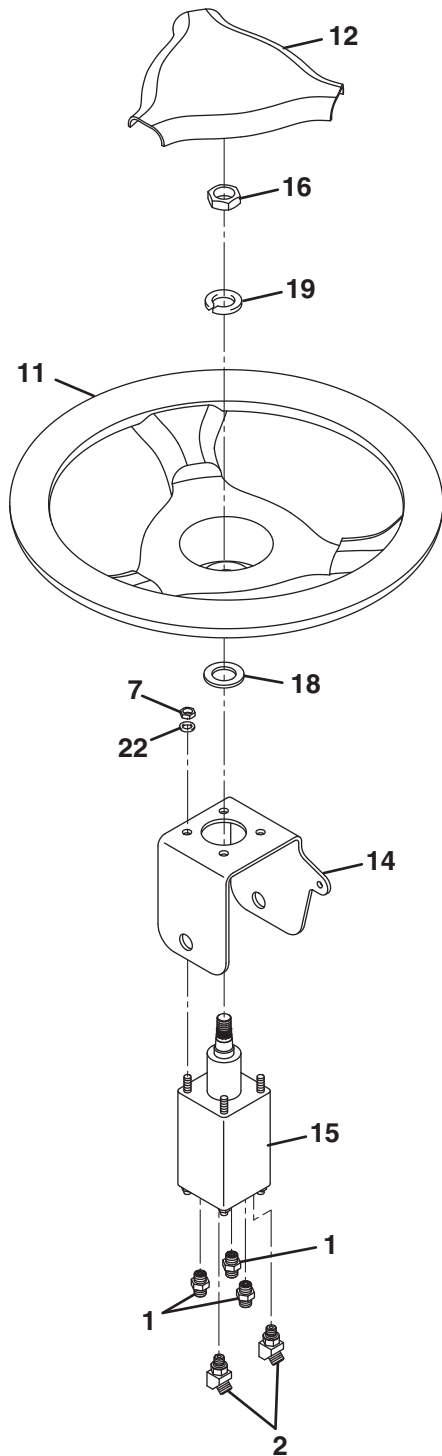
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4117884	1	Motor, Right Wheel	
	4139604	1	• Seal Kit	
2	800777	1	• Key, Woodruff	
3	800778	1	• Nut, 1-20	
4	220290	1	Hub, Wheel	
5	400416	4	Screw, 1/2-13 x 2-1/2" Hex Head	
6	446154	4	Lockwasher, 1/2	
7	443118	4	Nut, 1/2-13	
8	837737	1	Clamp, Hose	
9	837736	1	Plate, Clamp Cover	
10	400196	1	Screw, 5/16-18 x 2" Hex Head	
11	N/S	2	Wheel and Tire Assembly	
	360111	1	• Valve Stem	
	3008134	1	• Wheel, 10"	
	4132941	1	• Tire, 20 x 11-10	
12	353914	4	Bolt, Wheel	
13	447030	1	Lockwasher, 1" External Tooth	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

15.1 Power Steering



GROOM MASTER SAND TRAP RAKE

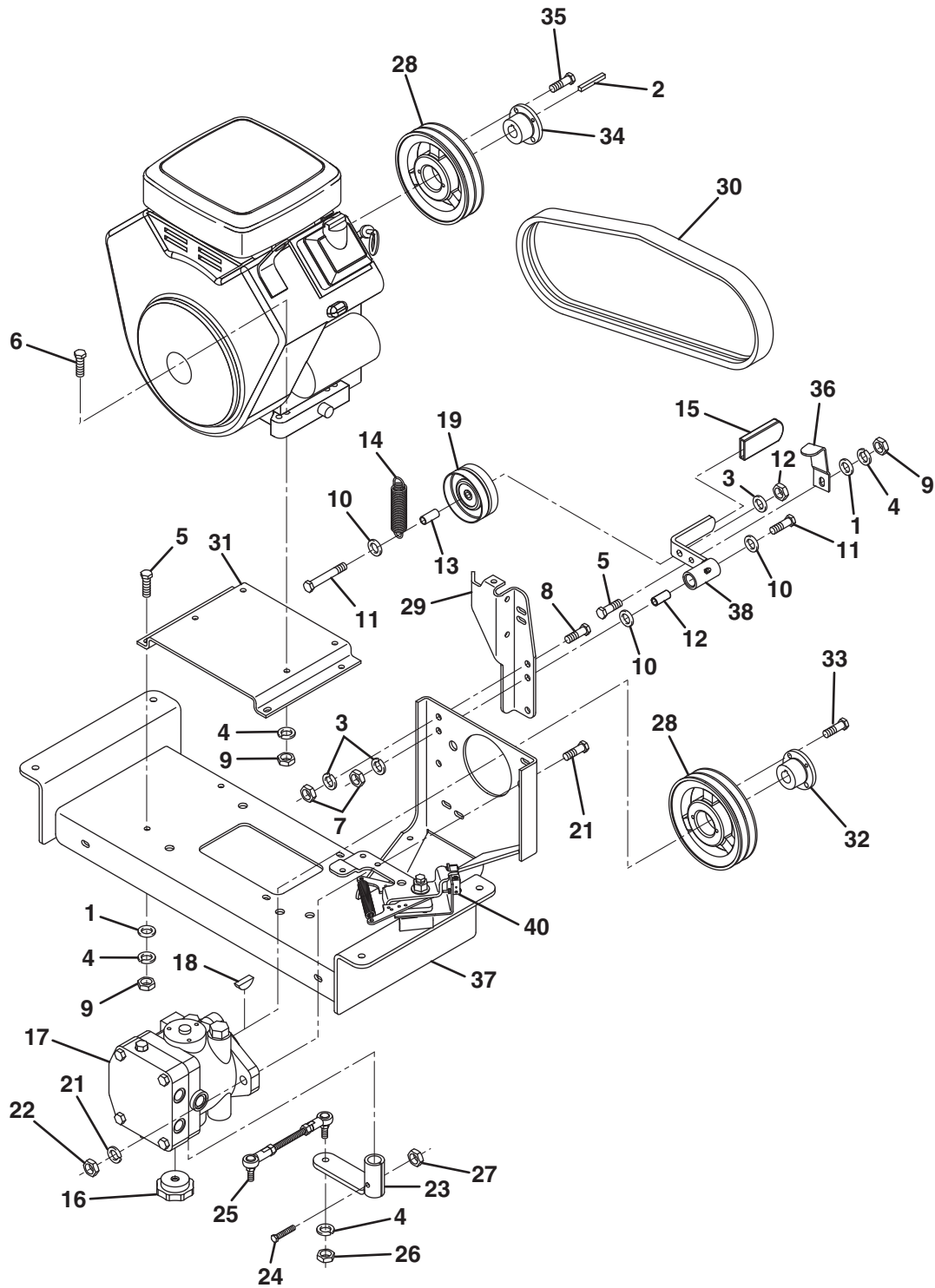
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	339974	2	Connector, 4-6 Straight Thread	See 31.1
2	340023	2	Connector, Hydraulic	
3	400190	1	Screw, 5/16-18 X 1-1/4" Hex Head	
4	400202	1	Screw, 5/16-18 X 2-3/4" Hex Head	
5	400258	2	Screw, 3/8-16 X 3/4" Hex Head	
6	444718	3	Locknut, 5/16-18 Center	
7	444754	4	Locknut, 5/16-24 Center	
8	444849	2	Locknut, 3/4-10 Center Jam	
9	446142	2	Lockwasher, 3/8 Heavy	
10	5002918	1	Actuator, Tilt Steering Assembly	
11	2811364	1	Wheel Assmebly, Steering	
12	2811365	1	• Cap, Steering Wheel	
13	3005934	2	Bolt, Shoulder	
14	3005981	1	Bracket, Steering Pump	
15	4144765	1	Valve, Power Steering	
16	443828	1	• Nut, 5/8-11	
17	5002919	1	Cable, Actuator	
18	2811547	1	Washer	
19	447224	1	Lockwasher, 5/8 Internal Tooth	
20	416911	2	Screw, #10-24 X 1/2" Self Tap	
21	444782	2	Locknut, #10-24 Center	
22	453009	4	Flat Washer, 5/16	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

16.1 Engine-Gas

Serial No. All



GROOM MASTER SAND TRAP RAKE

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	453009	5	Washer, 5/16"	See 30.1 (Supplied w/Pump)
2	312321	1	Key, 1/4" X 1/4" X 2"	
3	446140	4	Lockwasher, 3/8"	
4	446134	11	Lockwasher, 5/16"	
5	400188	5	Screw, 5/16-18 X 1"	
6	400194	4	Screw, 5/16-18 X 1-3/4"	
7	443110	4	Nut, 3/8-16	
8	400258	2	Screw, 3/8-16 X 3/4"	
9	443106	9	Nut, 5/16-18	
10	453010	3	Washer, 3/8"	
11	311213	2	Screw, 3/8-16 X 3"	
12	515759	1	Bushing	
13	808959	1	Spacer	
14	2701258	1	Spring	
15	521144	1	Cover, Handle	
16	523409	1	Knob	
17	547674	1	Pump, Hydraulic	
18	548369	1	• Key, #61 Woodruff, 3/16" X 5/8"	
19	548942	1	Pulley, Idler, 3-1/4" (83mm)	
20	400408	2	Screw, 1/2-13 X 1-1/2" Hex Head	
21	446152	2	Lockwasher, 1/2	
22	443118	2	Nut, 1/2-13 Hex	
23	890995	1	Arm Assembly, Pump Control	
24	400116	1	Screw, 1/4-20 X 1-1/2" Hex Head	
25	REF	1	Control Rod	
26	443108	1	Nut, 5/16-24 Hex	
27	444708	1	Locknut, 1/4-20 Center	
28	837757	2	Pulley, Drive, V-Belt	
29	838004	1	Bracket, Idler Spring	
30	838007	1	Belt, Drive	
31	838008	1	Plate, Engine Mount	
32	838047	1	Hub, Tapered, V-Belt Pulley	
33	400112	4	• Screw, 1/4-20 X 3/4"	
34	838048	1	Hub, Tapered, V-Belt Pulley	
35	400112	4	• Screw, 1/4-20 X 3/4"	
36	838352	1	Bracket, Belt Disengage	
37	4132673	1	Frame, Engine	
38	891255	1	Pivot, Idler	
39	807439	1	• Fitting, Lubrication, 1/4-28	
40	REF	1	Bellcrank Assembly	Not Illustrated See 10.1

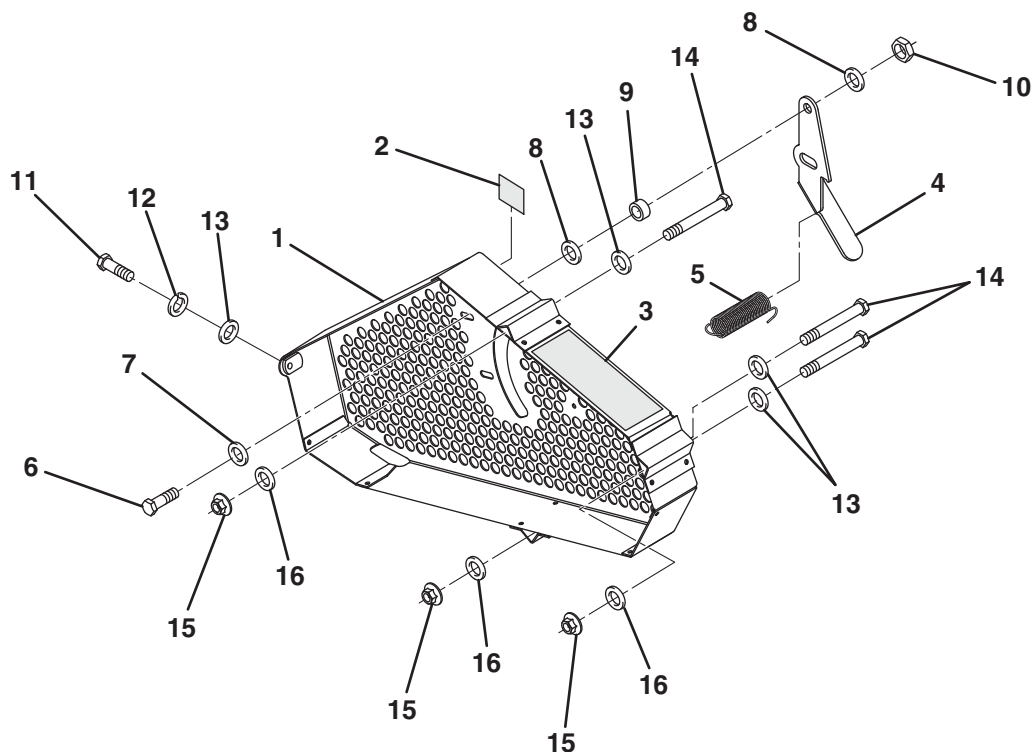
> Change from previous revision

GROOM MASTER SAND TRAP RAKE

17.1 Guard Assembly

Serial No. 88009 - All

Gas Units



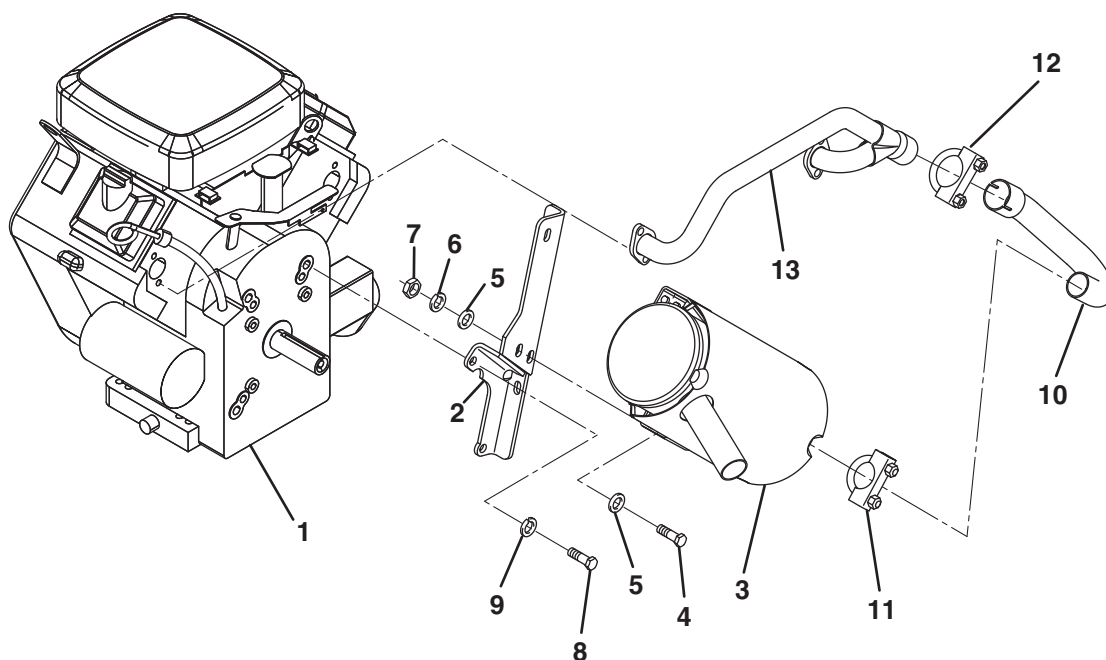
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	891581	1	Guard Assembly, Belt Drive-Gas	
2	838368	1	Decal, Belt Idler	
3	838488	1	Decal, Warning	
4	838314	1	Latch, Idler Arm	
5	817119	1	Spring, Extension	
6	400108	2	Screw, 1/4-20 X 3/4" Hex Head	
7	453023	2	Flat Washer, 1/4	
8	452004	4	Flat Washer, 1/4	
9	805245	2	Bushing	
10	444708	2	Locknut, 1/4-20 Center	
11	400184	4	Screw, 5/16-18 X 3/4" Hex Head	
12	446134	1	Lockwasher, 5/16	
13	453009	4	Flat Washer, 5/16	
14	400204	3	Screw, 5/16-18 X 3-1/2" Hex Head	
15	445781	3	Nut, 5/16-18 Hex Whiz-lock	
16	821702	3	Flat Washer, .45 1.00 .18 YS	

> Change from previous revision

18.1 Gas Engine Exhaust

Serial No. 88009 - All

Gas Units



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4132175	1	Engine, 18 HP Vanguard	
2	838237	1	Bracket, Muffler Support-Gas Engine	
3	4135764	1	Muffler Assembly	
4	400184	4	Screw, 5/16-18 X 3/4" Hex Head	
5	453009	4	Flat Washer, 5/16"	
6	446134	4	Lockwasher, 5/16"	
7	443106	4	Nut, 5/16-18 Hex	
8	400258	2	Screw, 3/8-16 X 3/4" Hex Head	
9	446140	2	Lockwasher, 3/8"	
10	4136213	1	Tube, Exhaust	
11	348856	1	Clamp, Tubing	
12	818962	1	Clamp, Tubing	
13	4136212	1	Exhaust Manifold	

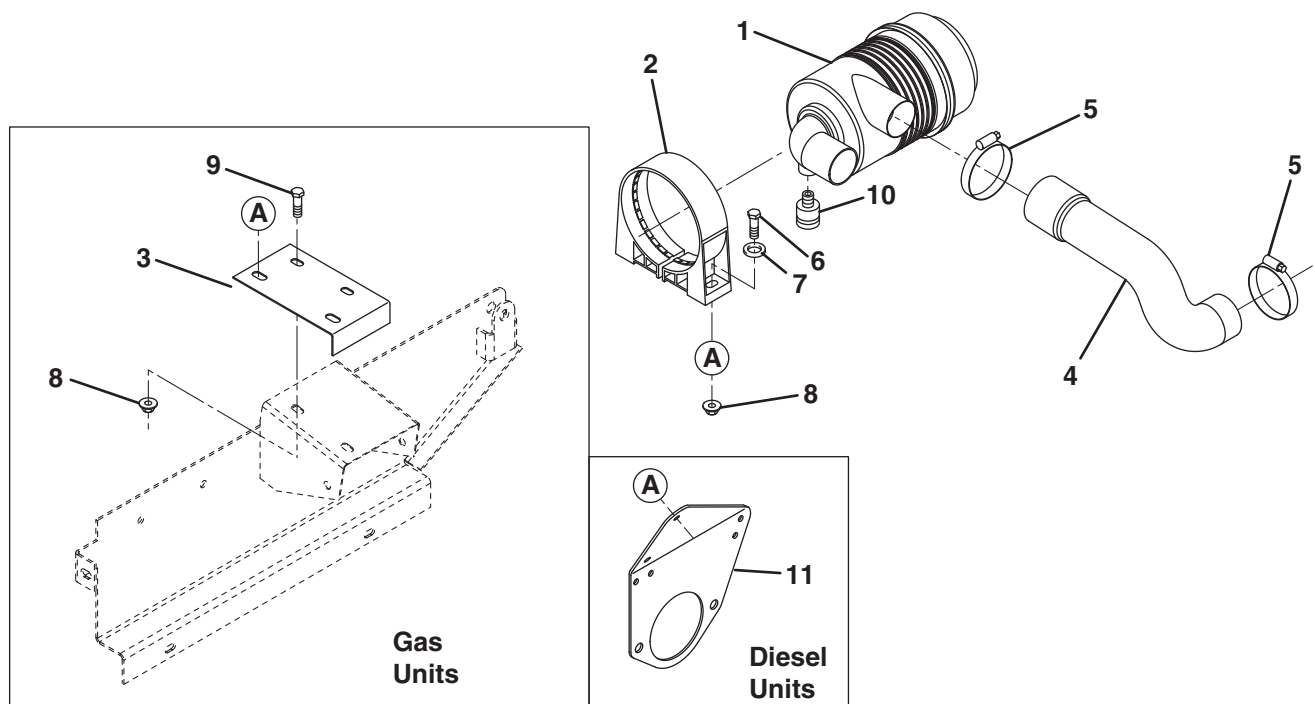
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GROOM MASTER SAND TRAP RAKE

Serial No. All

19.1 Air Cleaner

Gas and Diesel Engines



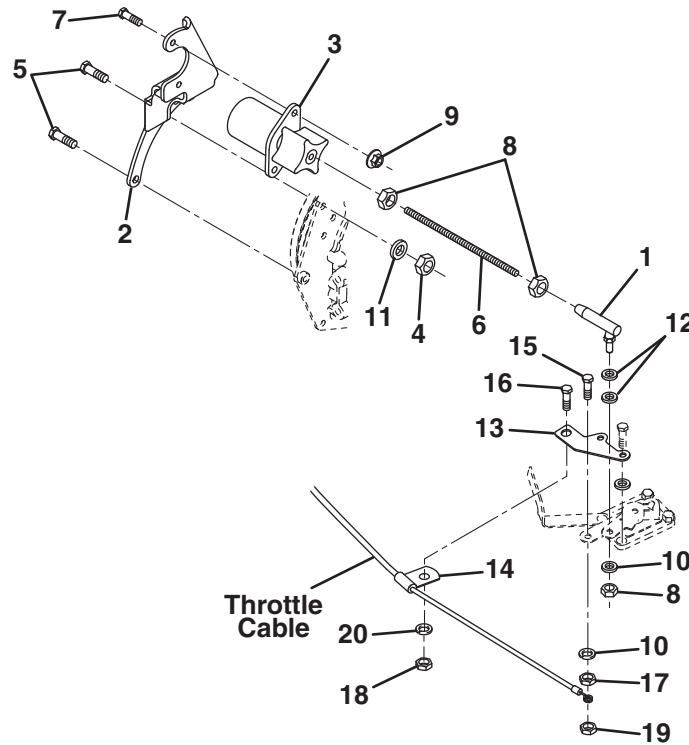
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	1001121	1	Air Cleaner Assembly	
	5000913	1	• Element, Air Cleaner	
	5000912	1	• Cover	
	5000914	1	• Valve	
2	3008573	1	Bracket, Mounting	Gas Units Only
3	4133053	1	Bracket, Mounting-Air Filter	
4	4118108	1	Hose, Air Intake	
5	825358	2	Clamp, Worm Drive 2.75" Dia.	
6	400188	2	Screw, 5/16-18 X 1" Hex Head	Gas Units
7	452006	2	Flat Washer, 5/16"	
8	445795	4	Nut, 5/16-18 Spiralock	
8	445795	2	Nut, 5/16-18 Spiralock	
9	400180	2	Screw, 5/16-18 X 1/2" Hex Head	Gas Units Only
10	3002365	1	Indicator, Air Cleaner Service	Diesel Units Only, See 21.1
11	REF	1	Plate, Hydro Spacer	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

20.1 Diesel Engine Controls

Serial No. 88008 - All



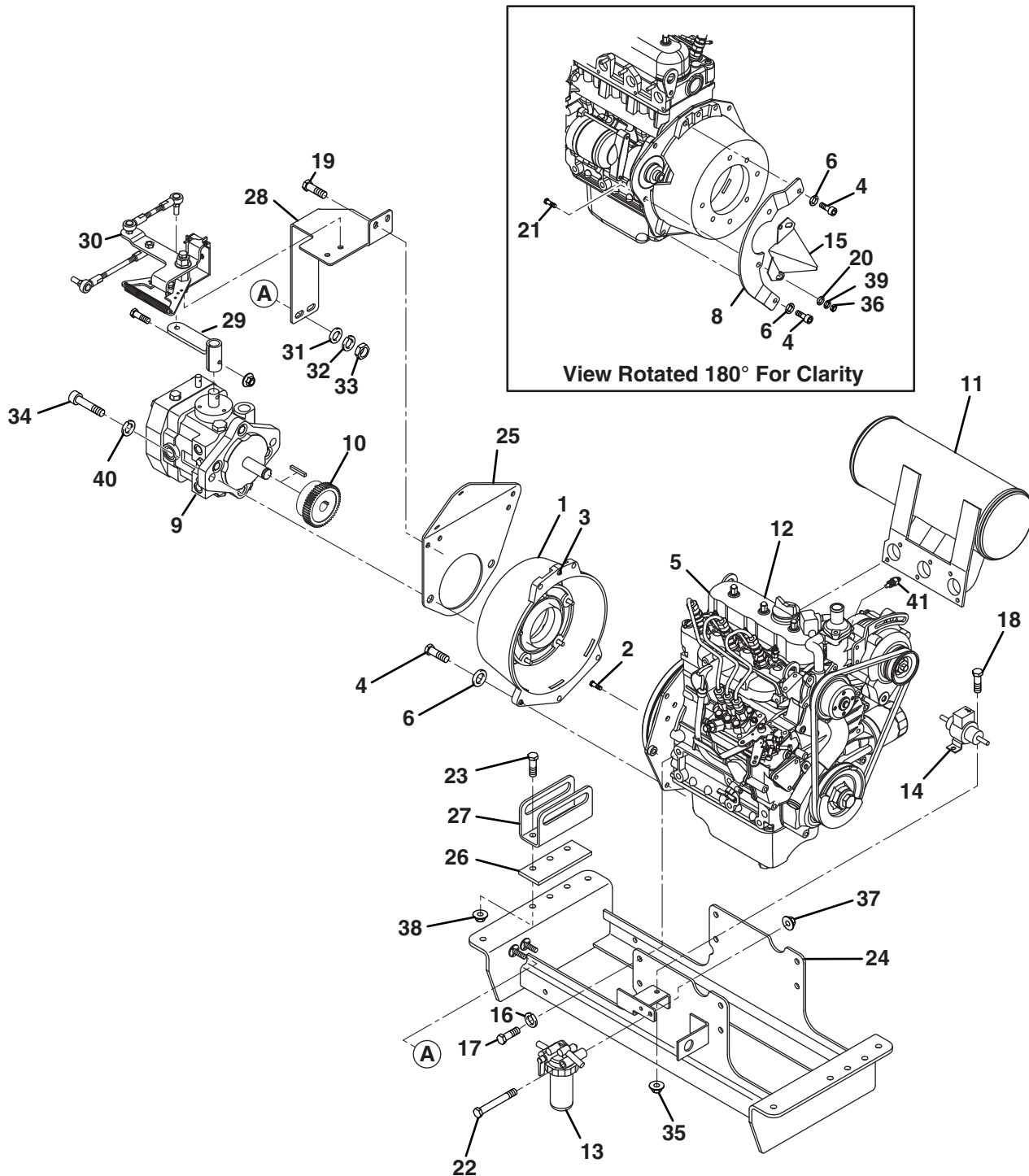
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	162478	1	Ball Joint	REFERENCE K-4, See 32.1
2	4140379	1	Bracket, Fuel Solenoid	
3	338289	1	Solenoid, Fuel	
4	362539	1	Nut, M8 X 1-1/4" Hex	
5	363586	2	Screw, M8-1-1/4" X 20mm Hex	
6	367191	1	Rod, Threaded	
7	400108	2	Screw, 1/4-20 X 3/4" Hex Head	
8	443104	3	Nut, 1/4-28 Hex	
9	445794	2	Nut, 1/4-20 Spirallock Flange	
10	446130	1	Lockwasher, 1/4" Heavy	
11	446136	2	Lockwasher, 5/16" Heavy	
12	453023	2	Flat Washer, 1/4	
13	3004151	1	Bracket, Cable Mount	
14	360934	1	Clip, Tubing	
15	400112	1	Screw, 1/4-20 X 1" Hex Head	
16	400260	1	Screw, 3/8-16 X 7/8" Hex Head	
17	443102	1	Nut, 1/4-20 Hex	
18	443110	1	Nut, 3/8-16 Hex	
19	444708	1	Locknut, 1/4-20 Center	
20	446140	1	Lockwasher, 3/8"	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

21.1 Engine-Diesel



GROOM MASTER SAND TRAP RAKE

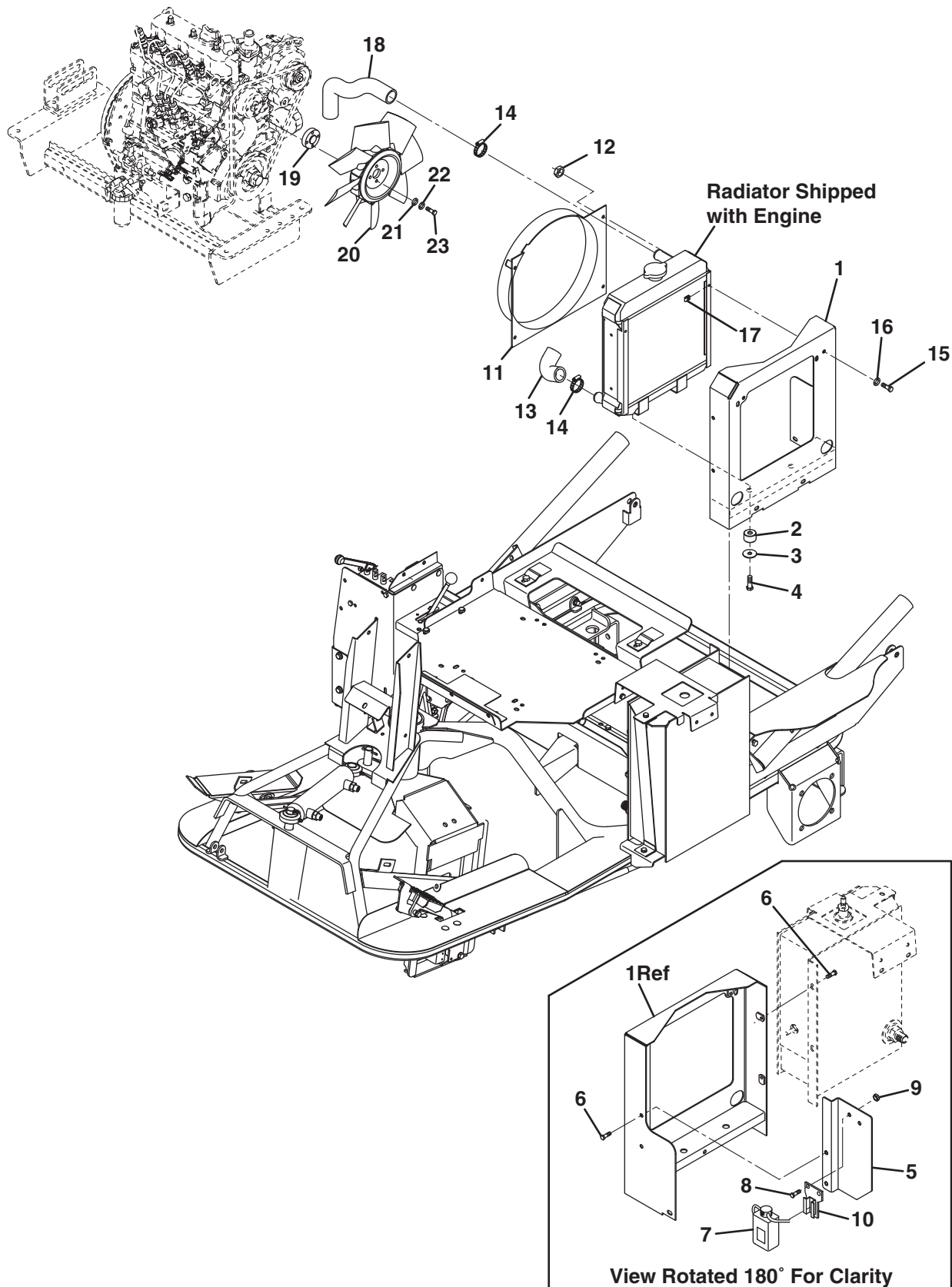
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	1004396	1	Coupling, Housing Kit	Includes items 2~7
2	N/S	5	• Bolt, M8 X 22	
3	N/S	1	• Pin	
4	N/S	4	• Bolt, M8 X 30	
5	N/S	1	• Flywheel Flange	
6	N/S	4	• Washer, M8	
7	400114	1	Screw, 1/4-20 x 1-1/4" Hex Head	
8	4140378	1	Bracket, Starter Support	See 30.1
9	1003249	1	Pump, Hydrostatic	
10	1004397	1	Hub Assembly	
11	4124957	1	Muffler, Diesel	S/N 88008 - 1601~1884
12	2811427	1	Engine, Kubota D662-EB	
12	4143070	1	Engine, Kubota D662-EB	S/N 88008 - 1885 and Up
13	5001947	1	Fuel Filter	REFERENCE M-2, See 32.1
14	5001948	1	Pump, Fuel	
15	3009932	1	Cover, Starter	
16	363485	8	Lockwasher, M10 Heavy	See 10.1
17	366884	8	Bolt, M10-1.25 X 20 Hex	
18	403769	2	Screw, 1/4-20 X 5/8" Hex Head	
19	400184	2	Screw, 5/16-18 X 3/4" Hex Head	
20	453009	2	Flat Washer, 5/16	
21	400194	2	Screw, 5/16-18 X 1-3/4" Hex Head	
22	400216	1	Screw, 5/16-18 X 2-3/4" Hex Head	
23	400262	3	Screw, 3/8-16 UNC X 1.250 Hex HD	
24	4140449	1	Frame Assembly, Engine Mount	
25	4116713.7	1	Plate, Hydro Spacer	
26	4129342	1	Spacer, Guide Cylinder	
27	4117163.7	1	Guide, Cylinder	
28	4133226	1	Bracket Assembly, Bellcrank Mount	
29	4117910.7	1	Arm Assembly, Pump Control	
30	REF	1	Bellcrank Assembly	
31	453010	2	Flat Washer, 3/8	
32	446140	2	Lockwasher, 3/8	
33	443110	2	Nut, 3/8-16 Hex	
34	434026	2	Screw, 1/2-13 X 2.0 Socket HD Cap	
35	445794	3	Nut, 1/4-20 Spiralock Flange	
36	443106	2	Nut, 5/16-18 Hex	
37	445795	1	Nut, 5/16-18 Spiralock Flange	
38	445796	3	Nut, 3/8-16 Spiralock Flange	
39	446136	3	Lockwasher, 5/16 Heavy	
40	446154	2	Lockwasher, 1/2 Heavy	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

22.1 Radiator-Diesel

Serial No. 88008 - 1601~1884



GROOM MASTER SAND TRAP RAKE

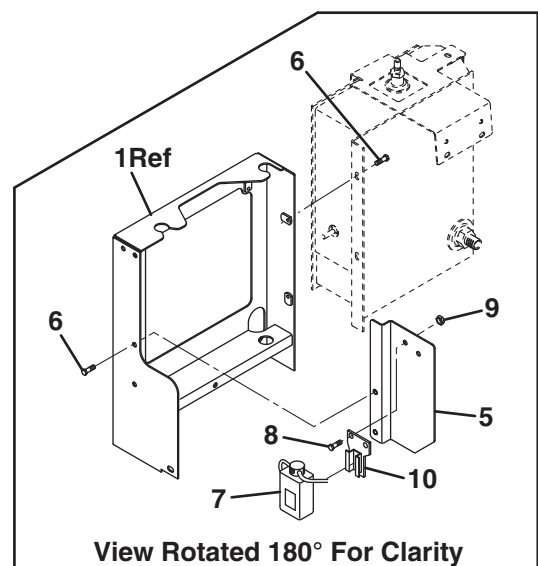
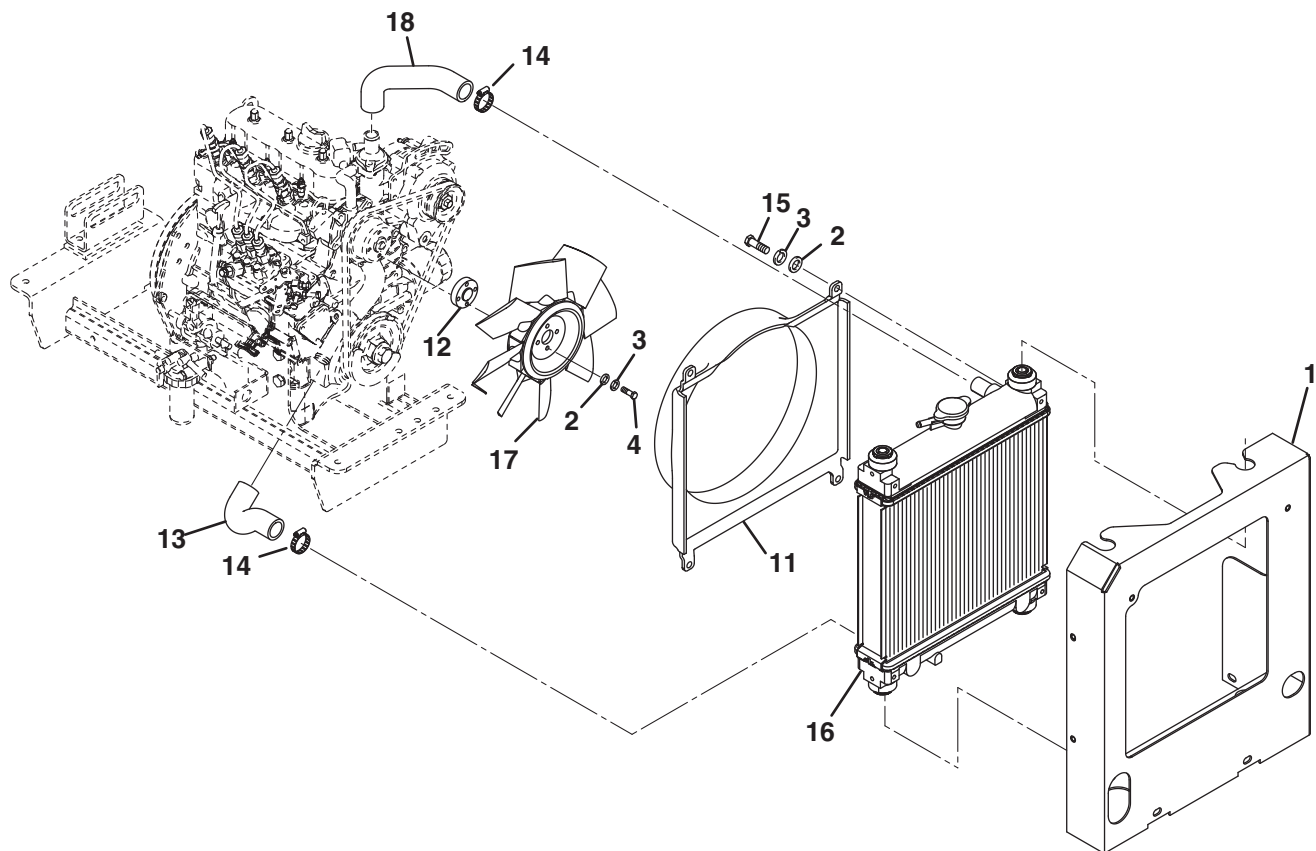
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4114429	1	Frame Assembly, Radiator	
2	553886	2	Cushion, Radiator	
3	3006233	2	Washer, Isolator	
4	3006135	2	Bolt, Hex Metric M10 X 40	
5	4136106	1	Shield Assembly, Fan Belt	
6	403770	4	Screw, 5/16-18 X 3/4" Hex Flange	
7	553926	1	Tank, Reserve	
8	400182	2	Screw, 5/16-18 X5/8" Hex Head	
9	444718	2	Locknut, 5/16-18 Center	
10	5001980	1	Bracket, Tank Assembly	
11	4125019	1	Shroud, Fan	
12	450377	4	Nut, M6-1.00 Hex Nylock	
13	5001974	1	Radiator Hose , Lower	
14	319914	4	Clamp, Hose	
15	404014	2	Screw	
16	816307	2	Washer, Flat	
17	800169	2	Speed Nut	
18	5001975	1	Radiator Hose, Upper	
19	4125492	1	Spacer, Fan	
20	4124938	1	Fan, 11-1/4" Engine Cooling	
21	453023	4	Flat Washer, 1/4"	
22	446130	4	Lockwasher, 1/4" Heavy	
23	363448	4	Screw, M6-1.0 X 35MM Hex Head	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

22.2 Radiator-Diesel

Serial No. 88008 - 1885 and Up



GROOM MASTER SAND TRAP RAKE

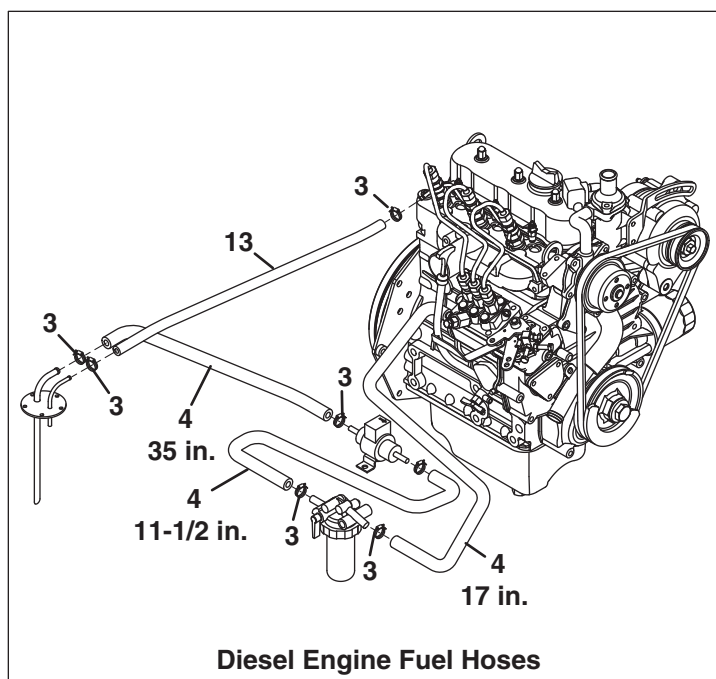
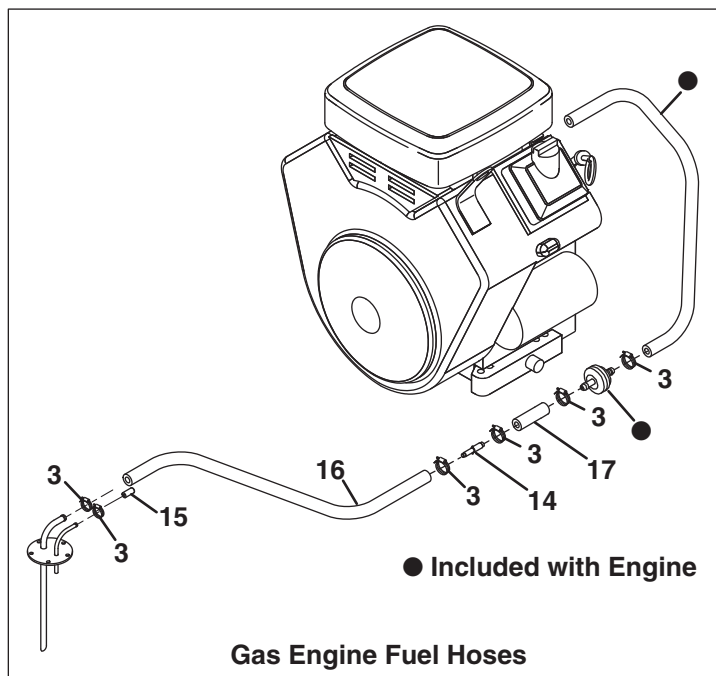
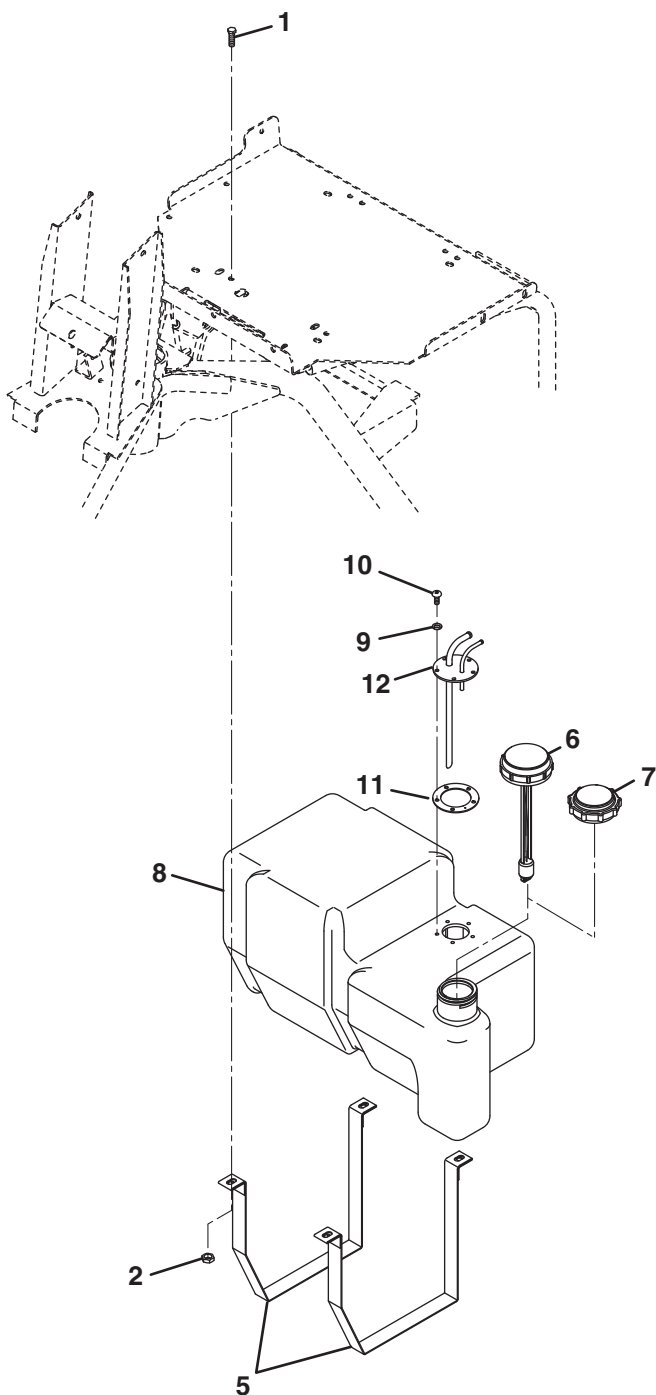
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4140280	1	Frame Assembly, Radiator	
2	453023	8	Flat Washer, 1/4"	
3	446130	8	Lockwasher, 1/4" Heavy	
4	363448	4	Screw, M6-1.0 X 35 mm Hex Head	
5	4136106	1	Shield Assembly, Fan Belt	
6	403770	4	Screw, 5/16-18 X 3/4" Hex Flange	
7	553926	1	Tank, Reserve	
8	400182	2	Screw, 5/16-18 X5/8" Hex Head	
9	444718	2	Locknut, 5/16-18 Center	
10	5001980	1	Bracket, Tank Assembly	
11	4141192	1	Shroud, Fan	
12	4125492	1	Spacer, Fan	
13	4142751	1	Radiator Hose , Lower	
14	319914	4	Clamp, Hose	
15	362535	4	Screw, M6-1.0 X 16 mm Hex Head	
16	4141036	1	Radiator, Aluminum	
17	4141024	1	Fan, 11-1/4" Engine Cooling	
18	4142750	1	Radiator Hose, Upper	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

23.1 Fuel Tank

Serial No. All



GROOM MASTER SAND TRAP RAKE

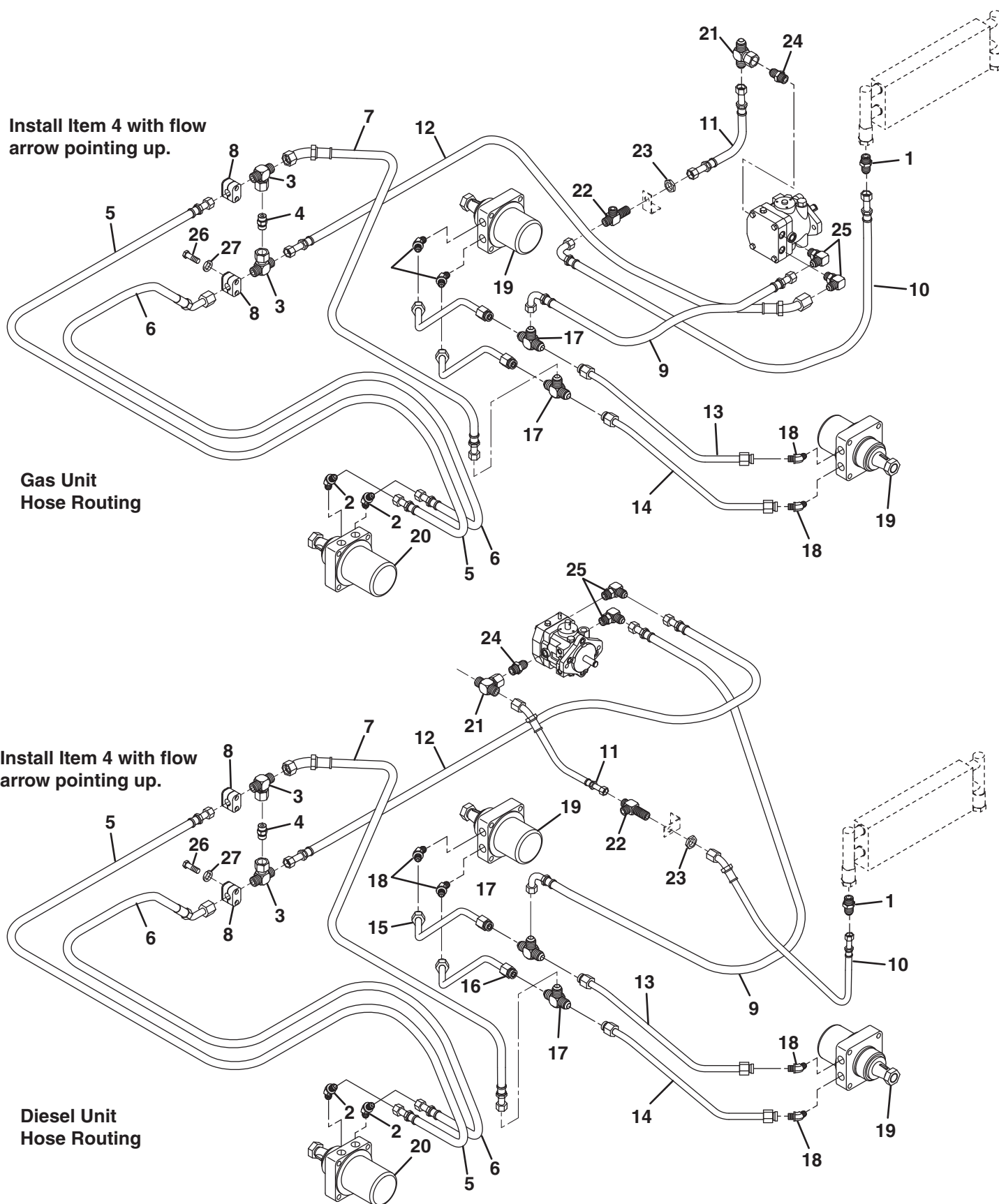
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	400190	4	Screw, 5/16-18 X 1" Hex HD	Diesel Units, Cut to desired length
2	444718	4	Locknut, 5/16-18 Center	
3	48540-01	4	Clamp, Hose	
4	826590	AR	Hose, Fuel 5/16" I.D. 25 Foot Roll	
5	838001	2	Strap, Fuel Tank Support	
6	838049	1	Cap, Fuel Tank w/gauge	
7	830979	1	Cap, Fuel Tank	
8	891270	1	Tank, Fuel	
9	446116	5	• Lockwasher, #10	
10	800021	5	• Screw, #10-32 X 1/2 YS TR G2	
11	829954	1	• Gasket	
12	891262	1	• Pickup Assembly, Fuel	
13	831039	AR	Hose, Fuel 3/16" I.D. 25 Foot Roll	
14	834037	1	Connector, Hose	
15	838491	1	Cap, Fuel Line	
	4175921	1	Kit, Low Evap Fuel Hose	
16	N/S	AR	• Hose, Fuel 5/16" I.D. 10 Foot Roll	
17	N/S	AR	• Hose, Fuel 1/4" I.D. 2 Foot Roll	
18	48540-01	4	• Clamp, Hose	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

24.1 Hydraulic Drive Circuit



GROOM MASTER SAND TRAP RAKE

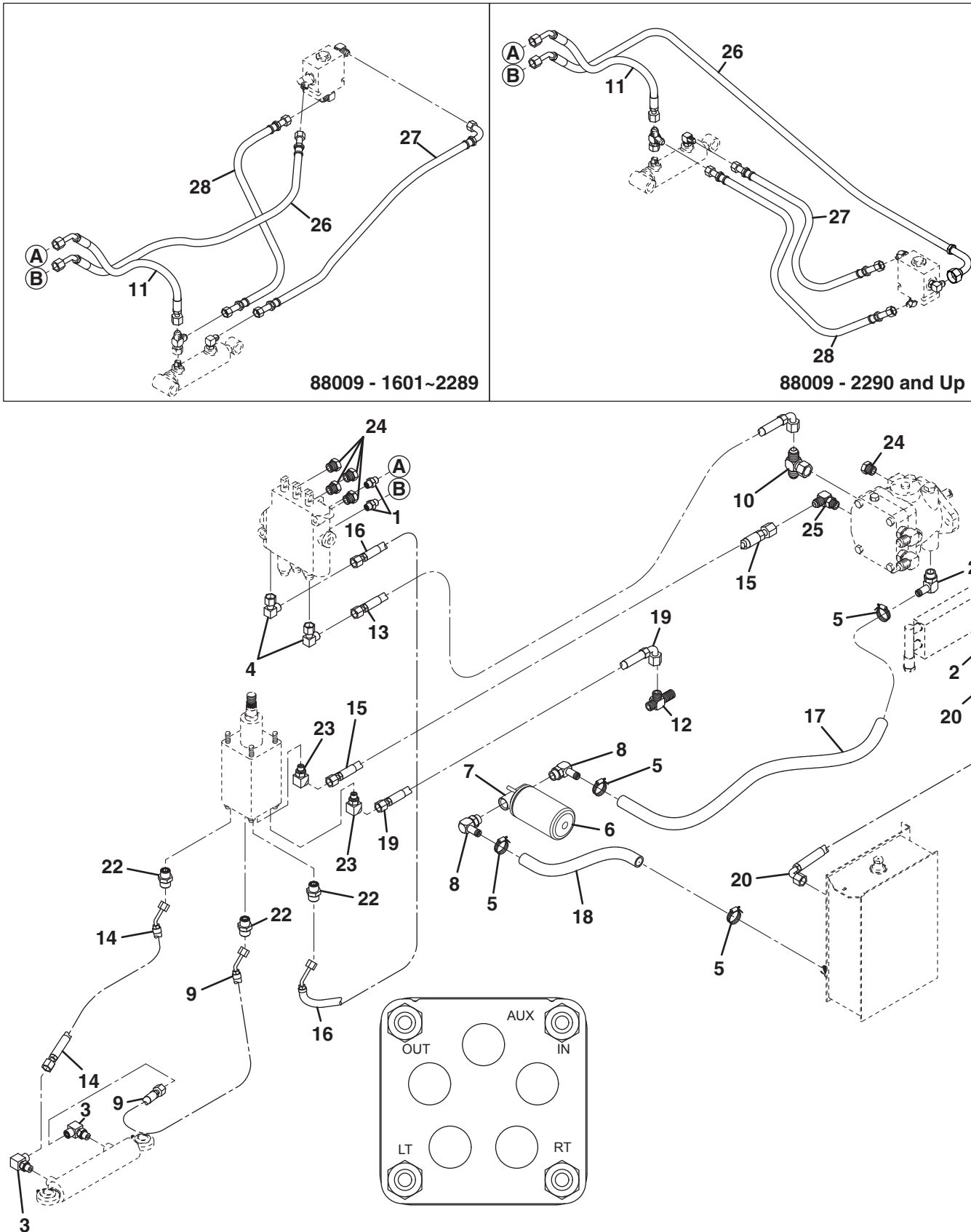
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	339985	1	Connector, Straight Thread	
2	838026	2	Adapter, 45° Elbow	
3	340144	2	Tee, Branch	
4	894730	1	Valve Assembly, Check	
5	4130003	1	Hose, Upper Bypass to Front Motor	
6	4130004	1	Hose, Lower Bypass to Front Motor	
7	4130008	1	Hose, Motor Tee to Upper Bypass	
8	4130316	2	Hose Clamp Assembly	
9	4141626	1	Hose, Pump to Upper Motor Tee	Gas Units
9	4141625	1	Hose, Pump to Upper Motor Tee	Diesel Units
10	4130388	1	Hose, Bulkhead Tee to Cooler	Gas Units
10	4130001	1	Hose, Bulkhead Tee to Cooler	Diesel Units
11	4130389	1	Hose, Pump Tee to Bulkhead Tee	Gas Units
11	4130002	1	Hose, Pump Tee to Bulkhead Tee	Diesel Units
12	4130390	1	Hose, Pump to Lower Bypass	Gas Units
12	4130009	1	Hose, Pump to Lower Bypass	Diesel Units
13	891266	1	Tube Asm, Hydraulic- LH Top	
14	891268	1	Tube Asm, Hydraulic- LH Bottom	
15	891938	1	Tube Asm, Hydraulic- RH Top	
16	891939	1	Tube Asm, Hydraulic- RH Bottom	
17	523761	2	Adapter, Tee - Pump to Motor	
18	838019	4	Adapter, 45° Elbow	
19	REF	2	Motor Assembly, Hydraulic	See 12.1
20	REF	1	Motor Assembly, Hydraulic	See 13.1
21	340144	1	Tee, Swivel Branch	
22	340216	1	Tee, Bulkhead Run	
23	339962	1	Nut, Bulkhead	
24	339984	1	Adapter, Straight	
25	340069	2	Adapter, 90°	
26	400118	4	Screw, 1/4-20 x 1-3/4" Hex Head	
27	446128	4	Lockwasher, 1/4	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

25.1 Hydraulic Implement Circuit - Gas



GROOM MASTER SAND TRAP RAKE

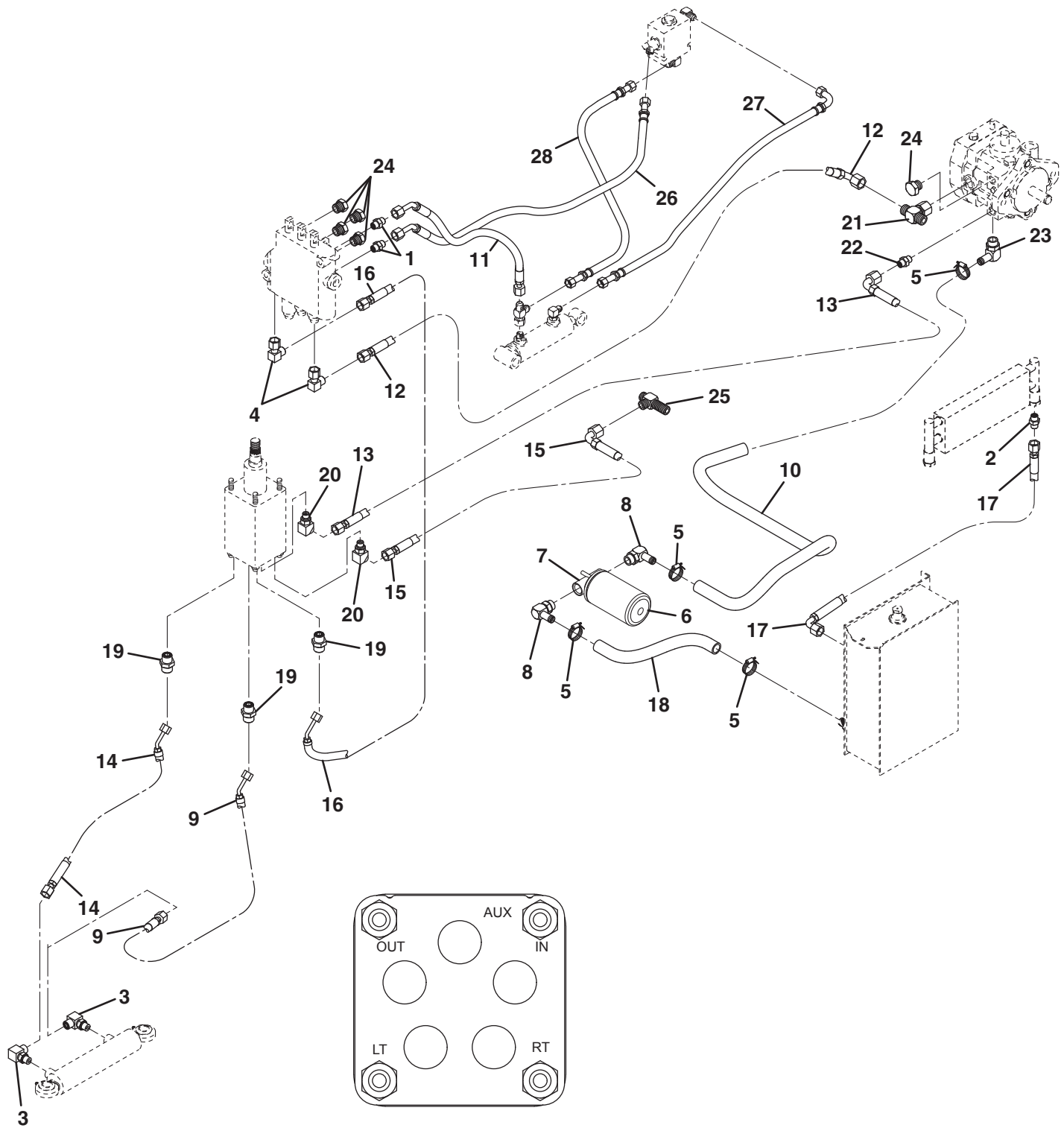
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	339974	2	Connector, 4-6 Straight Thread	See 24.1
2	339985	2	Connector, Straight Thread	
3	340061	2	Elbow, 90° Degree	
4	340375	2	Elbow, 90° Degree	
5	108094-02	4	Hose Clamp	
6	108046	1	Filter, Hydraulic Oil	
7	547818	1	Head, Filter	
8	3001025	2	Fitting, Beaded - 90° Degree	
9	4129998	1	Hose Asm, Hyd. .25 ID, 27.5"	
10	REF	1	Tee, Swivel Branch	
11	4130005	1	Hose Asm, Hyd. .38 ID, 22.5"	
12	REF	1	Tee, Bulkhead Run	
13	4130383	1	Hose Asm, Hyd. .38 ID, 40.5"	
14	4130174	1	Hose Asm, Hyd. .25 ID, 23.5"	
15	4130384	1	Hose Asm, Hyd. .38 ID, 83"	
16	4213340	1	Hose Asm, Hyd. .38 ID, 79.5"	
17	4130385	1	Hose Asm, Hyd. .75 ID, 30"	
18	4130375	1	Hose Asm, Hyd. .75 ID, 13.5"	
19	4130386	1	Hose Asm, Hyd. .38 ID, 67"	
20	4130960	1	Hose Asm, Hyd. .50 ID, 37"	
21	364963	1	Fitting, Beaded - 90° Degree	Serial No. 88009 - 1601~2289 Serial No. 88009 - 2290 and Up
22	339974	3	Connector, 4-6 Hydraulic	
23	340023	2	Elbow, 45° Degree	
24	524038	5	Plug, Hydraulic	
25	340061	1	Adapter, 90°	
> ● 26	4140808	1	Hose, Lift Valve to Check Valve	
> 26	4206722	1	Hose, Lift Valve to Check Valve	
> ● 27	4140810	1	Hose, Check Valve to Cylinder	
> 27	4206724	1	Hose, Check Valve to Cylinder	
> ● 28	4140809	1	Hose, Cylinder Tee to Check Valve	
> 28	4206723	1	Hose, Cylinder Tee to Check Valve	
> 29	473142	1	Cable Tie, 3/16 x 14"	Serial No. 88009 - 2290 and Up
●	Check valve relocation kit 4208840 is available to update older GroomMaster to current production			

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

26.1 Hydraulic Implement Circuit - Diesel

Serial No. All



GROOM MASTER SAND TRAP RAKE

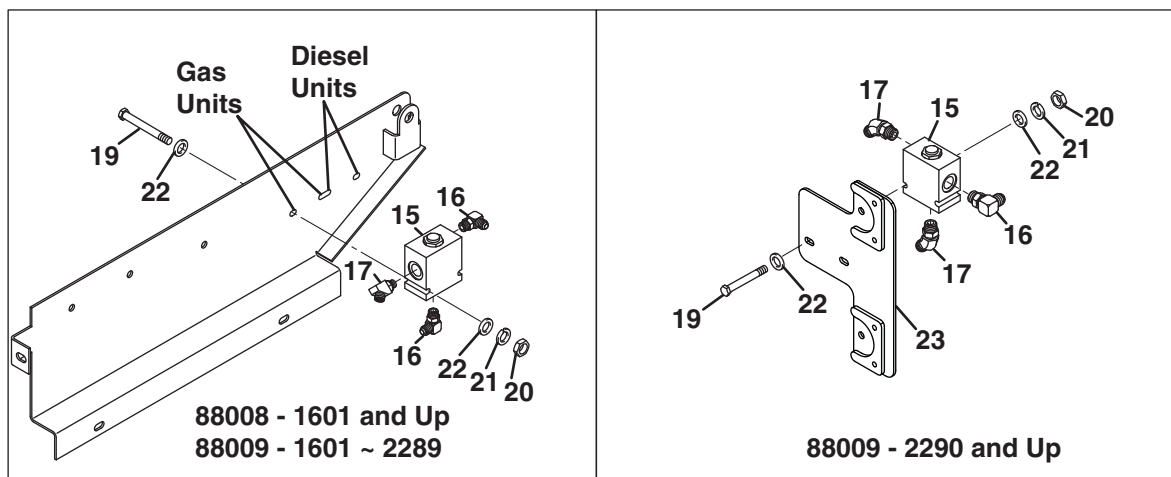
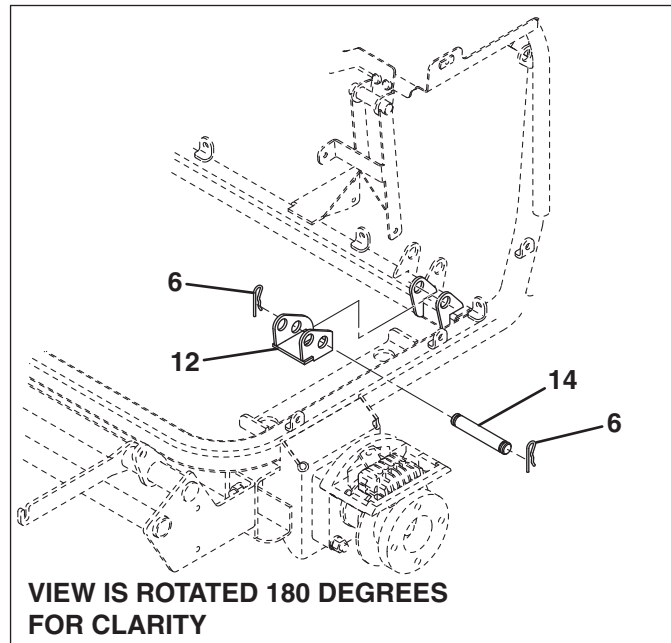
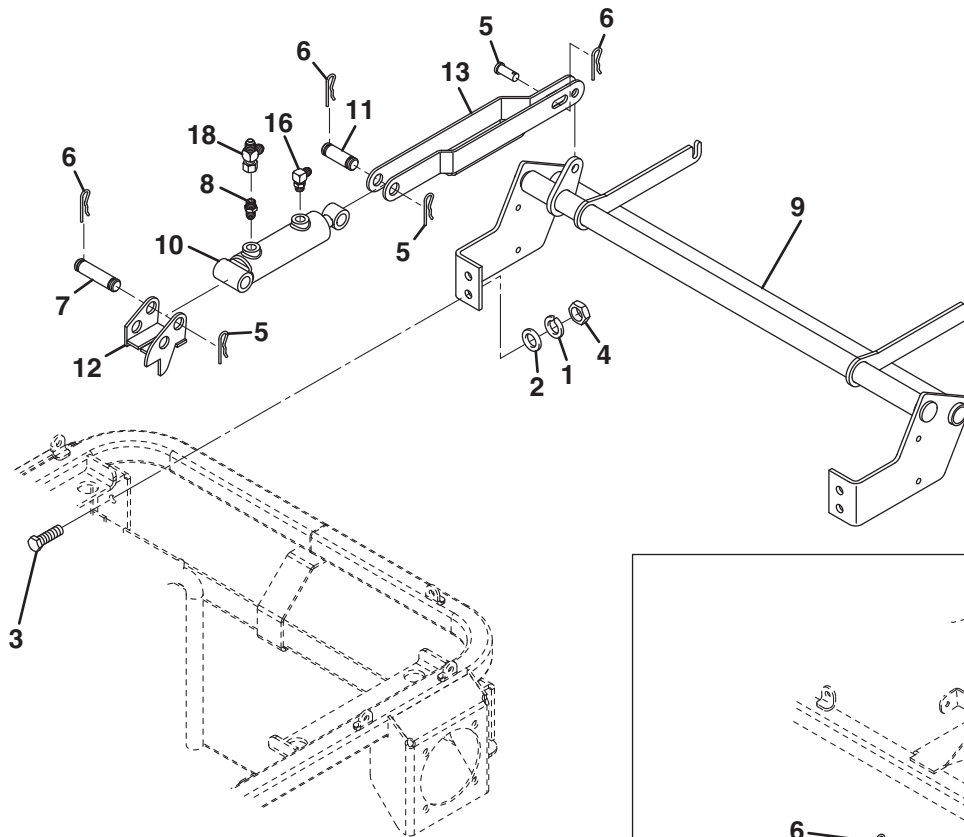
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	339974	2	Connector, 4-6 Straight Thread	
2	339985	1	Connector, Straight Thread	
3	340061	2	Elbow, 90° Degree	
4	340375	2	Elbow, 90° Degree	
5	108094-02	4	Hose Clamp	
6	522972	1	Filter, Hydraulic Oil	
7	547818	1	Head, Filter	
8	3001025	2	Fitting, Beaded - 90° Degree	
9	4129998	1	Hose Asm, Hyd. .25 ID, 27.5"	
10	4129999	1	Hose Asm, Hyd. .38 ID, 40.0"	
11	4130005	2	Hose Asm, Hyd. .38 ID, 22.5"	
12	4130006	1	Hose Asm, Hyd. .38 ID, 17.5"	
13	4130007	1	Hose Asm, Hyd. .38 ID, 72"	
14	4130174	1	Hose Asm, Hyd. .25 ID, 23.5"	
15	4130175	1	Hose Asm, Hyd. .38 ID, 64"	
16	4130176	1	Hose Asm, Hyd. .38 ID, 79.5"	
17	4130303	1	Hose Asm, Hyd. .50 ID, 42"	
18	4130375	1	Hose Asm, Hyd. .75 ID, 13.5"	
19	339974	3	Connector, 4-6 Straight Thread	See 24.1
20	340023	2	Elbow, 45° Degree, Straight Thread	
21	REF	1	Tee, Swivel Branch	
22	339979	1	Connector, 6-6 Hydraulic	
23	340069	2	Elbow, 90° Degree	See 24.1
24	524038	1	Plug, Hydraulic	
25	REF	1	Tee, Bulkhead Run	
26	4140808	1	Hose, Lift Valve to Check Valve	
27	4140810	1	Hose, Check Valve to Cylinder	
28	4140809	1	Hose, Cylinder Tee to Check Valve	

> Change from previous revision

GROOM MASTER SAND TRAP RAKE

Serial No. All

27.1 Rake Lift Assembly



GROOM MASTER SAND TRAP RAKE

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	120166	4	Lockwasher, .509 .879 .171 YS	
2	308091	4	Flat Washer, .50 1.06 .09 YS	
3	400406	4	Screw, 1/2-13 X 1-1/4" Hex Head	
4	443118	4	Nut, 1/2-13 Hex	
5	548458	1	Pin, Clevis	
6	822529	AR	Pin, Hair .44 2.00 .13 YS	
7	827172	1	Pin, HSG Pivot	
8	339979	1	Adaptor, Straight Male	
9	891210	1	Support Assembly, Rake Lift	
10	891272	1	Cylinder, Hydraulic	
11	837897	1	Pin, Lift Cylinder	Gas Units Only
11	4114455	1	Pin, Lift Cylinder	Diesel Units Only
12	4117143	1	Adapter Assembly, Cylinder Pivot	Diesel Units Only
13	4144686	1	Channel, Link-Rake Lift	Gas Units Only
13	4144685	1	Channel, Link-Rake Lift	Diesel Units Only
14	4118152	1	Pin, Lift Cylinder	Diesel Units Only
15	4140811	1	Valve, Check	
16	340061	3	Adapter, 90° 6-6	Serial No. 88008 - 1601 and Up Serial No. 88009 - 1601~2289
16	340061	2	Adapter, 90° 6-6	Serial No. 88009 - 2290 and Up
17	340026	1	Adapter, 45° 6-6	Serial No. 88008 - 1601 and Up Serial No. 88009 - 1601~2289
17	340026	1	Adapter, 45° 6-6	Serial No. 88009 - 2290 and Up
18	340119	1	Tee, Swivel Run 6-6-6	
19	400122	2	Screw, 1/4-20 x 2-1/4" Hex Head	
20	443102	2	Nut, 1/4-20 Hex	
21	446130	2	Lockwasher, 1/4 Heavy	
22	452004	4	Flat Washer, 1/4	
23	4206721	1	Bracket, Check Valve	Serial No. 88009 - 2290 and Up See 4.1 for mounting.

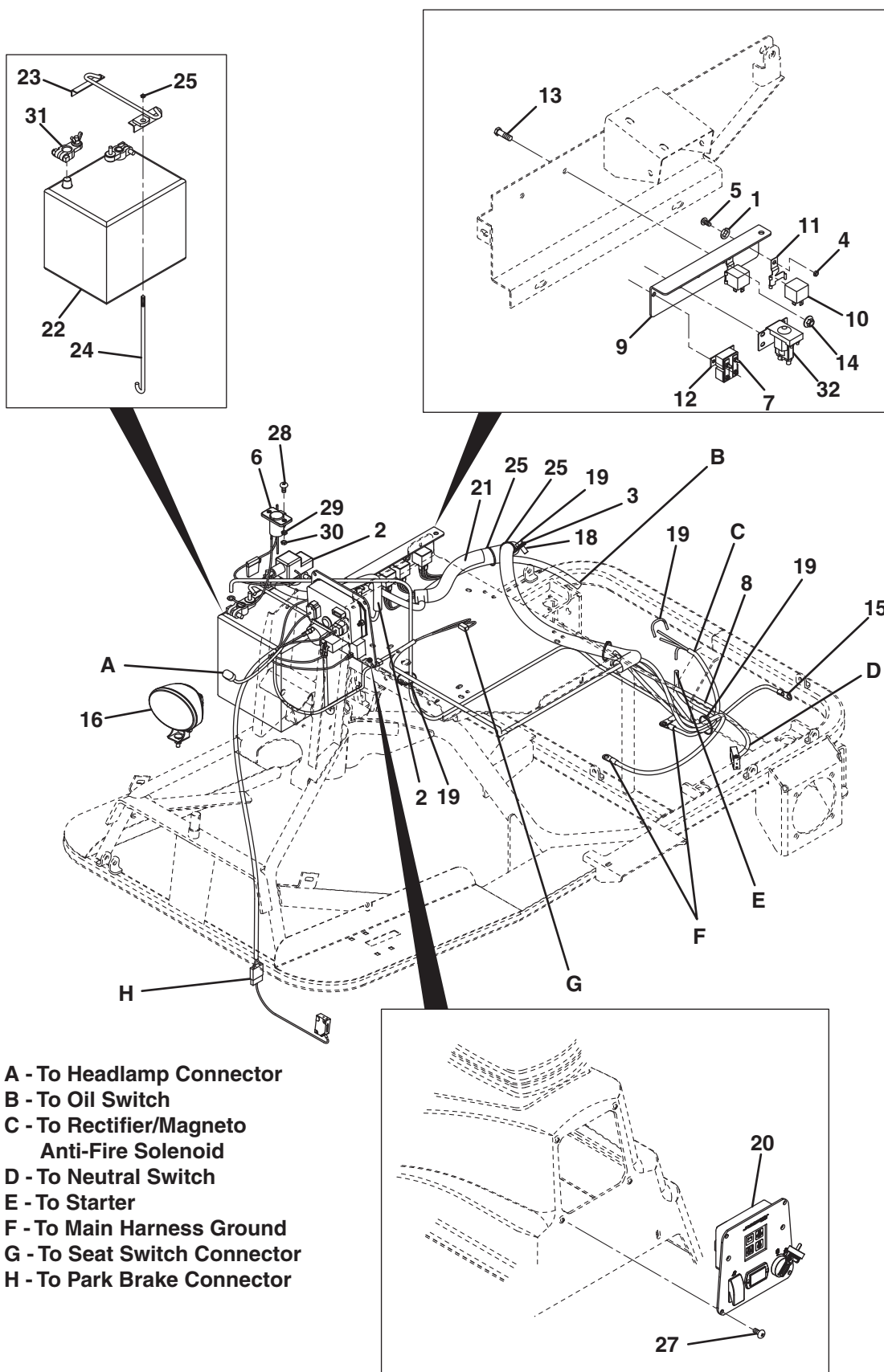
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GROOM MASTER SAND TRAP RAKE

Serial No. All

28.1 Electrical Harness

Gas Units



GROOM MASTER SAND TRAP RAKE

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	446116	6	Lockwasher, #10	REFERENCE K-1,K-2 See 32.1 REFERENCE CB-1, See 32.1 REFERENCE L-1, See 32.1 REFERENCE B-1, See 32.1 REFERENCE K3, See 32.1
2	4132728	1	Battery Cable Assembly	
3	831225	1	Clamp, Tube/Wire	
4	444310	6	Nut, #10-24 Hex Plated	
5	403910	6	Screw, #10-24 X 1/2" Truss Head	
6	4131515	1	12V Acc. Wire Assembly	
7	445795	1	Nut, 5/16-18 Spiralock Flange	
8	884513	1	Wire Assembly, 46" Black	
9	4136868	1	Bracket, Electrical Component	
10	4126082	2	Relay, SPDT w/Diode	
11	4125826	3	Bracket, Relay Mounting	
12	4136880	1	Circuit Breaker, 12V - 80A	
13	400190	2	Screw, 5/16-18 X 1-1/4" Hex Head	
14	445795	2	Nut, 5/16-18 Spiralock Flange	
15	883078	1	Wire Assembly, 10" Black	
16	4122840	1	Headlight Assembly, Oval	
17	383586	1	Screw, M8-1.25 X 20MM Hex Head	
18	453011	1	Flat Washer, 3/8"	
19	320107	1	Tie, Strap	
20	4134719	1	Control Panel Assembly	
21	4130930	1	Harness, Main GM-2 Gas	
22	148074	1	Battery	
23	887645	1	Hold Down Assembly	
24	4136334	2	Bolt, Bent - Battery Hook	
25	800697	2	Nut, Lock 5/16-18	
26	446134	1	Lockwasher, 5/16"	
27	404018	4	Screw, 1/4-20 X 3/4" Truss Head	
28	402006	2	Screw, #6-32 X 1/2" Slotted Rd. Hd.	
29	446106	2	Lockwasher, #6 Heavy	
30	444304	2	Nut, #6-32 Hex Plated	
31	4135324	2	Terminal, Positive	
32	131905	1	Solenoid, Starter	

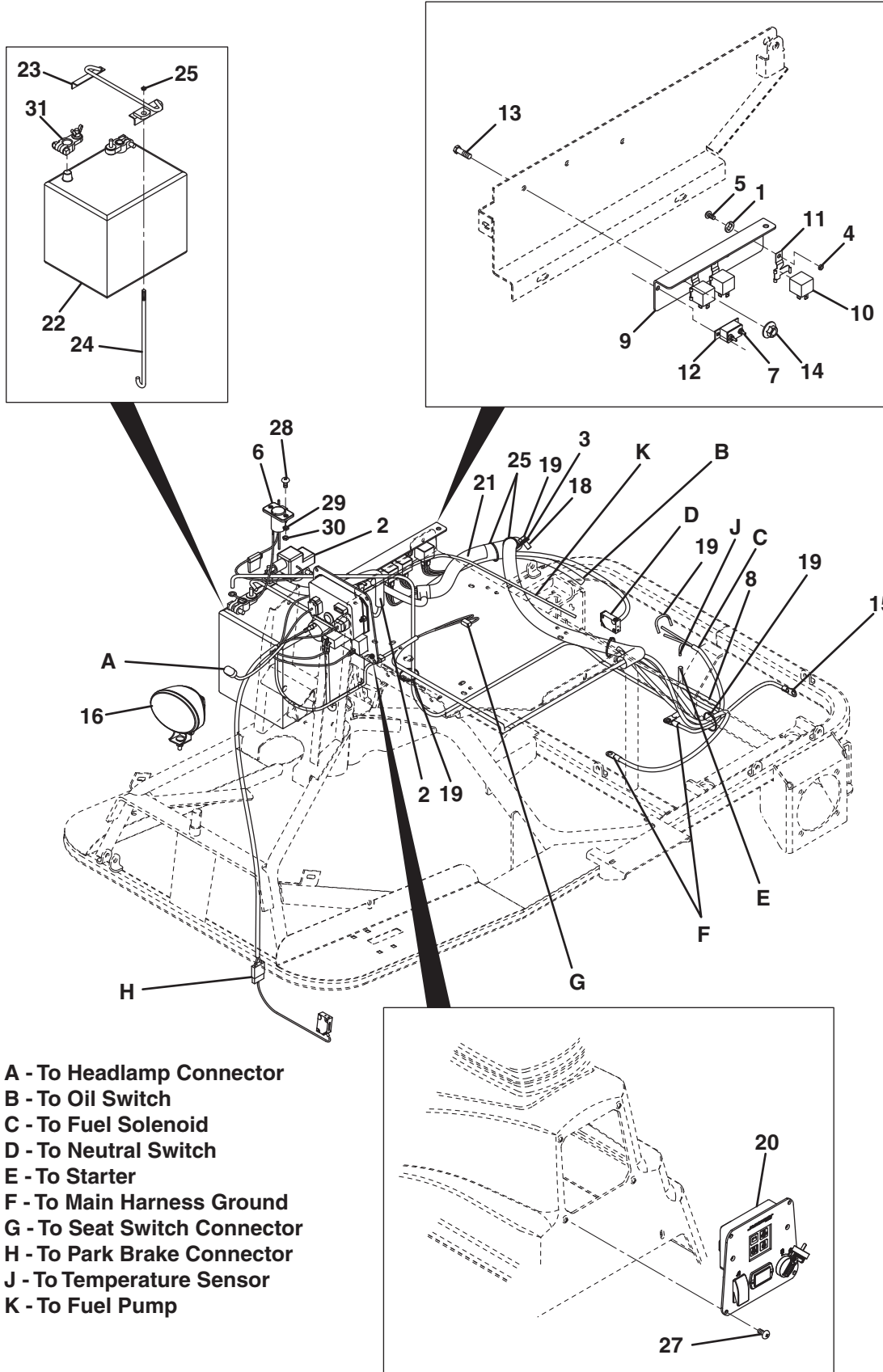
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GROOM MASTER SAND TRAP RAKE

Serial No. All

29.1 Electrical Harness

Diesel Units



GROOM MASTER SAND TRAP RAKE

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	446116	5	Lockwasher, #10	
2	4131150	1	Battery Cable Assembly	
3	831225	1	Clamp, Tube/Wire	
4	444310	4	Nut, #10-24 Hex Plated	
5	403910	5	Screw, #10-24 X 1/2" Truss Head	
6	4131515	1	12V Acc. Wire Assembly	
7	445795	1	Nut, 5/16-18 Spiralock Flange	
8	884513	1	Wire Assembly, 46" Black	
9	4136868	1	Bracket, Electrical Component	
10	4126082	3	Relay, SPDT w/Diode	REFERENCE K-1,K-2,K-3, See 32.1
11	4125826	3	Bracket, Relay Mounting	REFERENCE CB-1, See 32.1
12	361439	1	Circuit Breaker, 12V - 50A	
13	400190	2	Screw, 5/16-18 X 1-1/4" Hex Head	
14	445795	2	Nut, 5/16-18 Spiralock Flange	REFERENCE L-1, See 32.1
15	883078	1	Wire Assembly, 10" Black	
16	4122840	1	Headlight Assembly, Oval	
17	383586	1	Screw, M8-1.25 X 20MM Hex Head	
18	453011	1	Flat Washer, 3/8"	
19	320107	1	Tie, Strap	REFERENCE B-1, See 32.1
20	4134719	1	Control Panel Assembly	
21	4130457	1	Harness, Main GM-2	
22	148074	1	Battery	
23	887645	1	Hold Down Assembly	
24	4136334	2	Bolt, Bent - Battery Hook	
25	800697	2	Nut, Lock 5/16-18	
26	446134	1	Lockwasher, 5/16"	
27	404018	4	Screw, 1/4-20 X 3/4" Truss Head	
28	402006	2	Screw, #6-32 X 1/2" Slotted Rd. Hd.	
29	446106	2	Lockwasher, #6 Heavy	
30	444304	2	Nut, #6-32 Hex Plated	
31	4135324	2	Terminal, Positive	

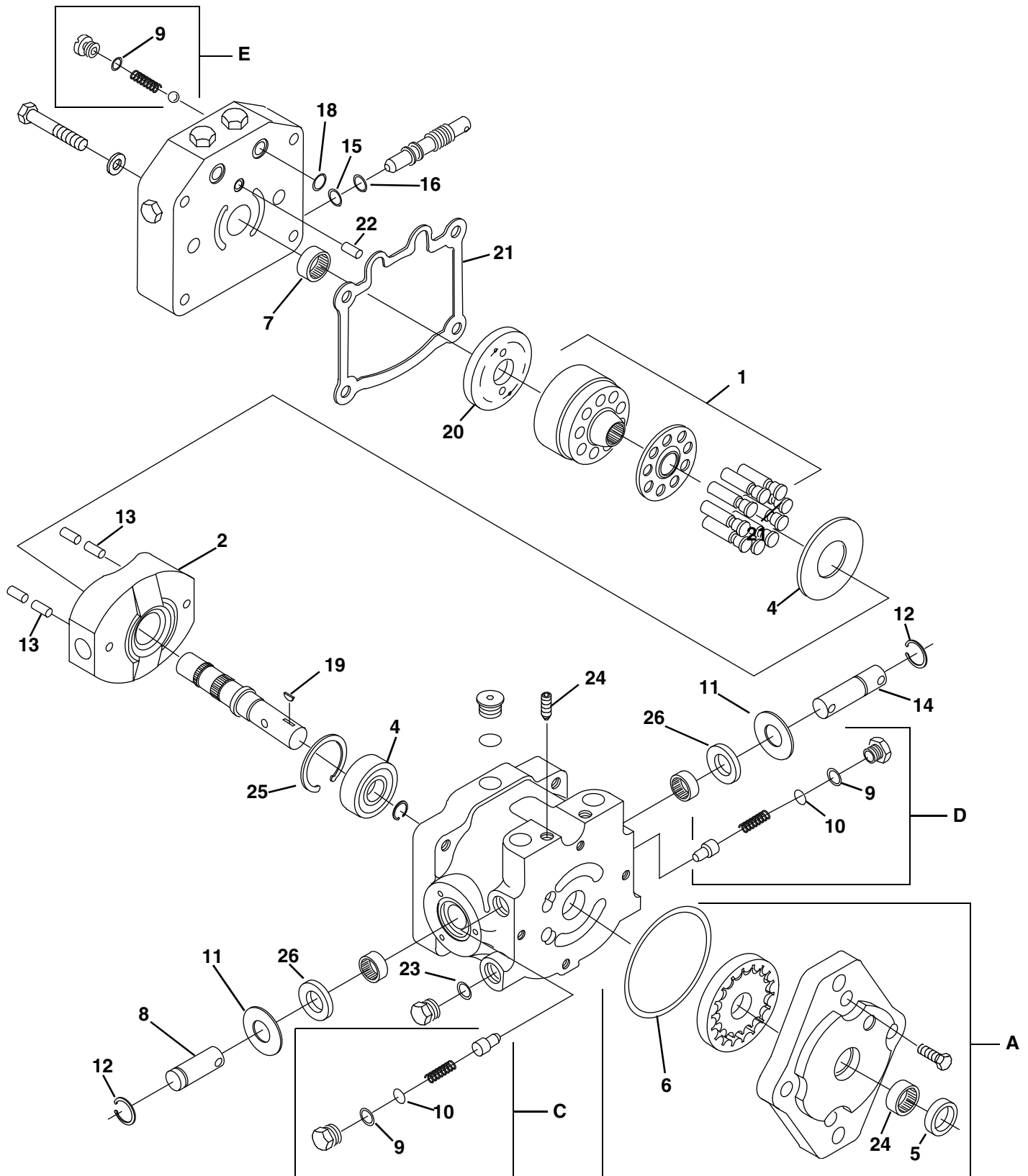
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GROOM MASTER SAND TRAP RAKE

30.1 Hydraulic Pump

Serial No. All

Part Number 1003249 - Diesel Units / Part Number 547674 - Gas Units



GROOM MASTER SAND TRAP RAKE

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	156287	1	Cylinder Block Kit	
2	333831	1	Swash Plate	
3	333844	2	Thrust Plate	
4	5003452	1	Ball Bearing	
5	A, B	1	Lip Seal	
6	A, B	1	O-Ring	
7	558136	1	Roller Bearing	
8	558127	1	Trunnion Shaft	
9	B, C, D, E	4	O-Ring	
10	B, C, D	1	Shim Kit	
11	333846	2	Washer	
12	333845	2	Retaining Ring	
13	349577	3	Spring Coiled Pin	
14	333835	1	Trunnion Shaft	
15	B	1	O-Ring	
16	B	1	Back-Up Ring	
17	590063	2	Pipe Plug	
18	B	2	O-Ring	
19	5003448	1	Key	
20	5003449	1	Valve Plate	
21	B	1	Gasket	
22	333855	1	Pin	
23	B	1	O-Ring	
24	551048	1	Needle Bearing	
25	360803	1	Retaining Ring	
A	5003450	1	Charge Pump Kit	Includes Items 5, 6 and 24
		1	Charge Pump Housing	
		4	Screw	
		1	Gerotor Assembly	
B	5002068	1	Seal Kit	Includes Items 5, 6, 9, 10, 15, 16, 18, 21 and 23
C	2500596	1	Charge Pump Kit	Includes Items 9 and 10
		1	Plug	
		1	Charge Relief Spring	
		1	Charge Relief Cone	
D	2500597	1	Implement Relief Kit	Includes Items 9 and 10
		1	Plug	
		1	Implement Relief Spring	
		1	Implement Relief Cone	
E	5003451	2	Check Valve Kit	Includes Item 9
		1	Ball	
		1	Spring	
		1	Plug	

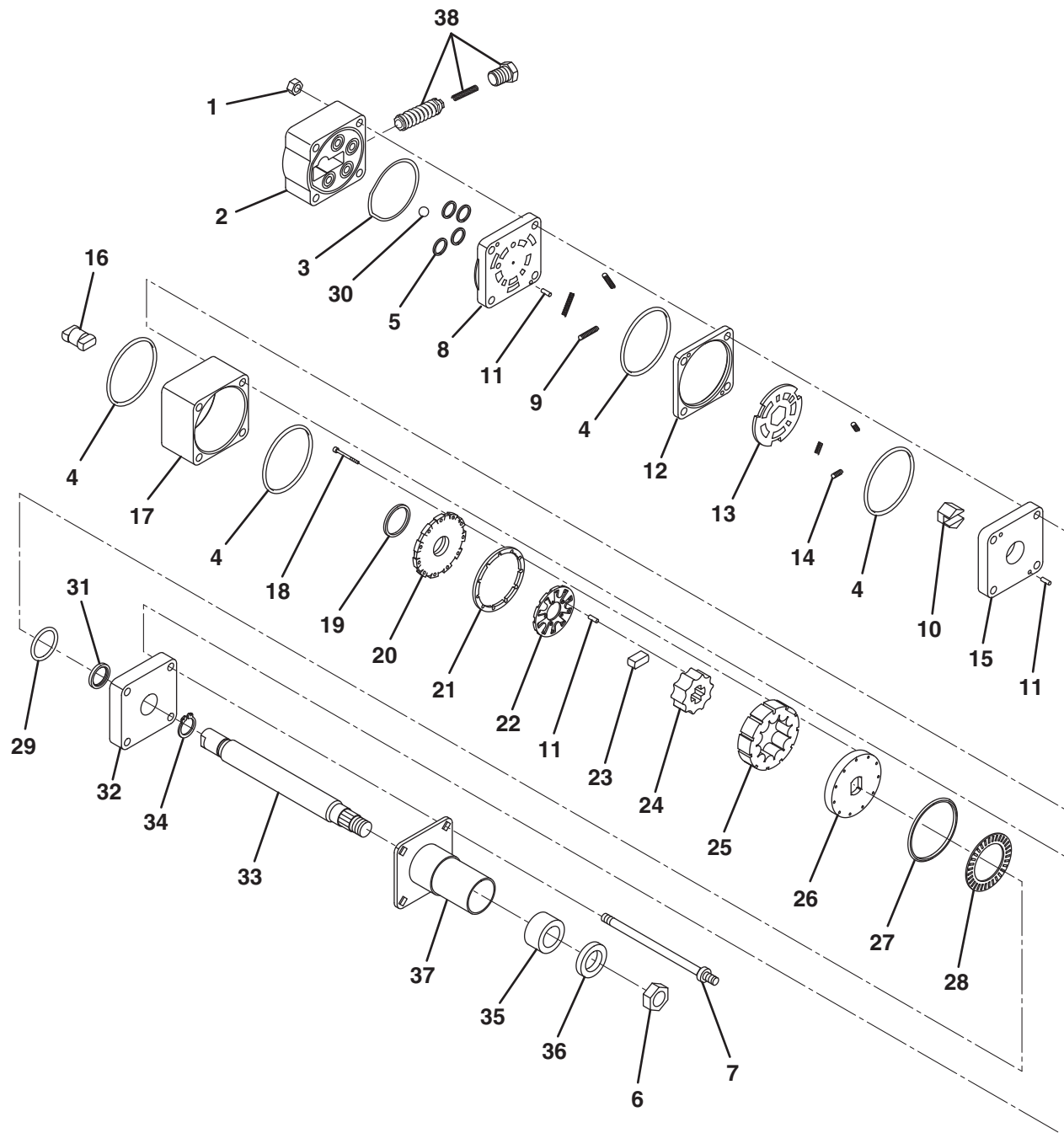
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GROOM MASTER SAND TRAP RAKE

31.1 Power Steering Pump

Part Number 4144765

Serial No. All



GROOM MASTER SAND TRAP RAKE

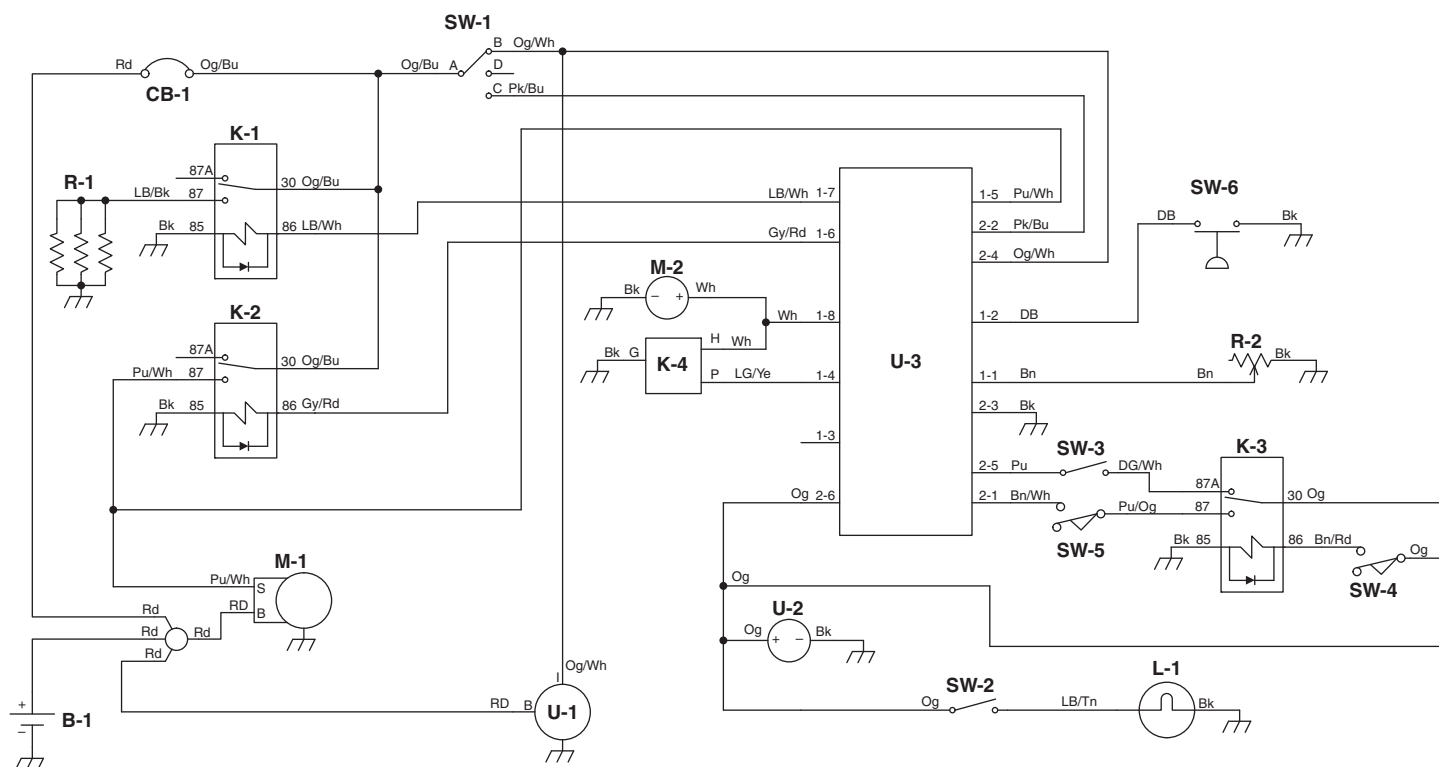
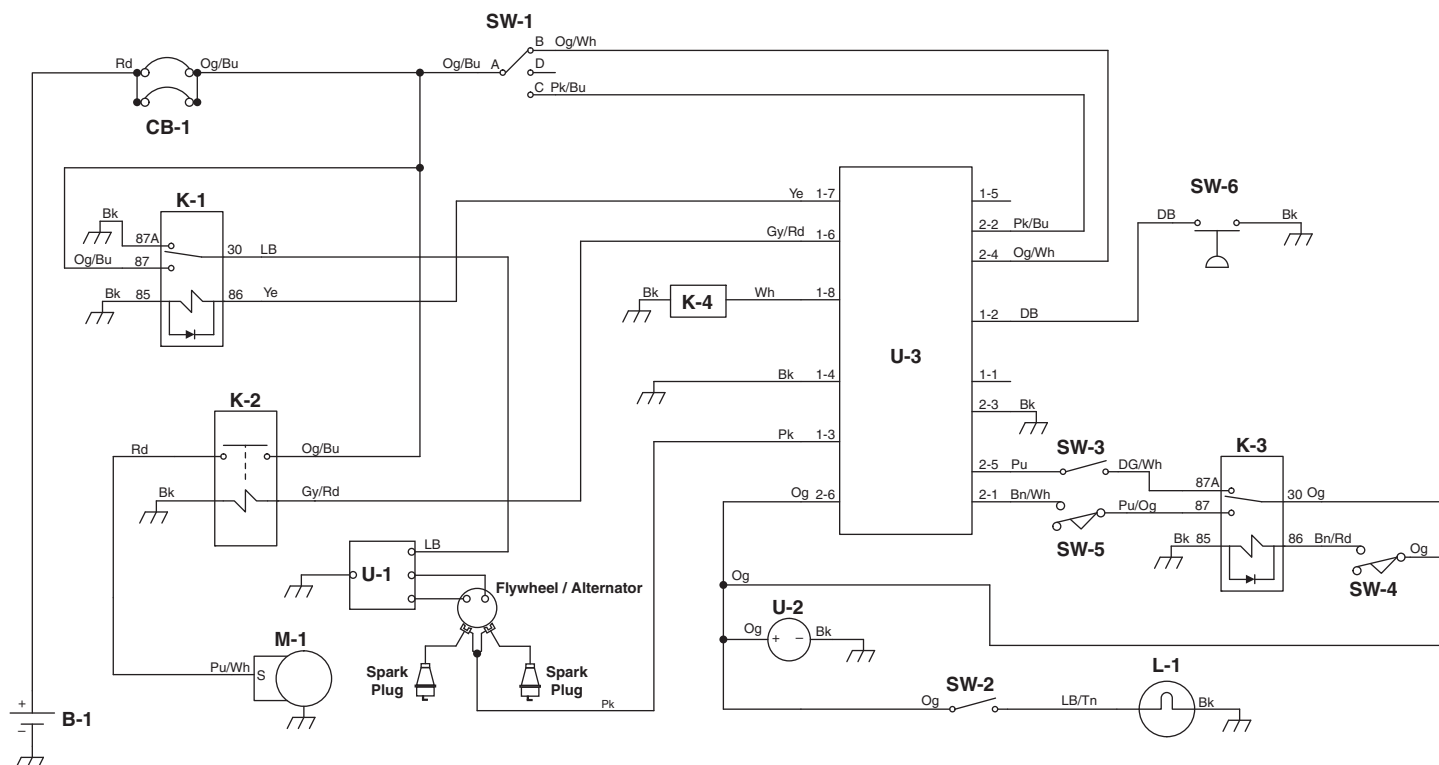
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4134033	4	Locknut 5/16-18 Center	
2	4134034	1	Port Cover	
● 3	4134035	1	Seal, O-Ring	
● 4	N/S	4	Seal, O-Ring	
● 5	N/S	4	Seal, O-Ring	
6	443828	1	Nut, 5/8-18 Hex Jam	
7	N/S	4	Special Bolt	
8	N/S	1	Port Manifold	
◆ 9	N/S	3	Spring, Port Side	
10	N/S	1	Hex Drive	
□▼ 11	N/S	9	Needle Roller	
12	503398	1	Valve Ring	
13	503398	1	Valve Plate	
◆ 14	N/S	3	Spring, Shaft Side	
15	554854	1	Isolation Manifold	
16	551105	1	Drive Link	
17	5002051	1	Metering Ring	
□ 18	N/S	11	Screw, Socket Head	
● 19	N/S	1	Seal, Commutator	
□ 20	N/S	1	Commutator Cover	
□ 21	N/S	1	Commutator Ring	
□ 22	N/S	1	Commutator	
□ 23	N/S	1	Spacer	
□ 24	N/S	1	Rotor	
□ 25	N/S	1	Stator	
□ 26	N/S	1	Drive Plate	
27	554858	1	Spacer	
28	554856	1	Thrust Bearing	
● 29	N/S	1	Face Seal	
30	N/S	1	Ball, 9/32"	
31	554857	1	Seal, Spacer	
32	N/S	1	Upper Cover Plate	
★ 33	N/S	1	Shaft	
★ 34	N/S	1	Retaining Ring	
★ 35	N/S	1	Bushing	
★ 36	N/S	1	Seal	
★ 37	N/S	1	Jacket	
□	5002059	1	Metering Kit	Includes all Items marked □
◆	502924	1	Spring Kit	Includes all Items marked ◆
●	557738	1	Seal Kit	Includes all Items marked ●
★	4135062	1	Column Assembly	Includes all Items marked ★
▼	502925	1	Needle Roller Kit	Includes all Items marked ▼

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GROOM MASTER SAND TRAP RAKE

32.1 Electrical Scematic

Serial No. All



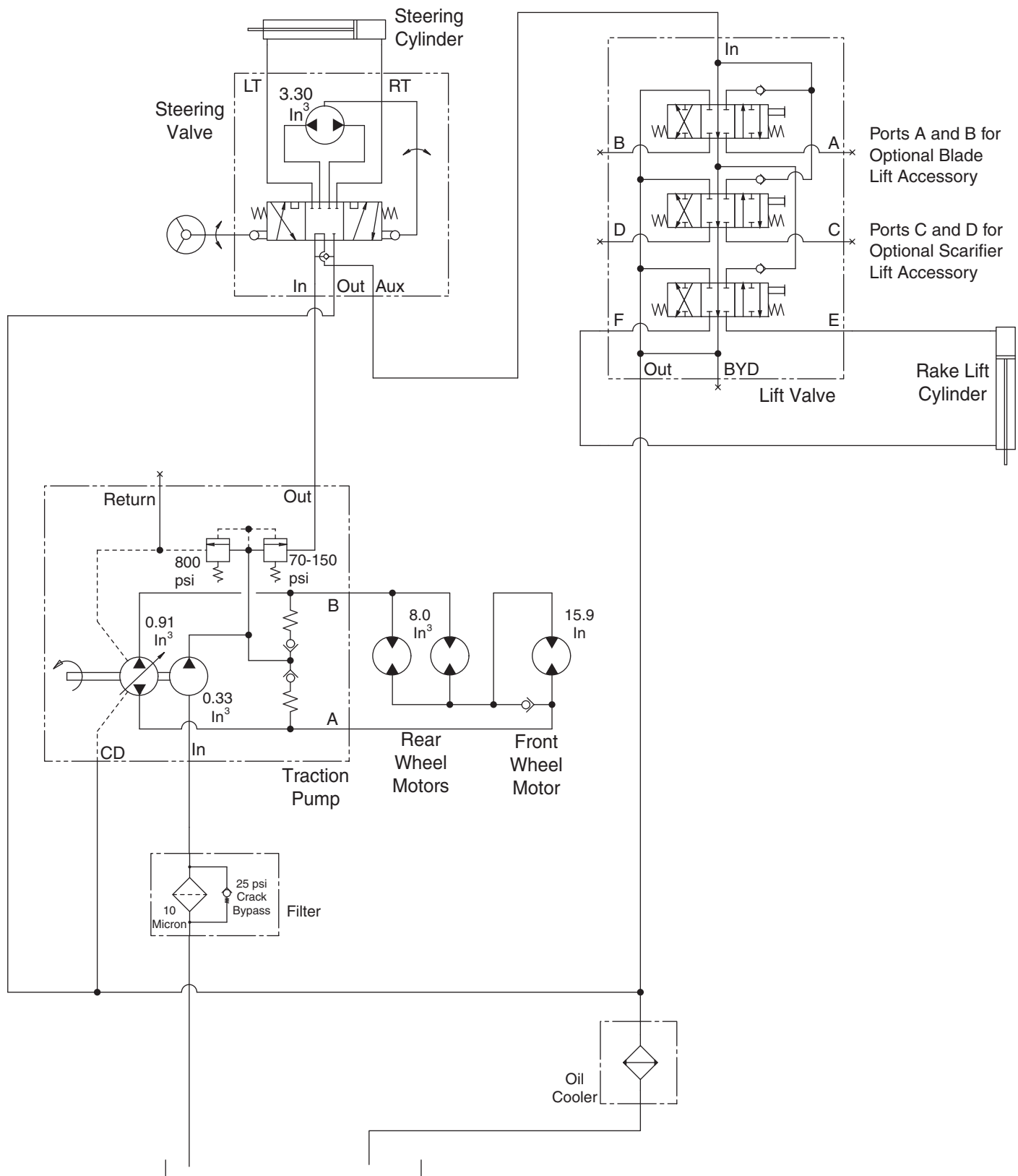
GROOM MASTER SAND TRAP RAKE

Item	Reference Illustration	Part Number	Description	Serial Numbers/Notes
B-1	See 28.1, 29.1	148074	Battery	
CB-1	See 28.1	4136880	80 Amp Circuit Breaker	Gas Units
CB-1	See 29.1	361439	50 Amp Circuit Breaker	Diesel Units
K-1	See 28.1	4126082	Shut Down Relay	Gas Units
K-1	See 29.1	4126082	Glow Plug Relay	Diesel Units
K-2	See 28.1	131905	Starter Solenoid	Gas Units
K-2	See 29.1	4126082	Starter Relay	Diesel Units
K-3	See 28.1, 29.1	4126082	Interlock Relay	
K-4	Not Shown		Fuel Solenoid	Gas Units, Included with Engine
K-4	See 20.1	338289	Fuel Solenoid	Diesel Units
L-1	See 28.1, 29.1	4122840	Headlight	
M-1	Not Shown		Sterter	Included with Engine
M-2	See 21.1	5001948	Fuel Pump	Diesel Units
R-1	Not Shown		Glow Plugs	Diesel Units
R-2	Not Shown		Temperature Sender	Diesel Units
SW-1	See 6.1	4128888	Ignition Switch	
SW-2	See 6.1	4130132	Light Switch	
SW-3	See 11.1	4125831	Seat Switch	
SW-4	See 5.1	158135-01	Brake Switch	
SW-5	See 10.1	4125831	Neutral Switch	
SW-6	Not Shown		Engine Oil Switch	Included with Engine
U-1	Not Shown		Regulator/Rectifier	Gas Units
U-1	Not Shown		Alternator	Diesel Units
U-2	See 6.1	4129683	Hour Meter	
U-3	See 6.1	4129260	Controler	



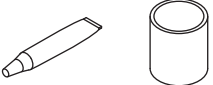
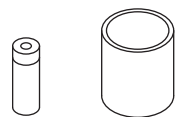
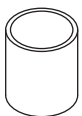
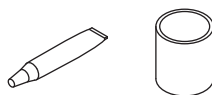

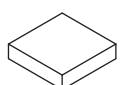
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GROOM MASTER SAND TRAP RAKE

33.1 Hydraulic Schematic



Fluids and Compounds

Hydraulic Fluid*		
5001405	Two 2-1/2 Gallon Container of ISO VG68 Oil	
5001404	One 5 Gallon Pail of ISO VG68 Oil	
2500548	Two 2-1/2 Gallon Container of 10W30 Oil	
2500546	One 5 Gallon Pail of 10W30 Oil	
503409	Two 2-1/2 Gallon Container of ATF Fluid	
503407	One 5 Gallon Pail of ATF Fluid	
2-Cycle Oil		
554599	Twenty Four 8 Ounce Plastic Container	
Grease		
5000067	One 5 Gallon Pail OO-Grease	
5000068	Twenty Four 8 Ounce Tube OO-Grease	
Paint		
4184140	12 Ounce Orange Aerosol Can	
2500789	Twelve 1 Quart Can Orange	
546409	Two 1 Gallon Can Orange	
5002631	Hunter Green Aerolol Can	
838140	16 Ounce Ransomes Green Aerosol Can	
4112764	1 Quart Can Ransomes Green	
Lapping Compound		
5002488	One 10 Pound Pail of 80 Grit	
5002490	One 25 Pound Pail of 80 Grit	
5002489	One 10 Pound Pail of 120 Grit	
5002491	One 25 Pound Pail of 120 Grit	
Specialty Compound		
365422	5.3 Ounce Tube of Electrical Insulating Gel	
5001581	14 Ounce Can of Lubriplate Multi Lube A	
523248	Chain Lubricant	
4136736	Zinc Spray Corrosion Protection	
Biodegradable Hydraulic Fluid*		
5003102	One 55 Gallon Drum Jacobsen GreensCare 68	
5003103	One 5 Gallon Pail Jacobsen GreensCare 68	
5003105	One 55 Gallon Drum Jacobsen GreensCare 46	
5003104	One 5 Gallon Pail Jacobsen GreensCare 46	
4115976	One 55 Gallon Drum Jacobsen GreensCare 32	
4115977	One 5 Gallon Pail Jacobsen Greens Care 32	
4114701	GreensCare Bio-Flush	
5003106	Twenty Four 14 Ounce Tube Greens Care Grease	
O-Ring Kit		
5002452	SAE O-Ring Boss (3/32 ~ 2" Tube O.D.)	
5002453	Common O-Ring Kit	
5002454	O-Ring Face Seal ORFS (-4 ~ -24 ORS Tube Size)	
Right Start Kit for New Machines		
See your local Jacobsen Dealer		
On-Time Maintenance Kit		
See your local Jacobsen Dealer		

* Refer to the Operator's manual or the Parts & Maintenance Manual for the correct hydraulic oil requirements for your machine. Jacobsen offers a High Usage Parts Catalog illustrating commonly used Parts through easy to read line Drawings. See your local Jacobsen Dealer for a copy.

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