

# ***CLASSEN***<sup>®</sup>

## **RECIPROCATING AERATOR**



MAN C100721

Rev A. 02-2013

Original Language Instructions

**MODELS:**  
**RA-21H**  
Reciprocating Aerator Honda GX160

**RA-21B**  
Reciprocating Aerator B&S Intek 850



**SCHILLER**

GROUNDS  
CARE

# **PARTS MANUAL**



**CALIFORNIA**

**Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

**⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**CALIFORNIA**

**Proposition 65 Warning**

Battery posts, terminals, wiring insulation, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**WASH HANDS AFTER HANDLING.**



## IMPORTANT MESSAGE

Thank you for purchasing this Classen product. You have purchased a world class product, one of the best designed and built anywhere.

This machine comes with an Operation and Safety Manual, Parts and Service Manual, and Engine Manual. The useful life and good service you receive from this machine depends to a large extent on how well you read and understand these manuals. Treat your machine properly, lubricate and adjust it as instructed, and it will give you many years of reliable service.

Your safe use of this Classen product is one of our prime design objectives. Many safety features are built in, but we also rely on your good sense and care to achieve accident-free operation. For best protection, study the manuals thoroughly. Learn the proper operation of all controls. Observe all safety precautions. Follow all instructions and warnings completely. Do not remove or defeat any safety features. Make sure those who operate this machine are as well informed and careful in its use as you are.

See a Classen dealer for any service or parts needed. Classen service ensures that you continue to receive the best results possible from Classen products. You can trust Classen replacement parts because they are manufactured with the same high precision and quality as the original parts.

Classen designs and builds its equipment to serve many years in a safe and productive manner. For longest life, use this machine only as directed in the manuals, keep it in good repair and follow safety warnings and instructions. You'll always be glad you did.

**Classen**  
**Schiller Grounds Care, Inc.**  
**1028 Street Road**  
**Southampton, PA 18966-4217**

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Operator's Manual C100722



This Operator / Parts Manual is part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.



**NOTICE !!!**

Unauthorized modifications may present **extreme** safety hazards to operators and bystanders and could also result in product damage.

Schiller Grounds Care, Inc. strongly warns against, rejects and disclaims any modifications, add-on accessories or product alterations that are not designed, developed, tested and approved by Schiller Grounds Care, Inc.'s Engineering Department. Any Schiller Grounds Care, Inc. product that is altered, modified or changed in any manner not specifically authorized after original manufacture—including the addition of “after-market” accessories or component parts not specifically approved by Schiller Grounds Care, Inc.—will result in the Schiller Grounds Care, Inc. Warranty being voided.

Any and all liability for personal injury and/or property damage caused by any unauthorized modifications, add-on accessories or products not approved by Schiller Grounds Care, Inc. will be considered the responsibility of the individual(s) or company designing and/or making such changes. Schiller Grounds Care, Inc. will vigorously pursue full indemnification and costs from any party responsible for such unauthorized post-manufacture modifications and/or accessories should personal injury and/or property damage result.



This symbol means:  
**ATTENTION!**  
**BECOME ALERT!**

Your safety and the safety of others is involved.

**Signal word definitions:**

The signal words below are used to identify levels of hazard seriousness. These words appear in this manual and on the safety labels attached to Schiller Grounds Care, Inc. machines. For your safety and the safety of others, read and follow the information given with these signal words and/or the symbol shown above.

**⚠ DANGER**

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

**⚠ WARNING**

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

**⚠ CAUTION**

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

**CAUTION**

**CAUTION** used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, **MAY** result in property damage.

***Schiller Grounds Care, Inc.***

1028 Street Road  
Southampton, PA 18966 U.S.A  
Phone: 215-357-5110  
Fax: 215-357-8045

MODEL NUMBER

SERIAL NUMBER

**MODEL NUMBER:** This number appears on sales literature, technical manuals and price lists.

**SERIAL NUMBER:** This number appears only on your unit. It contains the model number followed consecutively by the serial number. Use this number when ordering parts or seeking warranty information.



## MAINTENANCE SAFETY

### In general

- Read and understand the manual before maintenance on machine.
- Maintain machine according to manufacturer's schedule and instructions for maximum safety and best results.
- Park machine on level ground.
- Never allow untrained personnel to service machine.
- Guards should only be removed by a qualified technician for maintenance or service. Replace when work is complete.
- Adjust or repair only after the engine has been stopped and the tines have quit rotating.
- Replace parts if worn, damaged or faulty. For best results, always replace with parts recommended by the manufacturer.
- Disconnect spark plug wire(s) before making any repairs.
- Do not dismantle the machine without releasing or restraining forces which may cause parts to move suddenly.
- Provide adequate support, e.g. jackstands for lifted machine or parts if working beneath.
- Do not put hands or feet near or under rotating parts.
- Clean up spilled oil or fuel thoroughly.
- Replace faulty mufflers.
- To reduce fire hazards, keep the engine, muffler, and fuel storage area free of grass, leaves, debris buildup or grease.



### Tines

- Tines are sharp and can cut. Use extra caution when handling. Wear appropriate personal protective equipment.
- Only replace tines. Never straighten or weld them.
- Keep other persons away from tines.

### WARNING



### Fuel

### WARNING



- Petrol (gasoline) and diesel fuels are flammable; petrol (gasoline) vapors are explosive. Use extra care when handling.
- Store only in containers specifically designed for fuel.
- When refueling or checking fuel level:
  - Stop the engine and allow to cool;
  - Do not smoke;
  - Refuel outdoors only;
  - Use a funnel;
  - Do not overfill;
  - If fuel is spilled, do not attempt to start the engine until the spill is cleaned up and vapors have cleared.
  - Replace caps on fuel containers and tanks securely.

Sparks from static electricity can start fires or cause explosions. Flowing fuel can generate static electricity. To prevent static electricity sparks:

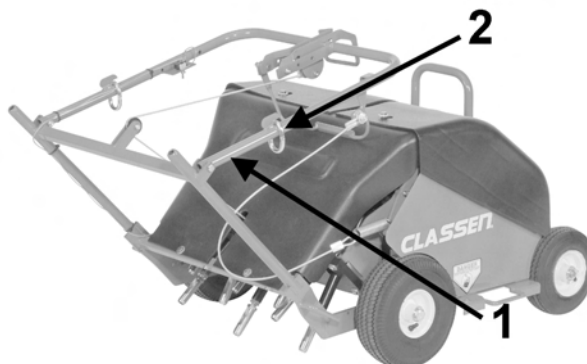
- Keep fuel containers electrically grounded.
- Do not fill containers in a vehicle or on a truck or trailer bed with a plastic liner. Fill containers on the ground away from the vehicle.
- When practical, remove gas powered equipment from the truck or trailer and refuel it on the ground. If equipment must be refueled on the truck or trailer, refuel from a portable container rather than a dispenser nozzle.
- Keep the dispenser nozzle in contact with the rim of the fuel tank or container opening until fueling is complete. Do not use a nozzle lock-open device.



## SET-UP INSTRUCTIONS

**NOTE:** Units ship with no gas or oil.

1. Cut banding and roll aerator off pallet.
2. Unfold by pulling up on handle **1**. Slide lock rings **2** down to lock handle in upright position.
3. Add oil to the engine and crankcase with the engine resting in a level position. Refer to the engine manufacturer's Owners manual for the correct type and amount of oil.
4. Fill the fuel tank according to the engine manufacturer specifications.



## MAINTENANCE



### WARNING

Stop the engine and remove spark plug wire before performing any maintenance.

When replacement parts are required, use genuine Classen parts or parts with equivalent characteristics, including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or bystanders.

Carbon monoxide present in the exhaust is an odorless and deadly gas. Never start or run the engine where exhaust fumes can collect. Provide enough fresh air to keep fumes from getting too strong.

Replace any warning decals that become illegible immediately.

## DAILY MAINTENANCE

### Hardware

- Tighten any hardware (nuts, bolts, etc) that are found loose.
- Replace any broken or missing hardware (nuts, bolts, cotter pins, etc.).
- Check to see that set screws on pulley are tight.

### Engine

See engine manual for oil change intervals and oil and gas specifications. See engine manual for air cleaner service intervals and servicing procedure.

### Oil

See engine manual for air cleaner service intervals and servicing procedure.

### Aerator

#### Service:

Stop engine and remove spark plug wire before servicing aerator.

### Tines

- Check condition of guards for damage or wear.
- Replace broken, worn, or damaged tines. Do not weld or try to straighten tines.

### Guards

- Check condition of guards for damage or wear.
- Replace broken, worn, or damaged shield plates.

### Belts

- Check condition of belts for damage or wear.
- Replace broken, worn, or damaged belts.

### Belt Replacement

- Stop the engine and disconnect the spark plug wire before attempting to replace any belt.

### Lubrication

- Grease the crankshaft and arm bearings every 25 hours of operation.



### STORAGE INSTRUCTIONS

#### **⚠ WARNING**

To prevent possible explosion or ignition of vaporized fuel, do not store equipment with fuel in tank or carburetor in enclosure with open flame (for example, a furnace or water heater pilot light).

#### **Daily Storage**

1. Check engine oil level and air filter element daily.
2. Check oil level in gear case.
3. Close fuel valve at bottom of fuel tank.
4. Clean cutting blade (grass, dirt, etc.).

### EXTENDED STORAGE

**Before the equipment is put into storage for any period exceeding 30 days:**

1. Drain all fuel from fuel tank and lines (use a hose or fuel line, routed from fuel tank shut-off to proper container).
2. Start engine and run until all fuel is used from the carburetor float bowl.
3. While engine is warm, drain the crankcase oil and refill with the proper weight of oil corresponding to the season when the equipment will next be used.
4. Remove the spark plug and squirt a small quantity of engine oil into the cylinder. Turn the engine over a few times to distribute the oil.
5. Lubricate all lubrication fittings.
6. Clean and oil cutting blade to prevent rust.

**To put equipment into operation after an extended storage:**

1. Fill fuel tank with clean fresh fuel.
2. Check crankcase oil level, and start engine.
3. Check fuel system for fuel leaks.



## RA-21

### Dimensions:

Width.....	31.5" (800 mm)
Length.....	64" (1626 mm)
Length (handle folded).....	49" (1245 mm)
Height (transport).....	39" (991 mm)
Height (handle folded).....	24" (610 mm)
Maximum gate Width.....	32" (813 mm)

### Net Weight:

Weight.....	261 lbs. (119 Kg)
Removable weights.....	N/A

### Speed:

Aerate.....	up to 305 f.p.m. (2.84 km/h)
-------------	------------------------------

### Engines:

#### Model RA-21H

Model.....	GX160
	Honda, 4.0 h.p., 4 cycle
Starter.....	Recoil, on/off switch
Governor.....	3900 RPM, no load
Idle Speed.....	1400 + 100 RPM
Fuel Tank.....	.66 gal. (2.5 L)
Gear Reduction.....	6 to 1

#### Model RA-21B

Model.....	#12S4520131FB, Type 0141, Trim .01
	Briggs & Stratton 6.0 h.p., 4 cycle
Starter.....	Recoil, on/off switch
Governor.....	3200 RPM +/- 100 RPM, no load
Idle Speed.....	2000 RPM
Fuel Tank.....	3.2 qt. (3.0 L)
Gear Reduction.....	6 to 1

### Drive:

Machine.....	Push off the tines
Primary.....	Sheaves and Belts

### Wheels:

Front.....	2.80-4
Rear.....	4.10 x 3.50 -4

### Aeration:

Tines....	5/8" (15.875 mm) diameter, 8 per unit
Penetration Depth.....	2 3/4" (70 mm) max.
Swath Width.....	20.8" (558 mm)
Hole Pattern.....	2.6" x 7.5" (66 x 191 mm) on center
Production.....	Up to 26,000 sq. ft. / hour (2415 sq.m /hour)



# **PARTS SECTION**



# HANDLE AND WHEEL ASSEMBLY

# RA-21

FIGURE 1

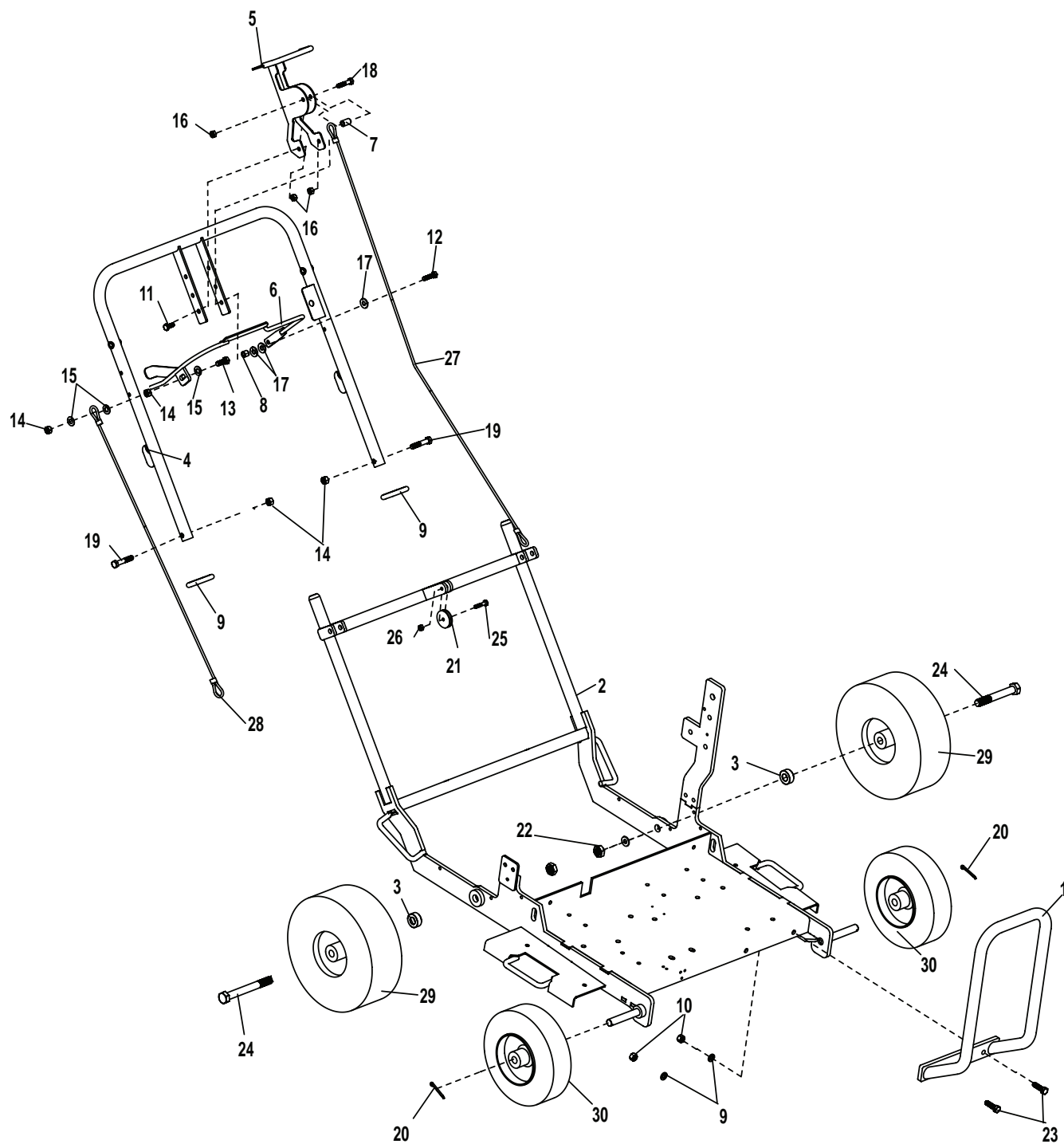




FIGURE 1

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	C400237	BUMPER, 8.0 HP	1				
2	C400414	MAIN DECK	1				
3	C500286	NUT, 5/8-18 FINE JAM NYLC	2				
4	C400418	MAIN HANDLE WELDMENT	1				
5	C400425	TINE HANDLE	1				
6	C400428	CRANK TENSION BAIL	1				
7	C400429	TINE BUSHING	1				
8	C400448	SPACER BUSHING	1				
9	C100251	RING, HANDLE LOCK	2				
10	C500129	NUT, 3/8-16	2				
11	C500140	BOLT, 5/16-18 x 3/4	1				
12	C500074	BOLT, 5/16-18 X 1-3/4	1				
13	C500146	BOLT, 3/8-16 X 1-1/2	1				
14	C500041	NUT, 3/8-16 LOCK	3				
15	C500042	WASHER, 3/8" FLAT	2				
16	C500169	NUT, 5/16-18 LOCK	3				
17	C500083	WASHER, 5/16 FLAT	3				
18	C500147	BOLT, 5/16-18 x 1-1/2	1				
19	C500091	BOLT, 3/8-16 x 2	2				
20	C500016	PIN, 5/32" x 1-1/4" COTTER	2				
21	C100270	TINE PULLEY	1				
22	C500077	5/8-18 JAM NUT	2				
23	C500134	BOLT, 3/8-16 x 1-1/4	2				
24	C500287	BOLT, 5/8 X 5	2				
25	C500218	BOLT, 1/4-20 X 1-3/4	1				
26	C500136	NUT, 1/4-20	1				
27	C100657	CABLE, BOARD LIFT	1				
28	C100656	CABLE, TINE ENGGMNT	1				
29	C100103	WHEEL TIRE ASSLY10"	2				
30	C100648	TIRE, 9" WHEEL	2				

ITEMS 31-38 USED ON ON/OFF SWITCH FROM  
HANDLE TO ENGINE

31*	C200036	WIRE, 14GA. RED -30'	1
32*	C100691	SWITCH-ON/OFF ROCKER	1
33*	C100705	SPADE, RD FEMALE	1
34*	C100707	EYELET-1/2" RND X 14GA	1
35*	C100708	EYELET-3/16 X 14GA	1
36*	C100714	WIRE NUT	1
37*	C100704	SPADE-ROUND MALE	1
38*	C100718	LABLE-ON/OFF	1

\*NOT ILLUSTRATED



FIGURE 2

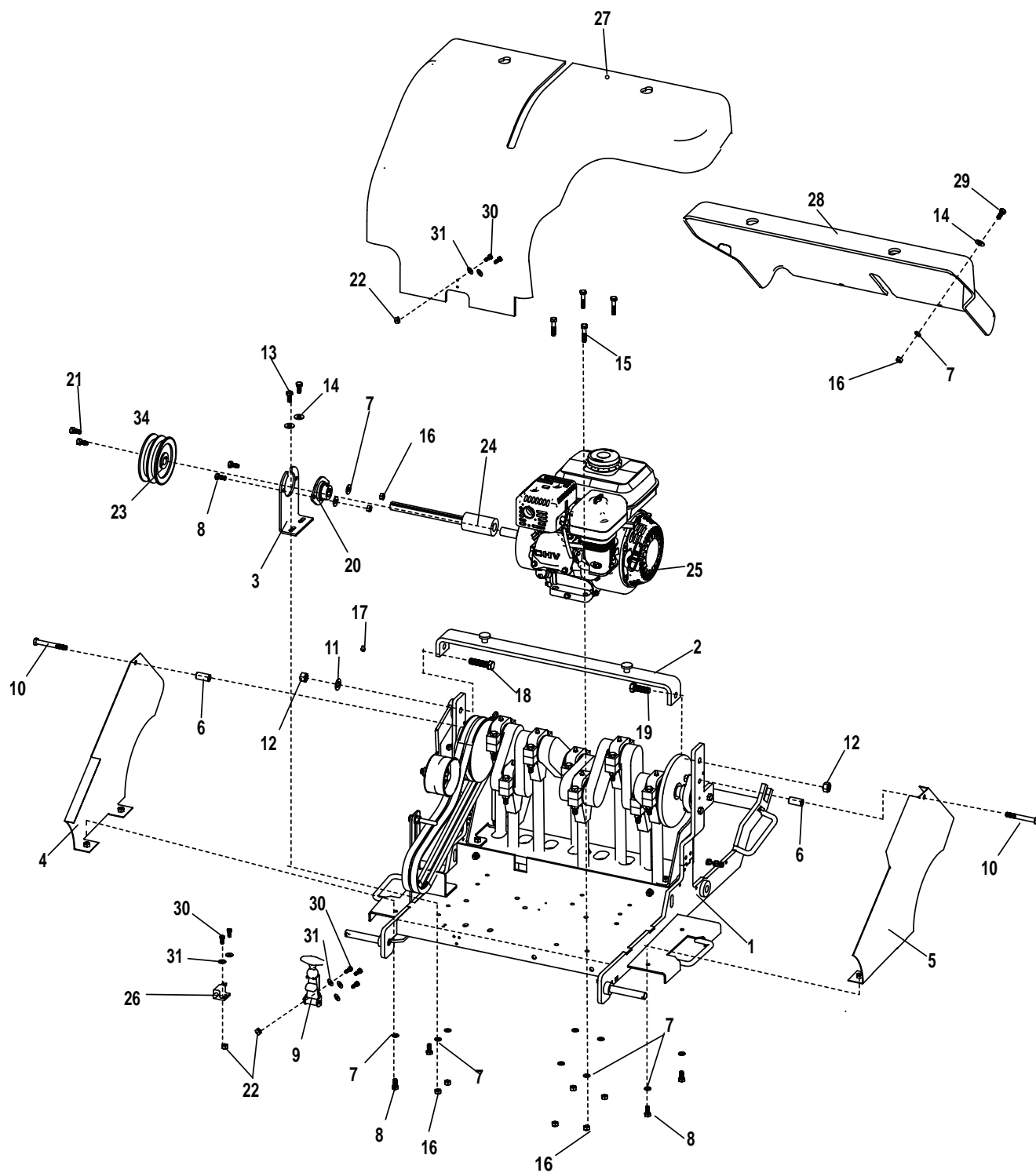




FIGURE 2

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	C400414	MAIN DECK	1				
2	C400417	TOP CROSSBAR WLDMNT	1				
3	C400420	BEARING MOUNT	1				
4	C400449	RIGHT SIDE GAURD WLDMNT	1				
5	C400438	LEFT SIDE GUARD WLDMNT	1				
6	C400446	SIDE GUARD BUSHING	2				
7	C500115	WASHER, 5/16 LOCK	16				
8	C500140	BOLT, 5/16-18 x 3/4	6				
9	C100665	LATCH RUBBER HOOD	1				
10	C500020	BOLT, 3/8-16 x 2-1/2	2				
11	C500043	WASHER, 1/2 FLAT	1				
12	C500131	NUT, 1/2-13 LOCK	2				
13	C500133	BOLT-5/16-18 x 1	2				
14	C500083	WASHER, 5/16 FLAT	6				
15	C500147	BOLT, 5/16-18 x 1-1/2	4				
16	C500101	NUT, 5/16-18	8				
17	C500001	GREASE FITTING, 1/4 x 28	1				
18	C500149	BOLT, 1/2-13 x 2	1				
19	C500150	BOLT, 1/2-13 x 1-1/2	1				
20	C100247	BEARING W/COLLAR, 1"	1				
21	C500029	BOLT, 1/4-20 x 3/4	2				
22	C500263	WASHER, 10-24 LOCK	7				
23	C100651	PULLEY, 2BK47	1				
24	C200058	COUPLER SHAFT, RECIP.	1				
25	C100715	ENGINE-HONDA GX160	1				
		(USED ON RA-21H MODEL)					
	C100482	ENGINE-B&S INTEK 850					
		(USED ON RA-21B MODEL)					
	C400431	BRACKET, B&S ENGINE					
		(USED ON RA-21B MODEL)					
26	C100649	SWITCH, KILL	1				
27	C100690	PLASTIC COVER, FRONT	1				
28	C100689	PLASTIC COVER, BACK	1				
29	C500074	BOLT, 5/16-18 x 1-3/4	2				
30	C500290	BOLT #10-24 x 1	7				
31	C500269	NUT, #10	7				
32*	C100074	DECAL-CLASSEN	2				
33*	C100069	DECAL-DANGER	1				
34*	C100096	DECAL-ALL GUARDS	1				
35*	C100504	DECAL-SPARK ARRESTOR	1				
36*	C100505	DECAL-CA EMISSION	1				
37*	C100716	DECAL,RA-21	1				
38*	C100060	DECAL-CAUTION MUFFLER	1				
39*	C100070	DECAL-RED DANGER	1				
40*	C100725	EDGING STRIP, RUBBER	4				

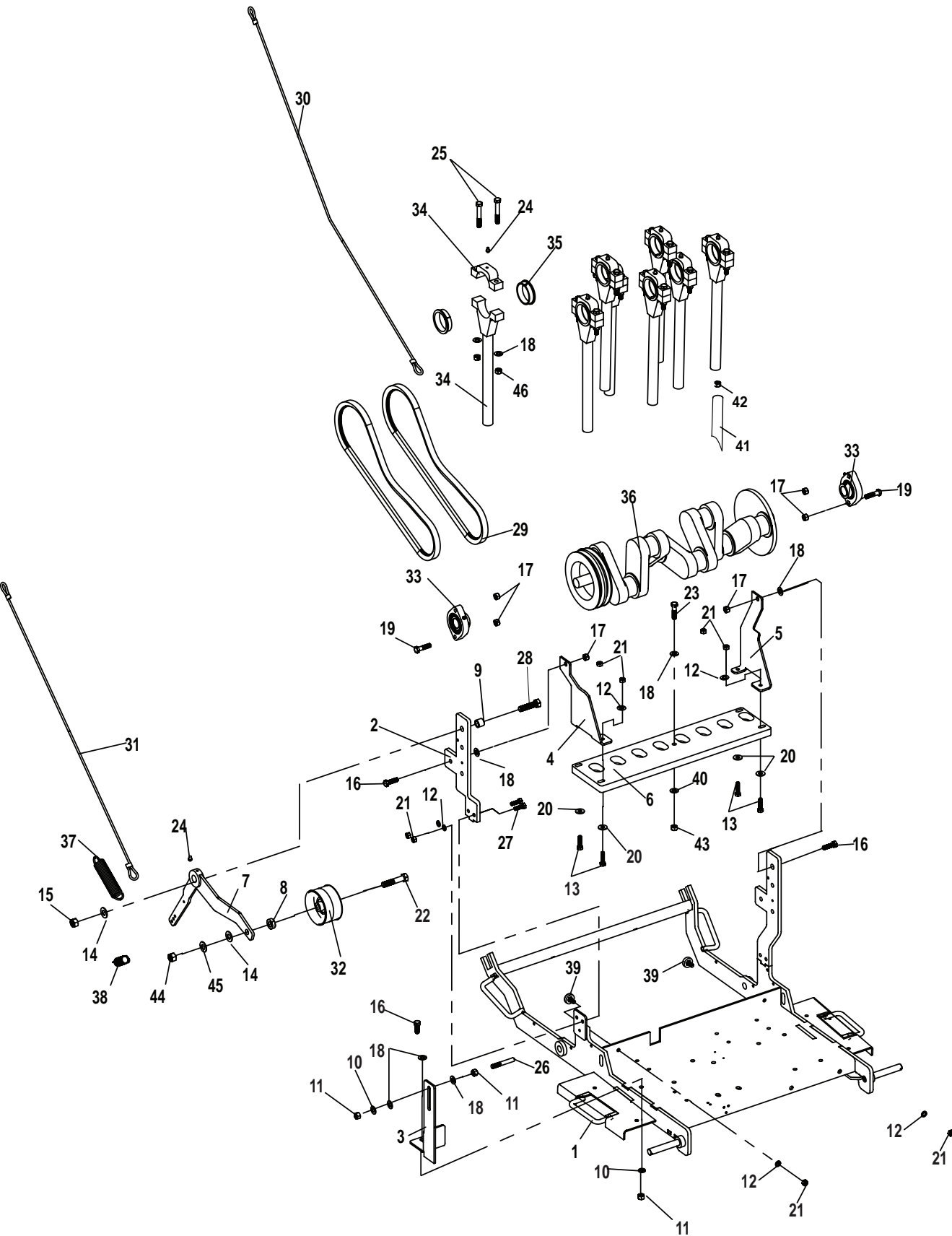
\*NOT ILLUSTRATED



CAM SHAFT & TINE ASSEMBLY

RA-21

FIGURE 3





ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	C400414	MAIN DECK	1				
2	C400416	RIGHT UPRIGHT SUPPORT	1				
3	C400419	BELT TENSIONER	1				
4	C400422	RIGHT UHMW GUIDE ARM	1				
5	C400423	LEFT UHMW GUIDE ARM	1				
6	C400424	UHMW BLOCK	1				
7	C400426	BELT TENSION ARM	1				
8	C400427	IDLER PULLEY BUSHING	1				
9	C400442	TENSION ARM BUSHING	1				
10	C500130	WASHER, 3/8 LOCK	2				
11	C500129	NUT, 3/8-16	3				
12	C500115	WASHER, 5/16 LOCK	8				
13	C500147	BOLT, 5/16-18 X 1-1/2	4				
14	C500034	WASHER, 1/2 FLAT	2				
15	C500131	NUT, 1/2-13 LOCK	1				
16	C500043	BOLT, 3/8-16 X 1	1				
17	C500041	NUT, 3/8-16 LOCK	6				
18	C500042	WASHER, 3/8" FLAT	21				
19	C500134	BOLT, 3/8-16 x 1-1/4	2				
20	C500083	WASHER, 5/16 FLAT	4				
21	C500101	NUT, 5/16-18	8				
22	C500135	BOLT, 1/2-13 x 2-1/2	1				
23	C500218	BOLT, 1/4-20 x 1-1/4	1				
24	C500001	GREASE FITTING, 1/4 x 28	9				
25	C500265	BOLT 3/8-16 x 2.25 HHCS	16				
26	C500170	BOLT 3/8 x 3-1/2 HEX	1				
27	C500133	BOLT, 5/16-18 x 1	2				
28	C500149	BOLT, 1/2-13 x 2	1				
29	C100681	TINE DRIVE BELT	2				
30	C100657	CABLE, BOARD LIFT	1				
31	C100656	CABLE, TINE ENGMNT	1				
32	C100208	PULLEY, IDUAL IDLER	1				
33	C100650	BEARING, 1" - 2 BOLT	2				
34	C100621	TINE ROD	8				
35	C100678	CNNCTING ROD BRNG	16				
36	C100622	CRANKSHAFT	1				
37	C100654	SPRING, MEDIUM	1				
38	C100655	SPRING, SMALL	1				
39	C100652	BUMPER, RUBBER 3/8x 1	2				
40	C500088	WASHER, 1/4 FLAT	1				
41	C100679	TINES, 5/8"	8				
42	C500293	NUTS,COURSE THRD TINE	8				
43	C500139	NUT, 1/4-20 LOCK	1				
44	C500106	NUT, 1/2-13	1				
45	C500006	WASHER, 1/2 LOCK	1				
46	C500076	NUT, 3/8-16 NYLOC	16				



See the complete line of Turf Care Products

from

***CLASSEN***<sup>®</sup>

**COMPACT AERATORS**

CA-18H  
CA-18B

**STAND ON AERATOR**

SA-25

**SPLIT DRIVE AERATORS**

TA-25D  
TA-17D

**TURF AERATORS**

TA-19D  
TA-19B  
TA-26D

**RECIPROCATING AERATORS**

RA-21H  
RA-21B  
RAS-21H  
RAS-21B

**TOW/3PT AERATORS**

48RT  
60RT

**TURF SEEDERS**

TS-20H  
TS-20B  
TSS-20H  
TSS-20B

**TRAILERS**

AST

**TURF RAKES**

TR-20H  
TR-20B  
TRS-20H  
TRS-20B  
TR-20RH  
TR-20RB

**SOD CUTTERS**

SC-18/5.5  
SC-18/8.0

**HYDRO-DRIVE SOD CUTTERS**

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