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Minuteman[®]
Excellence Meets Clean



**Parts and Instruction Manual
Lumina 20
Battery Burnisher**

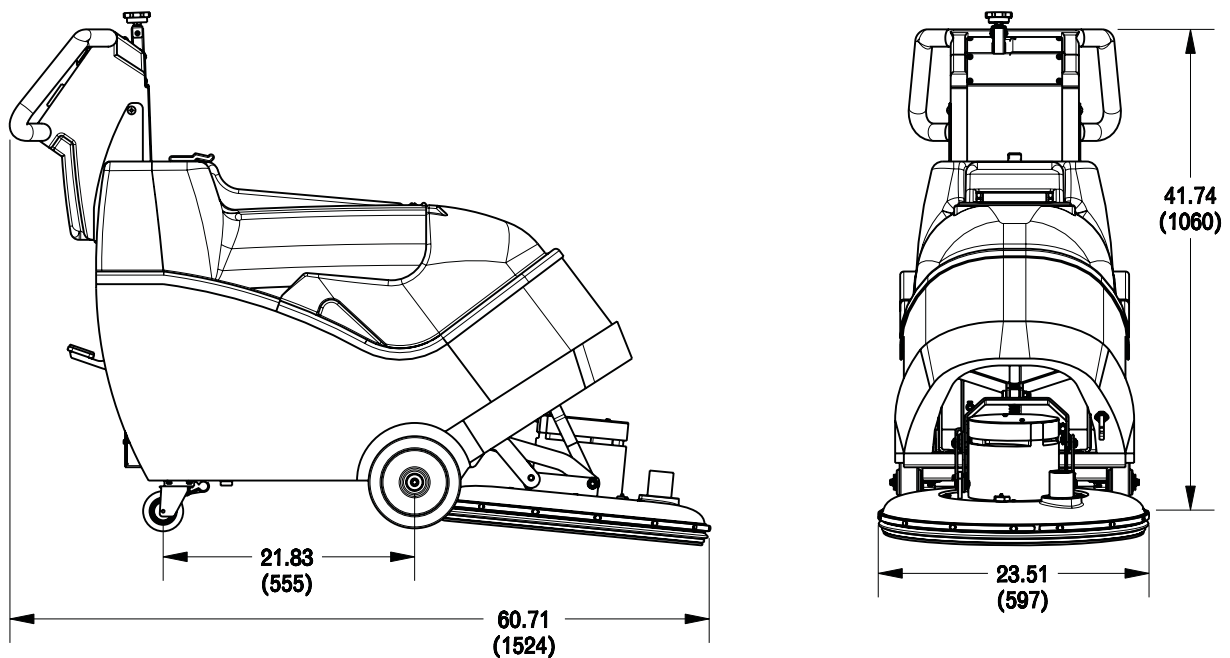
This manual is furnished with each new **MINUTEMAN Lumina 20**. This provides the necessary operating and preventive maintenance instructions. Operators must read and understand this manual before operating or servicing this machine.

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

Model	<i>Lumina 20 Brush Drive</i>
Model No.	M26036QP / M26036CE
Brush Speed	2600 RPM
Motor	2.5HP
Voltage, Batteries	36 volts, 3-12volt
Battery Capacity	165 AH
Gross Weight	916 lbs (415 kg) with batteries 638 lbs (290 kg) without batteries



EC Declaration of Conformity

according to Directives 72/23, 89/392, and 89/336

We, Minuteman International Incorporated, of 111 South Rohlwing Road Addison Illinois 60101 USA, declare under our sole responsibility that the product M26036CE a Lumina Burnisher to which this declaration relates corresponds to the relevant requirements of the EC Directives 72/23, 89/392 and 89/336. The following standards were used to determine compliance with the Directives: EN 292, EN 294, EN 811, EN 55014, EN 55104 and EN 60335-1.

SOUND		VIBRATION
77 dB Operator	71dB At 3m	.5 m/s² At Operators Handle
Tests were conducted on 7/20/02 with calibrated sound and vibration equipment under the conditions noted below:		
General Condition: Indoors	Wind: 0 km/hr	Humidity: 70%
Temperature: 25°C	Barometric Pressure: 29.5	

Jeff Pollack

Jeff Pollack, Standards Engineer

July 31, 2002

Date

Form: EC053

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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 and 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 and safety glasses. 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.** Make sure the charger is turned off before disconnecting it from the machine. Charge the batteries in a well-ventilated area with the battery cover removed completely.

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 (3) 12 volt batteries.

Batteries

Burnishers are shipped with batteries. (3 required)

Part No. 956701 12V 165AH 20 Hr. Rate (Standard)

Part No. 956210 12V 210AH 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. 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 20" high speed pad is used. Make sure the pad is installed on the machine by following instructions under “Pad Installation.”*
- 2. Make sure that no battery charger is plugged into the recharge port.*
- 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. Turn the power switch to the ON position. The pad driver will then slowly adjust itself to the floor. 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 turning the knob accordingly. (See Pad Pressure Adjustments.)*

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 8 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.

Floor Seal Strip

When the floor seal strip show signs of excessive wear, seal should be replaced. The strip can be removed by loosening the screw on the retainer strap until the seal can slide off of the pad shroud housing. To install new seal, slip the retainer strap over the new seal strip and pad shroud. Make sure the seal is seated equally around the perimeter and the holes on the floor seal are oriented towards the back portion of the shroud.

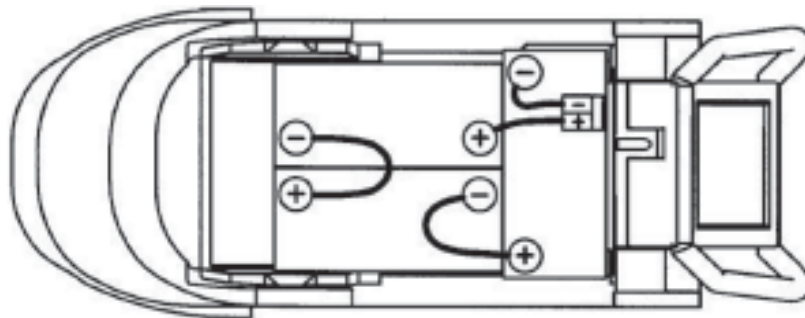
Battery Service and Installation

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

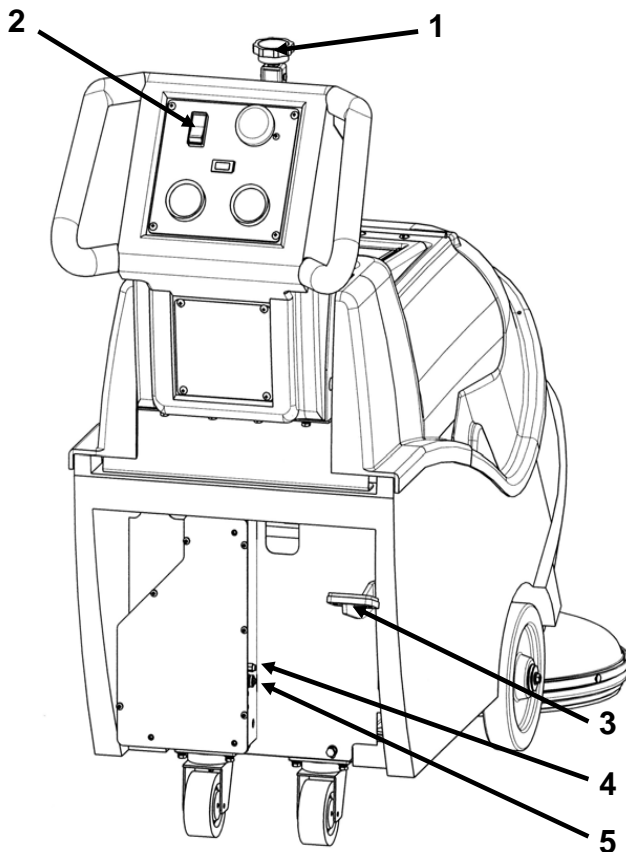
Charging of Batteries

Charging batteries generates explosive gasses. **DO NOT CHARGE BATTERIES WHEN OPEN FLAMES OR SPARKS ARE PRESENT. DO NOT SMOKE.** Make sure the charger is turned off before disconnecting it from the batteries. Charge the batteries in a well-ventilated area with battery cover removed completely. 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.

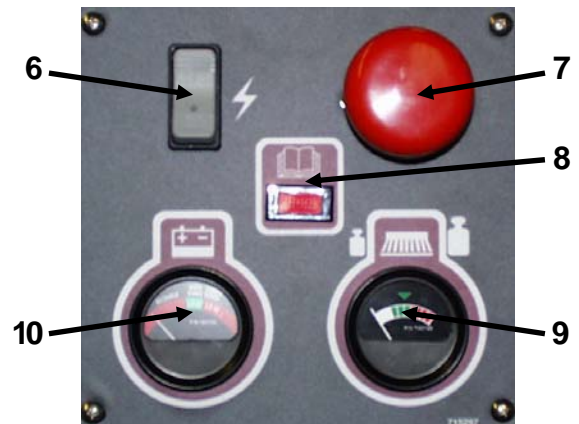
Battery Cable Routing



Machine Overview



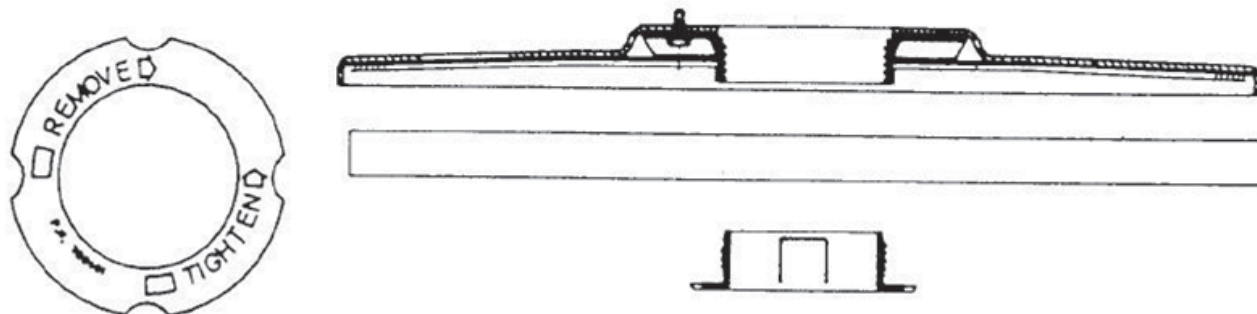
Control Panel



1. Pad Pressure Adjust knob
2. Dashboard Control Panel
3. Foot Pedal
4. Circuit Breaker 70 AMP
5. Circuit Breaker 3 AMP
6. Main Power Switch
7. Emergency Button
8. Carbon Brush Indicator
9. Pad Pressure Gauge
10. Battery 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 knob is located on the top of the control console. Counter-clockwise rotation increases pad pressure, the opposite rotation decreases. 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 70-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

70 amp circuit breaker protects pad driver motor from excessive overload conditions. 3.0 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

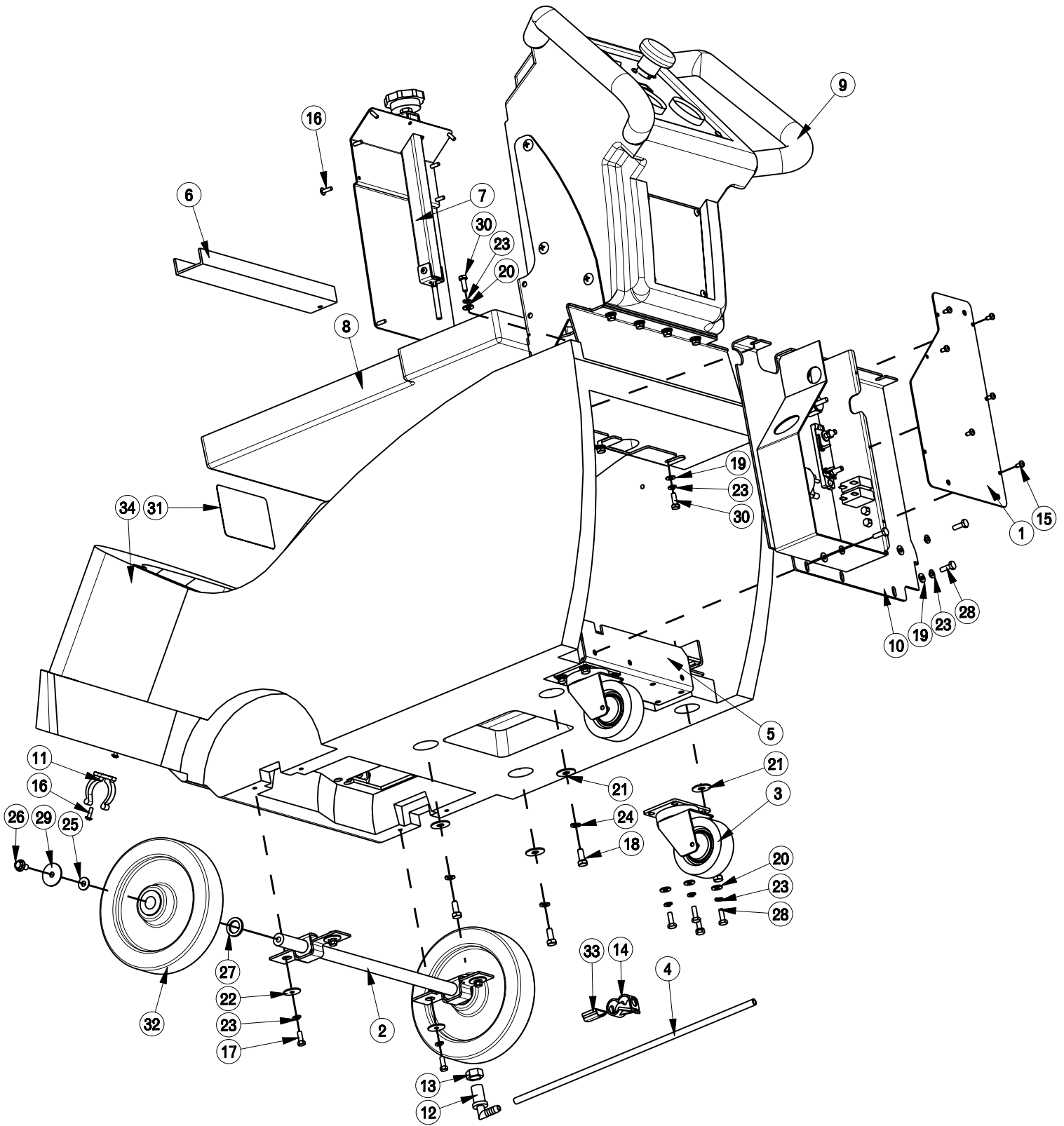
Design life of carbon brushes is between 1800-2000 hours. Replace brushes if worn to 3/8" or less, broken, or chipped. All carbon brushes should be replaced when motor is serviced. Four (4) are required, P/N 572003. Red indicator on control panel (above Emergency Disconnect Button, below the Dashboard)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

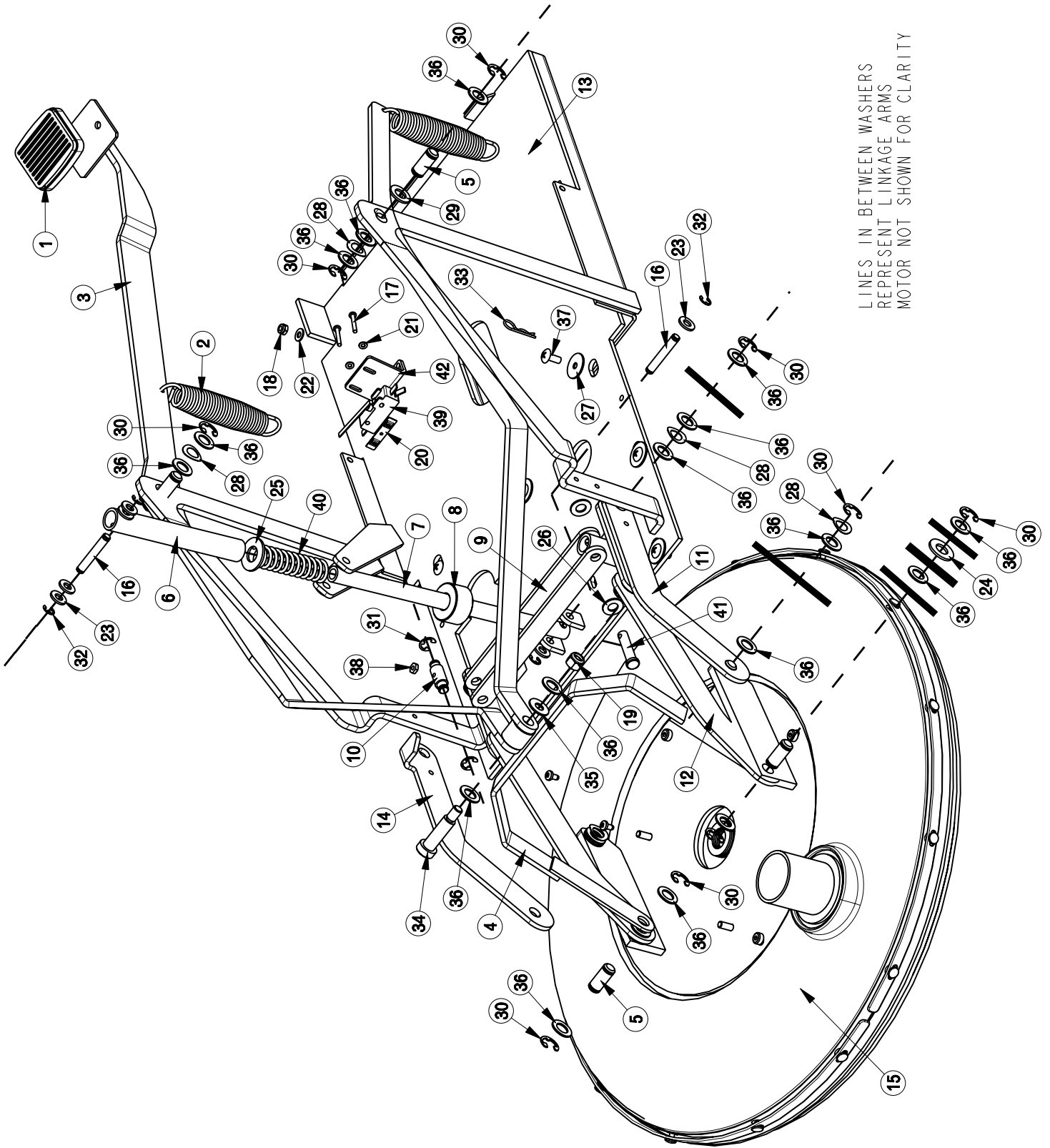
Exploded Views

Base Assembly



Base Assembly BOM

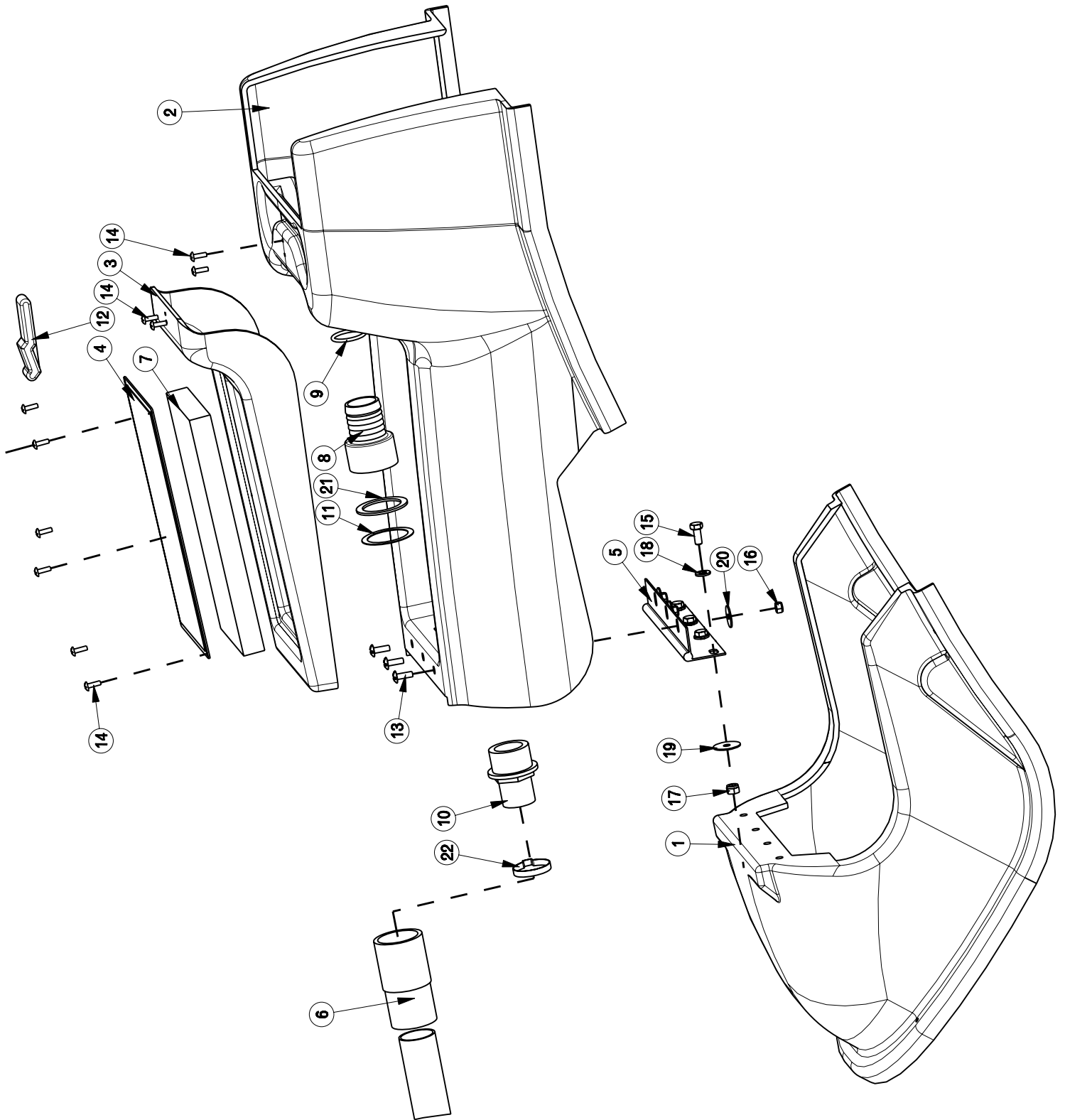
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	200154	1	PANEL COVER WELDMENT
2	200250	1	AXLE WELDMENT
3	200345	2	CASTER, 3-1/2 POLYURETHANE
4	260224	1	18" HOSE
5	260536	1	BASE PLATE WELDMENT
6	260537	1	LUMINA BATTERY SPACER
7	260549	1	PRESSURE ADJ ASSEMBLY
8	260558	1	BATTERY BOX
9	260568	1	CONSOLE ASSEMBLY
10	260570	1	ELECTRICAL PANEL ASSEMBLY
11	260579	1	TOOL CLIP, 1.5" HOSE
12	320271	1	NOZZLE BODY-ELBOW
13	320272	2	NOZZLE BODY LOCKNUT
14	320273	1	HOSE SHUT-OFF CLAMP
15	711124	6	PAN HEAD ST #10 X .37 NI
16	711160	10	#10 X 5/8 HI-LO
17	711203	4	BLT-HH 1/4-20 X 0.62 STPL
18	711228	4	BLT-HH 5/16-18 X .75 ST PL
19	711504	6	WSR-FLAT 1/4 ID SS
20	711505	13	WSR-FLAT 1/4
21	711507	4	WSR-FLAT .37 X 1.12 X .06
22	711519	4	WSR- FLAT .25 X 1.01 X .06
23	711544	23	WSR-HELICAL 1/4
24	711545	4	WSR-HELICAL 5/16
25	711575	2	WSR-FLT .31x.75x.06ST
26	712042	2	BLT-WSR HH 5/16-18 X .62
27	712318	2	WSR- FLAT.75 X 1.12 X .12 PL
28	712562	11	BOLT-HH 1/4-20X3/4 SS
29	712759	2	WSR- FLT .31 X 1.37 X .06 SS
30	713002	8	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5
31	715430	1	DECAL, BATTERY ROUTING
32	762332	2	WHEEL 8 X 2 X .75 W/BEARING
33	809444	1	CLIP-CORD
34	200102MCH	1	BASE MACHINED



LINES IN BETWEEN WASHERS
REPRESENT LINKAGE ARMS
MOTOR NOT SHOWN FOR CLARITY

Mainframe Assembly BOM

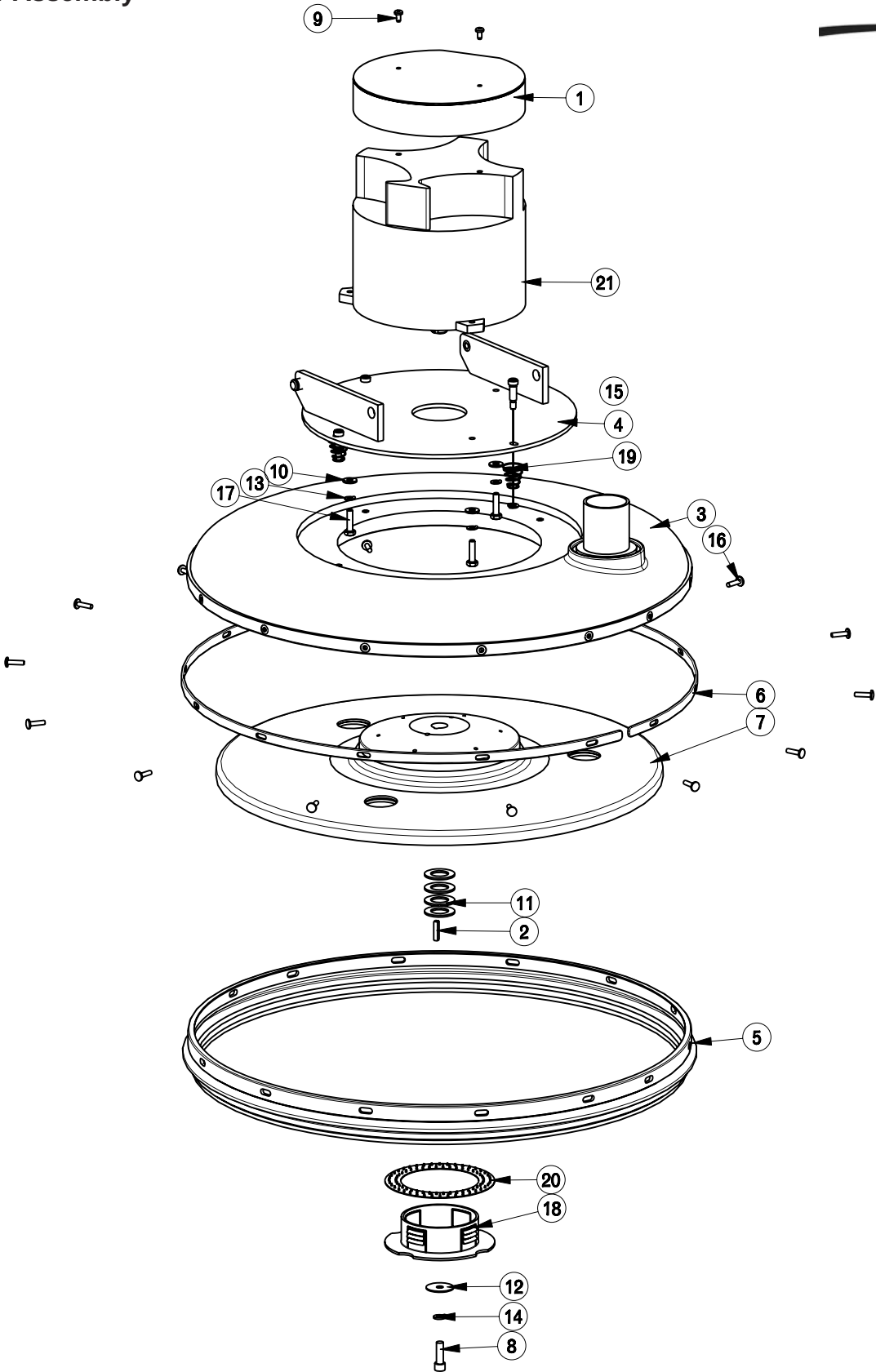
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	210142	1	PEDAL PAD
2	260211	2	HOBBY SPRING
3	260511	1	UPPER WMT
4	260513	1	MOTOR LIFT WELDMENT
5	260519	4	PIVOT PIN
6	260521	1	GUIDE TUBE
7	260522	1	SPRING GUIDE
8	260523	1	SPRING SPACER 1.50 X .632 X .84
9	260524	2	ADJUSTMENT LINK
10	260525	1	ADJUSTMENT NUT
11	260528	1	LINK
12	260529	2	TRAILING LINK
13	260536	1	BASE PLATE WELDMENT
14	260576	1	LINK
15	260610	1	SHROUD ASS'Y, NEW - LUMINA 20
16	670605	2	ROLLER PIN
17	710307	2	SCR-MC 6-32 X 1.0 ST PL PAN HD
18	711350	2	NUT NYLOC 10-32
19	711380	1	NUT-NYLOC 3/8-16 NUT
20	711430	1	NUT-TINNERMAN TWIN 6-32
21	711501	2	WSR-FLAT # 6
22	711503	2	WSR, FLAT#10
23	711506	8	WSR-FLT .344 X .690 X .062 STL ZINC
24	711509	2	WSR-FLAT 1/2 (.54X1.082X.087)
25	711511	1	WSR-FLAT .62 X 1.31 X .09
26	711515	2	WSR-FLAT .406 X .812 X .0625
27	711519	6	WSR- FLAT .25 X 1.01 X .06
28	711524	6	WSR-WAVE .52 X .87 X .01
29	711592	2	WSR-FLAT .50 X .9 X .075 NYL
30	711713	14	RETAINING RING - "E" TYPE EXT .500
31	711717	2	RETAINING RING- E TYPE .37
32	711721	4	RET RING-E TYPE .312
33	711808	1	COTTER PIN-HAIR #13
34	712102	1	BLT- SHLDR 1/2 X 1-1/2
35	712301	1	WSR-FLAT .87 X .38 X .06
36	712310	28	WSR- FLAT .52 X .87 X .06 PL
37	712565	6	SCR-MC 1/4-20X.63 SS TR HD
38	712905	1	NUT-HEX 10-24 NIPL
39	740830	1	SWITCH SPST NC CONTACT
40	762339	1	SPRING COMPRESSION
41	831965	1	3/8 x 1.63" CLEVIS PIN
42	260577-1	1	SWITCH INTERLOCK BRACKET





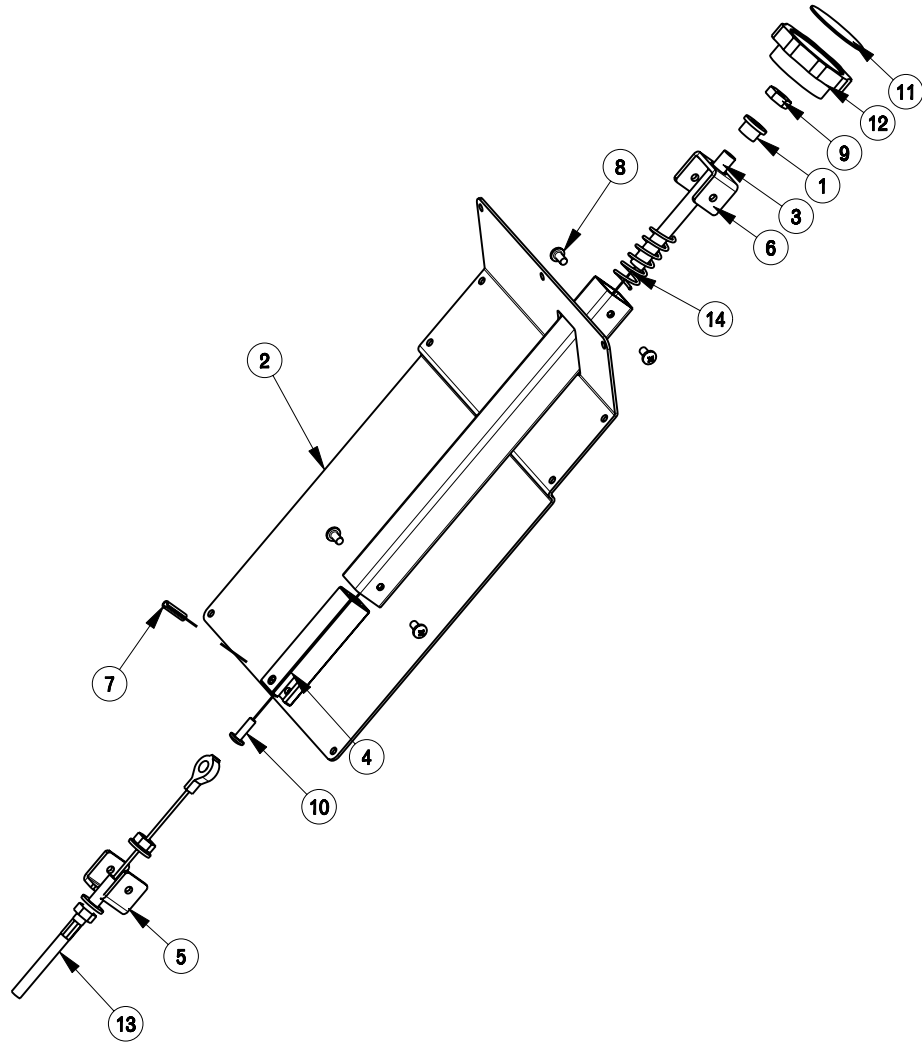
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	260501	1	FIXED TOP COVER
2	260502	1	MOVING TOP COVER
3	260503	1	BAG COVER
4	260504	1	FILTER COVER WELDMENT
5	260560	1	HINGE 9.75"
6	260590	1	HOSE ASSY DUST CONTROL
7	260592	1	EXHAUST FILTER DUST CONTROL
8	260596	1	INSERT FITTING, 1-1/2"PVC, FPT
9	310008	1	O RING BUNA 2201510561
10	450037	1	ADAPTER MACHINED
11	450081	1	WSR-SS 1.908 x 2.41 x .03
12	450207	1	LATCH, SOFT #C7-10
13	710180	3	SCR-MC TR HD 1/4-20x.75 STL ZINC
14	711160	10	#10 X 5/8 HI-LO
15	711228	4	BLT-HH 5/16-18 X .75 ST PL
16	711373	3	NUT-NYLOC 1/4-20
17	711374	4	NUT-NYLOC 5/16-18
18	711506	4	WSR-FLT .344 X .690 X .062 STL ZINC
19	711516	4	WSR- FLAT .31 X 1.25 X .05
20	711519	3	WSR- FLAT .25 X 1.01 X .06
21	828970	1	WSR-NEOP 1.87 X 2.4 X .125
22	831001	1	CRIMP CLAMP, 440R

Pad Driver Assembly



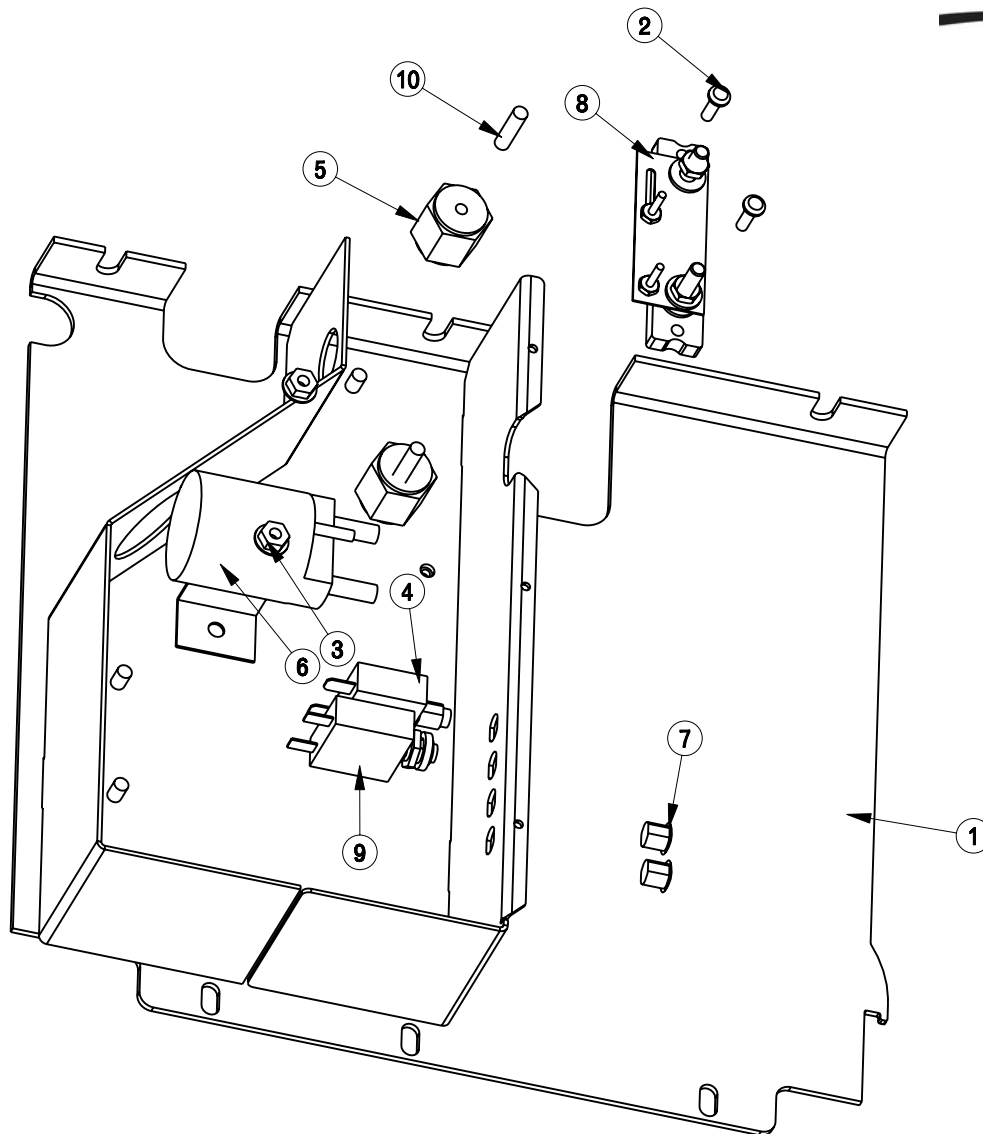
Pad Driver Assembly BOM

BILL OF MATERIAL - 260610			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	260573	1	MOTOR GRILL ASSY
2	260597	1	KEY, 3/16 X .906
3	260611	1	PAD DRIVER SHROUD - 20"
4	260615	1	MOTOR PLATE WELDMENT - NEW
5	260616	1	DUST SKIRT - NEW
6	260619	2	PAD DRIVER STRAP
7	670075	1	PAD DRIVER ASSY
8	710857	1	SCR-SC 5/16-24 X 1.00
9	711124	2	PAN HEAD ST #10 X .37 NI
10	711505	3	WSR-FLAT 1/4
11	711512	4	WSR-FLAT .75X1.37X.08
12	711516	1	WSR- FLAT .31 X 1.25 X .05
13	711544	7	WSR-HELICAL 1/4
14	711545	1	WSR-HELICAL 5/16
15	712070	4	BLT, SHLDR 5/16 X .75
16	712537	14	10-24 X .75 SS TRUSS HD SCR
17	713003	3	BLT-HH 1/4-20 X 1 #5
18	760401	1	CENTER CUP, NEW STYLE
19	809857	4	TRIGGER SPRING
20	260581MC	H 1	GRABBER RING, MACHINED
21	742461-2	1	MOTOR 66 FRAME 36V HI SPD



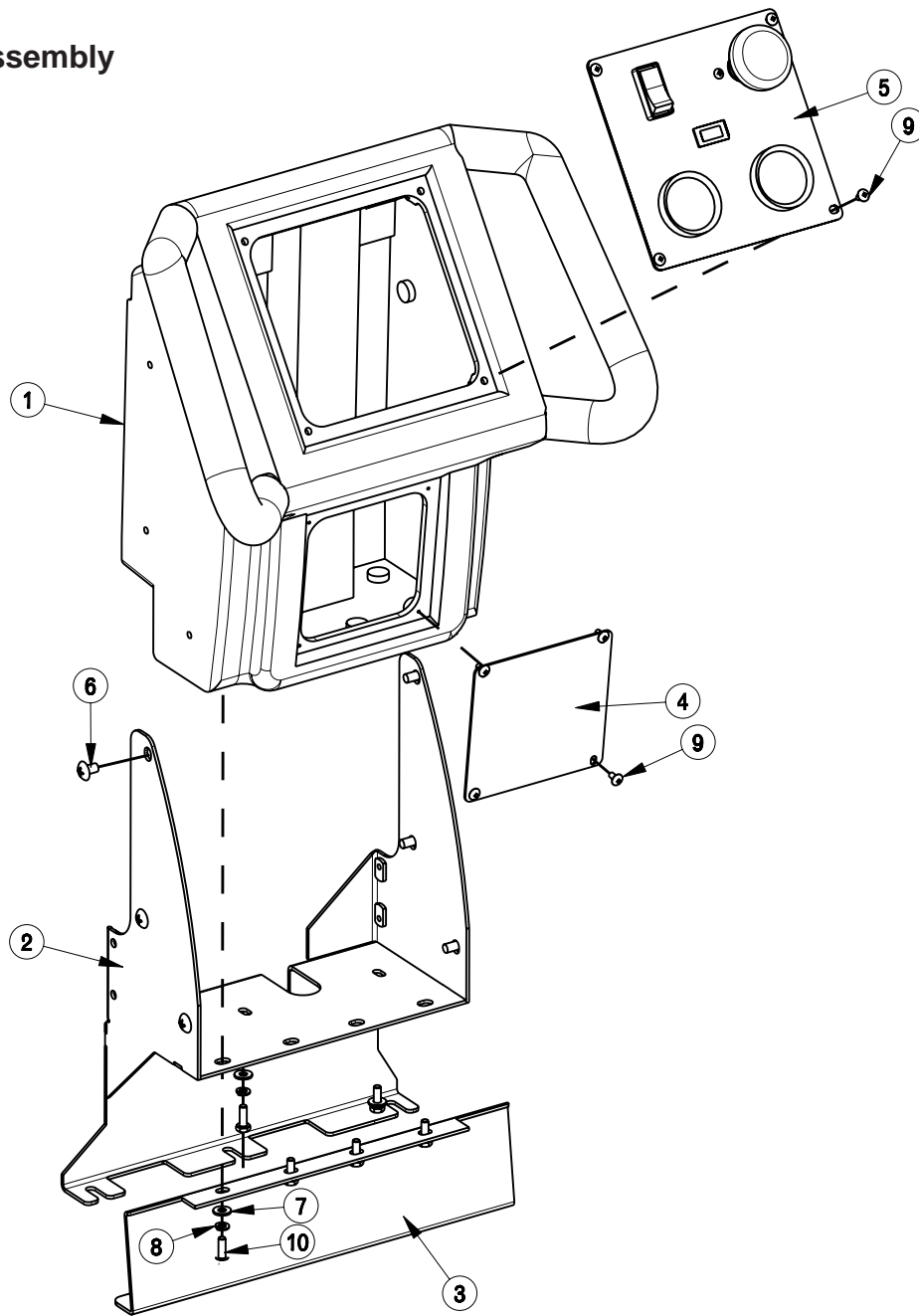
BILL OF MATERIAL - 260549

ITEM	PART NO.	REQ'D	DESCRIPTION
1	260066	1	OILITE BUSHING
2	260547	1	PRESS ADJ MOUNT WELD
3	260554	1	PRESS ADJ SCREW
4	260557	1	PRESS ADJ SLIDE
5	260562	1	PRESS ADJ RET BRKT
6	260563	1	PRESS ADJ RET BRKT
7	260564	1	ROLL PIN 3/16"X3/4"
8	710353	4	SCR-MC 10-32 X .37 ST PL
9	711391	1	NUT-HEX JAM 3/8-16 ST PL
10	712536	1	SCR-MC 10-24 X .62 TH SS
11	715038	1	DECAL, PAD PRESSURE
12	760034	1	KNOB, ADJ (SET SCREW)
13	762253	1	CABLE, ASSY PRESSURE
14	833102	1	SPRING, .62 X .75 X 1.75



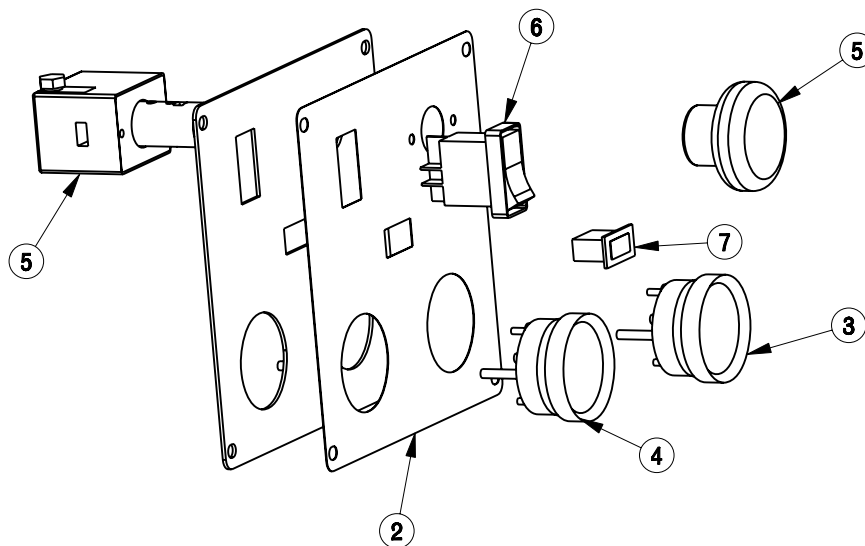
BILL OF MATERIAL - 260570			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	260542	1	BACK PANEL WELDMENT
2	710356	2	SCR-MC 10-32X.62 STPL
3	711425	2	NUT, HEX 1/4-20 WIZNUT
4	740131	1	CIRCUIT BREAKER - 70AMP
5	740132	2	INSULATOR, GLASTIC
6	740243	1	CONTACTOR 36V 124-117111
7	742749	2	HEYCO, HOLE PLUG
8	743464	1	SHUNT CALIBRATED ASSY
9	746006	1	CIRCUIT BREAKER - 3A
10	833638	2	BRASS STUD

Console Assembly



BILL OF MATERIAL - 260568			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	200104	1	HANDLE CONSOLE 200
2	260538	1	FRONT BRKT HANDLE WELDMT
3	260541	1	REAR HANDLE BRKT
4	260544	1	PANEL COVER
5	260569	1	DASH BRD ASSY, BURNISHER
6	710195	6	SCR- MC 5/16-18 X .50
7	711505	6	WSR-FLAT 1/4
8	711544	6	WSR-HELICAL 1/4
9	712540	8	SCR-MC TR HD 10-24 X .37 SS
10	713002	6	BLT-HH 1/4-20 UNC-2A X 3/4 STL#5

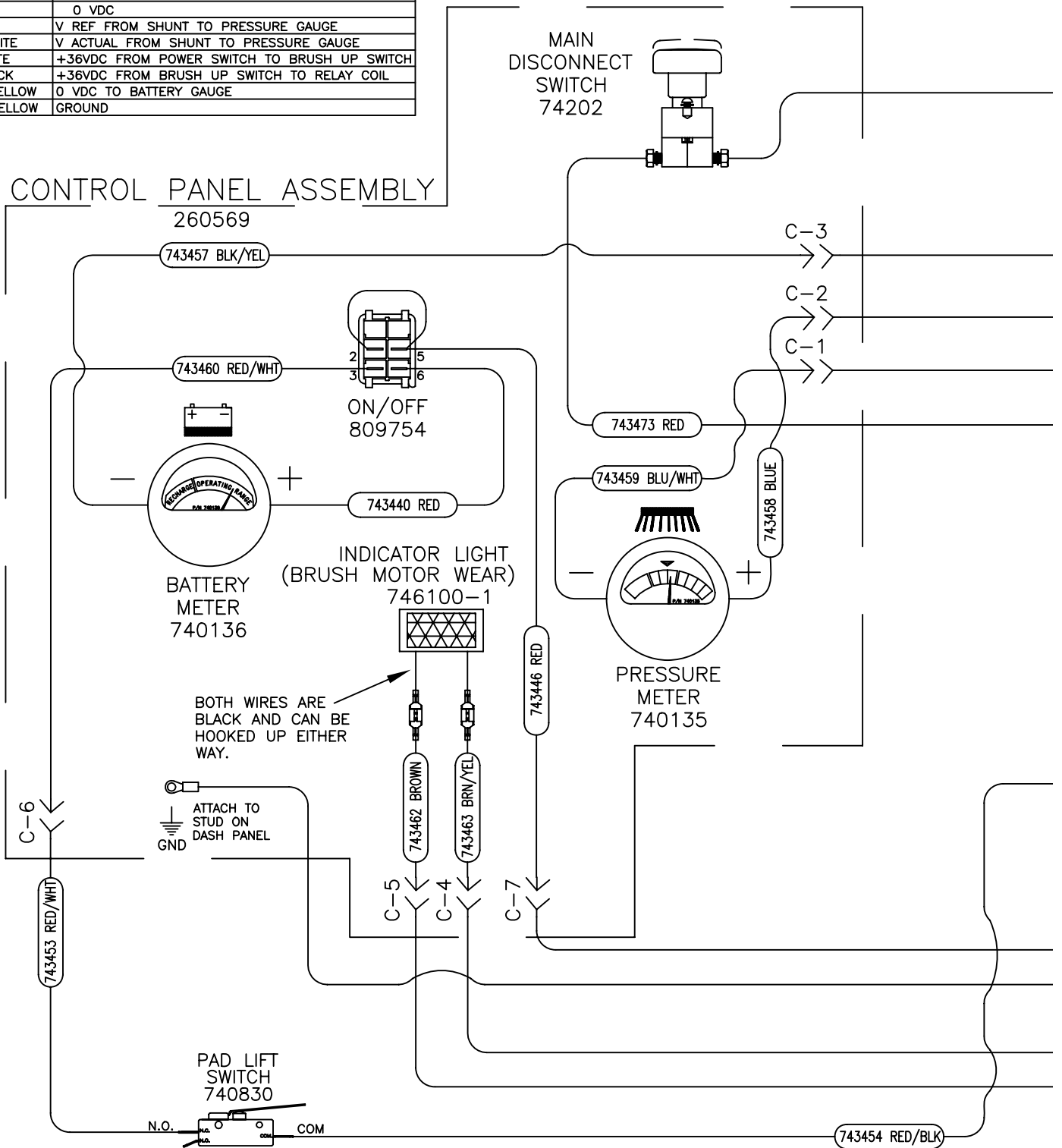
BILL OF MATERIAL - 260569			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	260546	1	DASHBOARD, BURNISHER
2	715297	1	DECAL, LUMINA 20
3	740135	1	METER, 100A DC (PRESSURE)
4	740136	1	METER, VOLT 22V45V BATTERY
5	742202	1	EMERGENCY STOP SWITCH
6	809754	1	SWITCH, ROCKER
7	746100-1	1	LIGHT ASSEMBLY



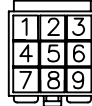
	<p>DUST SKIRT P/N 260595</p>
	<p>CARBON BRUSH REPLACEMENTS P/N 572003 (QTY 4)</p>
	<p>210 AMP HOUR BATTERY (OPTIONAL) P/N 956210</p>
	<p>PAPER BAG REPLACEMENTS P/N 370202PKG</p>

Wiring Diagram

WIRE COLOR CODE	
BROWN	MOTOR/BRUSH MOTOR WEAR TO INDICATOR
BROWN/YELLOW	MOTOR/BRUSH MOTOR WEAR TO INDICATOR
BROWN	ON MOTOR/BRUSH MOTOR WEAR +36VDC
BLUE	ON MOTOR/BRUSH MOTOR WEAR 0VDC
RED	+36 VDC
BLACK	0 VDC
BLUE	V REF FROM SHUNT TO PRESSURE GAUGE
BLUE/WHITE	V ACTUAL FROM SHUNT TO PRESSURE GAUGE
RED/WHITE	+36VDC FROM POWER SWITCH TO BRUSH UP SWITCH
RED/BLACK	+36VDC FROM BRUSH UP SWITCH TO RELAY COIL
BLACK/YELLOW	0 VDC TO BATTERY GAUGE
GREEN/YELLOW	GROUND

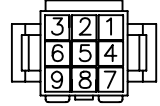


REAR VIEW OF RECEPTACLE
MACHINE SIDE



740318 FEMALE PIN
740320 RECEPTACLE

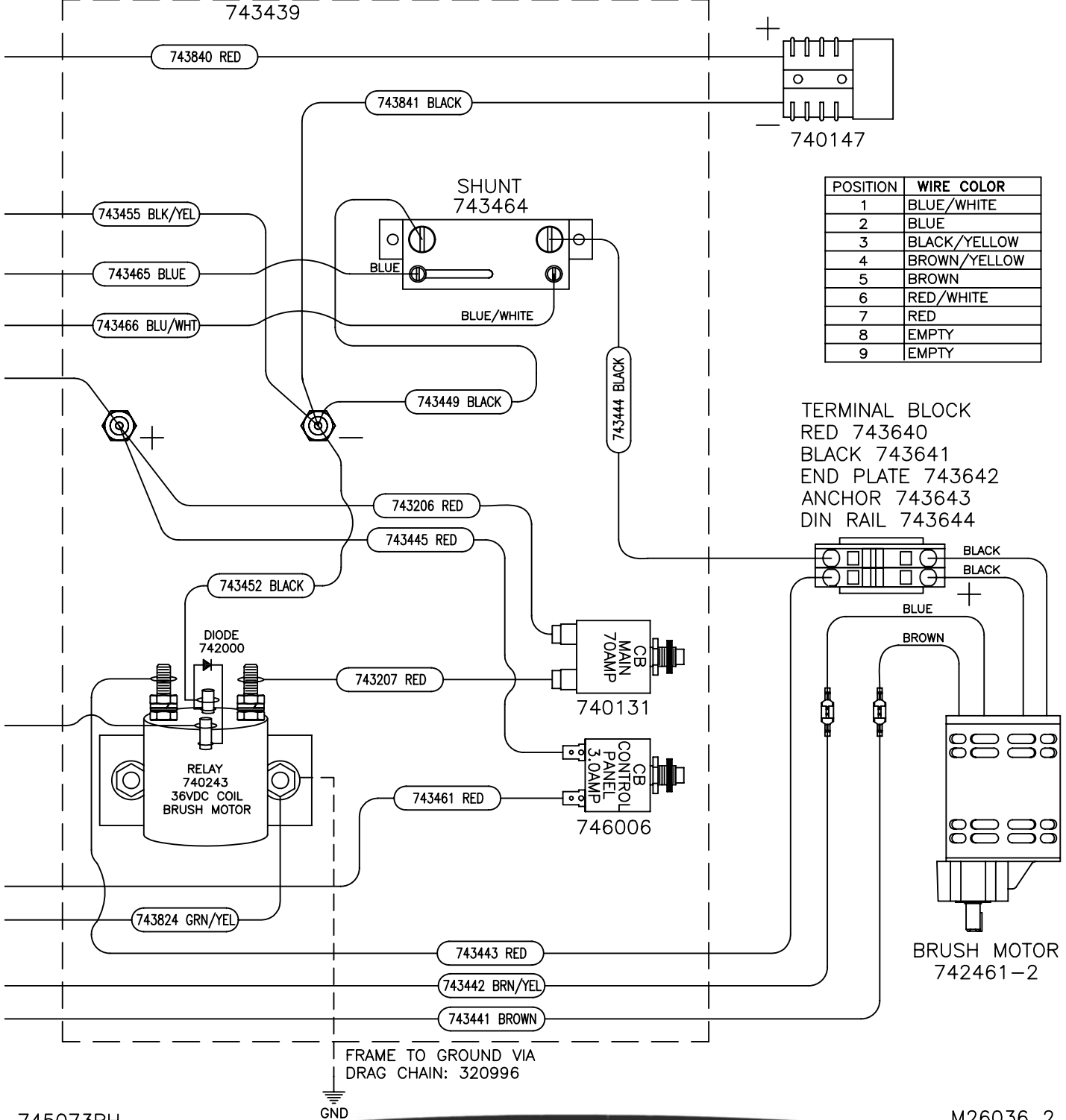
REAR VIEW OF PLUG
CONTROL PANEL SIDE



740317 MALE PIN
740319 PLUG

REAR PANEL ASSEMBLY

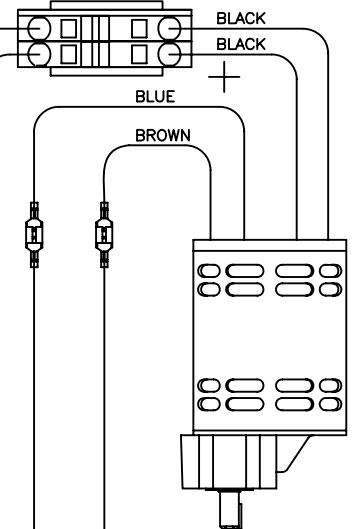
743439



POSITION	WIRE COLOR
1	BLUE/WHITE
2	BLUE
3	BLACK/YELLOW
4	BROWN/YELLOW
5	BROWN
6	RED/WHITE
7	RED
8	EMPTY
9	EMPTY

TERMINAL BLOCK

- RED 743640
- BLACK 743641
- END PLATE 743642
- ANCHOR 743643
- DIN RAIL 743644



BRUSH MOTOR
742461-2

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