



## Electronic Service Manuals

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**Minuteman<sup>®</sup>**  
Excellence Meets Clean



**Parts and Instruction Manual  
Lumina 28 Traction Drive  
Battery Burnisher**

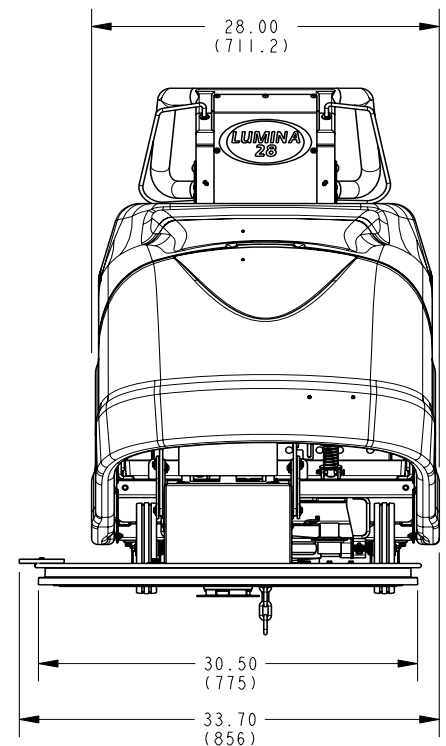
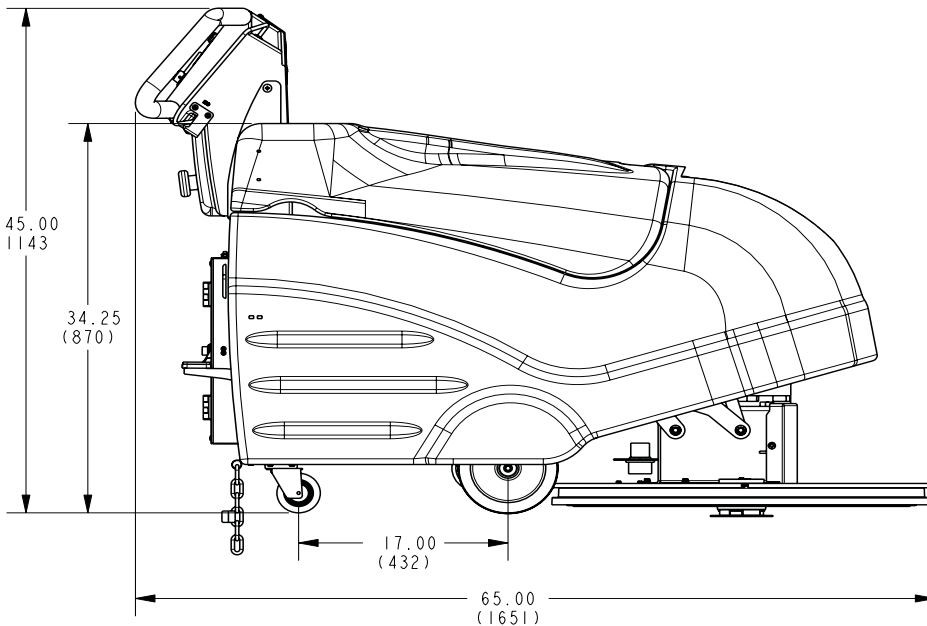
This manual is furnished with each new **MINUTEMAN Lumina 28**. This provides the necessary operating and preventive maintenance instructions. Operators must read and understand this manual before operating or servicing this machine.

This machine was designed to give you excellent performance and efficiency. For best results and minimal cost, please follow the general guidelines below:

- Operate the machine with reasonable care.
- Follow the manufacturers suggested maintenance instructions as provided in this booklet.
- Use original Minuteman supplied parts.

### TECHNICAL SPECIFICATIONS

<b>Model</b>	<i>Lumina 28</i>
<b>Model No.</b>	M28036TDQP
<b>Voltage, Batteries</b>	36 volts, 6-6volt
<b>Battery Capacity</b>	325 AH
<b>Dimensions (LxWxH)</b>	65" x 28" x 45" (1651mm x 711.2mm x 1143mm)



in (mm)

# Table of Contents

<b>IMPORTANT SAFETY INSTRUCTIONS</b> .....	<b>1</b>
<b>Operating Instructions</b> .....	<b>2</b>
Inspection .....	2
Electrical .....	2
Batteries .....	2
Operation .....	2
After Use .....	2
Maintenance .....	2
Battery Service and Installation .....	3
Charging of Batteries .....	3
Machine Overview .....	3
Dashboard Control Panel .....	3
Pad Installation .....	4
Pad Pressure Adjustments .....	4
Circuit Breaker Protection .....	4
Carbon Brush Replacement .....	4
Carbon Brush Service .....	4
<b>Exploded Views</b> .....	<b>5</b>
Base Assembly .....	5
Base Assembly BOM .....	6
Mainframe Assembly .....	7
Mainframe Assembly BOM .....	8
Burnisher Head Assembly .....	9
Electrical Assembly .....	10
Electrical Assembly BOM .....	11
Console Assembly .....	12
Console Assembly BOM .....	13
Dashboard Assembly .....	14
Bearing Assembly .....	15
Pad Driver Assembly .....	16
Pad Shroud Assembly .....	17
Switch Plate Assembly .....	18
<b>Schematics</b> .....	<b>19</b>
<b>Minuteman International Made Simple Commercial Limited Warranty</b> .....	<b>24</b>

## **IMPORTANT SAFETY INSTRUCTIONS**

**CAUTION:** Operators must read and understand this manual before operating or maintaining this machine.

Keep hands and feet clear of moving parts while machine is in operation.

Disconnect the power to the machine by pressing the Red Emergency Disconnect Button when charging batteries or during installation or removal of pads.

During operation, loose objects on the floor can become dangerous projectiles if struck by the high speed pad. Special attention should be paid in removing or avoiding loose floor tile, electrical cables, telephone connection boxes.

Electrical motors and components can cause an explosion when operated near explosive materials Or vapors. Do not operate this machine near flammable materials such as solvents, thinners, fuels, grain dust, etc.

Keep machine moving to reduce the risk of damaging floor finish and floor.

Make sure the Red Emergency Disconnect Button is pressed and the battery connector is unplugged from the machine before performing any maintenance procedures.

Store or park this machine on a level surface only.

These machines are designed for level floor operation only. Do not operate on ramps or inclines.

Battery acid can cause burns. When working on or around batteries, wear protective clothing, safety glasses and remove metal jewelry. Do not lay tools or metal objects on top of batteries.

Charging batteries generates explosive gases. **DO NOT CHARGE BATTERIES WHEN OPEN FLAMES OR SPARKS ARE PRESENT. DO NOT SMOKE.** Charge the batteries in a well-ventilated area with the battery cover open.

Maintenance and repairs must be performed by authorized personnel.

**SAVE THESE INSTRUCTIONS**

## Operating Instructions

### Inspection

*Carefully unpack and inspect your burnisher for shipping damage. Each unit is tested and thoroughly inspected before shipment; any damage is the responsibility of the delivery carrier who should be notified immediately.*

### Electrical

*This machine is battery operated and designed to operate on 36 volts DC (6) 6 volt batteries.*

### Batteries

*Burnishers are shipped with batteries. (6 required)*

*Part No. 956744 6V 325AH 20 Hr. Rate (Optional)*

*We do not recommend mixing AMP hour capacities. Any alternate battery sets can be used if they equal physical size and capacity. On board battery charger must be recalibrated if alternate batteries are used. Contact Minuteman Engineering for procedure. See next page for service and installation.*

### Operation

*Before starting, familiarize yourself with the machine and its controls (see “Machine Overview” and “Dashboard Control Panel” diagrams). To turn the machine ON, do the following:*

- 1. Make sure 28" high speed pad is used. Make sure the pad is installed on the machine by following instructions under “Pad Installation.”*
- 2. Make sure that the battery charger is unplugged and cord is safely stored.*
- 3. Lift the red emergency disconnect button so it is in the up position.*
- 4. Lower the pad driver assembly by pushing the pedal slightly outward on the machine (unlock it), and then release it slowly.*
- 5. Place hands on the bails and squeeze the bail lever to start the operation of the machine. Move forward in a straight line, check the reading on the Operating Range Meter and make sure you are in the Green Zone.*
- 6. Adjust the pad pressure as needed by pressing the pressure adjust rocker switch. (See Pad Pressure Adjustments.)*
- 7. Adjust speed as needed by turning the speed control knob accordingly.*

### After Use

*To raise the pad driver, push down until the pedal arm engages into the pedal catch. Turn machine off by turning the key switch on the control panel. Machine can be cleaned with a mild detergent and a damp cloth. Batteries should be charged after each use or when the battery condition meter shows a low charge. Once the battery charger reads 0 amps, the batteries are recharged. This should take approximately 11 hours if the batteries are completely discharged.*

### Maintenance

*Periodically remove batteries from machine. Clean the batteries and battery tray with a solution of baking soda and water. Check all battery cables and wiring for signs of damage and wear. Replace as needed. Grease front wheel and rear caster zerks once a month for best operation.*

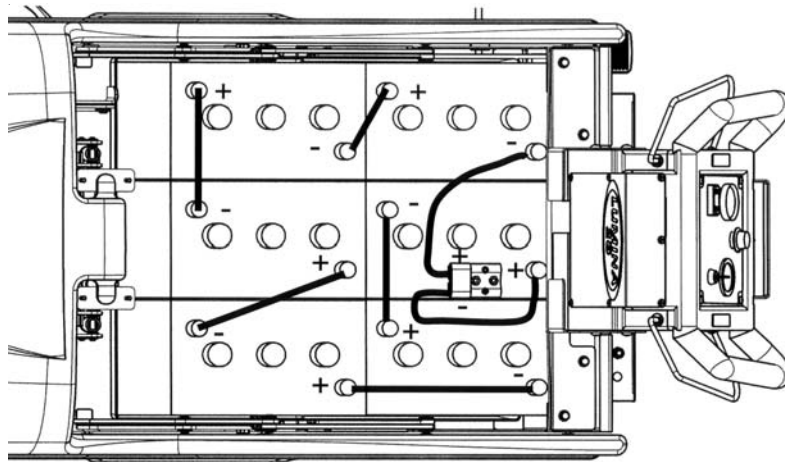
## Battery Service and Installation

**WARNING:** Battery acid can cause burns. When working on or around batteries, wear protective clothing, safety glasses and remove metal jewelry. Do not lay tools or metal objects on top of batteries.

### Charging of Batteries

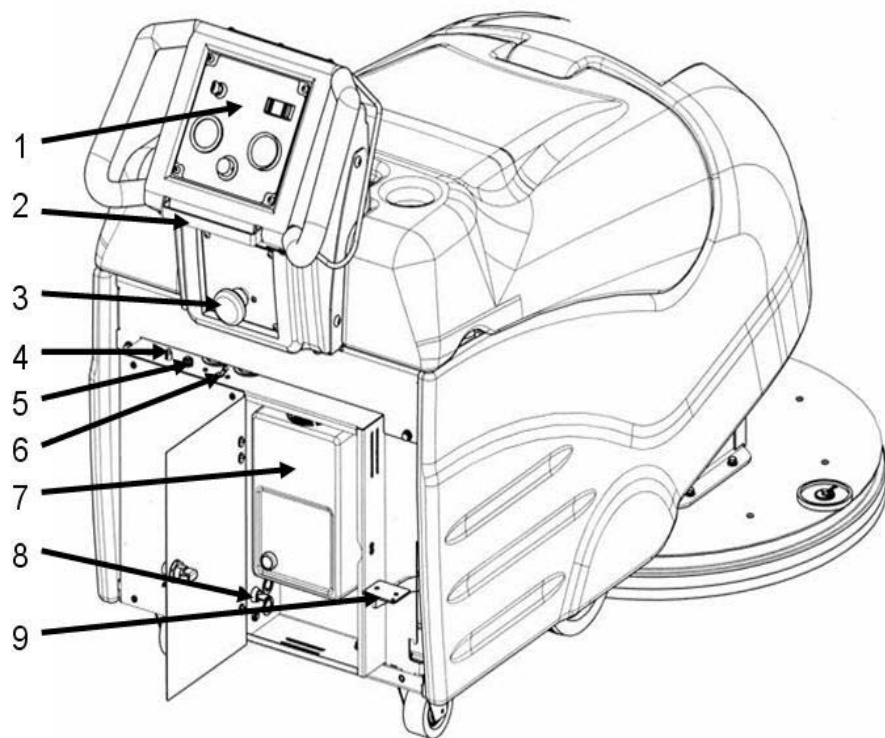
Charging batteries generates explosive gasses. **DO NOT CHARGE BATTERIES WHEN OPEN FLAMES OR SPARKS ARE PRESENT. DO NOT SMOKE.**

Charge the batteries in a well-ventilated area with battery cover open. Fluid levels should be checked before and after charging and maintained at the proper levels. If the burnisher is not used for extended periods of time, batteries should be kept fully charged with a boost charge once a week.



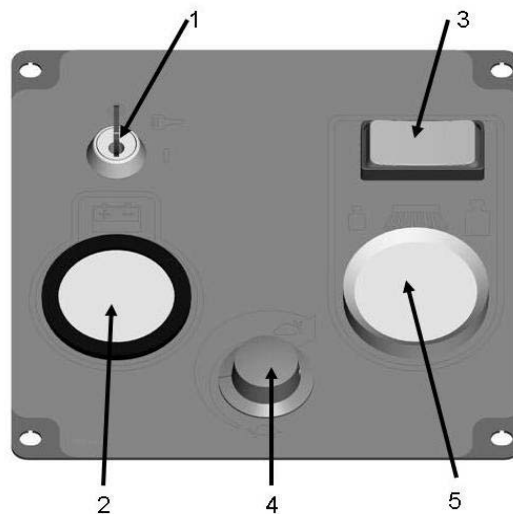
### Machine Overview

- 1 – Dashboard Control Panel
- 2 – Emergency Belly Bar Stop
- 3 – Emergency Stop Button
- 4 – Circuit Breaker, 3 AMP
- 5 – Circuit Breaker, 20 AMP
- 6 – Circuit Breaker, 100 AMP
- 7 – Charger, 36 VDC, 25 AMP
- 8 – Circuit Breaker, 2 AMP
- 9 – Foot Pedal



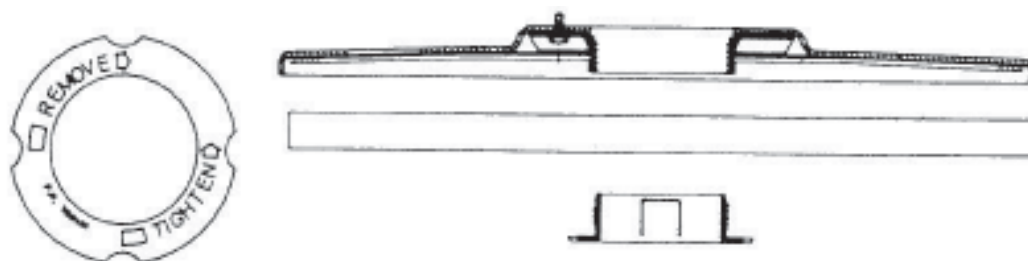
### Dashboard Control Panel

- 1 - On / Off Key Switch
- 2 - Battery Gauge
- 3 - Traction Drive Directional Switch
- 4 - Traction Drive Speed Control
- 5 - Pad Pressure Gauge



## Pad Installation

The red emergency disconnect button and the key switch must be in the OFF position before installation and the pad driver assembly in the RAISED position. Remove center cup locking device by gripping on outer edges and turning clockwise. **NOTE:** Center cup cannot be pulled out; it must be unscrewed. After removing used pad, place new pad on pad driver assembly using outer flange of pad driver to center the pad. Push centering locking cup through the pad and into the pad driver assembly. The ratchet teeth on the center cup will engage into the pad driver assembly and should be pushed in as far as possible. If further tightening is needed, rotate the center-locking cup counter-clockwise.



## Pad Pressure Adjustments

The pad pressure adjust switch is located on the control panel. Different floors, conditions, and pads produce carrying pad load conditions. Ideal burnishing conditions are maintained while the operating range meter remains in the Green Zone. If the meter reads in the Red Zone decrease the pad pressure. When the machine is operated in the Red Zone for a long period of time motor overload will occur and the 100-amp circuit breaker for the motor will trip. If the motor circuit trips:

1. Check pad condition.
2. Decrease pad pressure.
3. Reset circuit breaker.

## Circuit Breaker Protection

100 amp circuit breaker protects pad driver motor from excessive overload conditions.

20 amp circuit breaker protects drive motor, second 20 amp circuit breaker protects vacuum motor (optional).

3 amp circuit breaker protects control circuits against possible electrical shorts. If either circuit breaker trips, first determine the cause and correct the condition before resetting the breakers.

## Carbon Brush Replacement

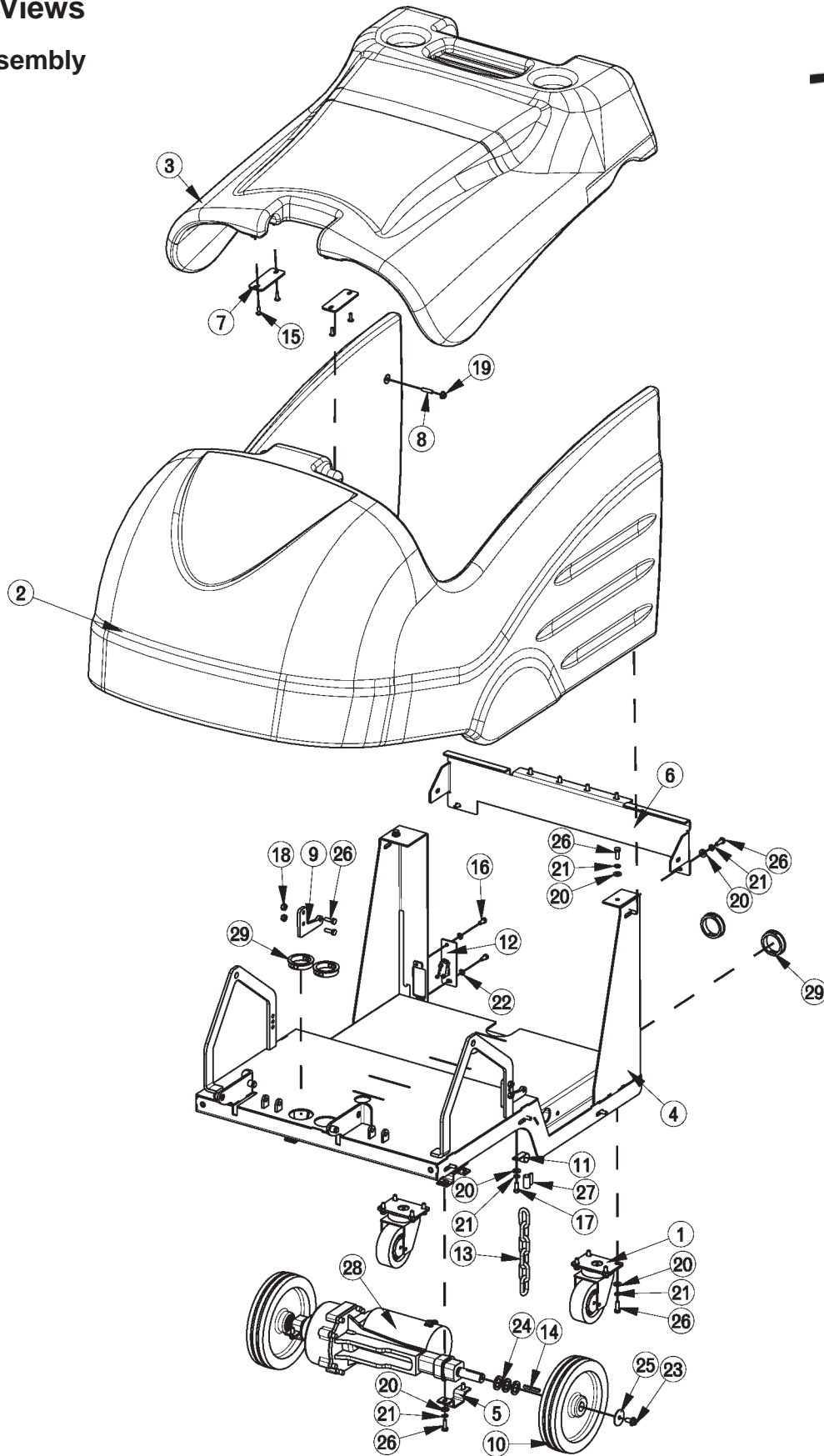
Design life of carbon brushes is between 1800-2000 hours. Replace brushes if worn to 3/8" or less, broken, or chipped. All carbon brushes should be replaced when motor is serviced. Four (4) are required, P/N 572003. Red indicator on control panel (above Emergency Disconnect Button, below the Dashboard) will glow when carbon brush service is required.

## Carbon Brush Service

1. Disconnect batteries from machine.
2. Remove two screws that hold dust control housing and motor cover to motor.
3. Blow out top of motor with air line.
4. Loosen screw and remove carbon brush lead.
5. Slide brush spring off the back of carbon brush and remove brush.
6. Reverse order for installation of new carbon brushes.

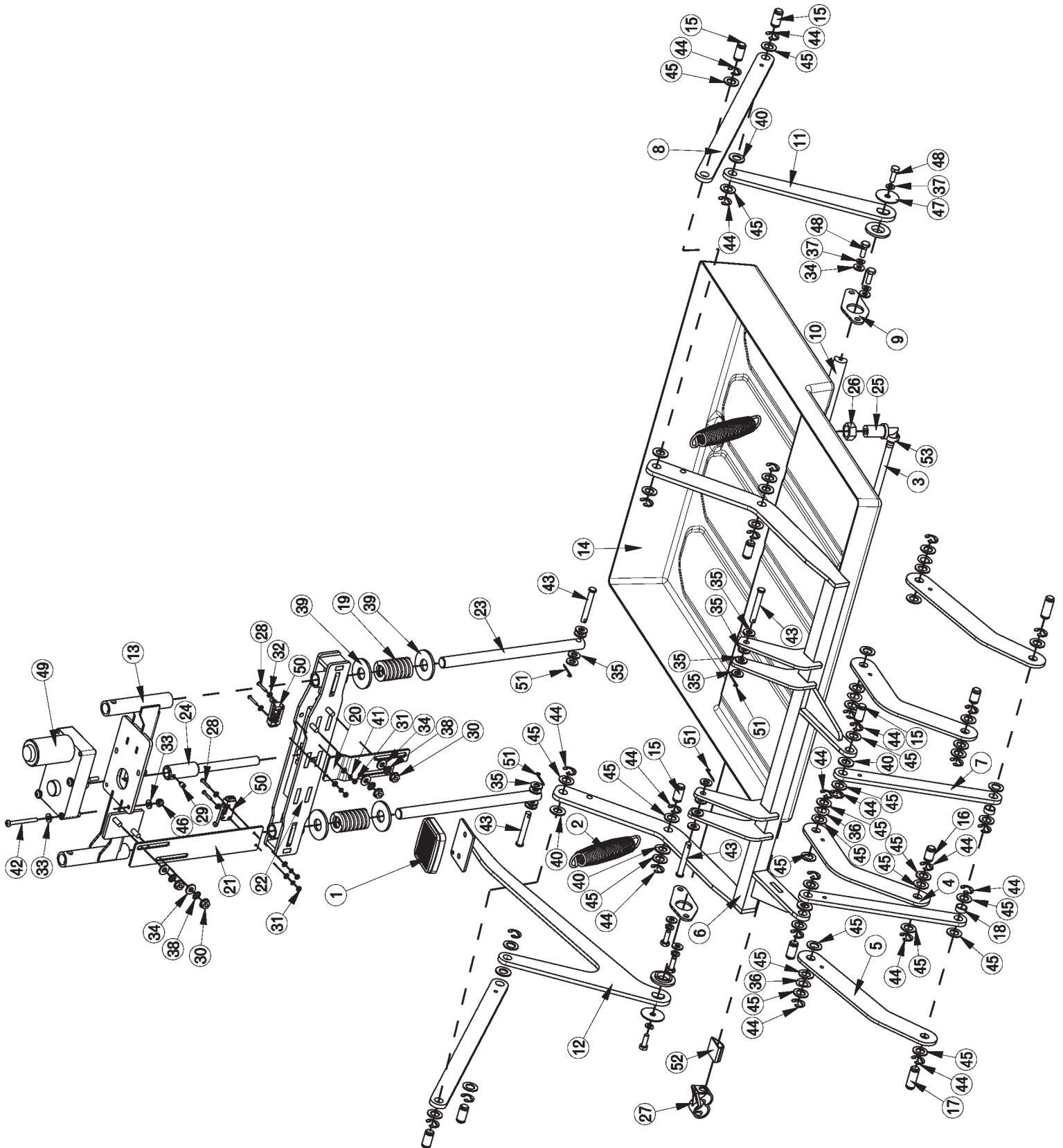
# Exploded Views

## Base Assembly

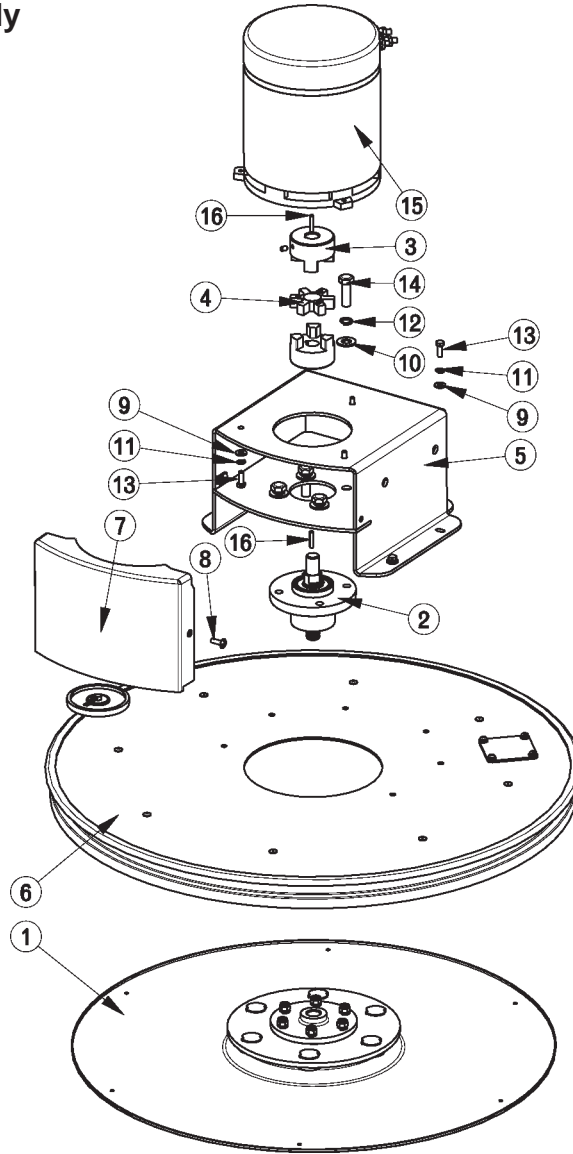


## Base Assembly BOM

BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	200345	2	CASTER, 3-1/2 POLYURETHANE
2	280300	1	BASE, LUMINA 28
3	280301	1	LID, LUMINA 28
4	280302	1	28" LUMINA MAIN FRAME WMNT
5	280322	2	BRACKET, TRANSAXLE MOUNTING
6	280360	1	SUPPORT, CONSOLE REAR
7	280362	2	LID BRACKET PLATE
8	280393	8	STUD, 1/4-20 X 1 STL ZINC
9	280395	2	PLATE, SPRING MOUNTING
10	280396	2	WHEEL 8 X 1.6 X .75 BORE
11	280404	1	LUMINA 28", CHAIN MTG STRAP
12	280433	1	SWITCH PLATE ASSEMBLY
13	320996	1	STATIC GROUNDING CHAIN
14	361233	2	KEY, 3/16 SQ. X 1.50"
15	711160	4	#10 X 5/8 HI-LO
16	711202	2	BLT-HH 1/4-20 X 0.50 STPL
17	711203	1	BLT-HH 1/4-20 X 0.62 STPL
18	711373	4	NUT-NYLOC 1/4-20
19	711425	8	NUT, HEX 1/4-20 WIZNUT
20	711505	21	WSR-FLAT 1/4
21	711544	21	WSR-HELICAL 1/4
22	711564	2	WSR-EXTERNAL LOCK 1/4
23	712042	2	BLT-WSR HH 5/16-18 X .62
24	712318	6	WSR- FLAT.75 X 1.12 X .12 PL
25	712759	2	WSR- FLT .31 X 1.37 X .06 SS
26	713002	24	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5
27	715281	1	DECAL-CHAIN GROUNDING
28	743800	1	TRANSAXLE 36VDC
29	762400	4	HEYCO BUSHING 2.00"



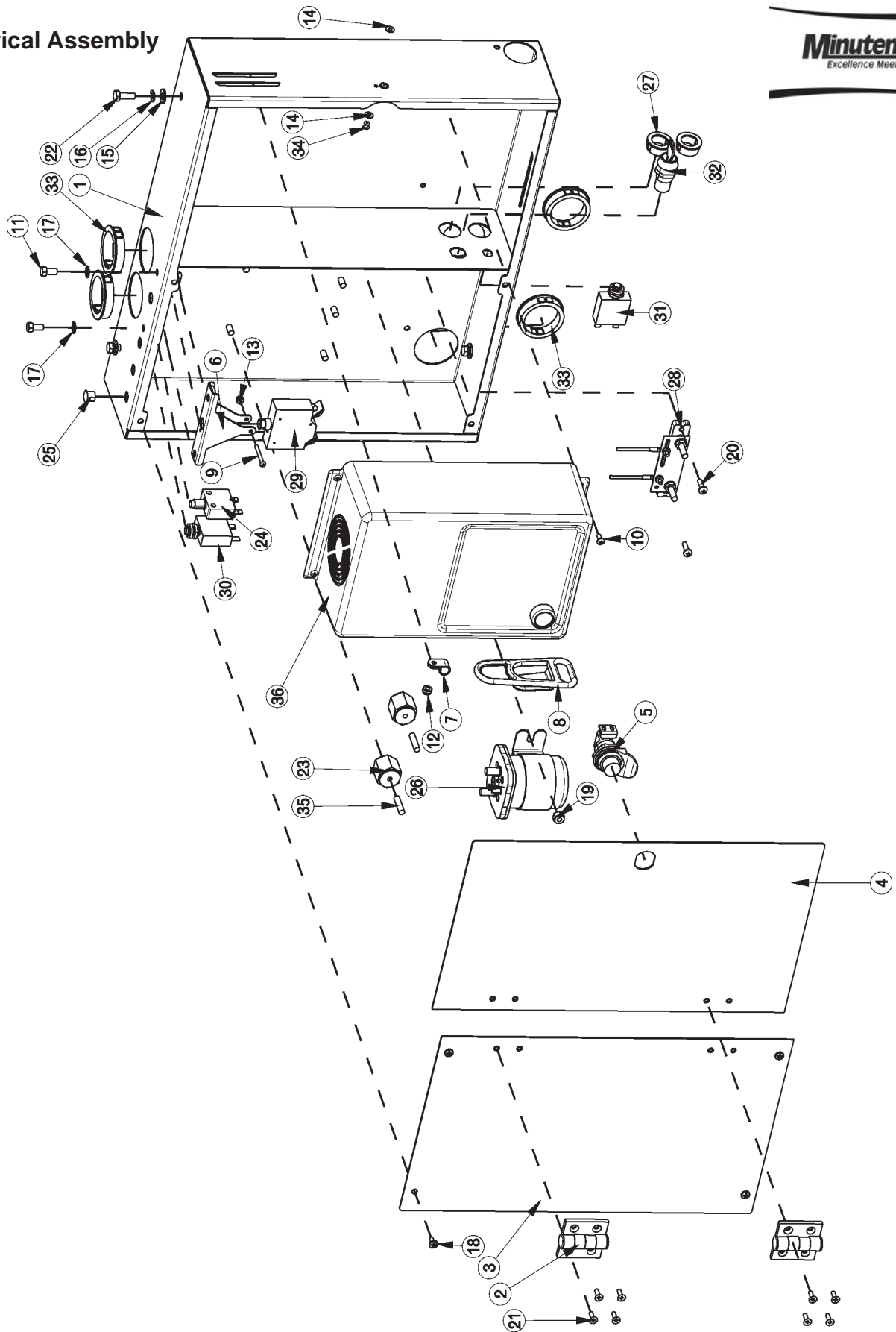
BILL OF MATERIAL				BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	210142	1	PEDAL PAD	28	710493	4	SCR-MC 4-40 X .75 PAN HD
2	260211	2	HOBBY SPRING	29	711027	1	SK-DOG POINT 1/4-20 X 3/8 STL BLACK OXIDE
3	260224	1	18" HOSE	30	711425	4	NUT, HEX 1/4-20 WIZNUT
4	280323	2	ARM, REAR PIVOT	31	711428	4	NUT-HEX 4-40
5	280324	2	ARM, FRONT PIVOT	32	711501	8	WSR-FLAT # 6
6	280325	1	WELDMENT, PIVOT ARM	33	711503	8	WSR, FLAT#10
7	280332	2	MOTOR LIFT BAR	34	711505	8	WSR-FLAT 1/4
8	280333	2	LINKAGE LIFT BAR	35	711506	16	WSR-FLT .344 X .690 X .062 STL Z
9	280334	2	ASSEMBLY, LINKAGE PIVOT BUSHING	36	711524	4	WSR-WAVE .52 X .87 X .01
10	280335	1	LINKAGE PIVOT ROD	37	711544	6	WSR-HELICAL 1/4
11	280336	1	LINKAGE PIVOT PLATE	38	711564	4	WSR-EXTERNAL LOCK 1/4
12	280337	1	PEDAL SUPPORT WMNT	39	711570	4	WSR-FLT .687 X 1.75 X .122
13	280340	1	WELDMENT, MOTOR SUPPORT	40	711592	8	WSR-FLAT .50 X .9 X .075 NYL
14	280372	1	TRAY, LUMINA 28 BATTERY	41	711596	6	WSR-INT LOCK #4
15	280383	8	PIN, LINKAGE PIVOT	42	711603	4	SCR-MC PAN HD (PHILLIPS) 10-24x2.00 ZINC
16	280384	2	PIN, REAR SHROUD PIVOT	43	711671	4	CLEVIS PIN .31X2.13 11-10
17	280385	2	PIN, FRONT SHROUD PIVOT	44	711713	28	RETAINING RING - "E" TYPE EXT .500
18	280386	2	SPACER, FRONT SHROUD PIVOT	45	712310	40	WSR- FLAT .52 X .87 X .06 PL
19	280387	2	SPRING, DIE 5/8 ID X 1 1/4 OD	46	712638	4	NUT, HEX 10-24 SS NYLOC
20	280423	1	SWITCH BRACKET	47	712759	2	WSR- FLT .31 X 1.37 X .06 SS
21	280424	1	SWITCH BRACKET - UPPER	48	713002	6	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5
22	280425	1	SUPPORT WELDMENT - LOWER	49	743905	1	MOTOR - GEAR, PRESSURE ADJUST
23	280426	2	SHAFT - STEEL, HARDENED	50	747603-2	2	SWITCH ASY, MICRO ROLLER W/PACK/CONDUIT
24	280427	1	THREADED COUPLER	51	809311	4	PIN-COTTER 7/64 DIA X 1
25	320271	1	NOZZLE BODY-ELBOW	52	809444	1	CLIP-CORD
26	320272	2	NOZZLE BODY LOCKNUT	53	828490	1	CRIMP CLAMP 140R
27	320273	1	HOSE SHUT-OFF CLAMP				



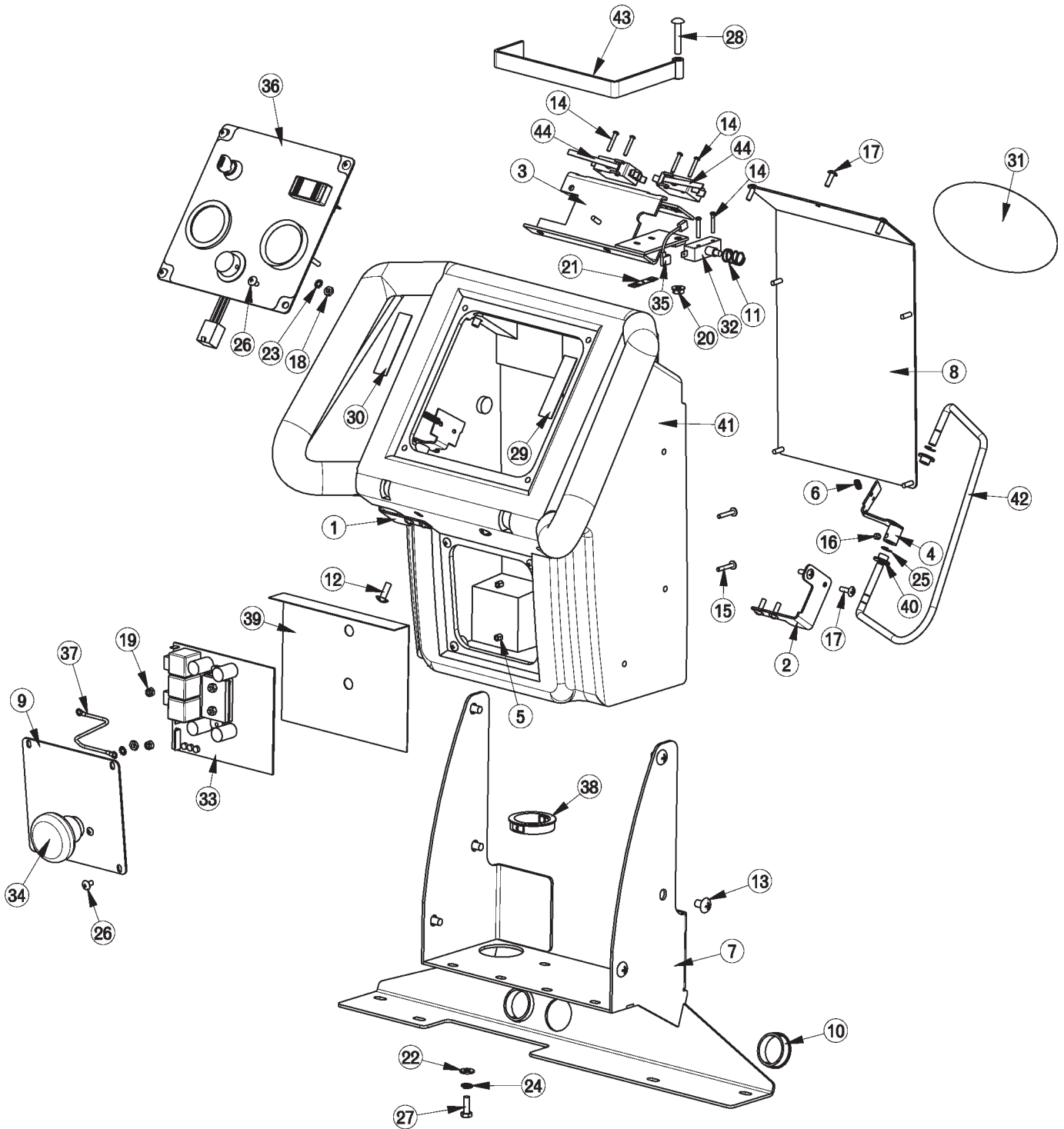
### BILL OF MATERIAL

ITEM	PART NO.	REQ'D	DESCRIPTION
1	220153	1	PAD DRIVER 28" W/ GIMBAL ASSY.
2	280363	1	BEARING ASSEMBLY PAD DRIVER
3	280373	2	COUPLING, 3/4" L-TYPE W/KEY JAW
4	280374	1	SPIDER, 3/4" L-TYPE COUPLING
5	280380	1	WELDMENT, MOTOR MOUNT
6	280397	1	PAD DRIVER ASSY, LUMINA 28"
7	280398	1	LUMINA 28", MOTOR MOUNT COVER
8	710180	2	SCR-MC TR HD 1/4-20x.75 STL ZINC
9	711505	9	WSR-FLAT 1/4
10	711509	4	WSR-FLAT 1/2 (.54X1.082X.087)
11	711544	9	WSR-HELICAL 1/4
12	711547	4	WSR-HELICAL 3/8
13	713002	9	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5
14	713071	4	BLT-HH 1/2-13 X 2.00 ST PL
15	743900	1	MOTOR, 3HP 36VDC PERM. MAG.
16	808821	2	KEY .187 SQ x 1.00

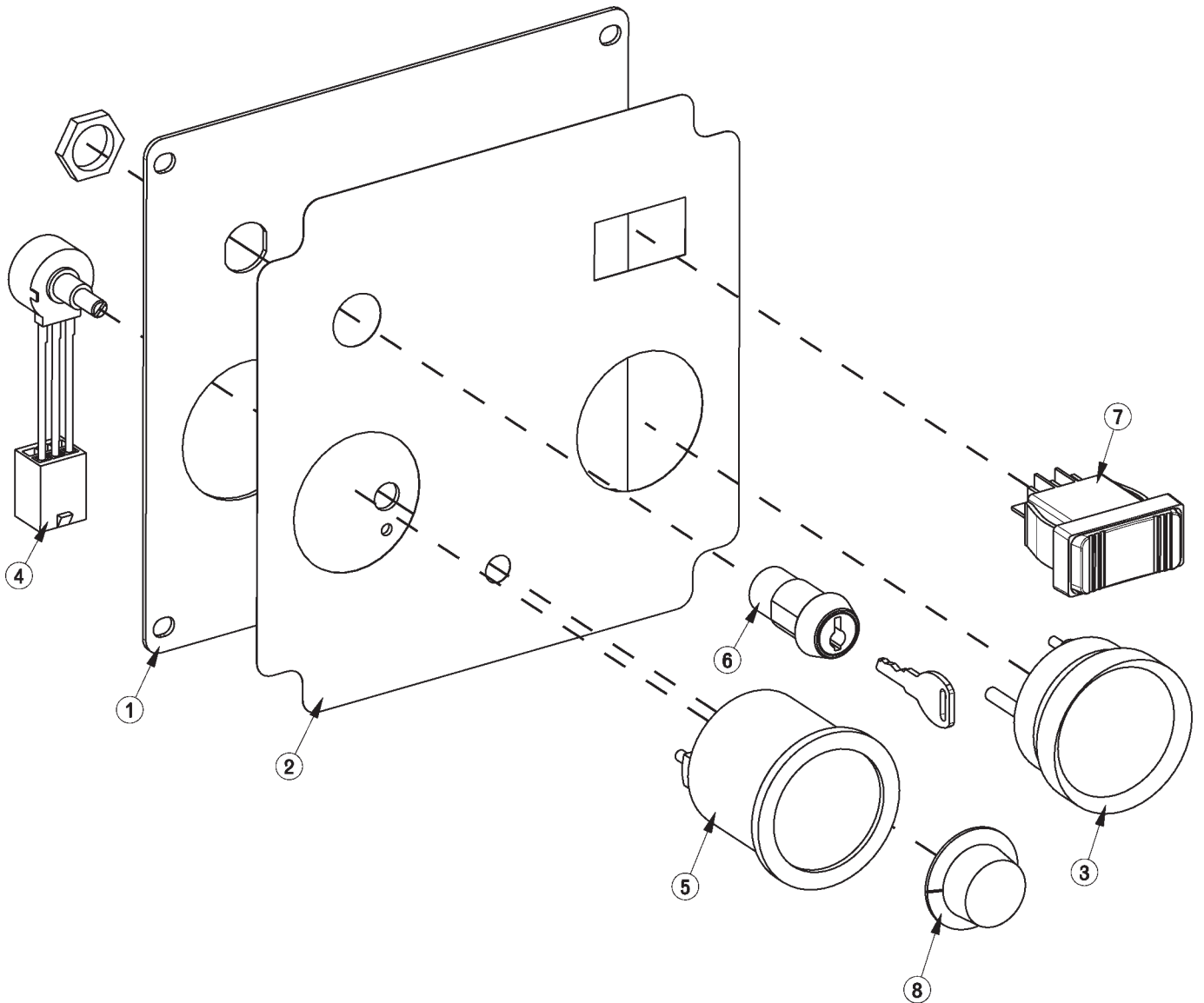
# Electrical Assembly



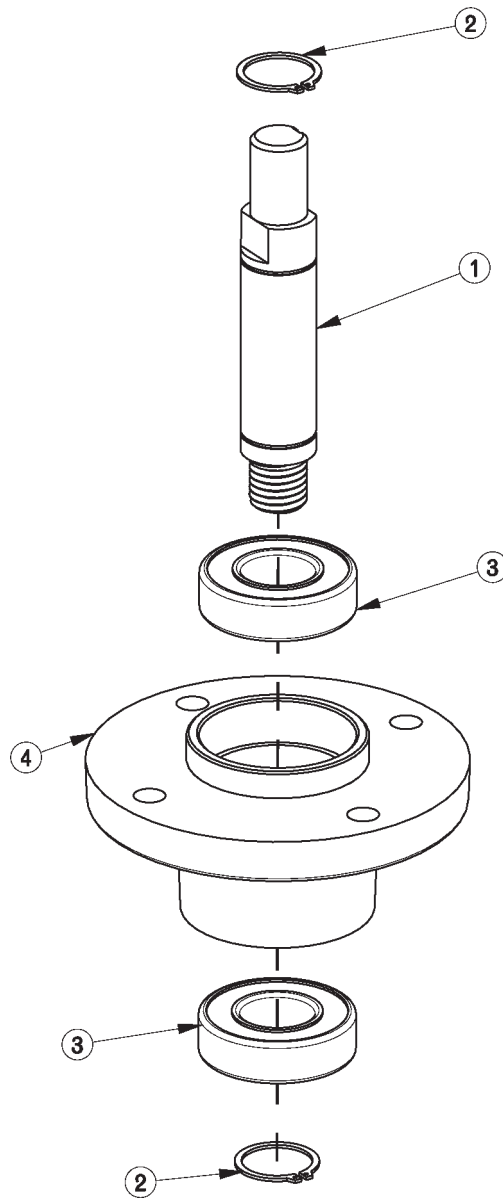
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	280350	1	WMNT, LUMINA 28" ELECTRICAL BOX
2	280353	2	HINGE, 2" PLASTIC BUTT
3	280354	1	PANEL, COVER ELECTRICAL
4	280355	1	PANEL, COVER BATTERY CHARGER
5	280388	1	SLAM ACTION PUSH BUTTON LATCH
6	280432	1	BRACKET - CIRCUIT BREAKER
7	381052	1	CORD CLIP 3/8"
8	450012	1	CORD STRAIN RELIEF
9	710008	1	SCR-MC 6-32 X 1.25 ZINC
10	710128	4	SCR-MC 8-32 X .37
11	711202	2	BLT-HH 1/4-20 X 0.50 STPL
12	711350	1	NUT-NYLOC 10-32
13	711371	1	NUT-NYLOC 6-32 STL ZINC
14	711502	4	WSR-FLT .170 x.38 x.032 STL ZINC
15	711505	4	WSR-FLAT 1/4
16	711544	4	WSR-HELICAL 1/4
17	711564	2	WSR-EXTERNAL LOCK 1/4
18	712063	4	SCR-WSR 8-32 X .38 NIPL
19	712667	2	NUT, HEX 1/4-20 NYLOC SS
20	712812	2	SCR-MC 10-24 X .62 PPH ST PL
21	712820	8	SCR-MC FL HD 10-24 X .50 BLK-OX
22	713002	4	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5
23	740132	2	INSULATOR, PLASTIC
24	740220	1	CIRCUIT BREAKER-20AMP 2-TERMIN
25	742749	1	HEYCO, HOLE PLUG
26	743901	1	RELAY, 36VDC 200A SPNO
27	743903	2	HEYCO BUSHING 1"
28	743906	1	SHUNT CALIBRATED 100A DC 100 MV
29	743917	1	CIRCUIT BREAKER - 100 AMP
30	746006	1	CIRCUIT BREAKER - 3A
31	746035	1	CIRCUIT BREAKER - 2.0A
32	747024	1	KEYSWITCH, SPST ES2832 SOLDER
33	762400	4	HEYCO BUSHING 2.00"
34	829214	2	RIVET, 1/8 DIA. REFERENCE POP
35	833638	2	BRASS STUD
36	957746	1	CHARGER, 36VDC 25A ON-BOARD (2



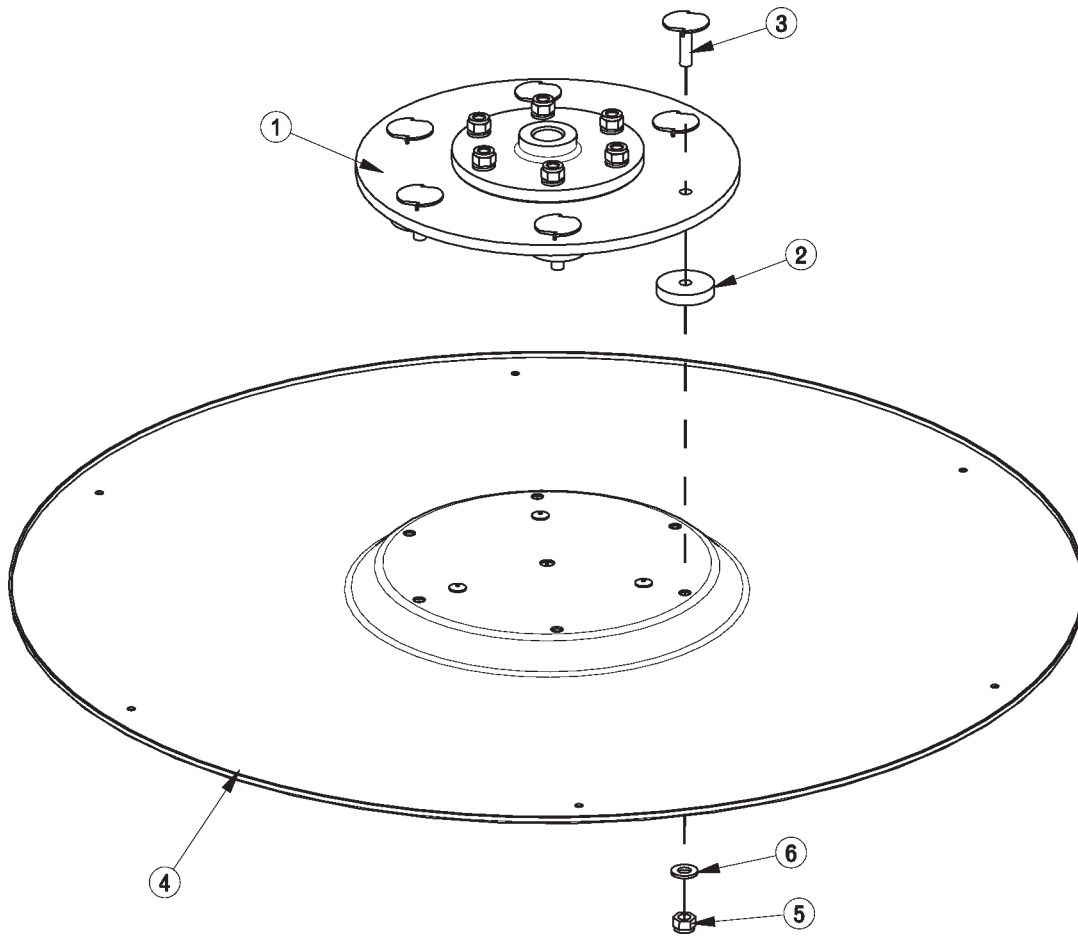
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	200039	1	BAIL STOP RH
2	200040	1	BAIL STOP LH
3	200184	1	SWITCH BRACKET WELDMENT
4	200338	2	CAM WELDMENT
5	200340	2	SPACER, SCR BOARD
6	220324	2	SPRING
7	280356	1	WELDMENT, CONSOLE BRACKET
8	280365	1	PLATE, CONSOLE COVER
9	280371	1	PANEL, LUMINA 28 E-STOP
10	670092	2	HEYCO BUSHING 1-1/2
11	670093	1	SPRING, COMPRESSION
12	710180	2	SCR-MC TR HD 1/4-20x.75 STL ZINC
13	710195	6	SCR-MC 5/16-18 X .50
14	710207	6	SCR-MC 6-32 X .87 ZINC
15	710534	2	SCR-MC TR HD 8-32 X 1.00 SS
16	711004	2	SK-CUP PT 1/4-20 X .25 STL BLACK
17	711160	15	#10 X 5/8 HI-LO
18	711310	1	NUT, HEX 10-32 ST PL
19	711372	2	NUT-NYLOC 8-32 STL ZINC
20	711425	1	NUT, HEX 1/4-20 WIZNUT
21	711430	3	NUT-TINNERMAN TWIN 6-32
22	711505	2	WSR-FLAT 1/4
23	711534	1	WSR-EXTERNAL LOCK #10
24	711544	2	WSR-HELICAL 1/4
25	711721	6	RET RING-E TYPE .312
26	712540	8	SCR-MC TR HD 10-24 X .37 SS
27	712562	2	BOLT-HH 1/4-20X3/4 SS
28	712569	1	SCR-MC TR HD 1/4-20 X 1.50 SS
29	715257	1	DECAL, "FORWARD" M2700
30	715258	1	DECAL, "REVERSE" M2700
31	715460	1	DECAL, LUMINA 28 MAIN
32	740029	1	SWITCH, PB SPST NO 25A 125/250 V
33	740803-1	1	SPEED CONTROL 36V 1203A-304
34	742202	1	EMERGENCY STOP SWITCH
35	743832	1	WIRE ASSEMBLY
36	743916	1	DASH ASY, W/ WIRES LUMINA 28"
37	743966	1	WIRE ASY, GREEN/YELLOW 16G
38	762400	1	HEYCO BUSHING 2.00"
39	805637	1	SCR INSULATOR
40	829052	4	BUSHING FLANGED NYLON .312 ID
41	200104MCH	1	HANDLE CONSOLE 200
42	200181CTD	2	HANDLE WIRE COATED
43	200190CTD	1	LEVER, SWITCH
44	833329SA	2	SWITCH, DPDT STAGGERED ACTION



BILL OF MATERIAL - 743916			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	280369	1	PLATE, LUMINA 28 DASHBOARD
2	715444	1	DECAL, LUMINA 28 CONTROL PANEL
3	740135	1	METER, 100A DC (PRESSURE)
4	743804	1	POTENTIOMETER ASSY 200TD
5	746103	1	GAUGE, BATTERY/HOUR W/RELAY
6	747024	1	KEYSWITCH, SPST ES2832 SOLDER
7	748152	1	SWITCH, ON-OFF-ON, SCV2832
8	809874	1	KNOB, SPEED CONTROL



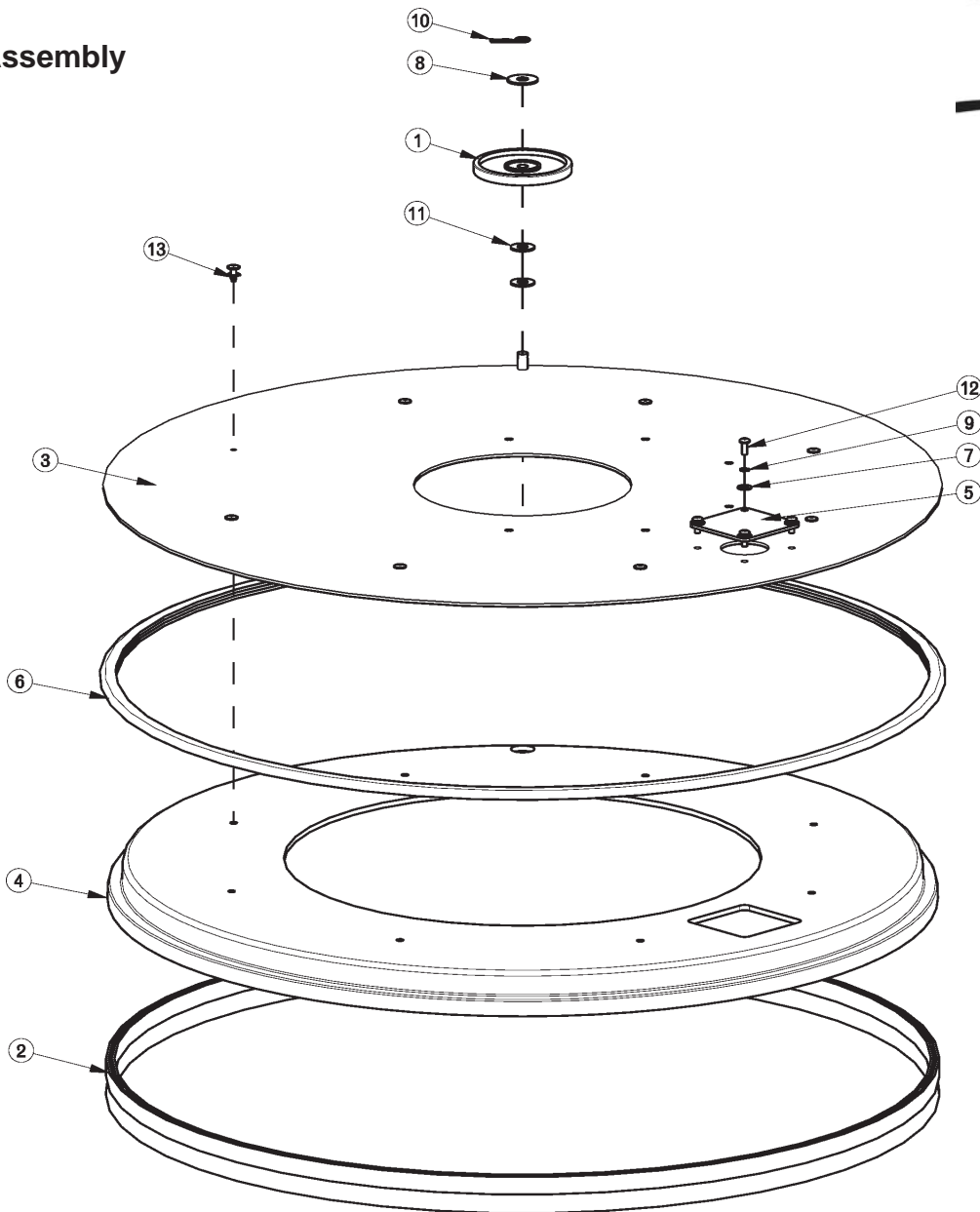
BILL OF MATERIAL - 280363			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	280361	1	DRIVE SHAFT PAD DRIVER
2	711719	2	RETAINING RING EXT 1.00
3	762093	2	BEARING 6205
4	220023MCH	1	BEARING HOUSING, PROPANE



**BILL OF MATERIAL - 220153**

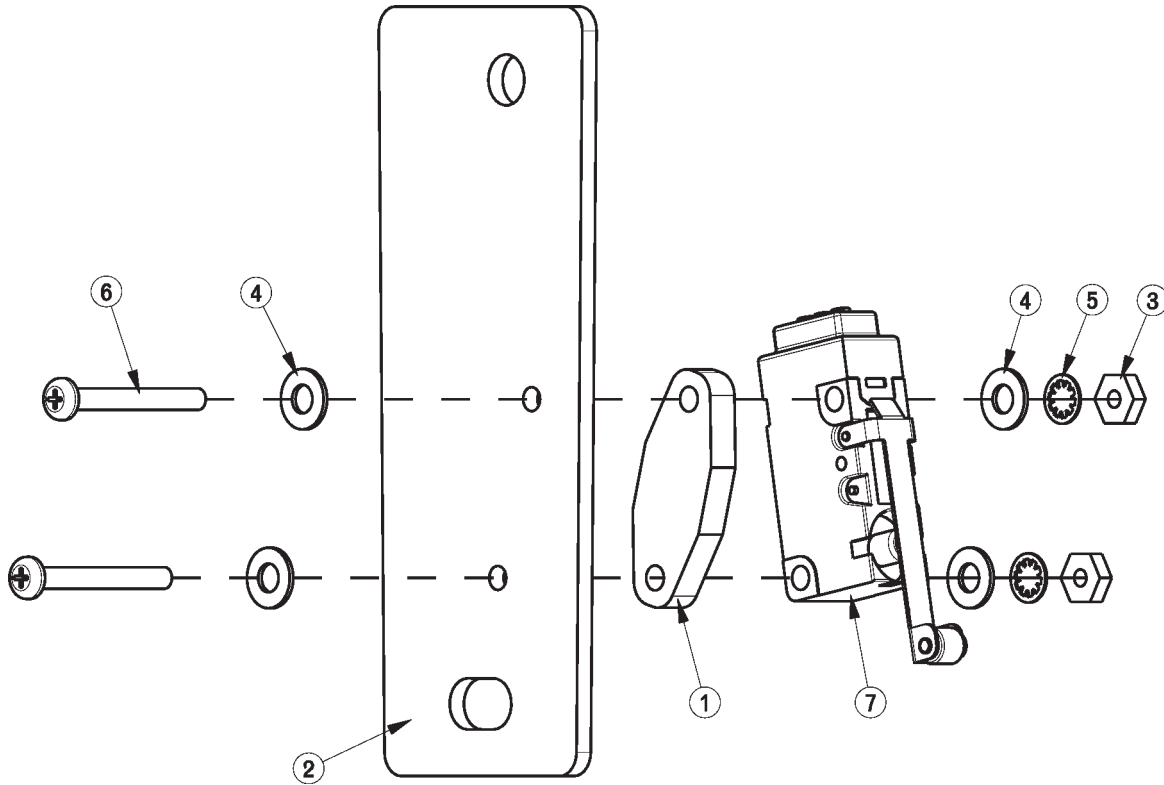
ITEM	PART NO.	REQ'D	DESCRIPTION
1	220017	1	GIMBAL ASSEMBLY COMPLETE
2	220019	6	GIMBAL SPACER DISC
3	220020	6	BLT SPEC ELEV 5/16X1.12
4	220060	1	PAD DRIVER ASSY 28 IN.
5	711374	6	NUT-NYLOC 5/16-18
6	711506	6	WSR-FLT .344 X .690 X .062 STL Z

# Pad Shroud Assembly



BILL OF MATERIAL - 280397			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	210153	1	ROLLER WHEEL
2	280348	1	SKIRT- BURNISHER
3	280381	1	WELDMENT, SHROUD MOUNTING PLATE
4	280382	1	SHROUD, 28" VAC FORM
5	280402	1	LUMINA 28" INTAKE COVER PLATE
6	280403	1	EDGING, LUMINA 28"
7	711503	4	WSR, FLAT#10
8	711507	1	WSR-FLAT .37 X 1.12 X .06
9	711543	4	WSR-HELICAL #10
10	711808	1	COTTER PIN-HAIR #13
11	712301	2	WSR-FLAT .37 X .87 X .06
12	712811	4	SCR-MC RD HD 10-24 X .50 ST PL
13	828893	8	RIVET-POP

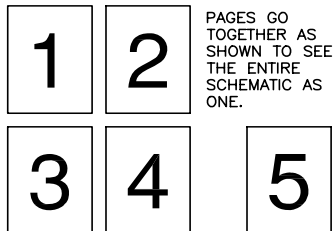
# Switch Plate Assembly



BILL OF MATERIAL - 280433			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	280430	1	SPACER PLATE - SWITCH
2	280431	1	MOUNTING PLATE - SWITCH
3	711428	2	NUT-HEX 4-40
4	711501	4	WSR-FLAT # 6
5	711596	2	WSR-INT LOCK #4
6	711604	2	SCR-MC PAN HD (PHILLIPS) 4-40x1.00 ZINC
7	747603-2	1	SWITCH ASY, MICRO ROLLER W/PACK/CONDUIT

1

PAGE LAYOUT

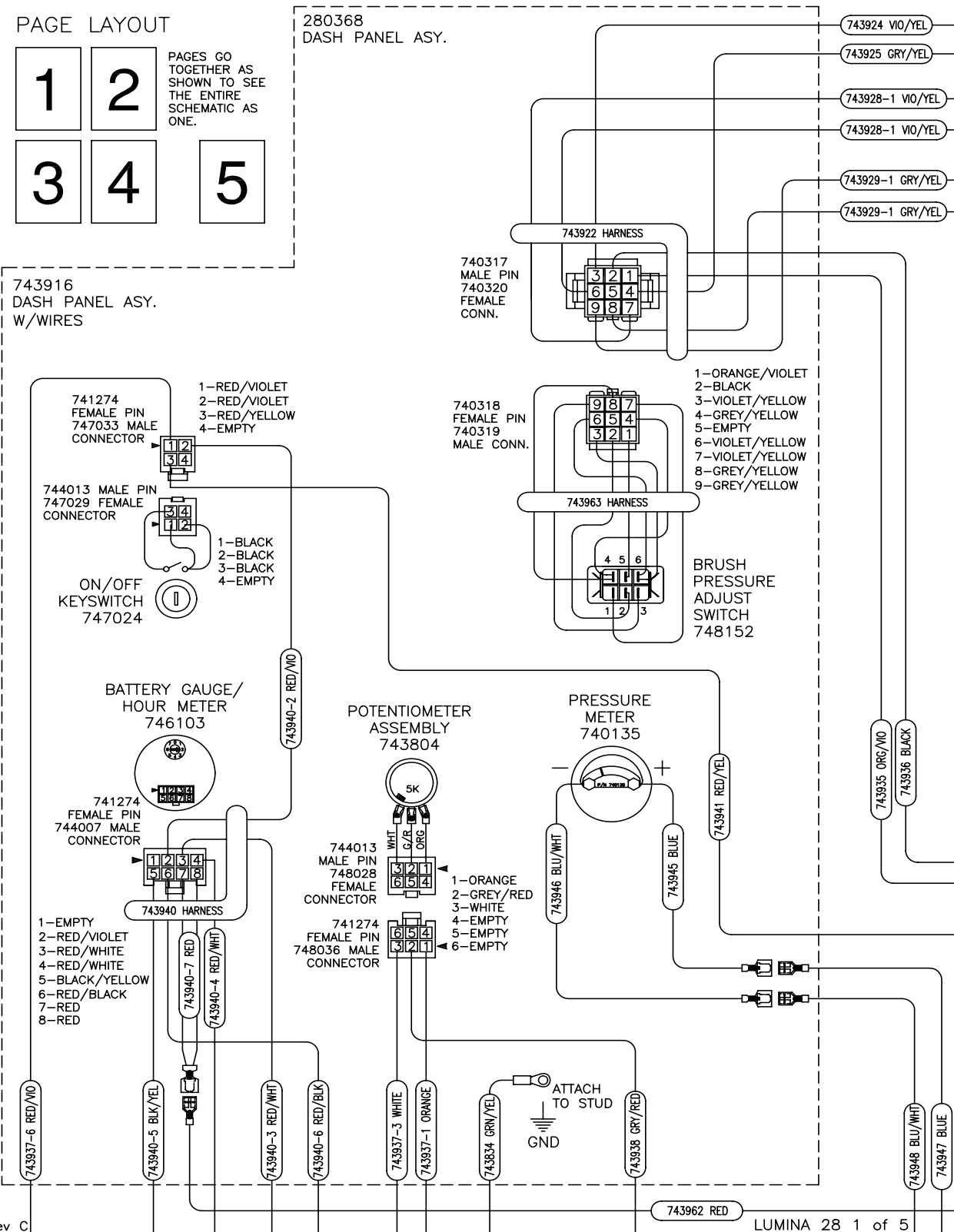


PAGES GO TOGETHER AS SHOWN TO SEE THE ENTIRE SCHEMATIC AS ONE.

DASH PANEL

280368 DASH PANEL ASY.

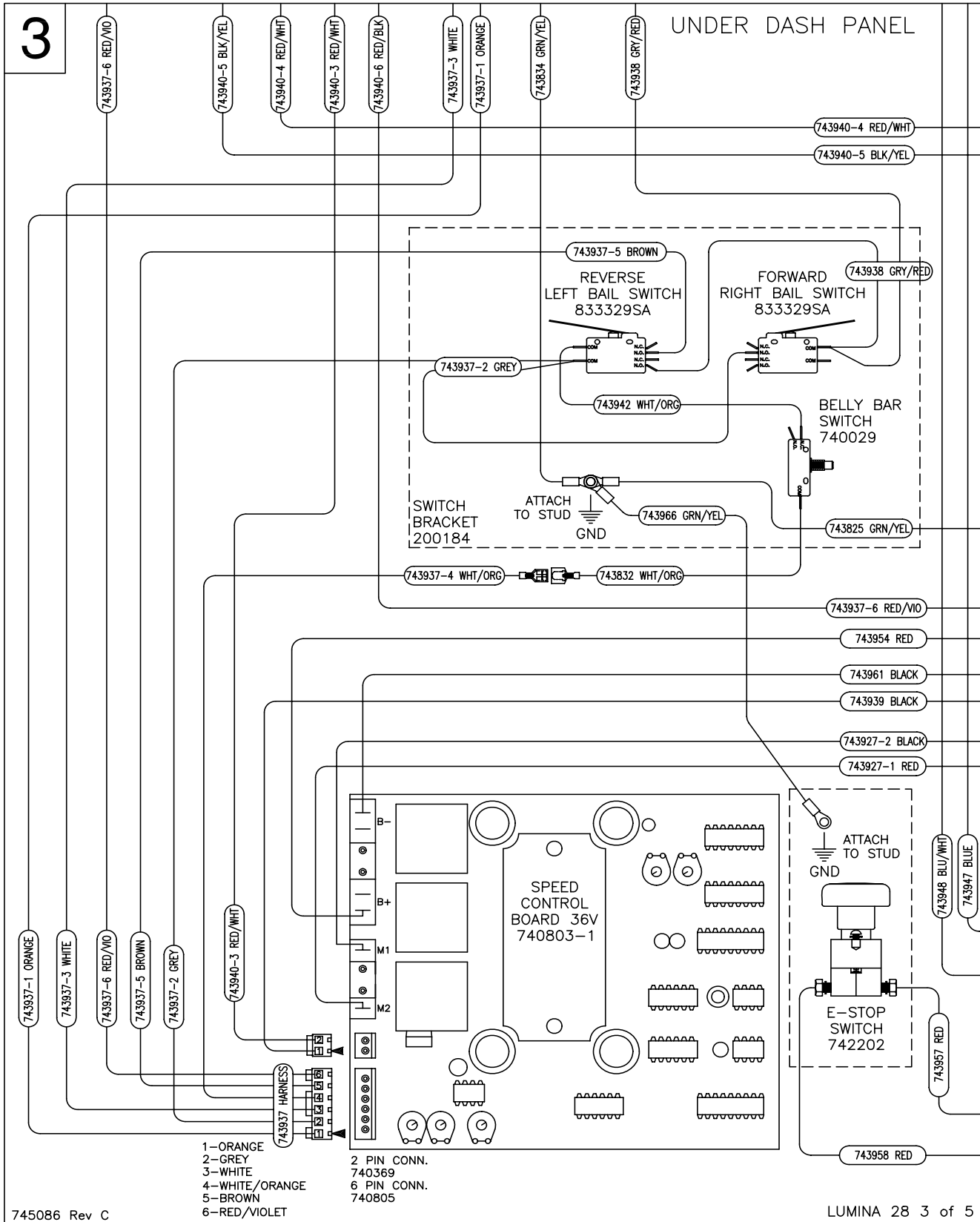
743916 DASH PANEL ASY. W/WIRES

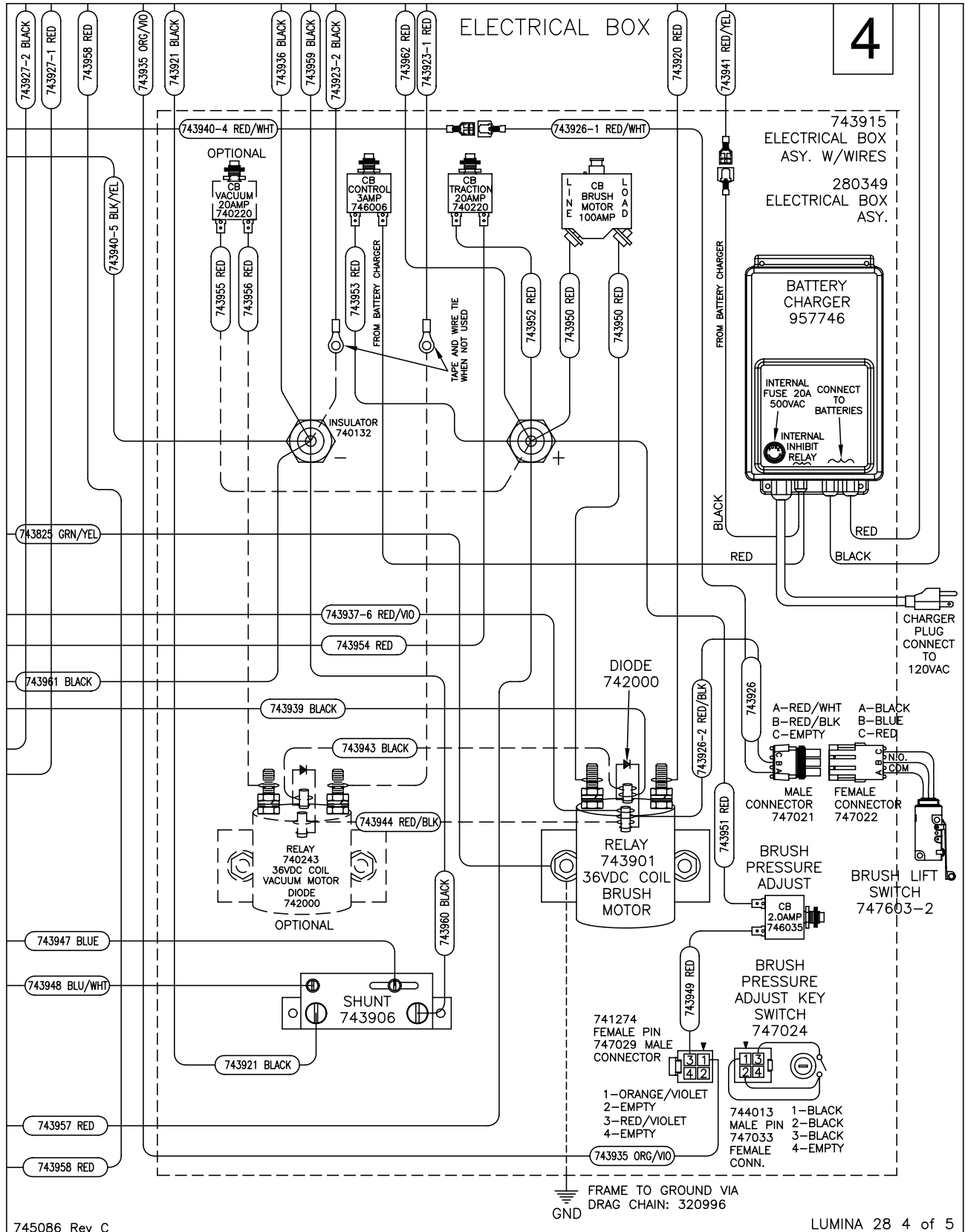


745086 Rev C

LUMINA 28 1 of 5





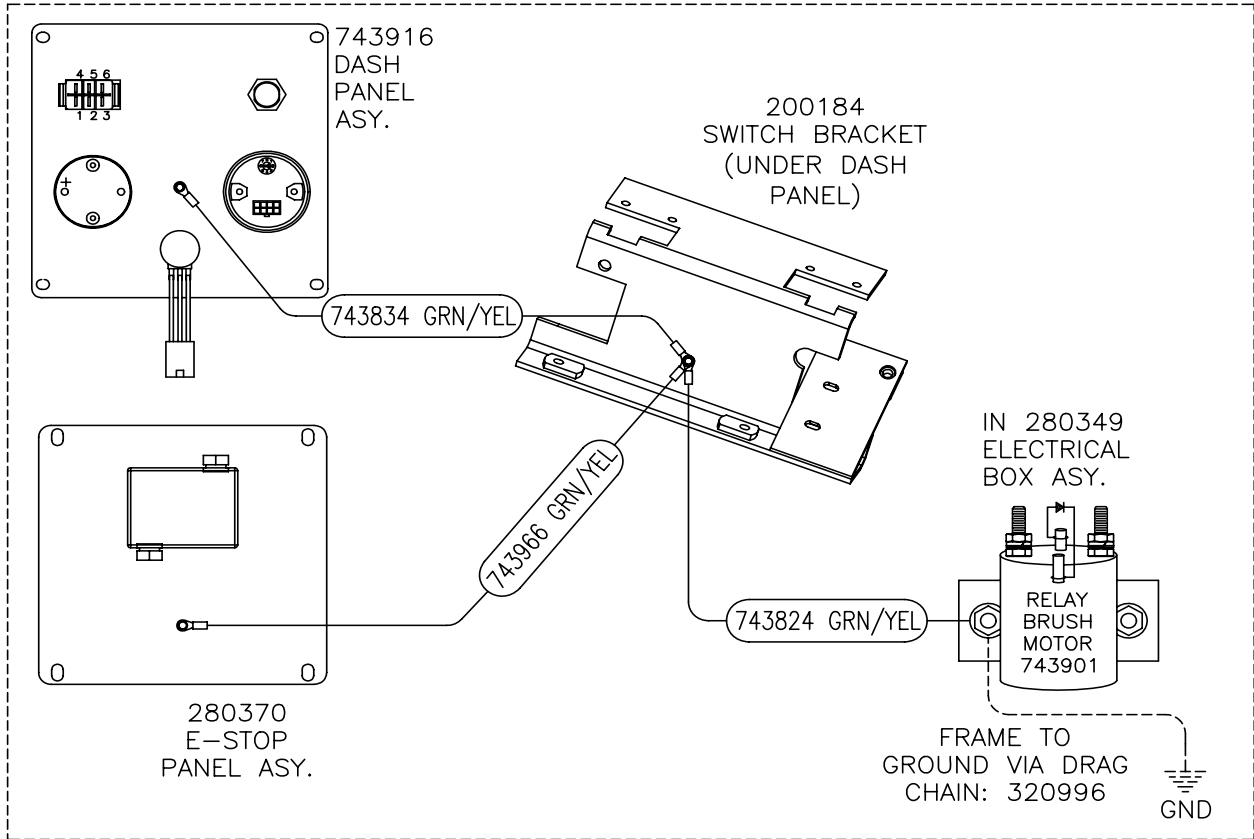


745086 Rev C

LUMINA 28 4 of 5

# 5

## GROUNDING DIAGRAM



**MAIN KEY SWITCH: 747024**

PIN #	COLOR	WHERE TO/FROM
1	RED/VIOLET	CONTROL BOARD P:6
2	RED/VIOLET	BATTERY GAUGE P:2
3	RED/YELLOW	BATTERY CHARGER RELAY
4	EMPTY	-

**BRUSH PRESSURE ADJUST SWITCH: 743963**

PIN #	COLOR	WHERE TO/FROM
1	ORANGE/VIOLET	PRESSURE ADJ KEY P:1
2	BLACK	TERMINAL -
3	VIOLET/YELLOW	PRESSURE ADJ MOTOR +
4	GREY/YELLOW	PRESSURE ADJ MOTOR -
5	EMPTY	-
6	VIOLET/YELLOW	UPPER LIMIT SWITCH P:A
7	VIOLET/YELLOW	UPPER LIMIT SWITCH P:C
8	GREY/YELLOW	LOWER LIMIT SWITCH P:A
9	GREY/YELLOW	LOWER LIMIT SWITCH P:C

**BATTERY GAUGE: 746103**

PIN #	COLOR	WHERE TO/FROM
1	EMPTY	-
2	RED/VIOLET	KEY SWITCH + P:2
3	RED/WHITE	INT. RELAY + :CONTROL BOARD +
4	RED/WHITE	INT. RELAY - :BRUSH SWITCH P:A
5	BLACK/YELLOW	BATTERY -
6	RED/BLACK	HOURLY METER INPUT -
7	RED	BATTERY +
8	RED	BATTERY +

**SPEED POTENTIOMETER: 743804**

PIN #	COLOR	WHERE TO/FROM
1	ORANGE	CONTROL BOARD P:1
2	GREY/RED	FOR/REV SWITCHES
3	WHITE	CONTROL BOARD P:3
4	EMPTY	-
5	EMPTY	-
6	EMPTY	-

**SPEED CONTROL BOARD: 740803-1**

PIN #	COLOR	WHERE TO/FROM
1	ORANGE	SPEED POT
2	GREY	SPEED POT/FOR-REV SWITCH
3	WHITE	SPEED POT
4	WHITE/ORANGE	REVERSE/BELLY SWITCH
5	BROWN	REVERSE/BELLY SWITCH
6	RED/VIOLET	KEY SWITCH

**SPEED CONTROL BOARD: 740803-1**

PIN #	COLOR	WHERE TO/FROM
1	BLACK	BRUSH/VAC RELAY COIL -
2	RED/WHITE	BAT GAUGE P:3/BRUSH SWT

**KEY SWITCH PRESSURE ADJUST: 747024**

PIN #	COLOR	WHERE TO/FROM
1	ORANGE/VIOLET	PRESS ADJUST SWITCH P:1
2	EMPTY	-
3	RED	CIRCUIT BREAKER 2A/TERM +
4	EMPTY	-

**BATTERY CHARGER: 957746**

PIN #	COLOR	WHERE TO/FROM
1	RED	INTERNAL RELAY/ CB 3.0A
2	BLACK	INTERNAL RELAY/MAIN KEY P:3
3	RED	BATTERY + TERMINAL
4	BLACK	BATTERY - TERMINAL

**OTHER WIRE COLORS**

1	RED	BATTERY +
2	BLACK	BATTERY -
1	RED/BLACK	BRUSH SWITCH/RELAY COIL +
2	GREEN	GROUND
3	BLUE	SHUNT/PRESSURE GAUGE +
4	BLUE/WHITE	SHUNT/PRESSURE GAUGE -

## Minuteman International Made Simple Commercial Limited Warranty

Minuteman International, Inc. warrants to the original purchaser/user that the product is free from defects in workmanship and materials under normal use. Minuteman will, at its option, repair or replace without charge, parts that fail under normal use and service when operated and maintained in accordance with the applicable operation and instruction manuals. All warranty claims must be submitted through and approved by factory authorized repair stations.

This warranty does not apply to normal wear, or to items whose life is dependent on their use and care, such as belts, cords, switches, hoses, rubber parts, electrical motor components or adjustments. Parts not manufactured by Minuteman are covered by and subject to the warranties and/or guarantees of their manufacturers. Please contact Minuteman for procedures in warranty claims against these manufacturers.

**Special warning to purchaser** -- Use of replacement filters and/or prefilters not manufactured by Minuteman or its designated licensees, will void all warranties expressed or implied. A potential health hazard exists without original equipment replacement.

All warranted items become the sole property of Minuteman or its original manufacturer, whichever the case may be.

Minuteman disclaims any implied warranty, including the warranty of merchantability and the warranty of fitness for a particular purpose. Minuteman assumes no responsibility for any special, incidental or consequential damages.

This limited warranty is applicable only in the U.S.A. and Canada, and is extended only to the original user/purchaser of this product. Customers outside the U.S.A. and Canada should contact their local distributor for export warranty policies. Minuteman is not responsible for costs or repairs performed by persons other than those specifically authorized by Minuteman. This warranty does not apply to damage from transportation, alterations by unauthorized persons, misuse or abuse of the equipment, use of non-compatible chemicals, or damage to property, or loss of income due to malfunctions of the product.

If a difficulty develops with this machine, you should contact the dealer from whom it was purchased.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

**Cord Electric Group**..... Three years parts, two years labor, ninety days travel (Not to exceed two hours)  
**Exceptions**..... Port-A-Scrub, one year parts, six months labor  
MPV 13, one year parts  
MPV 14 and 18, two years parts, one year labor  
RapidAir blower, one year parts, one year labor  
Explosion-Proof Vacuum, one year parts, one year labor  
Pneumatic Vacuums, three years parts, one year labor  
EX 12 and EX12H, one year parts, one year labor

**Battery Operated Group**..... Three years parts, two years labor, ninety days travel  
(Not to exceed two hours)  
**Exceptions**..... Sweepers, one year parts, one year labor, ninety days travel  
(Not to exceed two hours)

**Internal Combustion Group**.... One year parts, one year labor, ninety day travel  
(Not to exceed two hours)

**Replacement Parts**..... Ninety days  
**Batteries**..... 0-3 months replacement, 4-12 months pro-rate  
**Polypropylene Plastic Tanks**... Ten years, no additional labor