



**MADE IN THE U.S.A**

## PARTS MANUAL MODEL 09054 ELECTRIC GREENS ROLLER



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### MANUFACTURER OF OUTDOOR POWER EQUIPMENT

Products for Turf & Lawn care, Rental, Construction, Tree care, Wood Processing, Nursery & Farm Industries

*Other Salsco Equipment*

**3-1/2" - 18", Gas, Diesel, and P.T.O, Wood/Brush Chippers**

**Chipper Shredder Vacuum - Tailgate & Truckloader Vacuums up to 65 HP**

**Shaving Mills - Gas and Electric Greens Rollers**

***Quality of Workmanship, Innovative  
Design, Built to Last!***

SALSCO, INC.

105 School House Road, Cheshire, CT 06410

800-872-5726, 203-271-1682

203-271-2596 (Fax)

sales@salsco.com, www.salsco.com

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**MODEL 0009054 – ELECTRIC GREENS ROLLER**

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10/06

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## **STATEMENT OF FACT**

You have just purchased the highest quality, most dependable, Greens Roller, on the market today. This unit has the ability to meet exact standards and perform for years with minimum downtime. HOWEVER, it cannot read nor will it understand this manual no matter how long you leave it on top of the machine.

**It is your responsibility** to read and understand this manual; it is also your responsibility to be certain this information is passed along to anyone who is expected to operate this equipment. Should you choose not to read, understand and pass along the information provided you, please expect equipment failure and possible injuries to persons around this equipment.

For the safety of the operator, it is **imperative** that this manual is carefully read and understood.

Once you have read this manual, it is your responsibility to be sure that all new operators read and understand this manual, especially all cautions stated.

As a manufacturer of equipment, we have a responsibility to design a safe piece of equipment. NOTE: The important safeguards and instructions in this manual are not meant to cover all possible conditions and situations that may occur. It must be understood that common sense, caution, and care are factors, which cannot be built into any product. These factors must be supplied by the person(s) caring for and operating this equipment.

## **ONLY YOU CAN PREVENT ACCIDENTS!!**

## **MACHINE REGISTRATION**

MANUFACTURED BY:

SALSCO, INC.  
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THIS MANUAL COVERS MODEL (s): 0009054 ELECTRIC GREENS ROLLER

This company reserves the right to discontinue, add improvements to, or change the design of any model or product at any time without obligation to improve existing machines, either by changing the design or adding new parts.

It has been and will continue to be the policy of SALSCO to update existing machines at its own discretion. Whenever possible, new designs will be made in such a way that they can be "Retro Fit" if so desired.

Record in the space provided below the model and serial number of this unit. Please retain these numbers for future reference.

No parts orders will be accepted **WITHOUT MODEL NUMBERS OR PART NUMBERS**. All part numbers are listed in this manual.

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Serial Number

---

Model Number

NOTE: Be sure to complete your warranty card. This will insure immediate processing of any warranty claims.

**READ AND UNDERSTAND THIS MANUAL BEFORE STARTING MACHINE**

## **SAETY INSTRUCTIONS**

1. **NEVER** leave unit running while unattended.
2. **NEVER** park on a green for any reason.
3. **NEVER** go down steep hills sideways. **ALWAYS** approach hills straight on.
4. **NEVER** change your mind mid-way down a steep incline. Once you've started down a steep incline, change direction only with the greatest of care and gentlest touch.

## **OPERATING INSTRUCTIONS**

1. Check that the unit has been serviced.
2. Turn on/off switch to on position.
3. You should start unit from seated position. Just reach down to On/Off switch, and turn unit on. Keep feet off pedals.
4. **REMEMBER: RIGHT PEDAL TO GO RIGHT, LEFT PEDAL TO GO LEFT.**
5. Once unit is running, push pedal down slowly. Unit will begin to move. Drive it out of trailer on to a grassy area.
6. Speed is controlled by pressure on the pedal.

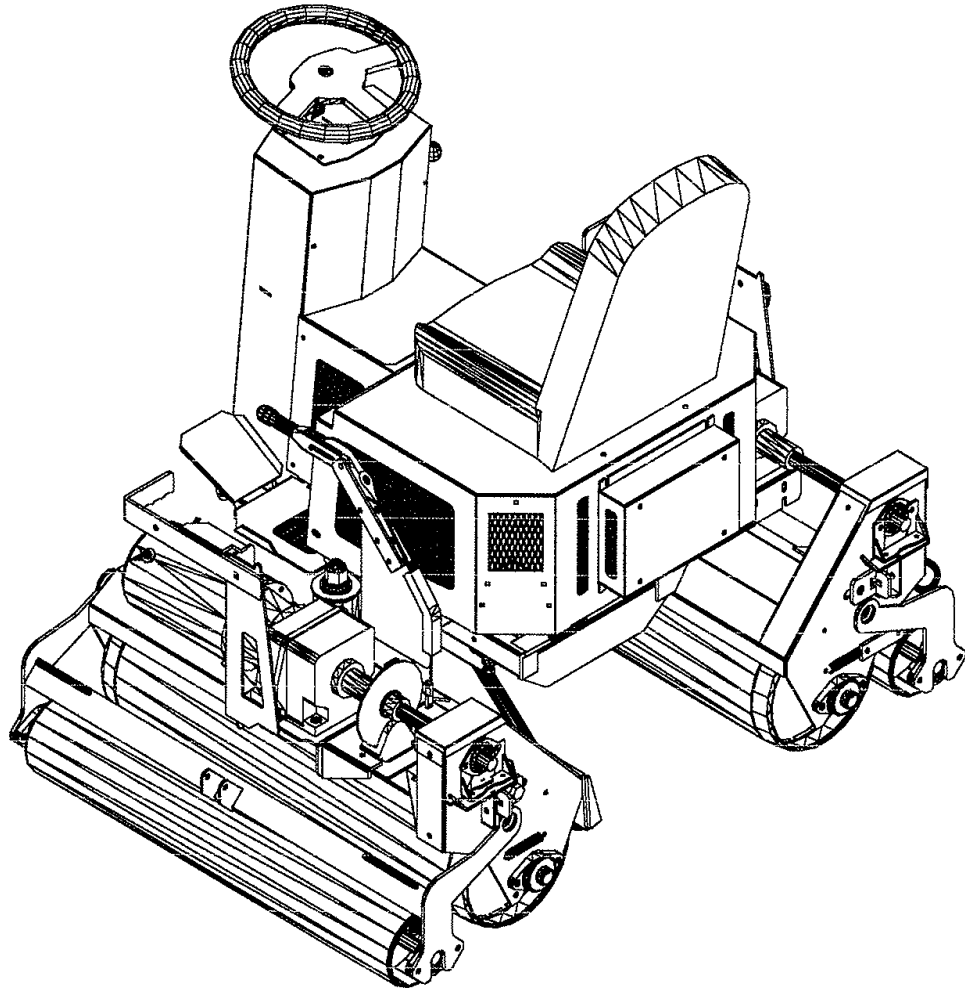
### **HINTS:**

1. **KEEP BOTH FEET ON PEDALS AT ALL TIMES.** By keeping your heels planted and moving your toes to change direction, you have smooth control - left to right.
2. If you roll the same direction as green was mowed, it's easy to follow the lines. This helps a new operator do a fine job sooner.
3. To insure longer life to your unit, when changing direction do so smoothly.
4. **REMEMBER TO TURN UNIT OFF BEFORE GETTING OFF.**

## **SERVICE & MAINTENANCE INSTRUCTIONS**

1. Check all grease fittings as listed below on a **WEEKLY** basis, and grease as necessary. (Add grease till grease leaks slightly from fitting.)
  - ◆ Bearings on roll housings - Quantity 4
  - ◆ Pivot bearing on main housing - Quantity 2
  - ◆ U-Joint on steering shaft - Quantity 1
2. After approximately **1 WEEK** of use, **and then every 2 WEEKS thereafter**, check drive chains - one on each side on roller drive motor. Pivot motor to tighten chain. **NOTE: Check and adjust the tension of both drive motor chains on a regular basis. If chains are not tight, this could cause severe sprocket wear and possible breakage.**
3. After approximately **1 WEEK** of use, **and then every 2 WEEKS thereafter**, check chains on steering. Adjust as needed.
4. Pivot for articulating steering should be tight, **with no play**, much the same as wheel bearings on cars.
5. **Keep unit clean.** Should rust form on rolls, simply drive the unit on a rough area till rolls are clean.
6. **Battery Maintenance/Charging. SEE MATERIALS/MANUAL PROVIDED BY TROJAN, ENCLOSED IN THE MANUAL PACKAGE YOU RECEIVED WITH THE ROLLER.**

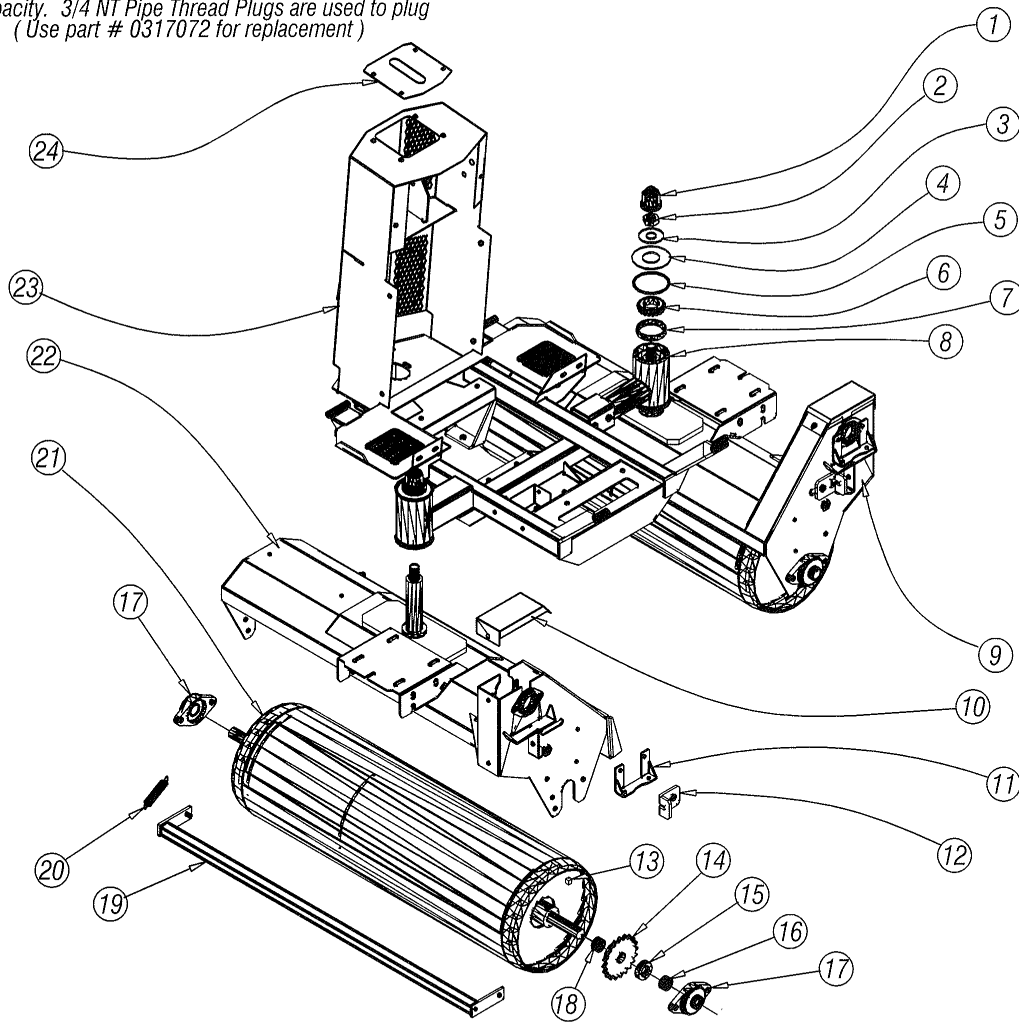
SAFETY IS A PRIME CONCERN AT SALSCO AND THE SAFETY DECALS ON YOUR MACHINE ARE A HIGHLY VISIBLE AND CONSTANT REMINDER TO ALL OPERATORS. REPLACEMENT SAFETY DECALS MAY BE OBTAINED BY CALLING SALSCO @ 1-800-872-5726, OR THE DEALER IN YOUR AREA.



*COMPLETE ELECTRIC GREENS ROLLER - DWG # 1*

NOTE: Each roll has a capacity of holding 8 fluid gallons. Each gallon weighs 8 lbs. Thereby adding 128 lbs to the total weight of the Greens Roller when both rolls are filled to capacity. 3/4 NT Pipe Thread Plugs are used to plug holes. ( Use part # 0317072 for replacement )

ISSUED:11-28-07



ITEM	PART DESCRIPTION	PART#	QTY
1	NUT CAP	0338405	2
2	JAM NUT	0338060	2
3	FLAT WASHER	0353106	2
4	WASHER	0453117	4
5	O-RING	0343003	4
6	CONE BEARING	0303015	4
7	BEARING CUP	0303016	4
8	OSCILLATOR HOUSING	0228164	1
9	RIGHT ROLL HOUSING	0228244	1
10	COVER, ROLL HOUSING	0471241	2
11	PUSHER BRACKET	0206448	2
12	ADJUSTER	0401032	2
13	PLUG	0317072	2

ITEM	PART DESCRIPTION	PART#	QTY
14	SPROCKET, ROLLS	0351010	2
15	COLLAR, SINGLE SPLIT	0311010	6
16	SPACER, STL-1 1/4 ODx.12 WALLx.550	STOCK	2
17	BEARING, 2-BOLT FLGD	0303006	4
18	SPACER, STL-1 1/4 ODx.12 WALLx.625	STOCK	2
19	SCRAPER, ROLL	0255154	2
20	SPRING, EXT. SCRAPER	0350033	2
21	ROLL	0248065	2
22	LEFT ROLL HOUSING	0228243	1
23	BASE FRAME	0219312	1
24	TOP ACCESS PLATE	0441703	1

FRAME & ROLL ASSY - DWG # 2



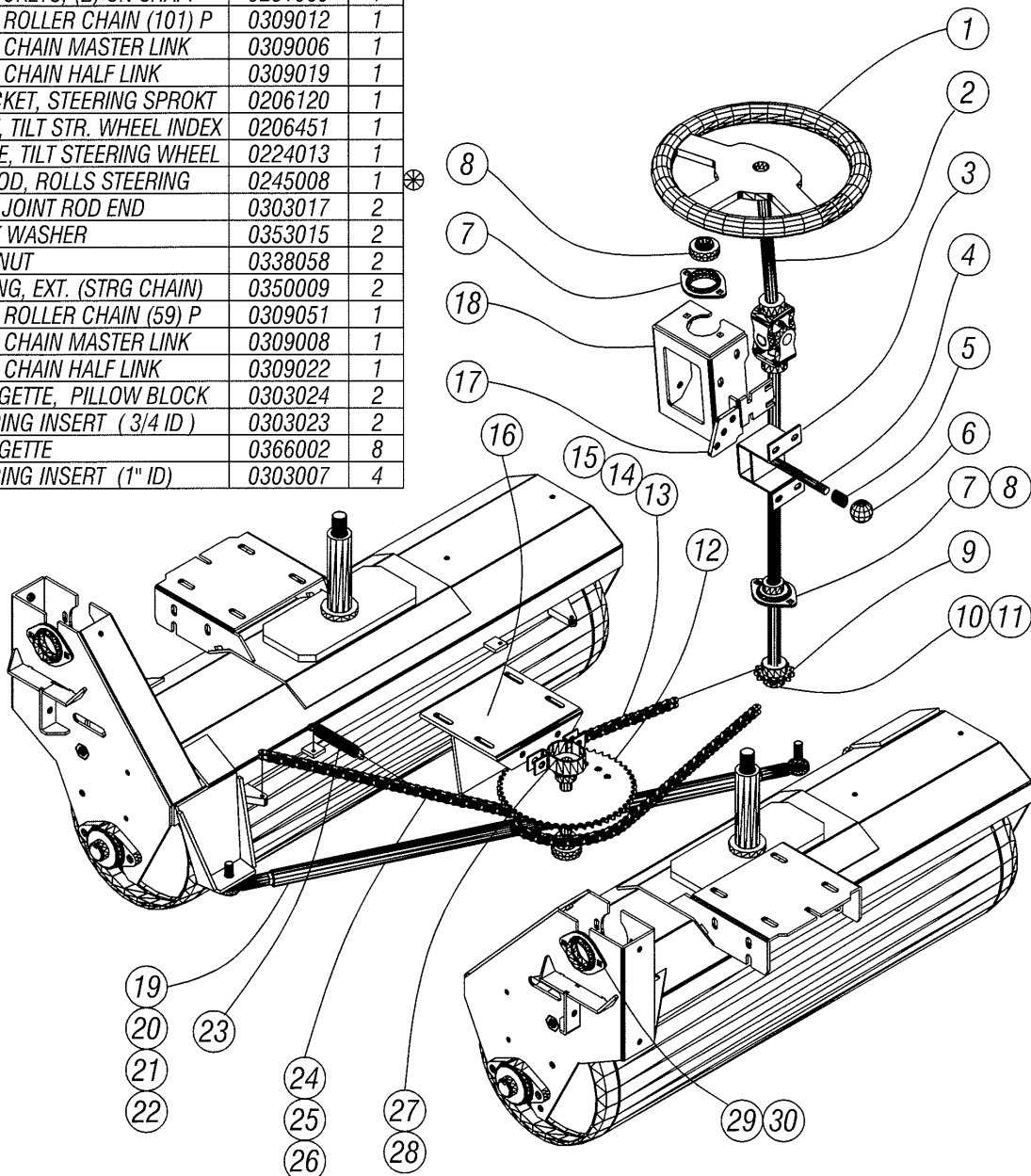
ITEM	PART DESCRIPTION	PART#	QTY
1	STEERING WHEEL	0336052	1
2	STEERING SHAFT	0248219	1
3	GUIDE, TILT-WHEEL, LOCK PIN	0222081	1
4	LEVER, ADJ., TILT-WHEEL	0233076	1
5	SPRING, COMPRESSION	0350031	1
6	KNOB, ROUND	0332013	1
7	FLANGETTE, (2) BOLT	0303005	4
8	BEARING INSERT- 3/4 ID	0303023	4
9	SPROCKET, STEERING SHAFT	0351003	1
10	SET COLLAR, 3/4 ID	0311046	1
11	KEY, 3/16 SQ x 1" LONG	0431004	1
12	SPROCKETS, (2) ON SHAFT	0251060	1
13	# 40 ROLLER CHAIN (101) P	0309012	1
14	# 40 CHAIN MASTER LINK	0309006	1
15	# 40 CHAIN HALF LINK	0309019	1
16	BRACKET, STEERING SPROKT	0206120	1
17	BRKT, TILT STR. WHEEL INDEX	0206451	1
18	HINGE, TILT STEERING WHEEL	0224013	1
19	TIE ROD, ROLLS STEERING	0245008	1
20	BALL JOINT ROD END	0303017	2
21	LOCK WASHER	0353015	2
22	JAM NUT	0338058	2
23	SPRING, EXT. (STRG CHAIN)	0350009	2
24	# 50 ROLLER CHAIN (59) P	0309051	1
25	# 50 CHAIN MASTER LINK	0309008	1
26	# 50 CHAIN HALF LINK	0309022	1
27	FLANGETTE, PILLOW BLOCK	0303024	2
28	BEARING INSERT ( 3/4 ID )	0303023	2
29	FLANGETTE	0366002	8
30	BEARING INSERT (1" ID)	0303007	4

ISSUED: 09-27-07

REVISIONS		
REV	DESCRIPTION	DATE

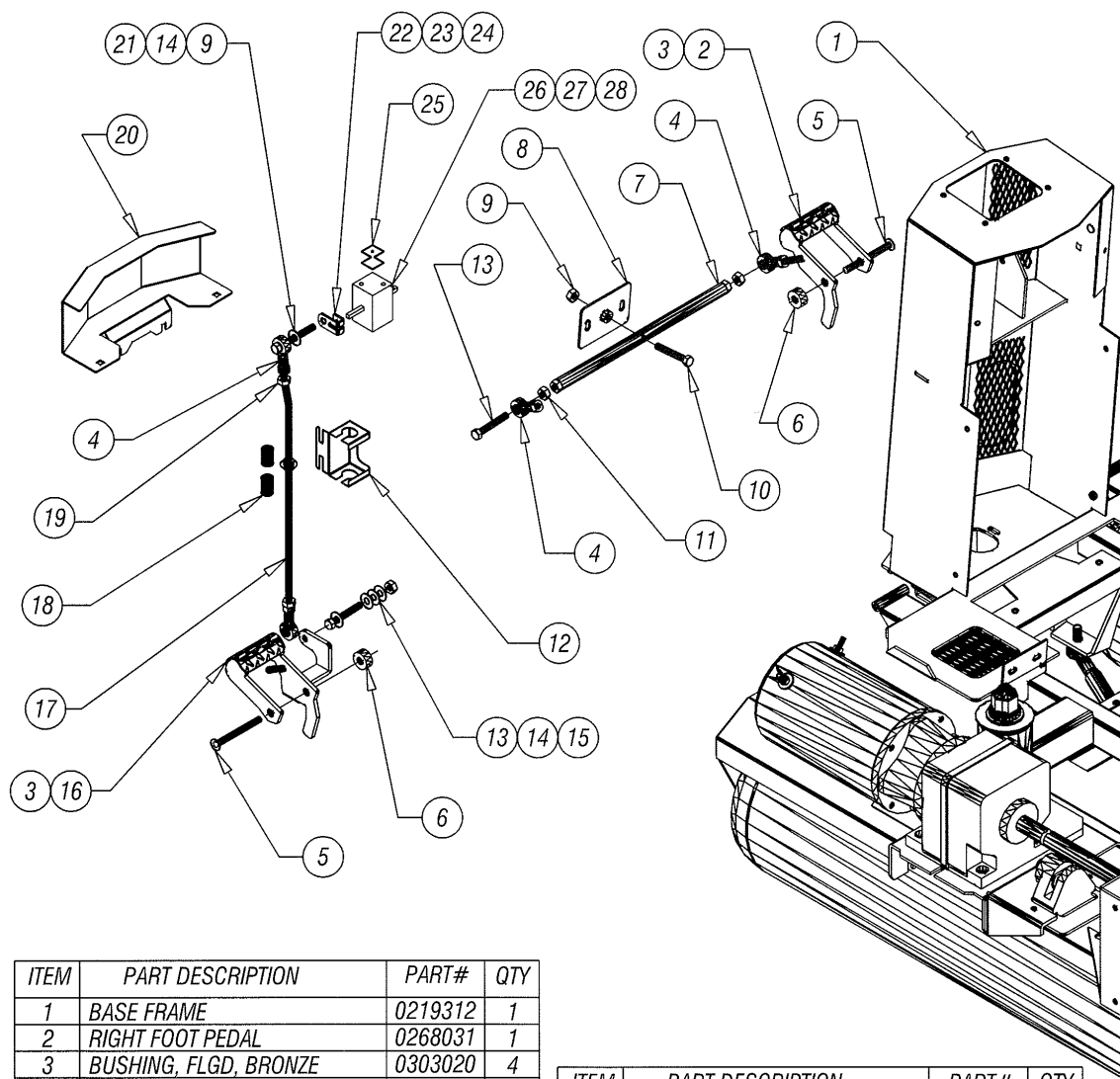
NOTE: \* ITEM 19

TIE ROD # 0245008 USED ON GREEN ROLLERS UP TO S/N 0094  
GREENS ROLLER S/N 0095 AND ABOVE, USE TIE ROD # 0245165



ROLLS STEERING SYSTEM- DWG#3

ISSUED: 11-14-07

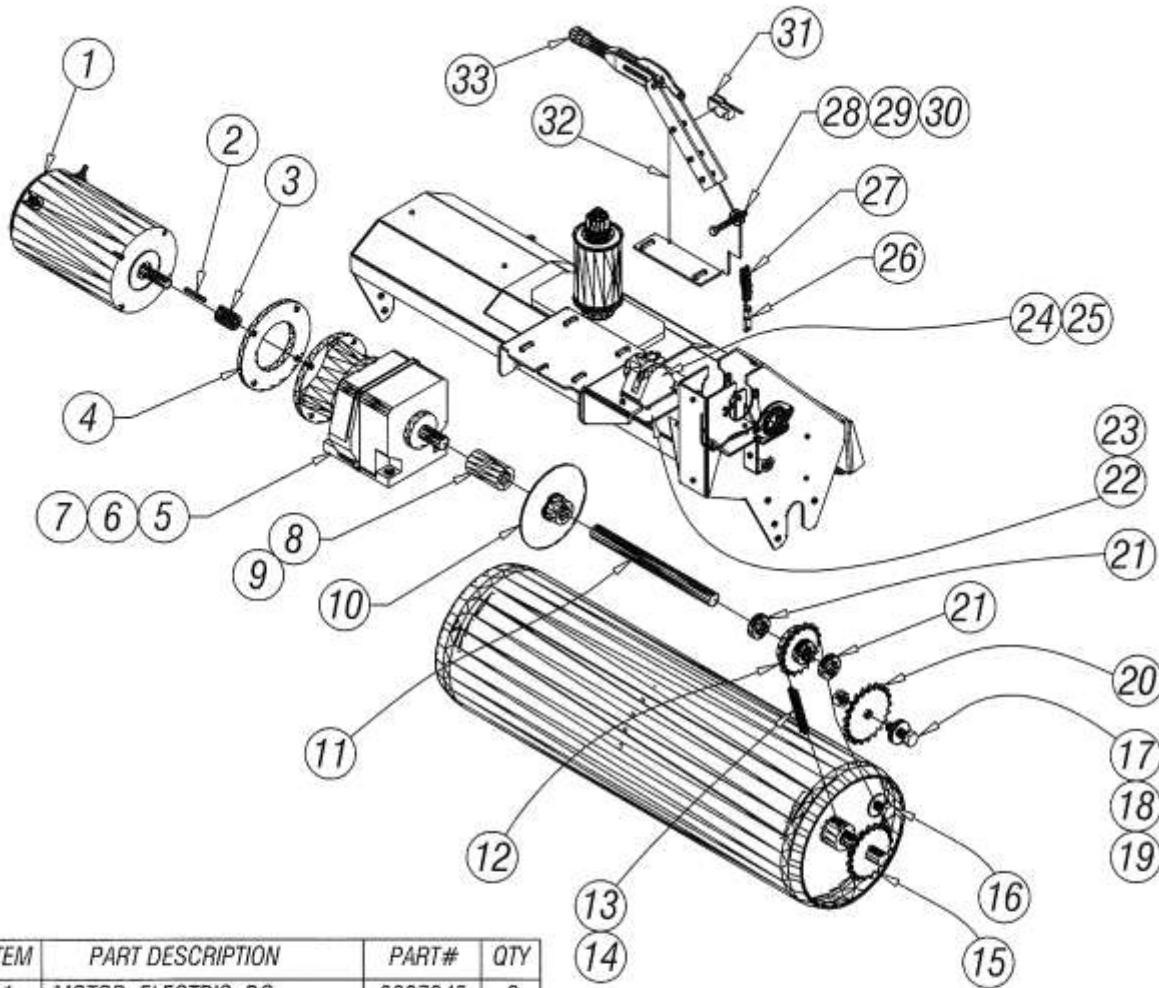


ITEM	PART DESCRIPTION	PART#	QTY
1	BASE FRAME	0219312	1
2	RIGHT FOOT PEDAL	0268031	1
3	BUSHING, FLGD. BRONZE	0303020	4
4	ROD END, BALL JOINT	0303019	4
5	PIN, FWD / REV FOOT PEDAL	0240068	2
6	COLLAR, SET	0311031	2
7	TUBE, F/R FOOT PEDAL CROSS	0267418	1
8	BRACKET, FWD / REV PIVOT	0206908	1
9	LOCK NUT, STOVER 3/8-16	0338152	2
10	BOLT, HEX HD 3/8-16 x 3 LG	0346252	1
11	JAM NUT, HEX HD 3/8-16	0338052	2
12	BRKT, FWD / REV SPRINGS	0206907	1
13	BOLT, HEX HD 3/8-16 x 2 LG	0346207	3
14	WASHER, FLAT	0353102	5
15	LOCK NUT, NYLON INSERT	0338102	1
16	LEFT FOOT PEDAL	0268030	1

ITEM	PART DESCRIPTION	PART#	QTY
17	ROD, THROTTLE	0245171	1
18	SPRING, COMPRESSION	0350031	2
19	JAM NUT, 3/8-24 FINE THRD'S	0338018	2
20	COVER, FRONT	0271310	1
21	BOLT, HEX HD 3/8-16 x 1 1/2 LG	0346205	1
22	BRKT, FWD/REV THROTTLE	0406900	1
23	BOLT, HEX HD 1/4-20 x 1 1/4 LG	0446007	1
24	LOCK NUT, NYLON INSERT	0338100	1
25	BASE SPACER, ELEC. THROTTLE	0484108	1
26	ELECTRONIC THROTTLE	0315328	1
27	SPLIT LOCKWASHER, #10	0353009	2
28	SCREW, # 10-32 x 3/8 LONG	0346812	2

ROLLS & DRIVE SYSTEM - DWG # 4

ISSUED: 12-17-2008



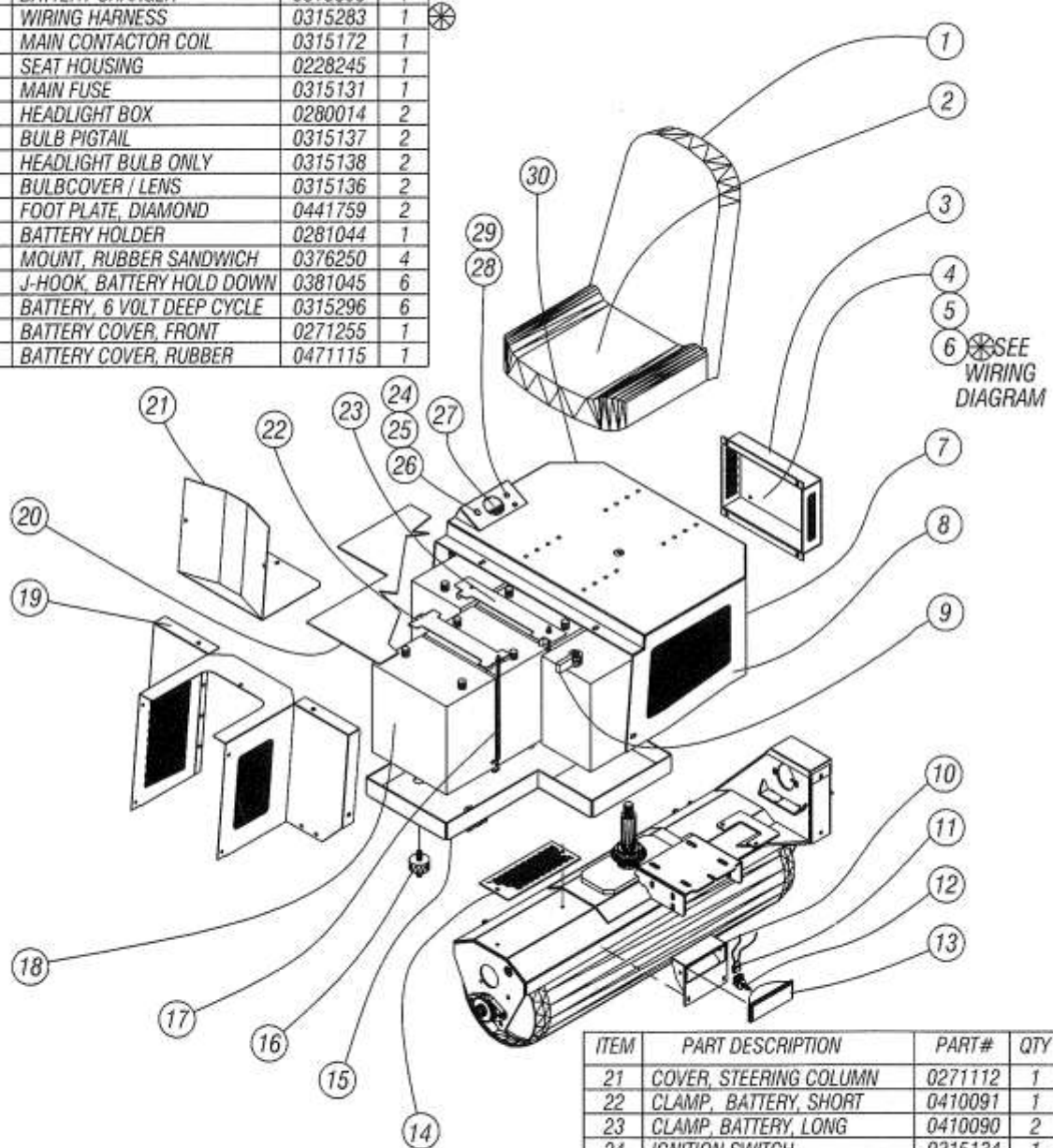
ITEM	PART DESCRIPTION	PART#	QTY
1	MOTOR, ELECTRIC, DC	0337345	2
2	KEY, STEPPED	0431023	2
3	BUSHING, GEARBOX / MOTOR	0307037	2
4	ADAPTER, ELECTRIC MOTOR	0475063	2
5	GEARBOX	0363014	2
6	GEARBOX SEAL - HIGH SPEED	0363015	2
7	GEARBOX SEAL - LOW SPEED	0363016	2
8	COUPLER, SPLIT	0313080	2
9	KEY, STEEL- 1/4 x 1/4 x 3" LG	0431122	2
10	DISC & HUB	0329086	2
11	SHAFT, DRIVE	0448220	2
12	SPROCKET, DRIVE SHAFT	0351013	2
13	ROLLER CHAIN 59 PITCHES	0309051	2
14	MASTER LINK	0309008	1
15	SPROCKET, ROLLS	0351010	2
16	PLUG, 3/4 NPT	0317072	2
17	BOLT, HEX HD, 5/8-11 x 2" LG	0346517	2
18	WASHER, FLAT 5/8 ID	0353110	6
19	LOCK NUT, 5/8-11	0338105	2

ITEM	PART DESCRIPTION	PART#	QTY
20	SPROCKET, IDLER	0351107	2
21	COLLAR, SINGLE SPLIT 1" ID	0311010	4
22	MOUNT, BRAKE CALIPER	0276544	1
23	PLATE, BRAKE CALIPER CLAMP	0462342	1
24	DISC CALIPER BRAKE ASSY	0336126	1
25	PUCK KIT, (REPLACEMENT)	0336128	1
26	BRAKE CHAIN LINK	0434060	1
27	BRAKE CHAIN, 27 PITCHES	0309078	1
28	BOLT, BRAKE CHAIN GUIDE	0346205	1
29	FLAT WASHER	0353111	2
30	JAM NUT	0338052	2
31	SNAP SWITCH- HAND BRAKE	0315072	1
32	BRACKET, EMER. BRAKE LEVER	0406711	1
33	LEVER, PARKING BRAKE	0333004	1

ROLLS & DRIVE SYSTEM - DWG # 5

ITEM	PART DESCRIPTION	PART#	QTY
1	SEAT ASSY	0347006	1
2	SEAT SWITCH	0315133	1
3	MOUNT, CONTROLLER	0276497	1
4	SPEED CONTROLLER	0315282	1
5	BATTERY CHARGER	0315393	1
6	WIRING HARNESS	0315283	1
7	MAIN CONTACTOR COIL	0315172	1
8	SEAT HOUSING	0228245	1
9	MAIN FUSE	0315131	1
10	HEADLIGHT BOX	0280014	2
11	BULB PIGTAIL	0315137	2
12	HEADLIGHT BULB ONLY	0315138	2
13	BULBCOVER / LENS	0315136	2
14	FOOT PLATE, DIAMOND	0441759	2
15	BATTERY HOLDER	0281044	1
16	MOUNT, RUBBER SANDWICH	0376250	4
17	J-HOOK, BATTERY HOLD DOWN	0381045	6
18	BATTERY, 6 VOLT DEEP CYCLE	0315296	6
19	BATTERY COVER, FRONT	0271255	1
20	BATTERY COVER, RUBBER	0471115	1

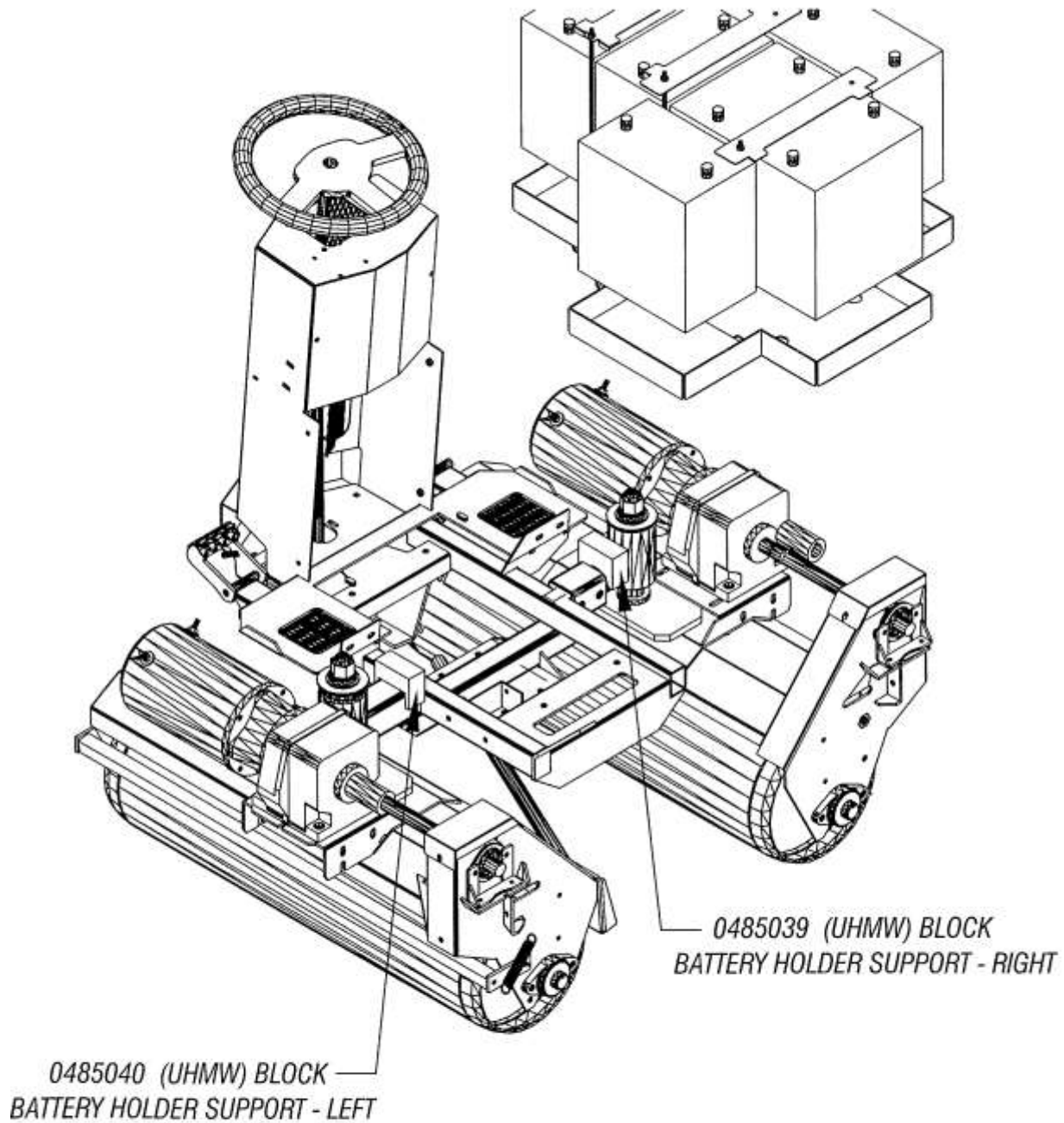
ISSUED: 07-07-2009



SEAT HOUSINGS & BATTERIES- DWG #6

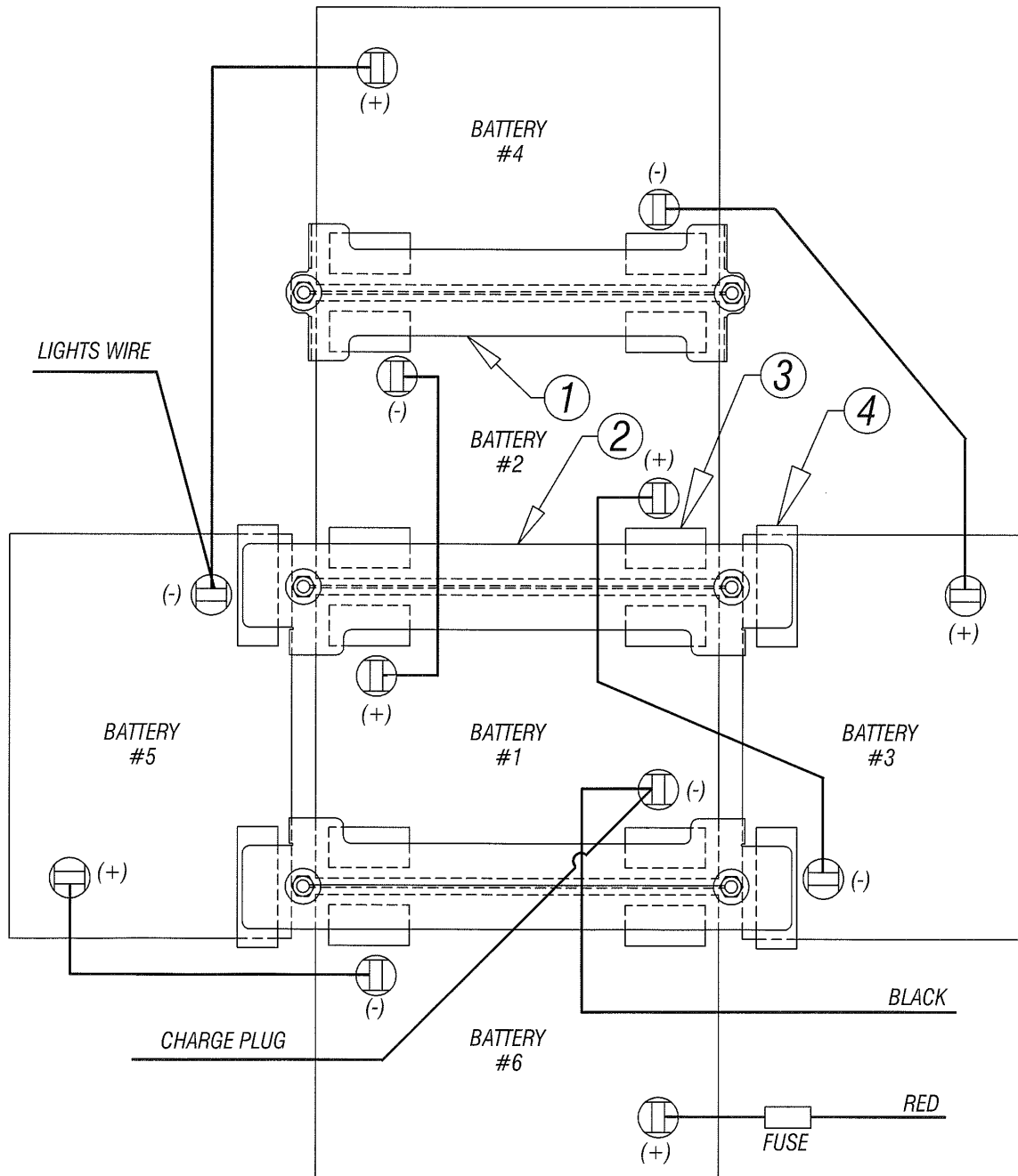
ITEM	PART DESCRIPTION	PART#	QTY
21	COVER, STEERING COLUMN	0271112	1
22	CLAMP, BATTERY, SHORT	0410091	1
23	CLAMP, BATTERY, LONG	0410090	2
24	IGNITION SWITCH	0315134	1
25	IGNITION KEY	0315142	2
26	FLANGED NUT, IGNIT. SWITCH	0315141	1
27	BATTERY DISCHARGE GAGE	0315135	1
28	TOGGLE SWITCH, HEAD LIGHT	0315143	1
29	BOOT FOR TOGGLE SWITCH	0315145	1
30	RECEPTACLE, DC	0315140	1

ISSUED: 03-02-2009



ITEM	PART DESCRIPTION	PART#	QTY
1	BATTERY CLAMP, SHORT	0210169	1
2	BATTERY CLAMP, LONG	0210170	2
3	RUBBER PADS, SHORT - 1/4 x1 x2	STOCK	12
4	RUBBER PADS, LONG - 1/4 x 2 x 3	STOCK	4

ISSUED: 04-29-2008



BATTERIES - CONNECT & CLAMP LAYOUT - DWG #9

REV	DESCRIPTION	DATE

ISSUED: 09-16-2009  
RE-ISSUED: 10-18-2010

ITEM	DESCRIPTION	PART NO	QTY	ITEM	DESCRIPTION	PART NO	QTY
1	KIT- ATTACHMENT FRAME, LEFT	0161237	1	12	BEARING, ROD END	0303019	2
2	KIT- ATTACHMENT FRAME, RIGHT	0161238	1	13	ROD, ARM LIFTING	0245158	1
3	SHAFT, TOURNAMENT ROLL	0248229	1	14	BRKT, LIFTING ARM SWIVEL	0206783	1
4	AIR SPIKE ASSEMBLY	0161225	1	15	ARM, TOUNAM'T ROLL & SPIKE	0265102	1
5	BRUSH ASSEMBLY	0161041	1	16	BEARING, 2-BOLT FLANGE	0303006	2
6	BRUSHES	0336060	2	17	BRKT, TRMT ROLL&SPIKE- RIGHT	0406801	1
7	FRAME, BRUSH KIT	0228067	1	18	LEVER, RIGHT	0433179	1
8	SHAFT, C.R.S. ROD-1"DIAx39"LG	0448226	1	19	BRKT, TRMT ROLL&SPIKE- LEFT	0406710	1
9	WASHER, FLAT USS - 1" ID	0353150	2	20	LEVER, LEFT	0433176	1
10	BLADE, AIR SPIKE	0405113	32				
11	SPACER, AIR SPIKE BLADES	0449207	64				

NOTE: THIS ASSY IS ON THE  
LEFT HAND SIDE  
SITTING ON THE ROLLER

ASSY 1  
SEE NOTE

TOURNAMENT OPTION KITS  
ELECTRIC GREENS ROLLER - DWG #11



REV	DESCRIPTION	DATE

ISSUED: 04-26-2010

Diagram illustrating the assembly of a trailer, showing various components and their assembly sequence:

- 1: Tire and wheel assembly
- 2: Hub assembly
- 3: Lug nut
- 4: Axle
- 5: Hex head screw
- 6: Lock nut
- 7: Tail gate
- 8: Hex screw
- 9: Bungee cord
- 10: Rubber mat (tailgate)
- 11: Carriage bolt
- 12: Lock washer
- 13: Hex nut
- 14: Rubber mat (box)
- 15: Trailer frame
- 16: Plate, jack mounting
- 17: Jack swivel with caster
- 18: Tongue
- 19: Hex head screw
- 20: Stop, roller movement
- 21: Cap (plastic)
- 22: Spring, extension
- 23: Bolt, hex HD - 1/4 - 20x1 1/4 LG
- 24: Jam nut - 1/4 - 20

NOTE :  
 DRILL & TAP 1/4 - 20  
 6" FROM LATCH IN TAIL GATE  
 (1) HOLE ON EACH SIDE

ITEM	DESCRIPTION	PART NO	QTY
1	TIRE & WHEEL ASSY (TREADED)	0354020	2
2	HUB ASSEMBLY	0329002	2
3	LUG NUT	0338306	10
4	AXLE	0202074	1
5	HEX HEAD SCREW	0346204	12
6	LOCK NUT	0338102	18
7	TAIL GATE	0219371	1
8	HEX SCREW	0346217	2
9	BUNGEE CORD	0308013	1
10	RUBBER MAT, ( TAILGATE )	0356043	1
11	CARRIAGE BOLT	0346129	8
12	LOCK WASHER	0353002	8
13	HEX NUT	0338002	8

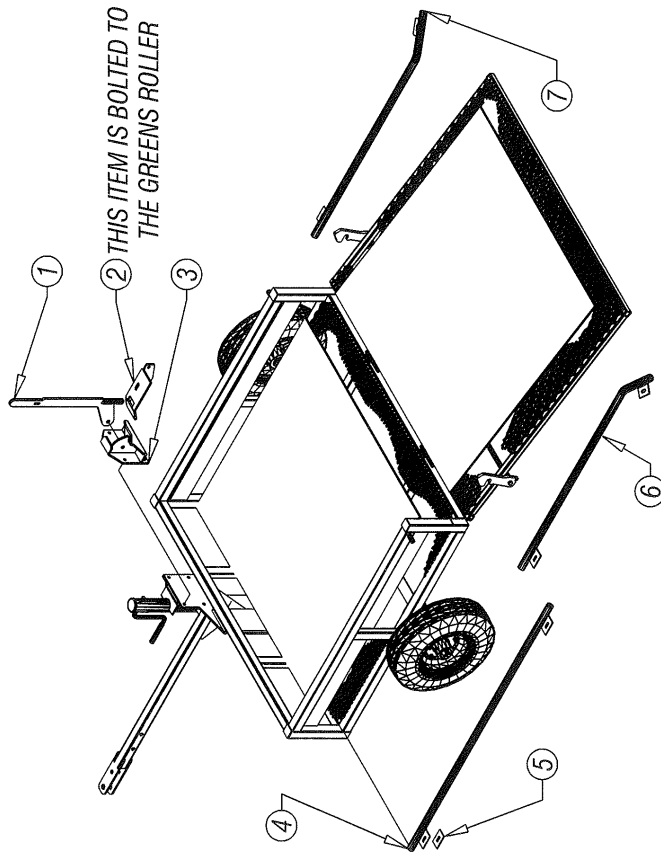
14	RUBBER MAT, ( BOX )	0356040	1
15	TRAILER FRAME	0219313	1
16	PLATE, JACK MOUNTING	0462410	1
17	JACK, SWIVEL- WITH CASTER	0369047	1
18	TONGUE	0225011	1
19	HEX HEAD SCREW	0346205	4
20	STOP, ROLLER MOVEMENT	0482066	1
21	CAP (PLASTIC)	0371001	4
22	SPRING, EXTENSION	0350009	2
23	BOLT, HEX HD - 1/4 - 20x1 1/4 LG	0346072	2
24	JAM NUT - 1/4 - 20	0338039	2

TRANSPORT TRAILER ASSY  
 0009056  
 ELECTRIC GREENS ROLLER  
 DWG #7

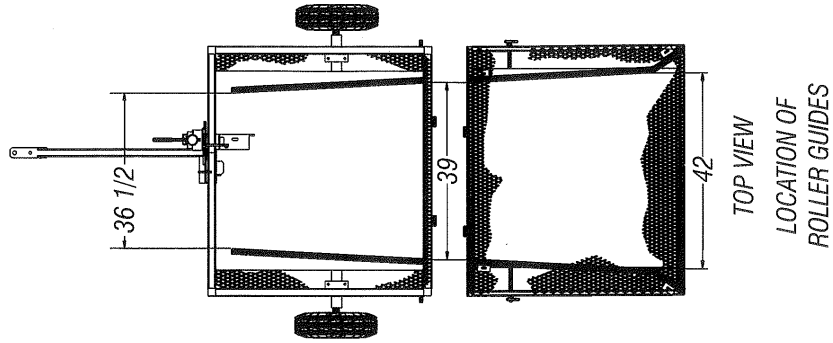


ISSUED: 07-08-2009

LATCH & LOCK			
ITEM	DESCRIPTION	PART NO	QTY
1	LEVER, TRANSPORT LATCH	0233224	1
2	PLATE, TRANSPORT LATCH	0462583	1
3	LATCH, TRANSPORT	0233226	1

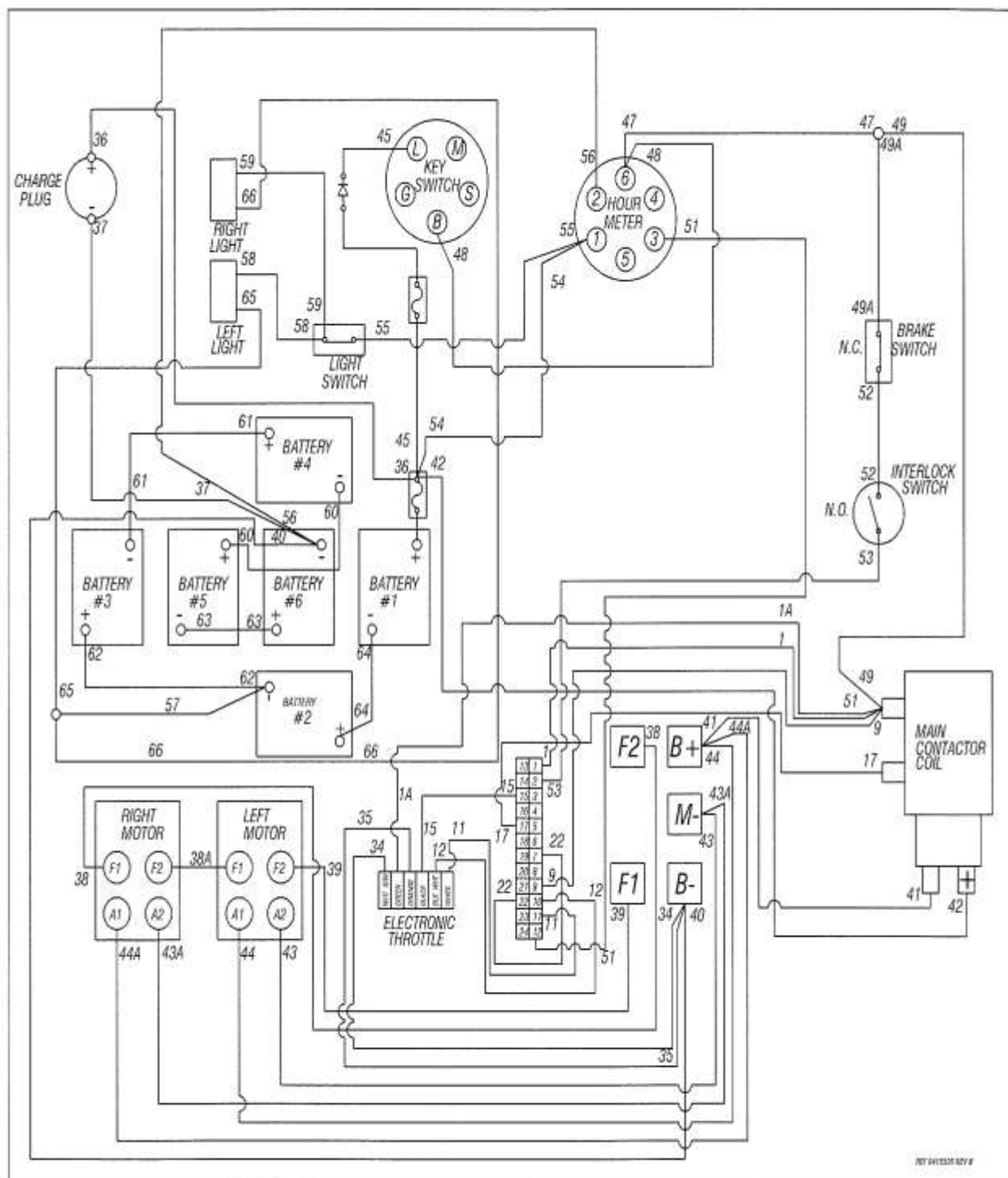


LOAD & GO			
ITEM	DESCRIPTION	PART NO	QTY
4	GUIDE, TRAILER ROLL	0222171	2
5	CLAMP PLATE (LOOSE)	0462585	8
6	GUIDE, TAILGATE ROLL - LEFT	0222172	1
7	GUIDE, TAILGATE ROLL - RIGHT	0222173	1



TRANSPORT TRAILER  
ELECTRIC GREENS ROLLER  
DWG #8

Size	Grade 5			Grade 8		
	Clamps (lbs)	Torque (ft-lbs)		Clamps (lbs)	Torque (ft-lbs)	
		dry	oiled		dry	oiled
¼-20	2000	8	6	2850	12	9
¼-28	2300	10	7.5	3250	14	10
5/16-18	2250	17	13	4700	25	18
5/16-24	3700	19	14	5200	25	20
3/8-16	4950	30	23	7000	45	35
3/8-24	5600	35	25	7900	50	35
7/16-14	6800	50	35	9550	70	55
7/16-20	7600	55	40	10650	80	60
½-13	9000	75	55	12750	110	80
½-20	10250	90	65	14375	120	90
9/16-12	11600	110	80	16375	150	110
9/16-18	13000	120	90	18250	170	130
5/8-11	14400	150	110	20350	220	170
5/8-18	16375	180	130	23000	240	180
¾-10	21300	260	200	30100	380	280
¾-16	23800	300	220	33500	420	320



WIRING DIAGRAM  
ELECTRIC GREENS ROLLER  
MODEL 0009054

REV. 09.25.2008

LIST OF CONNECTING WIRES & CABLES FROM WIRING DIAGRAM

ITEM	LOCATION	COLOR	GA.	LG.	TERMINALS
44	CONT. (B+) TO MOTOR (L) A1	RED	4	48"	5/16" T/L - E/E
44A	CONT. (B+) TO MOTOR (R) A1	RED	4	62"	5/16" T/L - E/E
43	CONT. (M-) TO MOTOR (L) A2	BLK	4	48"	5/16" T/L - E/E
43A	CONT. (M-) TO MOTOR (R) A2	BLK	4	62"	5/16" T/L - E/E
41	MCC TO CONT. (B+)	RED	4	15"	5/16" T/L - 3/8" T/L
42	MCC TO BATT POWER FUSE	RED	4	42"	5/16" T/L - 3/8" T/L
40	CONT. (B-) TO BATT#1 (-)	BLK	4	38"	5/16" T/L - E/E
60	BATTERY	RED	4	19"	5/16" T/L - E/E
61	BATTERY	RED	4	17"	5/16" T/L - E/E
62	BATTERY	RED	4	29"	5/16" T/L - E/E
63	BATTERY	RED	4	17"	5/16" T/L - E/E
64	BATTERY	RED	4	10.5"	5/16" T/L - E/E
38	CONT. (F2) TO MOTOR (R) (F1)	RED	10	62"	1/4" R/T - E/E
38A	MOTOR (R) (F2) TO MOTOR (L) (F1)	RED	10	64"	1/4" R/T - E/E
39	CONT. (F1) TO MOTOR (L) (F2)	BLK	10	46"	1/4" R/T - E/E
36	CHG. PLUG TO POWER FUSE	RED	10	27"	5/16" R/T - #10 R/T
37	CHG. PLUG TO BATT. #1 (-)	BLK	10	32"	5/16" R/T - #10 R/T
34	6 PIN WHT/BRN TO CONT. (B-)	WHT	20	61"	9 PIN - 5/16" R/T
35	6 PIN ORANGE TO CONT. (B-)	WHT	20	61"	9 PIN - 5/16" R/T
65	BATTERY #5 (-) TO LIGHT (L) (-)	BLK	14	30"	5/16" R/T - O/E
66	BATTERY #5 (-) TO LIGHT (R) (-)	BLK	14	47"	5/16" R/T - O/E
57	BATTERY #2 (12V-) TO B/S #'S 65 & 66	BLK	12	24"	5/16" R/T x B/S
45	(FUSE & DIODE IN LINE) K/S (L) TO PWR FUSE	RED	14	41"	1/4" F/S - 5/16" R/T
15	6 PIN BLK TO 24 PIN (#15)	WHT	20	67"	9 PIN - MOLEX
11	6 PIN WHT TO 24 PIN (#11)	WHT	20	67"	9 PIN - MOLEX
12	6 PIN BLK/WHT TO 24 PIN (#10)	WHT	20	67"	9 PIN - MOLEX
17	24 PIN (#17) TO MCC (L)	WHT	20	14"	MOLEX - 1/4" F/S
1	24 PIN (#1) TO MCC	WHT	20	14"	MOLEX - 1/4" F/S
9	24 PIN (#9) TO MCC	WHT	20	14"	MOLEX - 1/4" F/S
1A	6 PIN (GRN) TO MCC	WHT	20	74"	9 PIN - 1/4" F/S
51	24-PIN #12 TO H/M #3	WHT	20	52"	MOLEX-1/4" F/S
49	#47 B/S TO BRAKE SWITCH	RED	14	30"	B/S - 1/4" F/S
47	H/M (#6) #48 MATE TO B/S	RED	14	15"	1/4" F/S - B/S
48	K/S B TO HM (#6) #47 MATE	RED	14	X	1/4" F/S - E/E
49A	#47 B/S TO BRAKE SWITCH	RED	14	60"	B/S - #8 R/T
52	BRAKE SWITCH TO SEAT SWITCH	WHT	20	80"	1/4" F/S - #8 R/T
53	24 PIN (#2) TO SEAT SWITCH	WHT	20	54"	MOLEX - 1/4" F/S
54	H/M (#1) TO POWER FUSE	RED	14	40"	1/4" F/S - 5/16" R/T
55	LIGHT SWITCH TO H/M (#1) #54 MATE	RED	14	6"	#8 R/T - 1/4" F/S
58	LIGHT SWITCH TO LIGHT (L) (+)	RED	14	70"	#8 R/T - O/E
59	LIGHT SWITCH TO LIGHT (R) (+)	RED	14	55"	#8 R/T - O/E
56	H/M (#2) TO BATT (#1-)	BLK	14	45"	1/4" F/S - 5/16" R/T
22	24 PIN LOOP (#7) TO (#22) LOOP	WHT	20	5"	MOLEX - MOLEX

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**Table 5 TROUBLESHOOTING CHART**


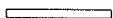
LED CODE	PROGRAMMER LCD DISPLAY	FAULT CATEGORY	EXPLANATION	POSSIBLE CAUSE
1,2	HW FAILSAFE1 - 2 - 3	1	self-test or watchdog fault	1. Controller defective.
1,3	M- SHORTED	1	internal M- short to B-	1. Controller defective.
	FIELD OPEN	1	field winding fault	1. Motor field wiring loose. 2. Motor field winding open.
	ARM SENSOR	1	armature current sensor fault	1. Controller defective.
	FLD SENSOR	1	field current sensor fault	1. Controller defective.
2,1	THROTTLE FAULT 1	1	wiper signal out of range	1. Throttle input wire open. 2. Throttle input wire shorted to B+ or B-.
	THROTTLE FAULT 2	1	pot low fault	1. Throttle pot defective. 2. Wrong throttle type selected.
2,2	SRO	3	SRO fault	1. Improper sequence of KSI, interlock, and direction inputs. 2. Wrong SRO type selected. 3. Interlock or direction switch circuit open. 4. Sequencing delay too short.
2,3	HPD	3	HPD fault	1. Improper seq. of direction and throttle inputs. 2. Wrong HPD type selected. 3. Misadjusted throttle pot. 4. Sequencing delay too short.
2,4	BB WIRING CHECK	1	emergency reverse wiring fault	1. Emergency reverse wire open. 2. Emergency reverse check wire open.
3,1	CONT DRVR OC	1	cont. driver output overcurrent	1. Contactor coil shorted.
3,2	MAIN CONT WELDED	1	welded main contactor	1. Main contactor stuck closed. 2. Main contactor driver shorted.
3,3	PRECHARGE FAULT	1	internal voltage too low at startup	1. Controller defective. 2. External short, or leakage path to B- on external B+ connection.
3,4	MISSING CONTACTOR	1	missing contactor	1. Any contactor coil open or not connected.
	MAIN CONT DNC	1	main contactor did not close	1. Main contactor missing or wire to coil open.
4,1	LOW BATTERY VOLTAGE	2	low battery voltage	1. Battery voltage < undervoltage cutback limit. 2. Corroded battery terminal. 3. Loose battery or controller terminal.
4,2	OVERVOLTAGE	2	overvoltage	1. Battery voltage > overvoltage shutdown limit. 2. Vehicle operating with charger attached. 3. Battery disconnected during regen braking.
4,3	THERMAL CUTBACK	2	over-/under-temp. cutback	1. Temperature >85°C or < -25°C. 2. Excessive load on vehicle. 3. Improper mounting of controller. 4. Operation in extreme environments.
4,4	ANTI-TIEDOWN	3	Mode 2 or Mode 4 selected at startup	1. Mode switches shorted to B+. 2. Mode switches "tied down" to select Mode 2 or Mode 4 permanently.

## LED DIAGNOSTICS

A Status LED is built into the 1244 controller. It is visible through a window in the label on top of the controller. This Status LED displays fault codes when there is a problem with the controller or with the inputs to the controller. During normal operation, with no faults present, the Status LED flashes steadily on and off. If the controller detects a fault, a 2-digit fault identification code is flashed continuously until the fault is corrected. For example, code “3,2”—welded main contactor—appears as:

□ □ □ □ □	□ □ □ □ □	□ □ □ □ □
( 3 , 2 )	( 3 , 2 )	( 3 , 2 )

The codes are listed in Table 6.

Table 6 STATUS LED FAULT CODES		
LED CODES		EXPLANATION
<i>LED off</i>		no power or defective controller
<i>solid on</i>		controller or microprocessor fault
0,1	■ □	controller operational; no faults
1,1	□ □	[not used]
1,2	□ □□	hardware failsafe fault
1,3	□ □□□	M-, current sensor, or motor fault
1,4	□ □□□□	[not used]
2,1	□□ □	throttle fault
2,2	□□ □□	static return to off (SRO) fault
2,3	□□ □□□	high pedal disable (HPD) fault
2,4	□□ □□□□	emergency reverse circuit check fault
3,1	□□□ □	contactor driver overcurrent
3,2	□□□ □□	welded main contactor
3,3	□□□ □□□	precharge fault
3,4	□□□ □□□□	missing contactor, or main cont. did not close
4,1	□□□□ □	low battery voltage
4,2	□□□□ □□	overvoltage
4,3	□□□□ □□□	thermal cutback, due to over/under temp.
4,4	□□□□ □□□□	anti-tiedown fault

NOTE: Only one fault is indicated at a time, and faults are not queued up. Refer to the troubleshooting chart (Table 5) for suggestions about possible causes of the various faults.

## FAULT OUTPUT DRIVERS

The 1244 controller provides two fault output drivers designed for use with a display to provide fault information to the operator. The fault output drivers, Fault 1 (Pin 5) and Fault 2 (Pin 6), are open collector drivers rated at 10 mA maximum current at the nominal battery voltage. They are intended to drive display LEDs but can be used to drive anything that operates within the drivers' limits. These outputs can be configured to display faults in Fault Code format or Fault Category format—see *Section 3, page 42*.

In Fault Code format, the two fault outputs operate independently. The Fault 1 line flashes the same codes, at the same time, as the controller's built-in Status LED (see Table 6). This line can therefore be used to drive an LED located on the display panel in order to provide fault code information directly to the operator. The Fault 2 line pulls to ground (B-) when a fault is present; it can be used to drive a remote LED that simply indicates whether or not there is a fault. When no faults are present, both of the fault lines are in their normal state (high).

In Fault Category format, the two fault outputs together define one of four fault categories, as listed in Table 7. When a fault occurs, the Fault 1 and Fault 2 lines (Pins 5 and 6) go to the state indicating the category of the particular fault: **LOW/HIGH**, **HIGH/LOW**, or **LOW/LOW**. When the fault is cleared, the fault outputs return to their normal state (i.e., HIGH/HIGH).

Table 7 FAULT CATEGORY CODES			
FAULT 1 DRIVER	FAULT 2 DRIVER	FAULT CATEGORY	POSSIBLE FAULT
HIGH	HIGH	0	(no known faults)
<b>LOW</b>	HIGH	1	Hardware failsafe fault M-, current sensor, or motor fault Throttle fault Emergency reverse wiring fault Contactor or output driver fault Precharge fault
HIGH	<b>LOW</b>	2	Low battery voltage Overvoltage Thermal cutback, due to over/under temp
<b>LOW</b>	<b>LOW</b>	3	Static return to off (SRO) fault High pedal disable (HPD) fault Anti-tiedown fault

## MAINTENANCE

There are no user serviceable parts in the Curtis PMC 1244 controller. **No attempt should be made to open, repair, or otherwise modify the controller.** Doing so may damage the controller and will void the warranty.

It is recommended that the controller be kept **clean and dry** that its diagnostics history file be checked and cleared periodically.

### CLEANING

Periodically cleaning the controller exterior will help protect it against corrosion and possible electrical control problems created by dirt, grime, and chemicals that are part of the operating environment and that normally exist in battery powered systems.



**When working around any battery powered vehicle, proper safety precautions should be taken.** These include, but are not limited to: proper training, wearing eye protection, and avoiding loose clothing and jewelry.

Use the following cleaning procedure for routine maintenance. Never use a high pressure washer to clean the controller.

1. Remove power by disconnecting the battery.
2. Discharge the capacitors in the controller by connecting a load (such as a contactor coil or a horn) across the controller's B+ and B- terminals.
3. Remove any dirt or corrosion from the power and signal connector areas. The controller should be wiped clean with a moist rag. Dry it before reconnecting the battery.
4. Make sure the connections are tight. Refer to Section 2, page 7, for maximum tightening torque specifications for the battery and motor connections.

### DIAGNOSTIC HISTORY

The handheld programmer can be used to access the controller's diagnostic history file. Connect the programmer, press the **[MORE INFO]** key, and then—while continuing to hold the **[MORE INFO]** key—press the **[DIAGNOSTICS]** key. The programmer will read out all the faults that the controller has experienced since the last time the diagnostic history file was cleared. The faults may be intermittent faults, faults caused by loose wires, or faults caused by operator errors. Faults such as contactor faults may be the result of loose wires; contactor wiring should be carefully checked. Faults such as HPD or overtemperature may be caused by operator habits or by overloading.

After a problem has been diagnosed and corrected, it is a good idea to clear the diagnostic history file. This allows the controller to accumulate a new file of faults. By checking the new diagnostic history file at a later date, you can readily determine whether the problem was indeed fixed.

To clear the diagnostic history file, go to the Special Program Menu by pressing and holding the **[MORE INFO]** key, and then pressing the **[PROGRAM]** key. Scroll through the menu until "Clear Diagnostic History" is the top line in the display, and then press **[MORE INFO]** again. The programmer will prompt you to acknowledge or cancel. See Section 7 of this manual for more detail on programmer operation.



## **How to install Electric Motor, Gearbox, and Final Drive**

These instructions must be followed EXACTLY. USE LOC-TITE, Blue

- 1) Install the flange bearings to the roller frame. The flanges should be to the outside of the frame and the bearings should have the exocentric collars towards the outside of the frame also. Install the bolts so they will hold the bearings in place but the bearings will slide if needed.
- 2) Slide the drive shaft through the bearings, installing the sprocket and key.
- 3) Install the shaft keepers outside the flanges at this time keeping the locking bolts loose and not touching anything.
- 4) Set the gearbox on the gearbox-mounting pad.
- 5) Install the four bolts and only tighten to a snug fit. You must be able to slide the box by hand and it must sit flat on the mounting pad.
- 6) Now slide the drive shaft so the end of the drive shaft and the output shaft of the gear box touch. Line up the keyways.
- 7) Install a full key and a split shaft collar over both shafts keeping the ends of both shafts touching and in the center of the shaft collar.
- 8) Tighten this split collar watching the bearings and flanges; they should not be forced left or right but may move up or down within the slots. Move the gearbox if needed to keep the bearings and flanges in a free state.
- 9) Next tighten the flanges watching that the bearings don't move in any direction.
- 10) Now tighten the four gearbox mounting bolts.
- 11) At this time, turn the lock bolts on the shaft keeper so they touch the lock pad. Tighten the jam nuts so as to hold the shaft keeper and bearing in place.
- 12) Set the exocentric collars and tighten the setscrews. With a punch, turn the exocentric collar in a clockwise direction, and then tighten the setscrew.
- 13) Set the sprocket the same distance from the inside wall of the roller frame as the roller sprocket. Tighten the setscrews and shaft collars on both sides of the sprocket.
- 14) The Electric motor comes with a plastic bushing over the shaft. Check the key between the plastic bushing and the motor shaft. It is very important the key is as long as the slot.
- 15) Some motors have a spacer between the motor and gearbox; it must be installed if it was there when disassembled.
- 16) Install the chain between the drive shaft and the roller. This chain should be installed with as little slack as possible. Avoid the use of ½ links.
- 17) Install the idler-adjusting sprocket. Shim the idler sprocket so it fits in the center of the chain, as closely as possible.

## WARRANTY POLICY

***Please remember to complete and return your Warranty Card and Dealer Delivery Report. Warranty Claims will not be considered if the Warranty Card and Dealer Delivery Report have not been returned to Salsco.***

Your Salsco Commercial or Turf Equipment product is a commercial type product and is normally manufactured and sold for commercial or industrial use. Salsco will, for the original purchaser, for (5) years from the date of purchase (90 days if used for rental purposes) repair or replace, free of charge, any part or parts found to be defective in material, workmanship or both. Any transportation or shipping charges will be borne by the purchaser. If, during the warranty period stated above, the product does not function properly due to defect, simply contact Salsco and follow the Warranty Procedures included in this manual.

This warranty **does not** include:

- Incidental or consequential damages and is exclusive of any implied warranties.
- Normal maintenance parts, including, but not limited to hoses, chains, belts, filters, lubricants, etc.
- Parts or components, which are covered under the original manufacturer warranty, including, but not limited to engines, pumps, and motors.

## WARRANTY PROCEDURE

In order for Salsco to consider your warranty claims in a timely manner you must follow the simple procedures listed below:

### MACHINE OR PART FAILURE

- Call our service department for helpful instruction on how to correct or repair the problem. Preventive maintenance will also be suggested.
- When ordering parts for Warranty issues, you **MUST** retain possession of the old parts in question until notified with respect to returning the parts to Salsco or other disposition.
- Warranty Claims **MUST** be filed within 30-days from completion of the work performed. Contact our office for an electronic warranty claim form.
- Fill in all information requested on warranty claim form, a copy of which is included in this manual, (date of purchase, company name, address, etc.). List all parts used. Make sure part numbers are correct. You can obtain these from your manual. (include good description of problem; i.e. "leaking from spool" rather than "leaking").
- It is our goal to consider and reach a disposition on each Warranty Claim within 30-days from the date that it is received. Therefore it is important that you respond promptly to any request for further information. Claims with no response to inquiries will be closed as "**denied for lack of response**" 90-days from the date of request.
- Email, Fax or Send Warranty Claim form to our Warranty Department. – **Warranty on parts most often requires return of the parts that were replaced. DO NOT DISCARD OLD PARTS UNTIL YOU HAVE RECEIVED A DETERMINATION AS TO WHETHER THESE PARTS MUST BE RETURNED.**
- Our Warranty Department will contact and instruct you on how to return the Parts to Salsco on an RA #. Returns **MUST** be made within 30-Days from issuance of RA #. **FREIGHT CHARGES ON RETURN OF PARTS IS THE RESPONSIBILITY OF THE CUSTOMER.** Normal pre-delivery adjustments are not covered under warranty. Labor Warranties are based on reasonable time allowances as determined by Salsco, Inc. and paid at 75% of posted labor rate. **TRAVEL TIME IS NOT REIMBURSED UNDER THE WARRANTY POLICY.**
- Be sure to put the RA form inside the box that you are shipping back, also be sure to put on the outside of the box "Return of Goods" and the RA #.
- Ship returns via a traceable method such as UPS Ground Service. Be sure that the shipment is insured for the appropriate value. If uninsured parts are lost, we cannot issue a credit.

**PLEASE NOTE:** *Warranty forms should be filled out completely.*

**PREVENTIVE MAINTENANCE IS YOUR BEST INSURANCE AGAINST EQUIPMENT FAILURE. BE SURE TO READ THIS MANUAL, ESPECIALLY THE MAINTENANCE, OPERATING AND CAUTION SECTIONS.**

**SALSCO, INC., 105 School House Rd.  
Cheshire, CT 06410  
800-872-5726, 203-271-1682  
203-271-2596 (Fax)  
sales@salsco.com, [www.salsco.com](http://www.salsco.com)**

**WARRANTY CLAIM FORM**

SALSCO, INC.  
105 School House Rd.  
Cheshire, CT 06410

Phone: (203) 271-1682, (800) 872-5726  
Fax: (203) 271-2596  
Email: s.clark@salsco.com  
Website: www.salsco.com

**END OWNER****Date Submitted:**

Name:	Phone:	Work Order #:
Email:	Fax:	Office Use Only
Address:		Date Rec'd
		Cust ID:
		Salsco WC
		Salsco RA

**PURCHASED FROM**

Name:	Phone:	Date Approved:
Email:	Fax:	Date Rejected:
Address:		Processed By:
		Dir. Del Report on File: YES NO
		Warranty Card on File: YES NO
		Part(s) Total:

**Equipment/Warranty Information (Must be complete)**

Purchase Date:	Invoice #	Date Failed:	Total Approved:
Model #:	Serial #:	Repair Date:	Approved/Rejected:
Hrs Used:	Primary Use:		Name:
			Reason for Rejection:
Warranty Claim/Work Order#:			

Was a Salsco Return Authorization # issued for repairs or

Return of Parts? YES NO

Probable Cause of Failure:

**Suggested Preventative Maint:**

Work Performed/Comments on Repair:

Shop Labor Rate:						Submitted By:	
Total Labor Hours to Repair:						Printed Name:	
Parts Required for repair							
Salsco Part #: Description:						Qty.	Price Each
							Total
							Inv #

Fill in all information requested on warranty claim form.

**INCOMPLETE FORMS CANNOT BE PROCESSED & WILL BE RETURNED**

List all parts used. Make sure part numbers are correct. Any parts that you believe to be defective or any parts that break should be retained for possible inspection until after the warranty has been paid or part has been replaced.

## SERVICE RECORD

If kept properly, this schedule will help track problems in the future.

[illegible]

MODEL # \_\_\_\_\_ S/N \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_