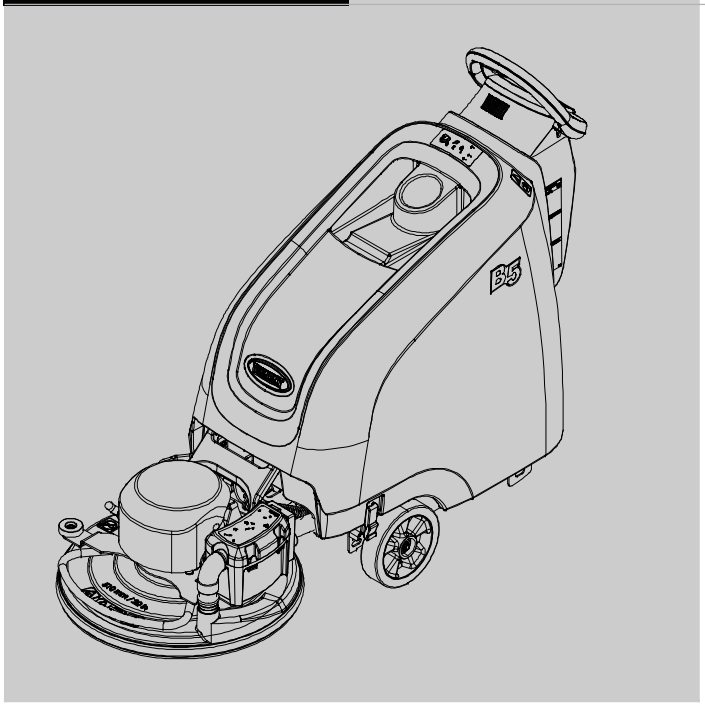
B5/B7

SpeedGleam® 5
SpeedGleam® 7

Walk-Behind Battery Burnisher



Service Information Manual

Tennant*True*® Parts

North America / International

9011478
Rev. 00 (01-2014)

www.tennantco.com
www.nobles.com

INTRODUCTION

This manual provides necessary service and maintenance instructions.

Read this manual completely and understand the machine before servicing it.

This machine will provide excellent service. However, the best results will be obtained at minimum costs if:

- The machine is operated with reasonable care.
- The machine is maintained regularly - per the maintenance instructions provided.
- The machine is maintained with manufacturer supplied or equivalent parts.

To view, print or download manuals online visit www.tennantco.com/manuals

PROTECT THE ENVIRONMENT

Please dispose of packaging materials and used machine components such as batteries in an environmentally safe way according to your local waste disposal regulations.

Always remember to recycle.

INTENDED USE

The burnisher machine is intended for commercial use, for example in hotels, schools, hospitals, factories, shops, offices and rental businesses. It is designed to burnish smooth dry hard floor surfaces (VCT, terrazzo, marble, finished hardwood, coated concrete, etc.) in an indoor environment only. Do not use this machine on carpeted surfaces. Use only recommended burnishing pads intended for machine application**.** Do not use this machine other than described in this Operator Manual.

MACHINE DATA

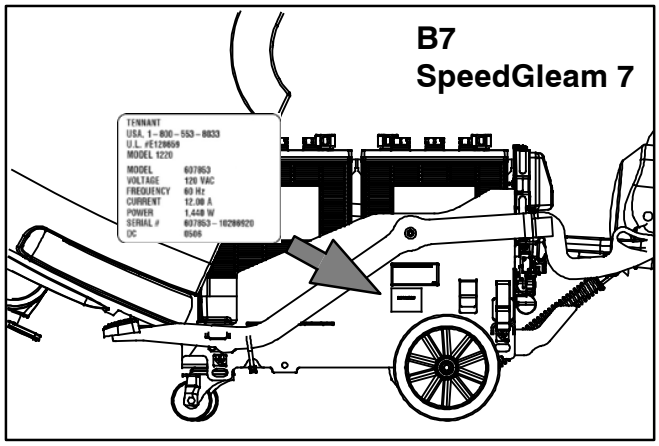
Please fill out at time of installation for future reference.

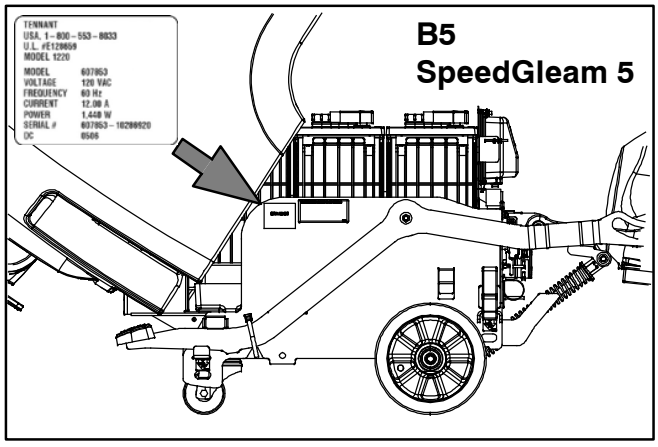
Model No. - _____

Serial No. - _____

Installation Date - _____

SERIAL NUMBER LABEL LOCATIONS





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IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

The following warning precautions are used throughout this manual as indicated in their description:

⚠ WARNING: To warn of hazards or unsafe practices which could result in severe personal injury or death.

FOR SAFETY: To identify actions which must be followed for safe operation of equipment.

The following information signals potentially dangerous conditions to the operator. Know when these conditions can exist. Locate all safety devices on the machine. Report machine damage or faulty operation immediately.

⚠ WARNING: To Reduce the Risk of Fire, Explosion, Electric Shock or Injury:

- **Read manual before operating machine.**
- **Do not use or pick up flammable materials.**
- **Do not use near flammable liquids, vapors or combustible dusts.**

  This machine is not equipped with an explosion proof motor. The electric motor will spark upon start up and during operation which could cause a flash fire or explosion if machine is used in an area where flammable vapors/liquids or combustible dusts are present.
- **Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.**
- **Disconnect battery cables and charger cord before cleaning and servicing machine.**
- **Do not charge batteries with damaged cord. Do not modify plug.**

  If the charger supply cord is damaged or broken, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

  The use of incompatible battery chargers may damage the battery and potentially cause a fire hazard.
- **Do not use outdoors or on wet surfaces. Store indoors. This machine is for dry use only.**
- **This machine is not suitable for picking up hazardous dust.**
- **Spinning pad, keep hands away.**

FOR SAFETY:

1. **Do not operate machine:**
   - **Unless trained and authorized.**
   - **Unless operator manual is read and understood.**
   - **Unless mentally and physically capable of following machine instructions.**
   - **Under the influence of alcohol or drugs.**
   - **While using a cell phone or other types of electronic devices.**
   - **If not in proper operating condition.**
   - **In outdoor areas. This machine is for indoor use only.**
   - **With pads or accessories not supplied or approved by Tennant. The use of other pads may impair safety.**
   - **In areas with possible falling objects.**
   - **In areas that are too dark to safely see the controls or operate machine.**
   - **Without dust bag and filters in place.**
2. **Before operating machine:**
   - **Make sure all safety devices are in place and operate properly.**
3. **When operating machine:**
   - **Use only as described in this manual.**
   - **Report machine damage or faulty operation immediately.**
   - **Wear closed-toe, non-slip work shoes.**
   - **Reduce speed when turning.**
   - **Keep hands away from spinning pad.**
   - **Go slowly on inclines and slippery surfaces.**
   - **Do not burnish on inclines that 9% grade or transport on inclines that exceed 19.5% grade.**
   - **Do not carry passengers on machine.**
   - **Use care when reversing machine.**
   - **Keep children and unauthorized persons away from machine.**
   - **Do not allow to be used as a toy.**

4. **Before leaving or servicing machine:**
   - **Stop on level surface.**
   - **Set the parking brake, if equipped.**
   - **Turn off machine and remove key.**
5. **When servicing machine:**
   - **Disconnect battery connection and charger cord before working on machine.**
   - **All work must be done with sufficient lighting and visibility.**
   - **All repairs must be performed by trained personnel.**
   - **Use Tennant supplied or approved replacement parts.**
   - **Do not modify the machine from its original design.**
   - **Avoid moving parts. Do not wear loose clothing or jewelry and secure long hair.**
   - **Do not disconnect the off-board charger's DC cord from the machine's receptacle when the charger is operating. Arcing may result. If the charger must be interrupted during charging, disconnect the AC power supply cord first.**
   - **Do not use incompatible battery chargers as this may damage battery packs and potentially cause a fire hazard.**
   - **Inspect charger cord regularly for damage.**
   - **Keep work area well ventilated.**
   - **Avoid contact with battery acid.**
   - **Keep all metal objects off batteries.**
   - **Do not power spray or hose off machine.**
   - **Use a hoist or adequate assistance when lifting batteries.**
   - **Jack machine up at designated locations only. Support machine with jack stands.**
   - **Block machine tires before jacking machine up.**
   - **Use a hoist or jack that will support the weight of the machine.**
   - **Wear personal protection equipment as needed and where recommended in this manual.**

For Safety: wear protective gloves.

For Safety: wear eye protection.

For Safety: wear protective dust mask.

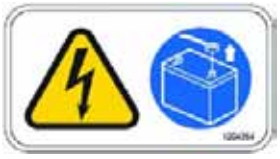
6. **When loading/unloading machine onto/off truck or trailer:**
   - **Use a ramp that can support the machine weight and operator.**
   - **Do not operate the machine on a ramp incline that exceeds a 19.5% grade level.**
   - **Use a winch if ramp incline exceeds a 19.5% grade level.**
   - **Lower the pad driver after loading.**
   - **Turn machine off and remove key.**
   - **Set parking brake (if equipped).**
   - **Block machine wheels.**
   - **Use tie-down straps to secure machine.**

SAFETY LABELS

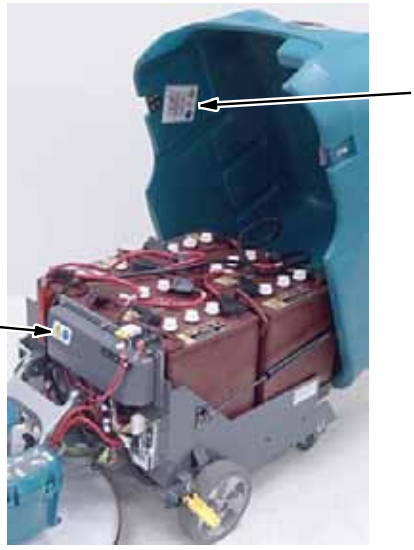
The safety labels appear on the machine in the locations indicated. Replace labels if they are missing or become damaged or illegible.

WARNING LABEL - Located on side of control console.

WARNING LABEL -
Spinning Pad. Keep Hands Away.
Located on burnishing head.



WARNING LABEL -
Disconnect battery cables before servicing machine.
Located on control board cover.



WARNING LABEL -
Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and open flame away when charging.
Located on backside of machine cover.

SECTION 2

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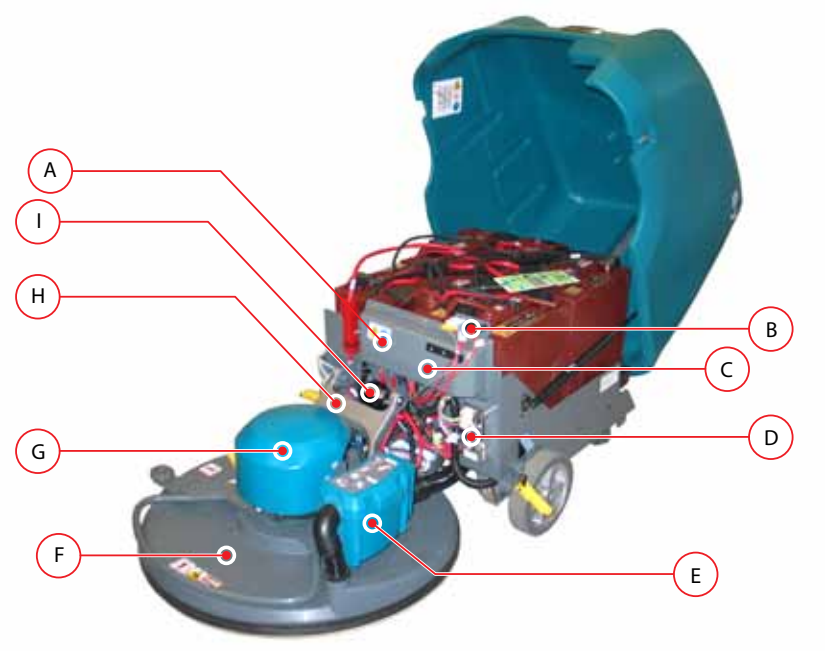
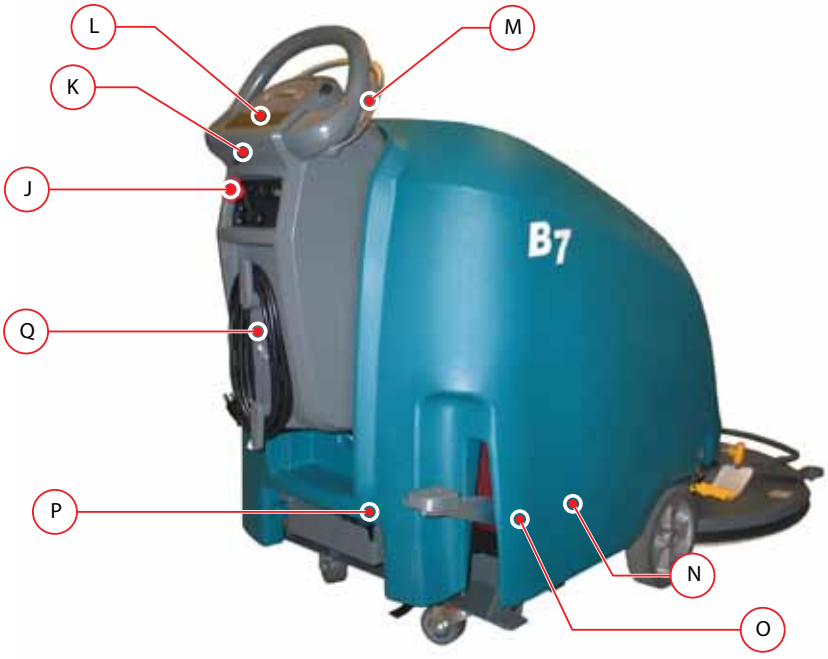
COMPONENT LOCATOR (B7 SHOWN)

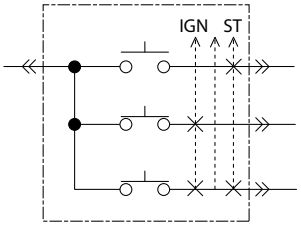
Components	
A	Half-Bridge Control Module
B	Circuit Breakers
C	Base Control Module
D	I-Drive Control Module (B/SG5*)
E	Dust bag and HEPA panel filter
F	Burnish Head - 20", 24", 27" (B7, 27" shown)
G	Burnish Motor
H	Contact Switch, Pad Up/Down
I	Head Lift Actuator*
J	E-Stop Switch*
K	USB Programming Port
L	Interface Control Module
M	Burnish/Propel* Activation Bail
N	Propel Transaxle*
O	Vacuum Fan*
P	Cover Contact Switch
Q	Onboard Battery Charger*

*** Optional Equipment**

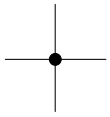


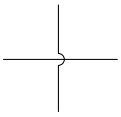


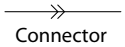
ELECTRICAL SCHEMATIC SYMBOLS



Key Switch


Connected


Not Connected

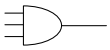

Connector

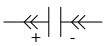

Energized


Adaptor Harness


Notes


Assembly


AC Plug

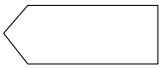

Capacitor


Battery

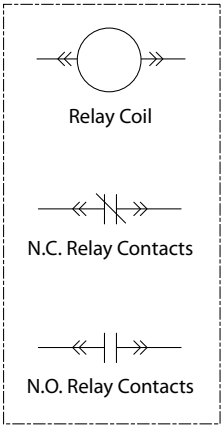

Circuit Breaker

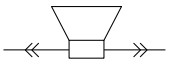

Fuse

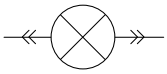

Diode

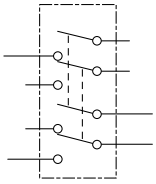

Single Continuation Tab

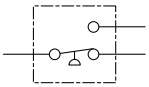

Double Continuation Tab

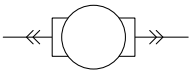


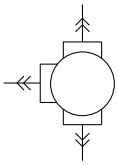

Horn or Alarm

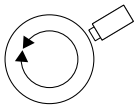

Light


DPDT Switch


Pressure Switch


Motor

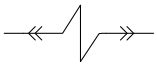

3 Phase AC
Induction Motor


Motor Encoder

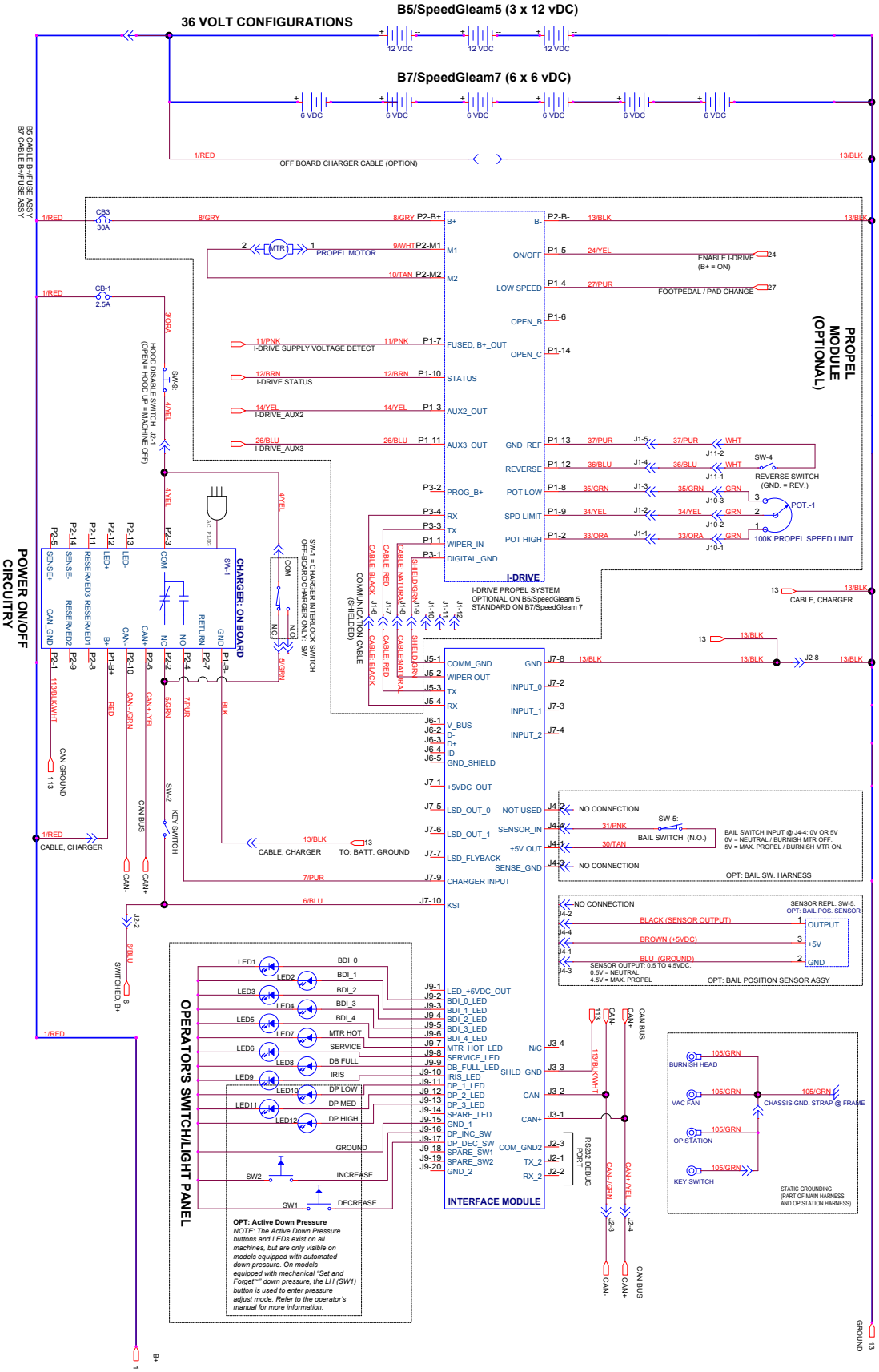

Sensor
(Variable Resistor)


Momenary Switch N.O.

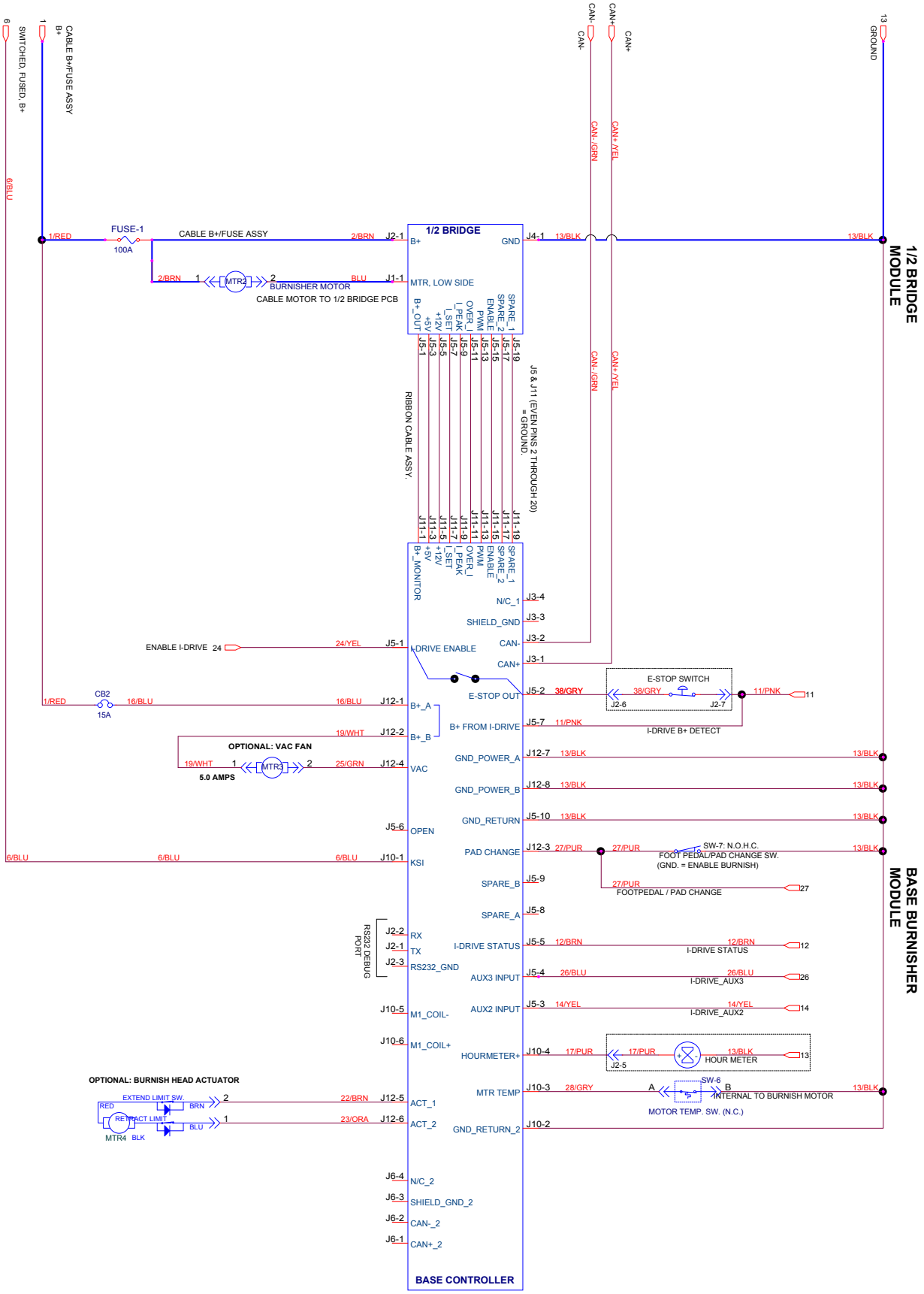

Contact Switch N.C.


Solenoid Valve

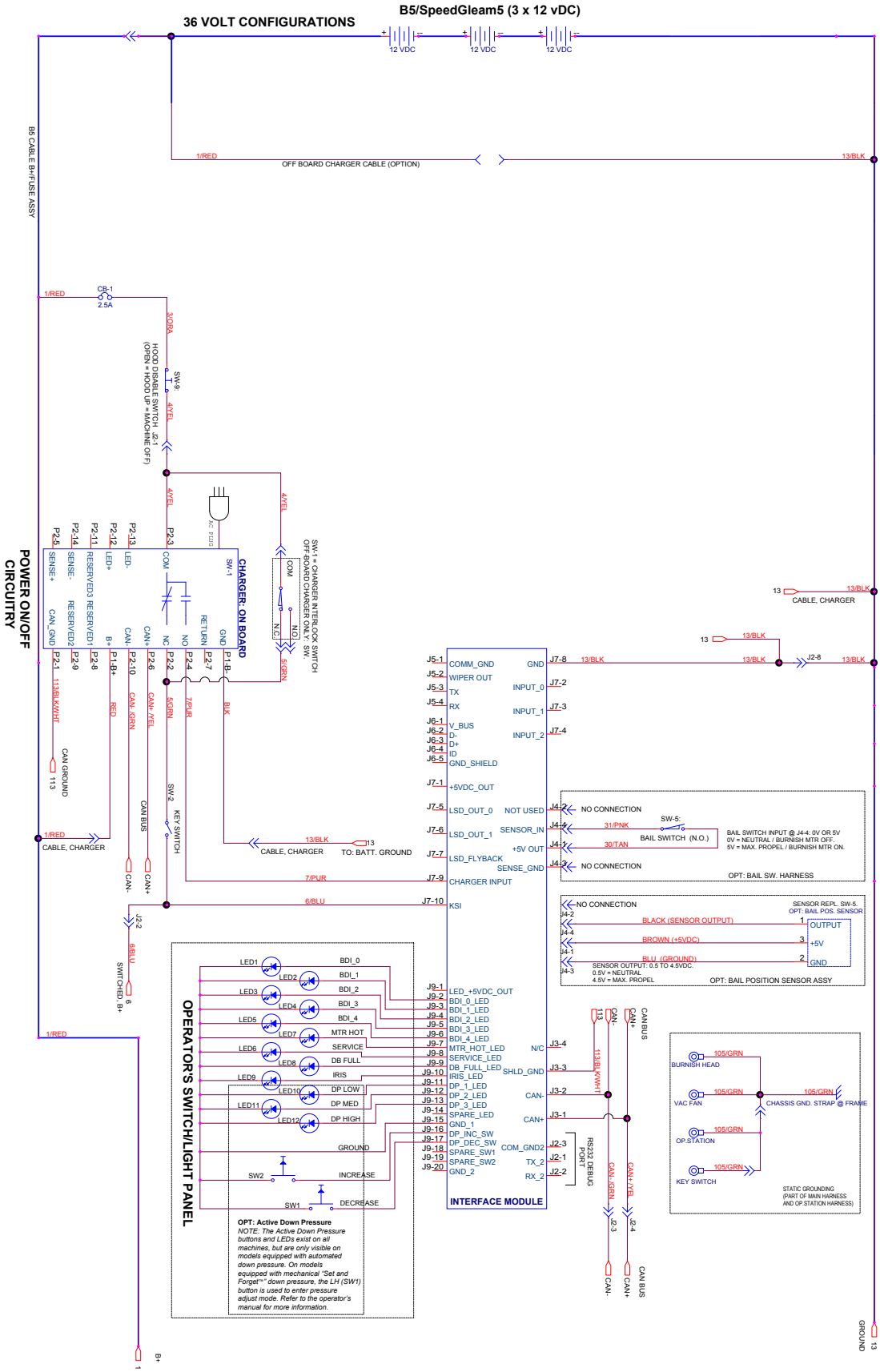
ELECTRICAL SCHEMATIC (DRIVE MODEL) - 1 of 2



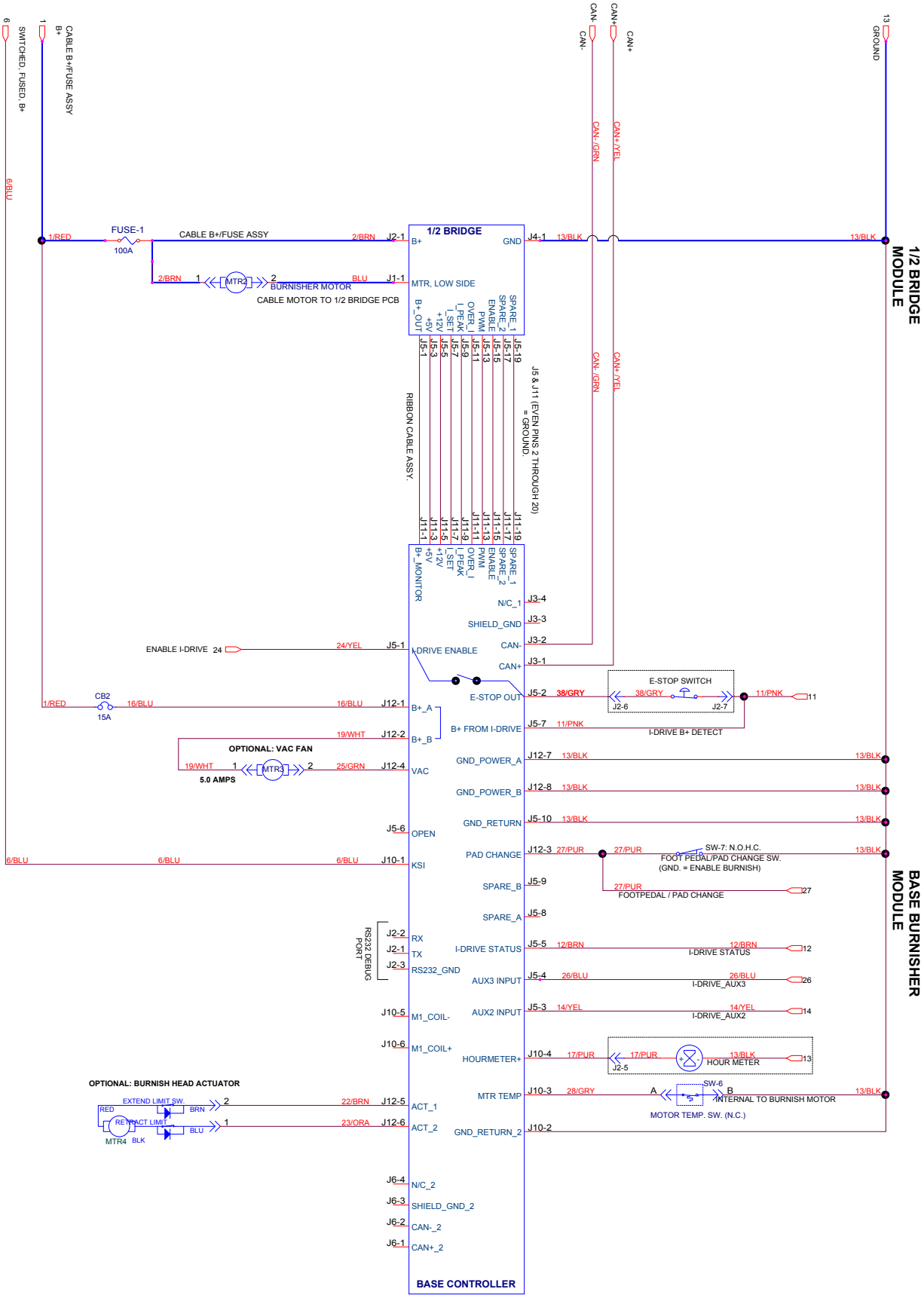
ELECTRICAL SCHEMATIC (DRIVE MODEL) - 2 of 2



ELECTRICAL SCHEMATIC (PUSH MODEL) - 1 of 2



ELECTRICAL SCHEMATIC (PUSH MODEL) - 2 of 2



B5/7, SpeedGleam5/7 OPERATIONAL MATRIX

FUNCTION	ENABLED	DISABLED
Burnish Motor - On	• Burnish Head Down • Burnish Bail Activated	• Burnish Head Up • Burnish Bail Release • Low Battery Voltage (< 32.5 vDC) • Load Current Fault • Battery Charger ON Interlock • Access Cover Open
Vacuum Fan (Optional)	• Burnish Head Down • Burnish Bail Activated	• Burnish Head Up • Burnish Bail Release • Low Battery Voltage (< 32.5 vDC) • Load Current Fault • Battery Charger ON Interlock • Access Cover Open
Propel (Optional on B/SG5)	• Neutral Input at Power Up • Burnish/Propel Bail Activated	• Battery Charger ON Interlock • Neutral - Ready State • Low Battery Voltage (< 30.0 vDC) • Load Current Fault • Access Cover Open

MOM001

FASTENER TORQUE

SAE (STANDARD)

Thread Size	SAE Grade 1	SAE Grade 2 Carriage Bolts	Thread Cutting Thread Rolling	SAE Grade 5 Socket & Stainless Steel	SAE Grade 8	Headless Socket Set Screws	Square Head Set Screws	
4 (.112)	(5) - (6.5)					(4) - (6)		**Inch Pounds**
5 (.125)	(6) - (8)					(9) - (11)		
6 (.138)	(7) - (9)		(20) - (24)			(9) - (11)		
8 (.164)	(12) - (16)		(40) - (47)			(17) - (23)		
10 (.190)	(20) - (26)		(50) - (60)			(31) - (41)		
1/4 (.250)	4 - 5	5 - 6	7 - 10	7 - 10	10 - 13	6 - 8	17 - 19	**Foot Pounds**
5/16 (.312)	7 - 9	9 - 12	15 - 20	15 - 20	20 - 26	13 - 15	32 - 38	
3/8 (.375)	13 - 17	16 - 21		27 - 35	36 - 47	22 - 26	65 - 75	
7/16 (.438)	20 - 26	26 - 34		43 - 56	53 - 76	33 - 39	106 - 124	
1/2 (.500)	27 - 35	39 - 51		65 - 85	89 - 116	48 - 56	162 - 188	
5/8 (.625)		80 - 104		130 - 170	171 - 265		228 - 383	
3/4 (.750)		129 - 168		215 - 280	313 - 407		592 - 688	
1 (1.000)		258 - 335		500 - 650	757 - 984		1281 - 1489	

METRIC

Thread Size	4.8/5.6	8.8 Stainless Steel	10.9	12.9	Set Screws
M3	43 - 56 Ncm	99 - 128 Ncm	139 - 180 Ncm	166 - 215 Ncm	61 - 79 Ncm
M4	99 - 128 Ncm	223 - 290 Ncm	316 - 410 Ncm	381 - 495 Ncm	219 - 285 Ncm
M5	193 - 250 Ncm	443 - 575 Ncm	624 - 810 Ncm	747 - 970 Ncm	427 - 554 Ncm
M6	3.3 - 4.3 Nm	7.6 - 9.9 Nm	10.8 - 14 Nm	12.7 - 16.5 Nm	7.5 - 9.8 Nm
M8	8.1 - 10.5 Nm	18.5 - 24 Nm	26.2 - 34 Nm	31 - 40 Nm	18.3 - 23.7 Nm
M10	16 - 21 Nm	37 - 48 Nm	52 - 67 Nm	63 - 81 Nm	
M12	28 - 36 Nm	64 - 83 Nm	90 - 117 Nm	108 - 140 Nm	
M14	45 - 58 Nm	102 - 132 Nm	142 - 185 Nm	169 - 220 Nm	
M16	68 - 88 Nm	154 - 200 Nm	219 - 285 Nm	262 - 340 Nm	
M20	132 - 171 Nm	300 - 390 Nm	424 - 550 Nm	508 - 660 Nm	
M22	177 - 230 Nm	409 - 530 Nm	574 - 745 Nm	686 - 890 Nm	
M24	227 - 295 Nm	520 - 675 Nm	732 - 950 Nm	879 - 1140 Nm	

B5/ SpeedGleam® 5 GENERAL MACHINE DIMENSIONS/CAPACITIES/PERFORMANCE

MODEL	(20 in / 510 mm) Push Model	(20 in / 510 mm) Drive Model
Length	59 in / 1499 mm	59 in / 1499 mm
Width	24.5 in / 622 mm	24.5 in / 622 mm
Height	43 in / 1092 mm	43 in / 1092 mm
Weight	193 lb / 87.5 kg	198 lb / 90 kg
Weight with batteries	507 lb / 230 kg	572 lb / 259 kg
Burnish path width	20 in / 510 mm	20 in / 510 mm
Productivity rate (max.)	16,260 ft^2/hr / 1,500 m^2/hr	20,000 ft^2/hr / 1,900 m^2/hr
Productivity rate (practical)	13,500 ft^2/hr / 1,200 m^2/hr	18,000 ft^2/hr / 1,670 m^2/hr
Burnishing speeds (Variable)	Pad Assist	Min: 100 fpm / 30 mpm Max: 200 fpm / 60 mpm
Transport speed (max.)	n/a	Fwd: 240 fpm/ 73 mpm Rev: 144 fpm/ 44 mpm
Aisle turn (min.)	60 in / 1,524 mm	60 in / 1,524 mm
Grade level (max.)	Burnishing: 9%, Transport: 19.5%	Burnishing: 9%, Transport: 19.5%
Propel Motor	n/a	24 V, 14 A, .363 hp / 0.27 kW, 271 W
Pad motor	36 V, 75 A, 2.8 hp max / 2.1 kW	36 V, 75 A, 2.8 hp max / 2.1 kW
Pad Pressure	Variable	Variable
Pad speed	2100 rpm	2100 rpm
Vacuum motor (Active Dust Collection)	36 V, 5 A, 180W / 0.18 kW	36 V, 5 A, 180W / 0.18 kW
HEPA filtration (Active Dust Collection)	99.97% @ 0.3 micron	99.97% @ 0.3 micron
Filtration (Passive Dust Collection)	95% @ 0.3 micron	95% @ 0.3 micron
Dust bag capacity	1.27 qt / 1.4 l	1.27 qt / 1.4 l
Machine Voltage	36 VDC	36 VDC
Battery capacity	3 - 12V, 185 Ah Wet/lead-acid (std.) 3 - 12V, 225 Ah Wet/lead-acid (opt.) 3 - 12V, 234 Ah AGM (opt.)	3 - 12V, 225 Ah Wet/lead-acid (std.) 3 - 12V, 234 Ah AGM (opt.)
Total power consumption	60 A / 1.9 kw nominal	60 A / 1.9 kw nominal
Run time (max.)	2.5 hours	2.5 hours
Battery charger	120 VAC, 60 Hz, 36 VDC, 25 A	120 VAC, 60 Hz, 36 VDC, 25 A
	220/240 VAC, 60 Hz, 36 VDC, 25 A	220/240 VAC, 60 Hz, 36 VDC, 25 A
Protection grade	IPX3	IPX3
*Sound pressure level L_{pA} (Active Dust Colletion Model)	64 dB(A)	64 dB(A)
*Sound pressure level L_{pA} (Passive Dust Colletion Model)	65 dB(A)	65 dB(A)
*Sound uncertainty K_{pA}	3.0 dB(A)	3.0 dB(A)
*Sound power level L_{wA} + uncertainty K_{wA}	xx dB(A)	xx dB(A)
*Machine vibration at hand-arm	<2.5 m/s^2	<2.5 m/s^2
*Machine vibration uncertainty K	0.2 m/s^2	0.2 m/s^2
Ambient operating temperature	Min: 32°F/0°C Max: 110°F/43°C	Min: 32°F/0°C Max: 110°F/43°C

*Values per EN 60335-2-72
Specifications are subject to change without notice.

B7/ SpeedGleam® 7 GENERAL MACHINE DIMENSIONS/CAPACITIES/PERFORMANCE

MODEL	(24 in / 610 mm) Drive Model	(27 in / 690 mm) Drive Model
Length	61.5 in / 1562 mm	63 in / 1602 mm
Width	30 in / 762 mm	31.5 in / 800 mm
Height	43 in / 1092 mm	43 in / 1092 mm
Weight	246 lb / 111.5 kg	254 lb / 115 kg
Weight with batteries	616 lb / 279 kg	797 lb / 362 kg
Burnish path width	24 in / 610 mm	27 in / 690 mm
Productivity rate (max.)	24,000 ft^2/hr / 2,200 m^2/hr	27,000 ft^2/hr / 2,500 m^2/hr
Productivity rate (practical)	22,000 ft^2/hr / 2,000 m^2/hr	25,000 ft^2/hr / 2,300 m^2/hr
Burnishing speeds (Variable)	Min: 100 fpm / 30 mpm Max: 200 fpm / 60 mpm	Min: 100 fpm / 30 mpm Max: 200 fpm / 60 mpm
Transport speed (max.)	Fwd: 240 fpm/ 73 mpm Rev: 144 fpm/ 44 mpm	Fwd: 240 fpm/ 73 mpm Rev: 144 fpm/ 44 mpm
Aisle turn (min.)	62.5 in / 1,588 mm	64 in / 1,626 mm
Grade level (max.)	Burnishing: 9%, Transport: 19.5%	Burnishing: 9%, Transport: 19.5%
Propel Motor	24 V, 14 A, .363 hp / 0.27 kW, 271 W	24 V, 14 A, .363 hp / 0.27 kW, 271 W
Pad motor	36 V, 90 A, 3.6 hp max / 2.6 kW	36 V, 90 A, 3.6 hp max / 2.6 kW
Pad Pressure	Variable	Variable
Pad speed	1875 rpm	1875 rpm
Vacuum motor (Active Dust Collection)	36 V, 5 A, 180W / 0.18 kW	36 V, 5 A, 180W / 0.18 kW
HEPA filtration (Active Dust Collection)	99.97% @ 0.3 micron	99.97% @ 0.3 micron
Filtration (Passive Dust Collection)	95% @ 0.3 micron	95% @ 0.3 micron
Dust bag capacity	1.27 qt / 1.4 l	1.27 qt / 1.4 l
Machine Voltage	36 VDC	36 VDC
Battery capacity	6 - 6V, 240 Ah Wet/lead-acid (std.) 6 - 6V, 312 Ah AGM (opt.) 6 - 6V, 360 Ah Wet/lead-acid (opt.)	6 - 6V, 240 Ah Wet/lead-acid (std.) 6 - 6V, 312 Ah AGM (opt.) 6 - 6V, 360 Ah Wet/lead-acid (opt.)
Total power consumption	75 A / 2.4 kw nominal	75 A / 2.4 kw nominal
Run time (max.)	3 hours	3 hours
Battery charger	120 VAC, 60 Hz, 36 VDC, 25 A	120 VAC, 60 Hz, 36 VDC, 25 A
	220/240 VAC, 60 Hz, 36 VDC, 25 A	220/240 VAC, 60 Hz, 36 VDC, 25 A
Protection grade	IPX3	IPX3
*Sound pressure level L_{pA} (Active Dust Colletion Model)	63 dB(A)	63 dB(A)
*Sound pressure level L_{pA} (Passive Dust Colletion Model)	65 dB(A)	65 dB(A)
*Sound uncertainty K_{pA}	3.0 dB(A)	3.0 dB(A)
*Sound power level L_{wA} + uncertainty K_{wA}	xx dB(A)	xx dB(A)
*Machine vibration at hand-arm	<2.5 m/s^2	<2.5 m/s^2
*Machine vibration uncertainty K	0.2 m/s^2	0.2 m/s^2
Ambient operating temperature	Min: 32°F/0°C Max: 110°F/43°C	Min: 32°F/0°C Max: 110°F/43°C

*Values per EN 60335-2-72
Specifications are subject to change without notice.

SPECIFICATIONS

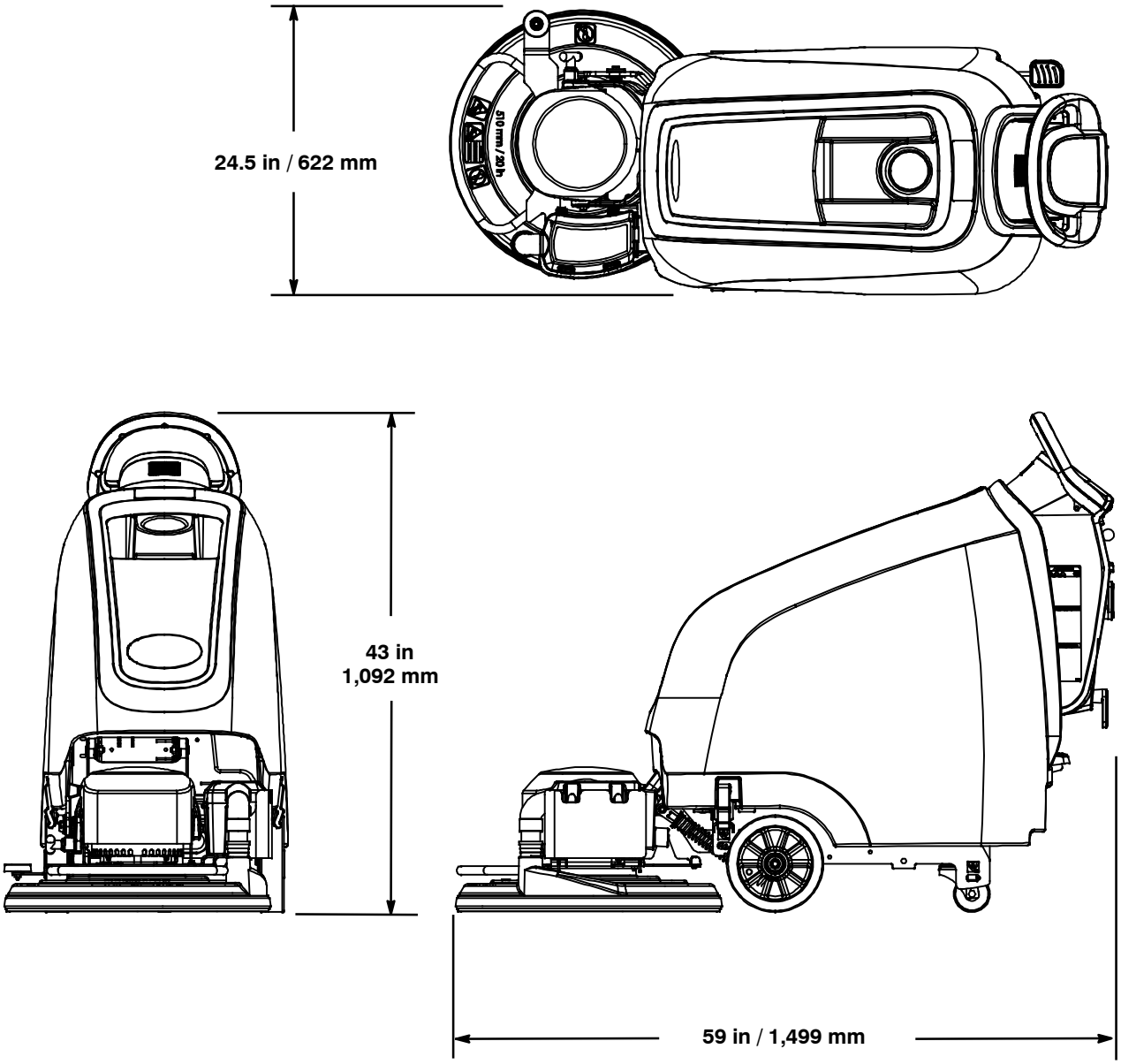
ELECTRICAL COMPONENTS *(For Reference Only)*

Component	Measure
Actuator, Scrub head lift	1 - 3 Amps Continuous
Motor, Vacuum Fan	5 Amps
Motor, Propelling (transport speed)	Variable to 14 Amps, 24 V
B5/ SG5 - Actuator Pressure	Burnish Motor Measure
Down Pressure 1 LED	42-49 Amps
Down Pressure 2 LEDs	57-64 Amps
Down Pressure 3 LEDs	72-79 Amps
B7/ SG7 - Actuator Pressure	Burnish Motor Measure
Down Pressure 1 LED	57-64 Amps
Down Pressure 2 LEDs	72-79 Amps
Down Pressure 3 LEDs	87-94 Amps
B5/ SG5 - Mechanical Pressure	Burnish Motor Measure - *Mechanical Pressure Adjust Mode*
BDI LED #1 (LH)	Less than 42 Amps (Blink), 42-49 Amps (Steady)
BDI LED #2	49-57 Amps
BDI LED #3	57-64 Amps
BDI LED #4	64-72 Amps
BDI LED #5 (RH)	72-79 Amps (Steady), Greater than 79 Amps (Blink)
B7/ SG7 - Mechanical Pressure	Burnish Motor Measure - *Mechanical Pressure Adjust Mode*
BDI LED #1 (LH)	Less than 56.5 Amps (Blink), 57-64 Amps (Steady)
BDI LED #2	64-72 Amps
BDI LED #3	72-79 Amps
BDI LED #4	79-87 Amps
BDI LED #5 (RH)	87-94 Amps (Steady), Greater than 94 Amps (Blink)

Specifications are subject to change without notice.

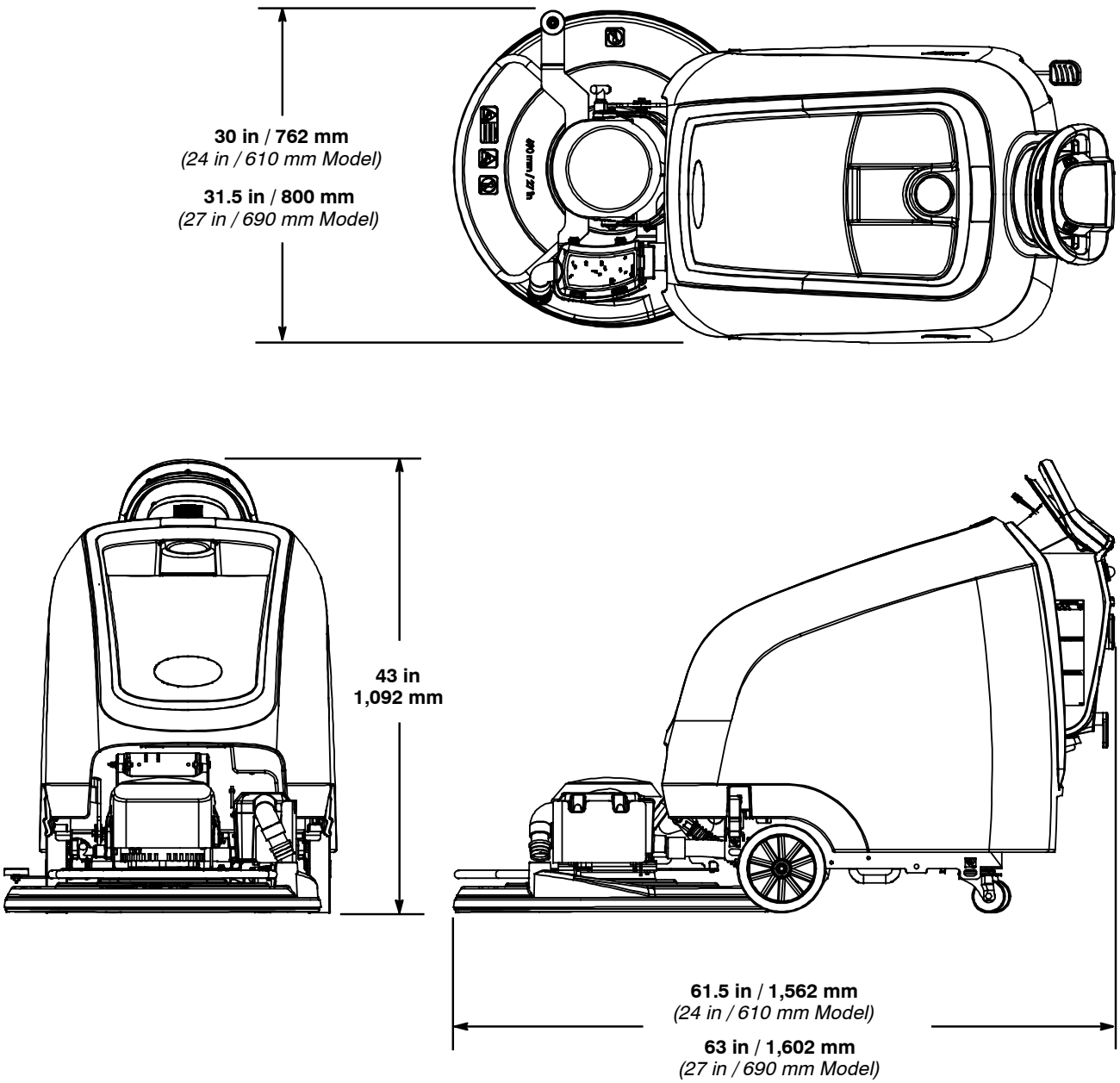
SPECIFICATIONS

B5/ SpeedGleam® 5 MACHINE DIMENSIONS



SPECIFICATIONS

B7/ SpeedGleam® 7 MACHINE DIMENSIONS



SECTION 3

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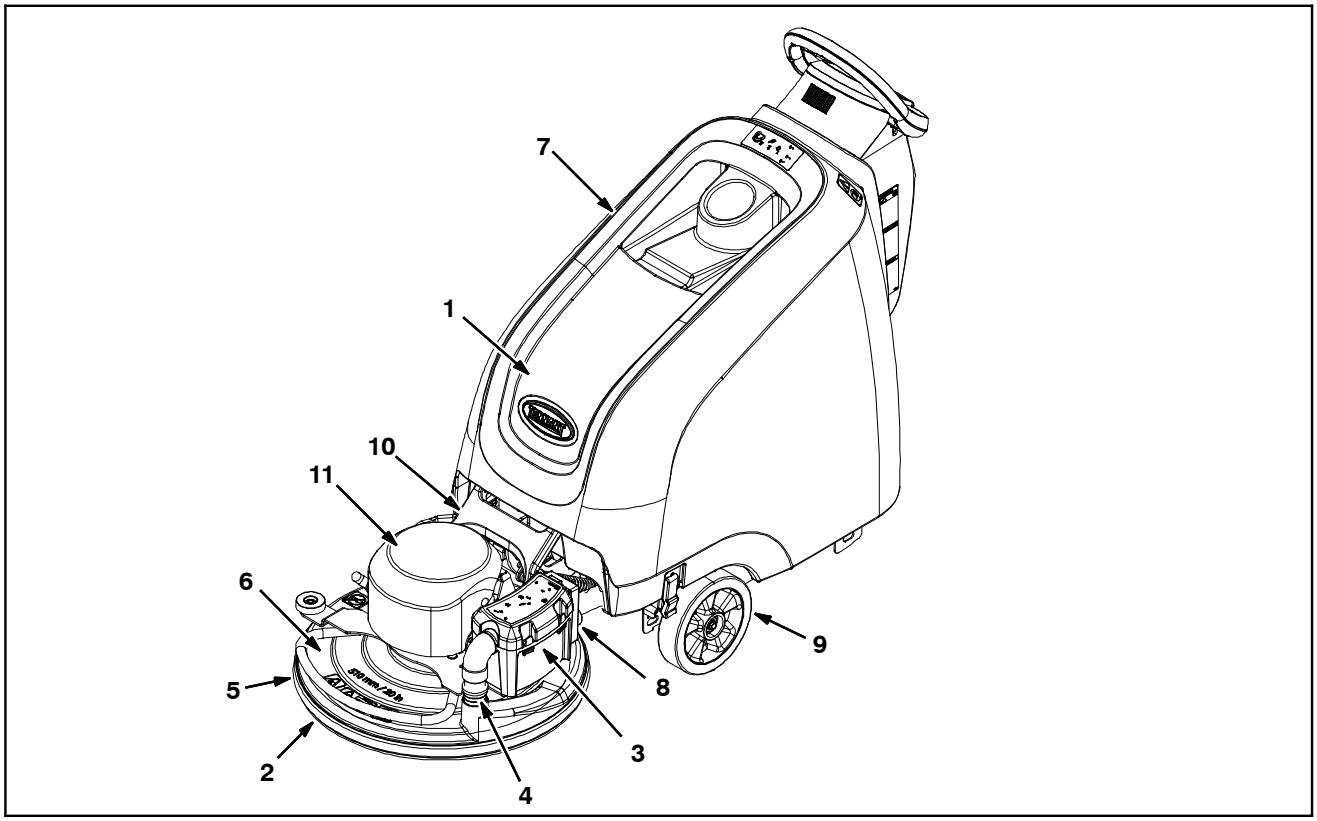
MAINTENANCE CHART



Interval/ Hours	Person Resp.	Key	Description	Procedure
Daily	O	1	Batteries	Charge
	O	2	Burnishing pad	Check, flip or replace
	O	3	Dust collection bag	Check, replace
	O	4	Vacuum hose	Check, clean
	O	5	Burnishing head dust skirt	Check for dry floor finish chunks
Weekly	O	1	Battery electrolyte level	Check, add distilled water if low
50 Hours	O	5	Burnishing head dust skirt	Check for wear and damage
	O	6	Burnishing head	Clean with air pressure hose
	O	7	Machine	Clean with damp cloth
100 Hours	O	1	HydroLINK Battery watering system (option)	Check hoses and connections for damage and wear
200 Hours	O	1	Batteries, terminals and cables	Check and clean
	O	8	Vacuum HEPA filter (Active Dust Control Model)	Check, clean, replace
750 Hours	T	9	Propel motor (Drive Model)	Replace carbon brushes
1000 Hours	T	10	Head lift bushings, 4 points	Inspect, replace bushings
	T	11	Pad motor	Replace carbon brushes

O = Operator T = Trained Personnel

MACHINE MAINTENANCE

To keep the machine in good working condition, simply perform the following maintenance procedures.

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

FOR SAFETY: When servicing machine wear personal protection equipment as needed. All repairs must be performed by trained personnel

AFTER DAILY USE

1. Flip the burnishing pad over or change to a new pad (Figure 35).

FIG. 35

2. Check the dust collection bag for fullness. Replace bag when half full (Figure 36).

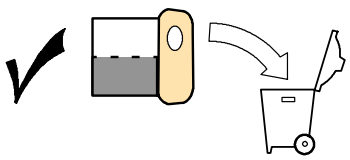


FIG. 36

3. Check vacuum hose for clogging. Clean hose as necessary (Figure 37).

FIG. 37

4. Charge batteries (Figure 38). *See CHARGING BATTERIES.*

ON- BOARD CHARGER

OFF- BOARD CHARGER

FIG. 38

AFTER WEEKLY USE

Check the electrolyte level in all batteries (Figure 39). See BATTERY MAINTENANCE.

FIG. 39

AFTER EVERY 50 HOURS OF USE

1. Check the dust skirt for wear or damage (Figure 40). Replace if worn or damaged.

FIG. 40

2. Clean the burnishing head and pad motor of any dust buildup using an air pressure hose (Figure 41). Maximum air pressure 100 psi / 690 kPa.

FOR SAFETY: When servicing machine, wear appropriate personal protection equipment as needed

FIG. 41

3. Clean the outside surface of the machine with an all purpose cleaner and damp cloth (Figure 42).

FIG. 42

AFTER EVERY 100 HOURS OF USE

If machine is equipped with the optional HydroLINK battery watering system, check the watering hoses and connections for damage and wear (Figure 43). Replace system if damaged.

FOR SAFETY: When servicing batteries, wear personal protection equipment as needed. Avoid contact with battery acid.

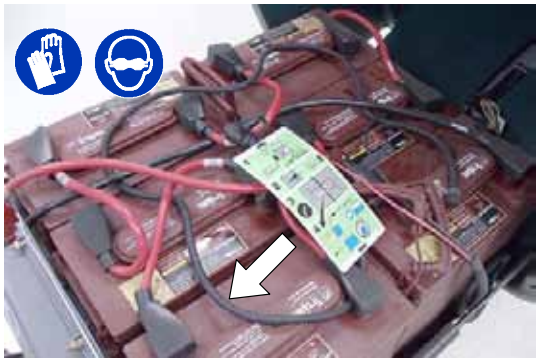


FIG. 43

AFTER EVERY 200 HOURS OF USE

1. Clean batteries and check for loose battery cable connections (See BATTERY MAINTENANCE).
2. Replace the HEPA filter if model is equipped with the active dust control collection option (Figure 44).

FIG. 44

AFTER EVERY 1000 HOURS OF USE

Inspect the four bushings at the head lift bracket assembly for wear (Figure 45). If you experience head bounce or vibration, have the bushings replaced.

FIG. 45

MOTOR MAINTENANCE

Replace motor carbon brushes as indicated. Contact trained personnel for carbon brush replacement.

Carbon Brush Replacement	Hours
Propel Motor (Drive Model)	750
Pad Motor	1000

BATTERY MAINTENANCE

FOR SAFETY: Before servicing machine, stop on level surface, turn off machine, remove key and set parking brake if equipped.

The lifetime of the batteries is limited to the number of charges the batteries receive. To get the most life from the batteries, only recharge the batteries when the battery discharge indicator begins to flash. It is also important to maintain the proper electrolyte levels during the life of the battery.

Your machine is equipped with either wet/lead- acid or sealed AGM batteries supplied by Tennant.

FOR SAFETY: When servicing machine, wear personal protection equipment as needed. Avoid contact with battery acid.

FOR SAFETY: When servicing machine, keep all metal objects off batteries.

SEALED AGM BATTERIES

The sealed AGM batteries are maintenance free and do not require any attention other than routine charging as described in this manual.

WET/LEAD- ACID BATTERIES

The wet/lead- acid batteries require routine maintenance as described below.

NOTE: If your machine is equipped with the HydroLINK battery watering system option, see HYDROLINK BATTERY WATER SYTEM.

Check the battery electrolyte level weekly. The electrolyte level should be slightly above the battery plates as shown (Figure 46). Add distilled water if low. DO NOT OVERFILL. The electrolyte will expand and may overflow when charging.

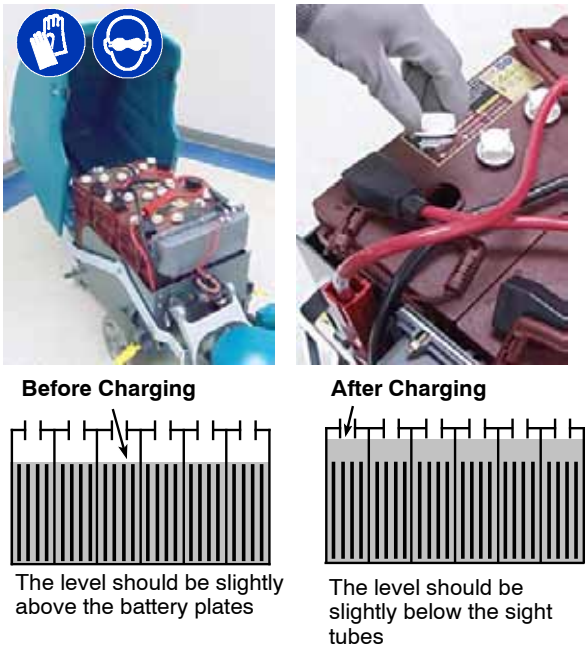


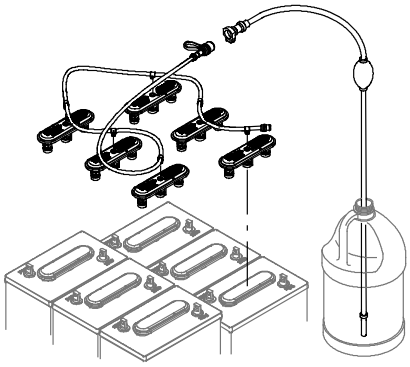
FIG. 46

After every 200 hours of use, check for loose battery connections and clean the surface of the batteries, including terminals and cable clamps to prevent battery corrosion. Use a scrub brush with a strong mixture of baking soda and water (Figure 47). Do not remove battery caps when cleaning batteries.

FIG. 47

HYDROLINK™ BATTERY WATERING SYSTEM (OPTION)

The following instructions are for models equipped with the HydroLINK battery watering system option.



The optional HydroLINK battery watering system provides a safe and easy way to maintain the proper electrolyte levels in your batteries.

This battery watering system is also offered as an aftermarket kit (p/n 9010301). It is designed exclusively for Trojan® wet/lead- acid batteries.

FOR SAFETY: When servicing machine, wear personal protection equipment as needed. Avoid contact with battery acid.

Before using the battery watering system check hoses and connections for damage or wear.

1. Fully charge batteries prior to using the battery watering system. Do not add water to batteries before charging, the electrolyte level will expand and may overflow when charging.
2. After charging batteries, check the battery electrolyte level indicators located on the battery covers (Figure 48). If the level indicator is white add water as described in the following instructions. If the level indicators are black the electrolyte is at the correct level, no water is required.

FIG. 48

3. Locate the battery fill hose coupler inside the battery compartment. Remove the dust cap and connect the hand pump hose (Figure 49).

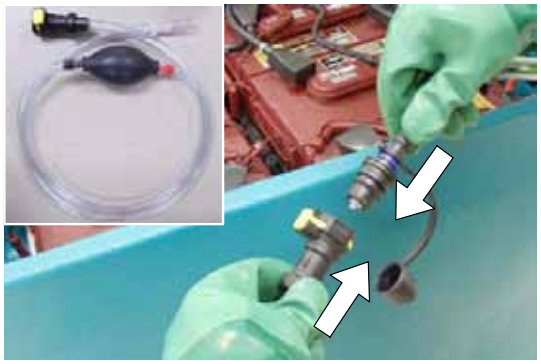


FIG. 49

4. Submerge the other end of the hand pump hose into a bottle of distilled water (Figure 50).

FIG. 50

5. Squeeze the bulb on the hand pump hose until firm (Figure 51). The level indicators will turn black when full.

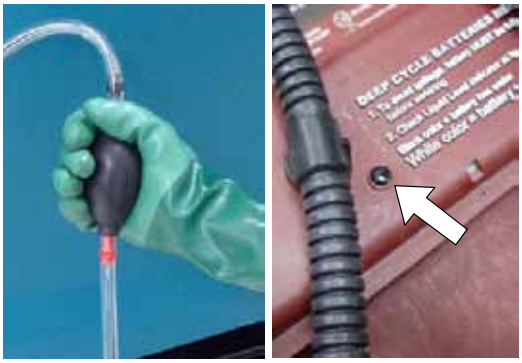


FIG. 51

6. After adding water, replace the dust cap on the battery fill hose and store the hand pump hose inside the machine's battery compartment for future use.

MACHINE JACKING

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine and remove key.

Use the designated jacking locations for jacking up the machine (Figure 52). Use a jack capable of supporting the weight of the machine. Position the machine on a flat, level surface and block the tires before jacking.

FOR SAFETY: When servicing machine, jack machine up at designated locations only. Use jack or hoist that will support machine weight. Block machine up with jack stands.

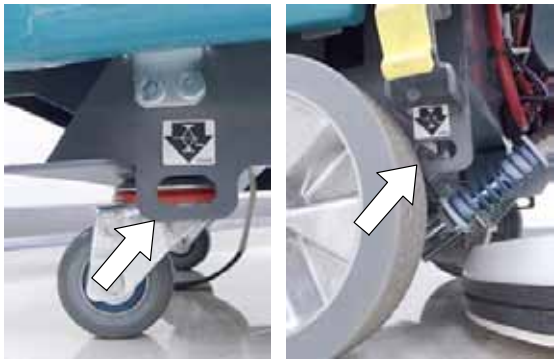


FIG. 52

LOADING/UNLOADING MACHINE FOR TRANSPORTING

When transporting the machine by use of trailer or truck, carefully follow the loading and tie- down procedure:

1. Raise the burnishing head to the transport position to prevent potential head damage when ramp loading machine on truck or trailer (Figure 53).

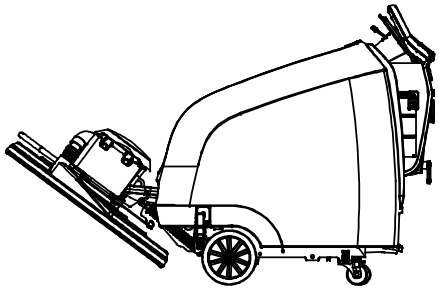
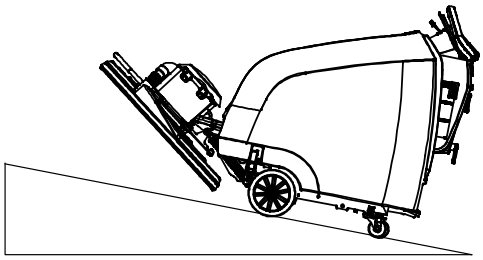


FIG. 53

2. Use a ramp that can support the machine weight and operator and carefully load machine. Do not operate the machine on a ramp incline that exceeds a 19.5% grade level (Figure 54). A winch must be used when ramp incline exceeds a 19.5% grade level.

FOR SAFETY: When loading/unloading machine onto/off truck or trailer, use a ramp that can support the machine weight and operator.

Do not operate the machine on a ramp incline that exceeds a 19.5% grade level. Use tie- down straps to secure machine to truck or trailer.



19.5% maximum ramp grade

FIG. 54

3. Once loaded, position the front of the machine up against the front of the trailer or truck. Lower the burnishing head to the floor and turn the key off (Figure 55).
4. Place a block behind each wheel (Figure 55).
5. Using tie- down straps, secure the front and rear of the machine using the four tie- down brackets located on the machine frame (Figure 55). It may be necessary to install tie-down brackets to the floor of your trailer or truck. Do not use the burnishing head lift pedal as a tie down.

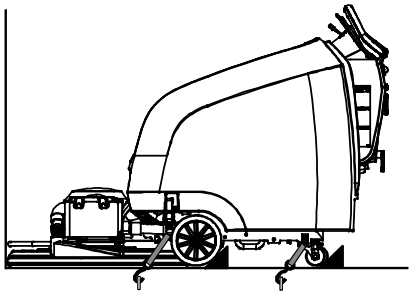


FIG. 55

6. When unloading machine, carefully back the machine down the ramp. Do not unload machine going in the forward direction.

STORING MACHINE

The following steps should be taken when storing the machine for extended periods of time.

1. Charge the batteries before storing machine to prolong the life of the batteries. Recharge batteries every 3 months.
2. Raise the burnishing head off the floor.
3. Park the machine in a cool, dry area.
4. Turn machine off and remove key.

NOTE: To prevent potential machine damage store machine in a rodent and insect free environment.

⚠ WARNING: To Reduce the Risk of Fire, Explosion, Electric Shock or Injury do not expose the machine to rain, store indoors.

5. For storage areas with limited space, raise the head as shown (Figure 56).

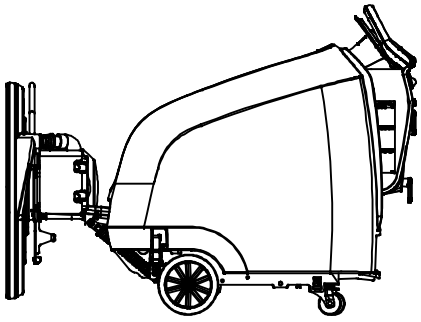


FIG. 56

SECTION 4

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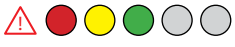
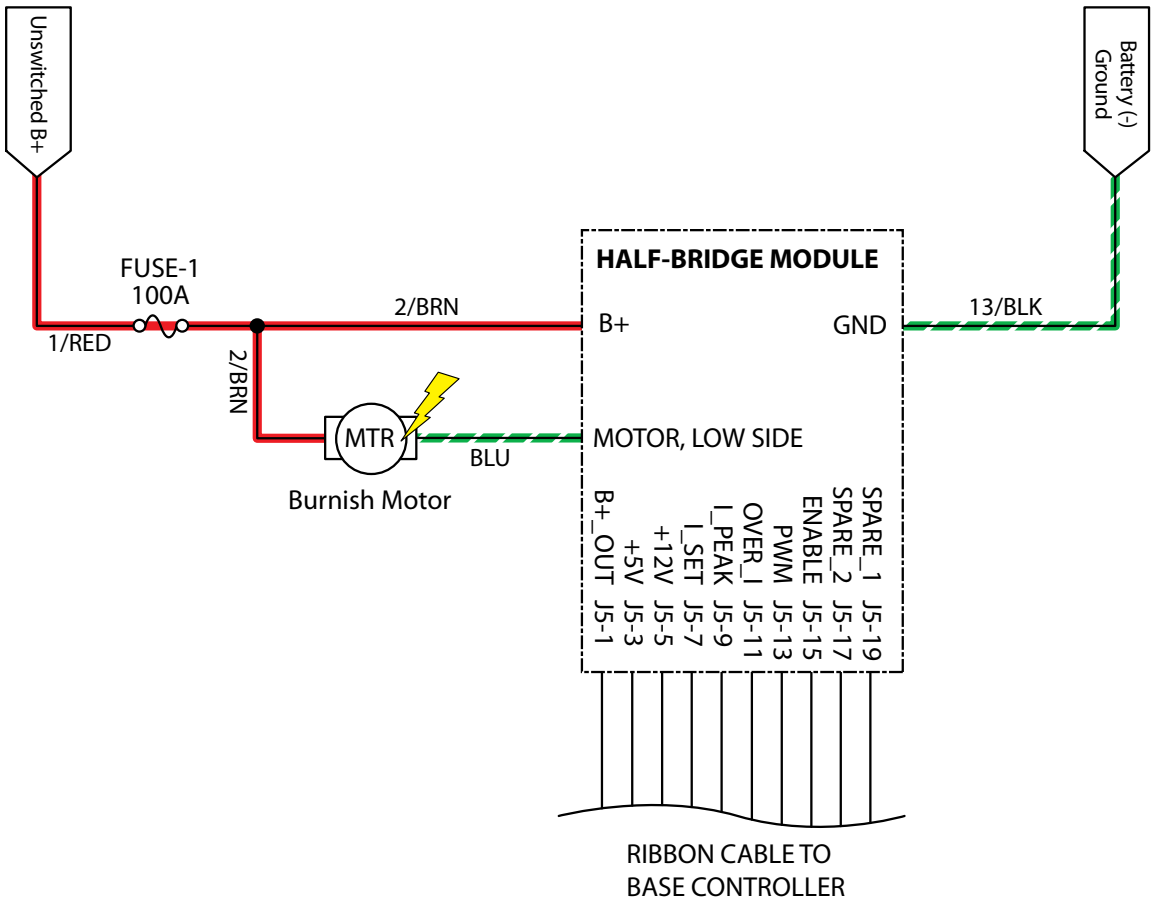
BDI (Battery Discharge Indicator) Faults

Blinking BDI Fault	Cause *Correction*
⚠ ○ ○ ○ ○ ●	Base module power supply failure *Correct fault condition*
⚠ ○ ○ ○ ● ○	Actuator circuit open (option) *Correct fault condition*
⚠ ○ ○ ○ ● ●	Burnish motor circuit open *Correct fault condition*
⚠ ○ ○ ● ○ ○	Vacuum motor circuit open (option) *Correct fault condition*
⚠ ○ ○ ● ○ ●	Actuator/Vac breaker tripped (option) *Correct fault condition, disconnect battery, reset circuit breaker*
⚠ ○ ○ ● ● ○	Propel motor breaker tripped (option) *Correct fault condition, disconnect battery, reset breaker*
⚠ ○ ○ ● ● ●	Propel motor circuit open (option) *Correct fault condition*
⚠ ○ ● ○ ○ ○	Charger over temperature *Move machine to well-ventilated area*
⚠ ○ ● ○ ○ ●	Burnish motor over-current *Correct fault condition*
⚠ ○ ● ○ ● ●	Software load failure *Reconfigure machine software*
⚠ ○ ● ● ○ ○	Charger no-load warning *Check connection from charger/battery*
⚠ ○ ● ● ○ ●	Charger timeout *Correct fault condition*
⚠ ○ ● ● ● ○	CAN-bus communication fault *Correct fault condition*
⚠ ● ● ● ○ ●	Burnish motor circuit shorted *Correct fault condition*
⚠ ● ● ● ● ○	Base controller module failure *Replace base controller module*
⚠ ● ● ● ● ●	E-Stop switch activated *Release E-Stop and cycle key switch*
⚠ 	Burnish motor high temperature *Allow burnish motor to cool down. Fault will clear once cooled.*

BDI (Battery Discharge Indicator) Faults

Blinking BDI Fault	Cause ***Correction***
	Not Used - Reserved for later use
	Burnish motor voltage loss *Correct fault condition*
	Propel system iDrive fault (option) *Correct fault condition*
	Propel motor circuit shorted (option) *Correct fault condition*
	Burnish motor hardware over-current *Correct fault condition*
	Burnish motor over-current *Correct fault condition*
	High throttle fault at power-up *Correct fault condition*
	Half-Bridge module failure *Replace half-bridge module*
	Vacuum motor hardware over-current *Correct fault condition*
	Vacuum motor over-current, Level 1 *Correct fault condition*
	Vacuum motor over-current, Level 2 *Correct fault condition*
	Vacuum motor circuit shorted *Correct fault condition*
	Actuator stall fault (option) *Correct fault condition*
	Charger fault - detected by charger *Correct fault condition*

Burnish Motor Failed to Turn ON



Operational Matrix:

	Enabled	Disabled
Burnish Motor	• Burnish head down • Burnish bail activated	• Burnish Head Up • Burnish Bail Release • Low Battery Voltage(< 32.5 V) • Load Current Fault • Battery Charger ON Interlock • Access Cover Open • High Motor Temp

Battery Positive +

Battery Negative -

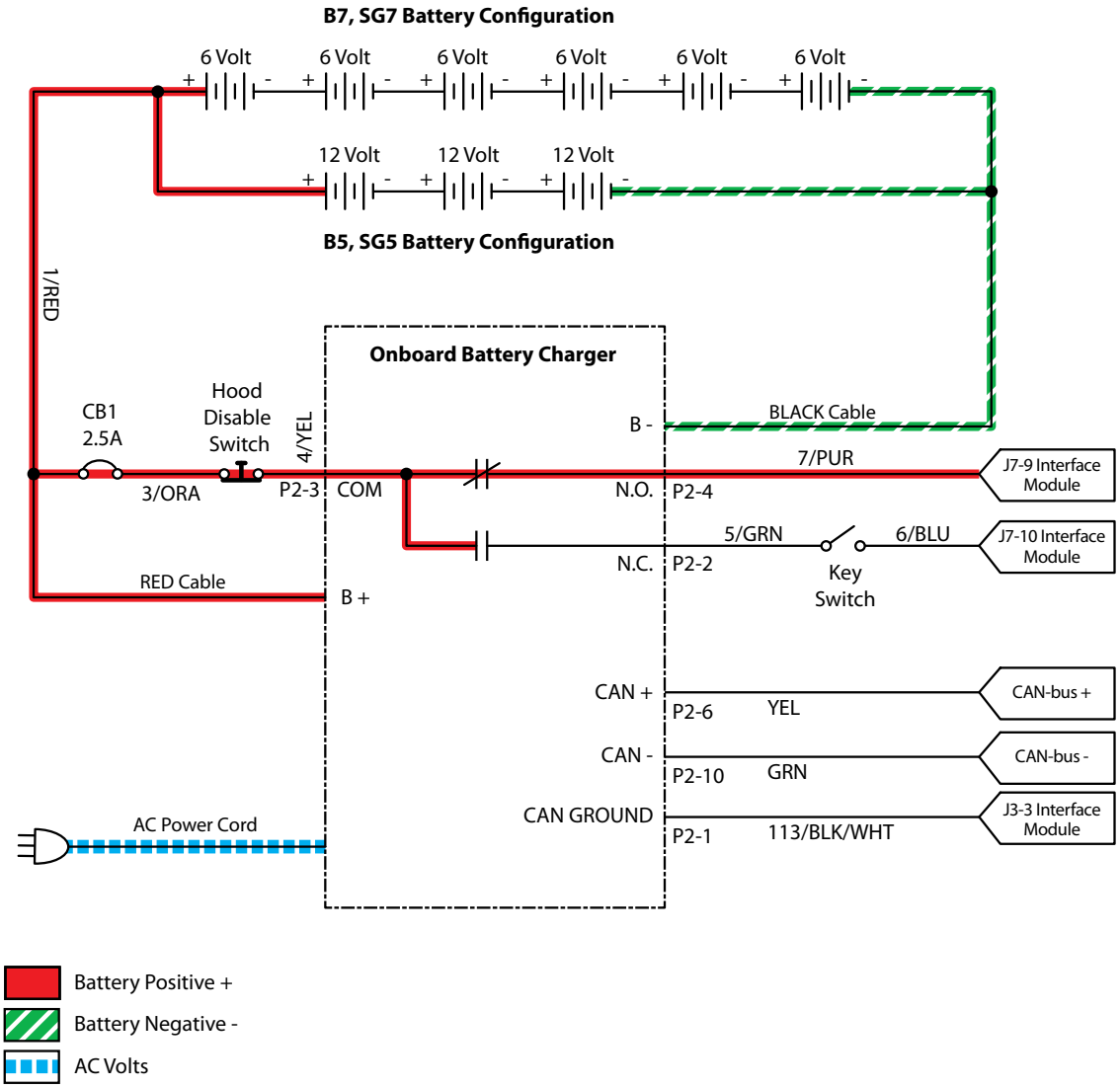
PMC011

Burnish Motor Failed to Turn ON

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Enable burnish motor • Is there a blinking BDI fault present?		See "BDI Faults" in the Troubleshooting section of this manual	Go to Step #2
2	• Key Off • Disconnect burnish motor power cables • Apply battery voltage directly to the burnish motor using jumper cables • Does the burnish motor turn On?		Go to Step #3	Repair or replace burnish motor
3	• Key Off • Reconnect burnish motor power cables • Disconnect ribbon cable from Half-Bridge and Base Controller modules • Inspect the ribbon cable and terminals for damage • Test each ribbon wire segment for continuity • Is there an open or damaged ribbon wire segment?		Replace ribbon cable	Go to Step #4
4	• Key On • Enable burnish motor • Test voltage applied to the burnish motor as shown on the electrical schematic • Are the electrical circuits operating as shown on the electrical schematic?		Go Back to Step #1	Identify Voltage Drop Location and Repair or Replace Necessary Components

Terms:
Backprobe = To insert voltmeter probe(s) into the back of a connector to contact a terminal(s) while the circuit operates or should be operating.
BDI = Battery Discharge Indicator
VDC = DC Voltage

Onboard Battery Charging ON (Optional)



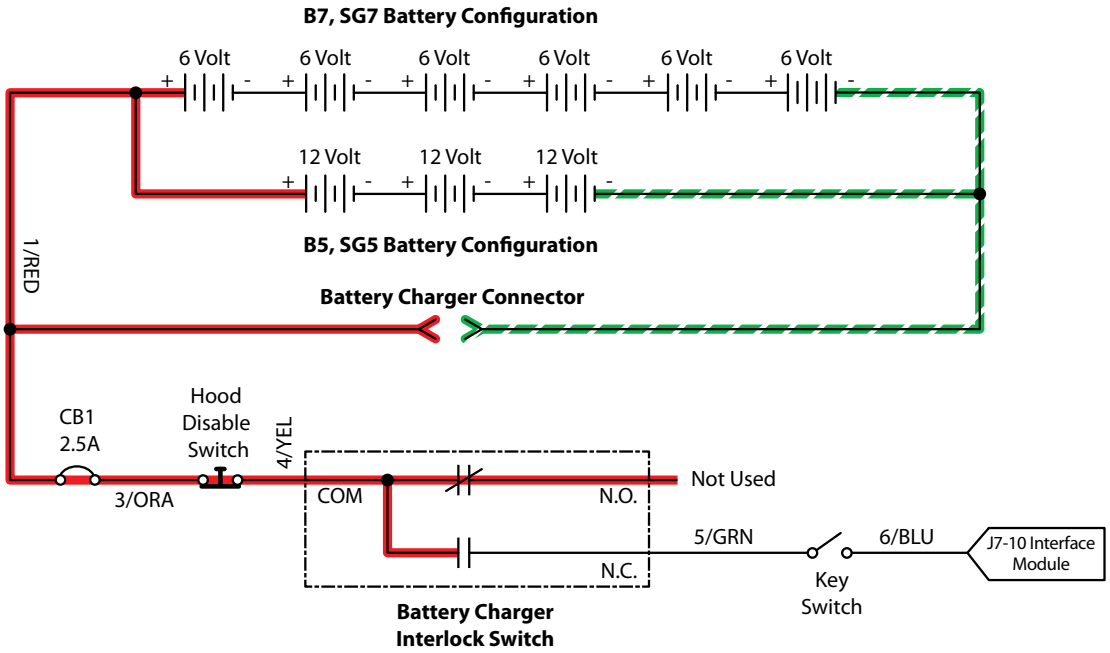
PMC021

Batteries Failed to Charge

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Is there a blinking BDI fault present?		See "BDI Faults" in the Troubleshooting section of this manual	Go to Step #2
2	• Key Off • Check AC power supply • Is the rated AC supply voltage present?		Go to Step #3	Check AC Supply Circuit Protection
3	• See *BATTERY CHARGER SETTINGS* in the *SERVICE* section of this manual and confirm proper charger settings • Is the onboard charger set properly?		Go to Step #4	Reprogram battery charger
4	• Key Off • Inspect battery and charger cables for damage, corrosion, contamination or terminal problems • Do any of the above conditions exist?		Repair or Replace Battery and/or Charger Cables	Go to Step #5
5	• Skip this step for sealed or AGM batteries • Key Off • Disconnect batteries • Check water level of all battery cells • Are the lead plates submerged?		Go to Step #6	Add Distilled Water Until Lead Plates are Covered.
6	• Key Off • Load test all batteries (AGM or Lead-Acid) • -or- • Test specific gravity of each cell using a hydrometer or refractometer (Lead-Acid) • Do the batteries pass a load test or are all battery cells within 0.050 (50 points) specific gravity of each other?		Replace Battery Charger	Replace Battery or Batteries

Terms:
AC = Alternating Current
AGM = Absorbed Glass Mat
Specific Gravity = Relative density of a substance compared to water (1.000 specific gravity)

Off Board Battery Charging ON



Battery Positive +

Battery Negative -

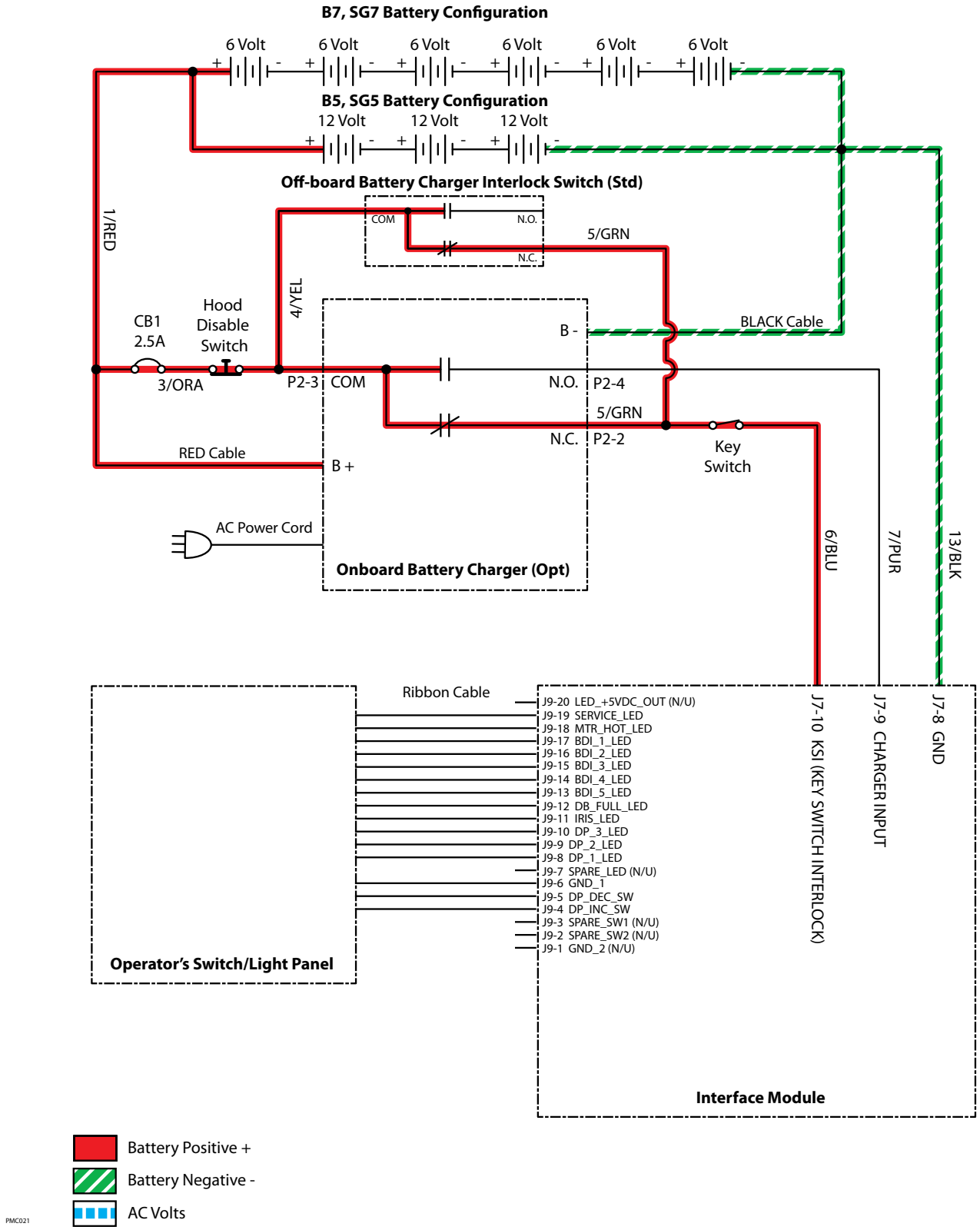
PMC021

Batteries Failed to Charge

STEP	ACTION	VALUE(S)	YES	NO
1	• Key Off • Check AC power supply • Is the rated AC supply voltage present?		Go to Step #2	Check AC Supply Circuit Protection
2	• Key Off • Inspect battery and charger cables for damage, corrosion, contamination or terminal problems • Do any of the above conditions exist?		Repair or Replace Battery and/or Charger Cables	Go to Step #3
3	• Skip this step for sealed or AGM batteries • Key Off • Disconnect batteries • Check water level of all battery cells • Are the lead plates submerged?		Go to Step #4	Add Distilled Water Until Lead Plates are Covered.
4	• Key Off • Load test all batteries (AGM or Lead-Acid) • -or- • Test specific gravity of each cell using a hydrometer or refractometer ((Lead-Acid) • Do the batteries pass a load test or are all battery cells within 0.050 (50 points) specific gravity of each other?		Replace Battery Charger	Replace Battery or Batteries

Terms:
AC = Alternating Current
AGM = Absorbed Glass Mat
Specific Gravity = Relative density of a substance compared to water (water = 1.000 specific gravity)

Power-Up ON

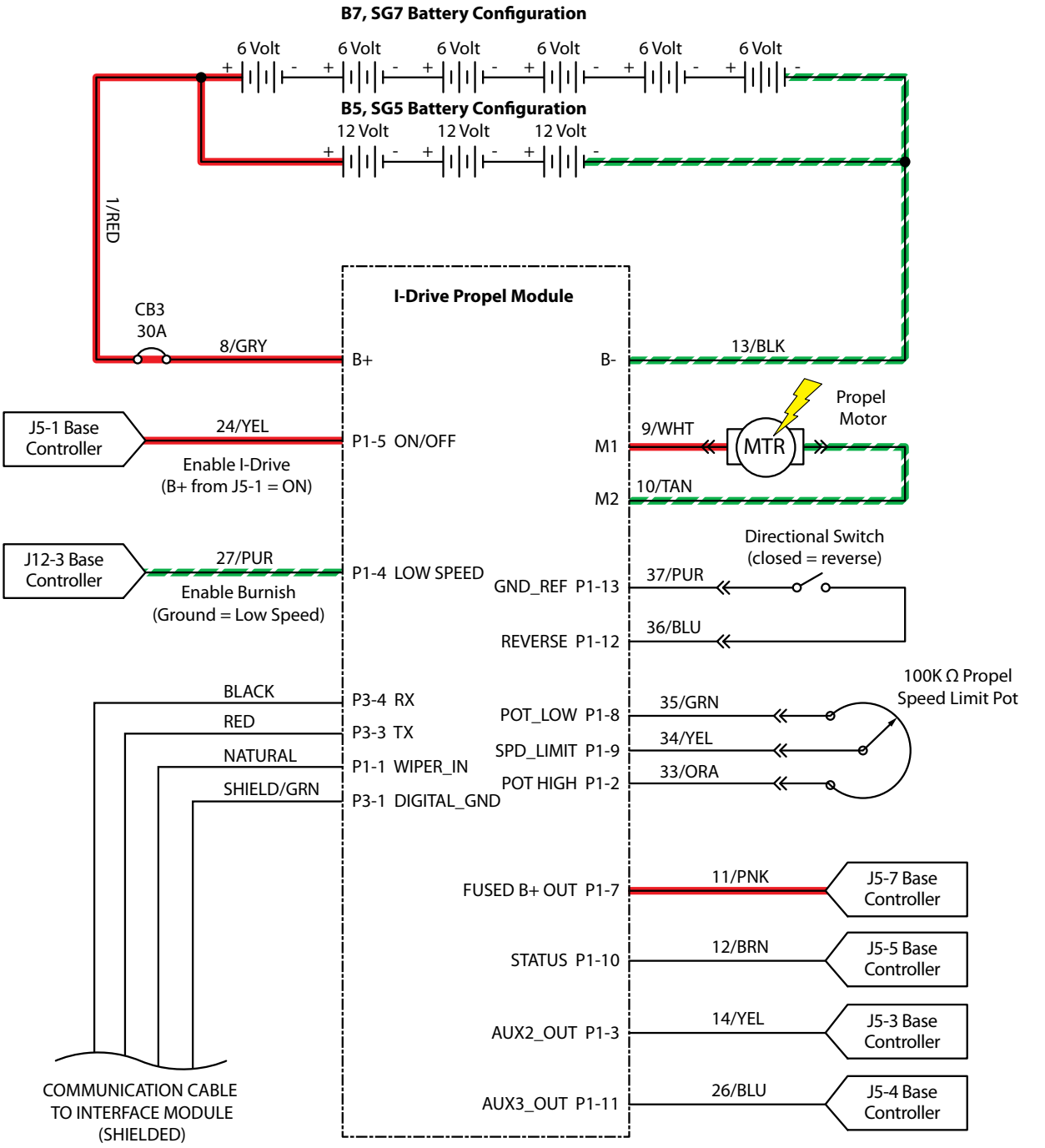

B7, SG7 Battery Configuration
6 Volt
6 Volt
6 Volt
6 Volt
6 Volt
6 Volt
B5, SG5 Battery Configuration
12 Volt
12 Volt
12 Volt
Off-board Battery Charger Interlock Switch (Std)
COM
N.O.
N.C.
5/GRN
1/RED
4/YEL
CB1
2.5A
Hood
Disable
Switch
3/ORA
P2-3
COM
B -
BLACK Cable
N.O.
P2-4
5/GRN
N.C.
P2-2
Key
Switch
RED Cable
B +
AC Power Cord
Onboard Battery Charger (Opt)
6/BLU
7/PUR
13/BLK
Ribbon Cable
J9-20 LED_+5VDC_OUT (N/U)
J9-19 SERVICE_LED
J9-18 MTR_HOT_LED
J9-17 BDI_1_LED
J9-16 BDI_2_LED
J9-15 BDI_3_LED
J9-14 BDI_4_LED
J9-13 BDI_5_LED
J9-12 DB_FULL_LED
J9-11 IRIS_LED
J9-10 DP_3_LED
J9-9 DP_2_LED
J9-8 DP_1_LED
J9-7 SPARE_LED (N/U)
J9-6 GND_1
J9-5 DP_DEC_SW
J9-4 DP_INC_SW
J9-3 SPARE_SW1 (N/U)
J9-2 SPARE_SW2 (N/U)
J9-1 GND_2 (N/U)
J7-10 KSI (KEY SWITCH INTERLOCK)
J7-9 CHARGER INPUT
J7-8 GND
Operator's Switch/Light Panel
Interface Module
Battery Positive +
Battery Negative -
AC Volts
PMC021

Machine Failed to Power Up

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Test the total battery voltage using a voltmeter • Is the total battery voltage greater than 30 VDC?		Go to Step #2	Recharge Batteries and Test Power-Up Circuit Operation
2	• Key Off • Firmly press circuit breaker #1 to reset • Is circuit breaker #1 tripped?		Reset and Test Power-Up Circuit Operation	Go to Step #3
3	• Key On • Test voltage applied to the power-up subsystem as shown on the electrical schematic • Are the electrical circuits operating as shown on the electrical schematic?		Go Back to Step #1	Identify Voltage Drop Location and Repair or Replace Necessary Components

Terms:
VDC = DC Voltage

Propel Subsystem (Optional)



Operational Matrix:

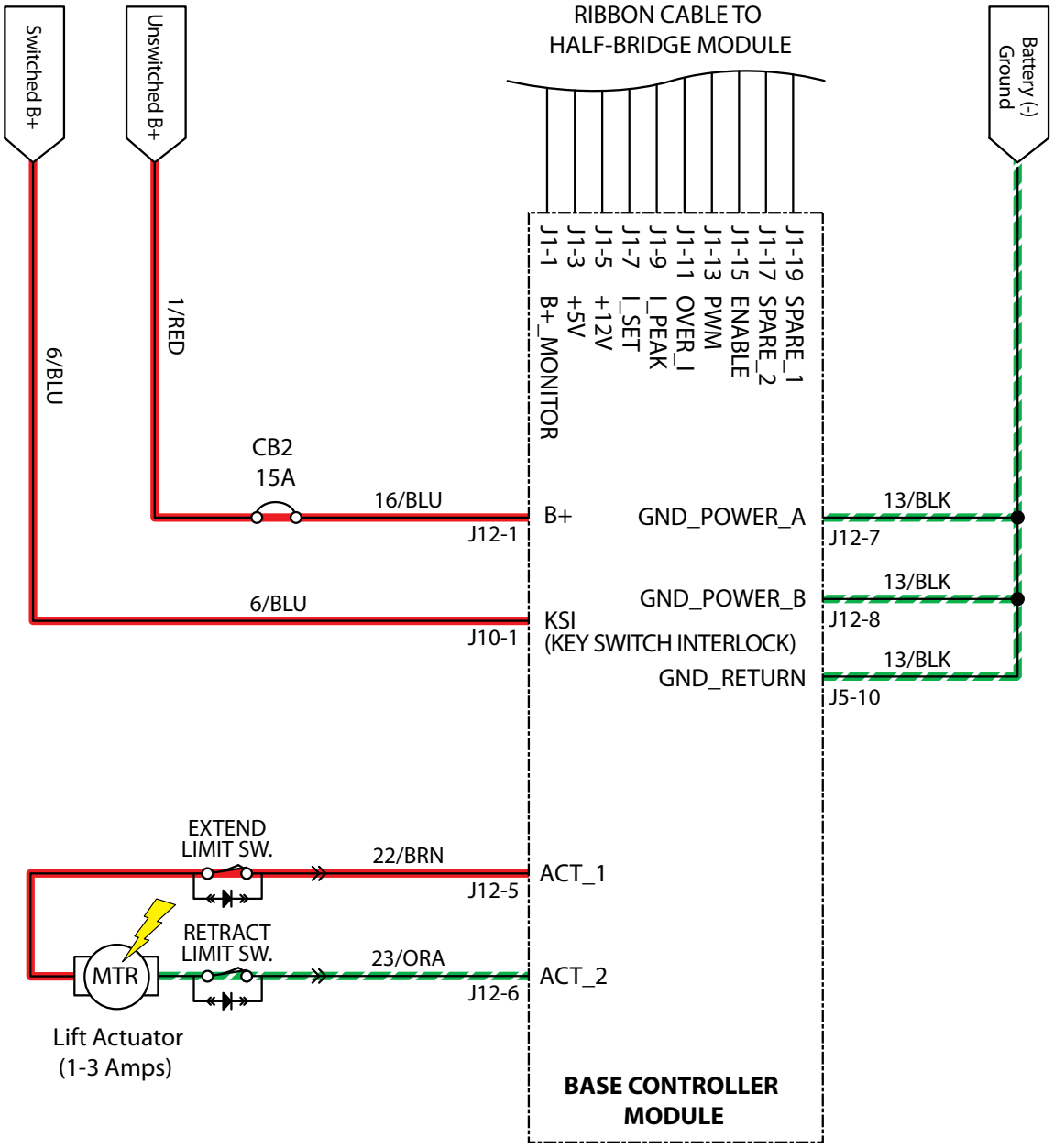
	Enabled	Disabled
Propel (Optional on B/SG5)	• Burnish head down • Burnish bail activated	• Battery Charger ON Interlock • Neutral - Ready State • Low Battery Voltage (< 30.0 vDC) • Load Current Fault • Access Cover Open

Machine Failed to Propel

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Enable propel • Is there a blinking BDI (Battery Discharge Indicator) fault present?		See "BDI Faults" in the Troubleshooting section of this manual	Go to Step #2
2	• See *SOFTWARE CONFIGURATION TOOL* in the *SERVICE* section of this manual and confirm the software is properly configured to enable the propel feature • Is the software configured properly?		Go to Step #3	Reprogram software
3	• Key Off • Place machine on blocks so drive wheels are lifted off the floor • Enable forward propel • Test voltage applied to the propel subsystem as shown on the electrical schematic • Are the electrical circuits operating as shown on the electrical schematic?		Go Back to Step #1	Identify Voltage Drop Location and Repair or Replace Necessary Components

Terms:
BDI = Battery Discharge Indicator

Burnish Head Lift Actuator (Optional)



Battery Positive +

Battery Negative -

PMC011

Operational Matrix:

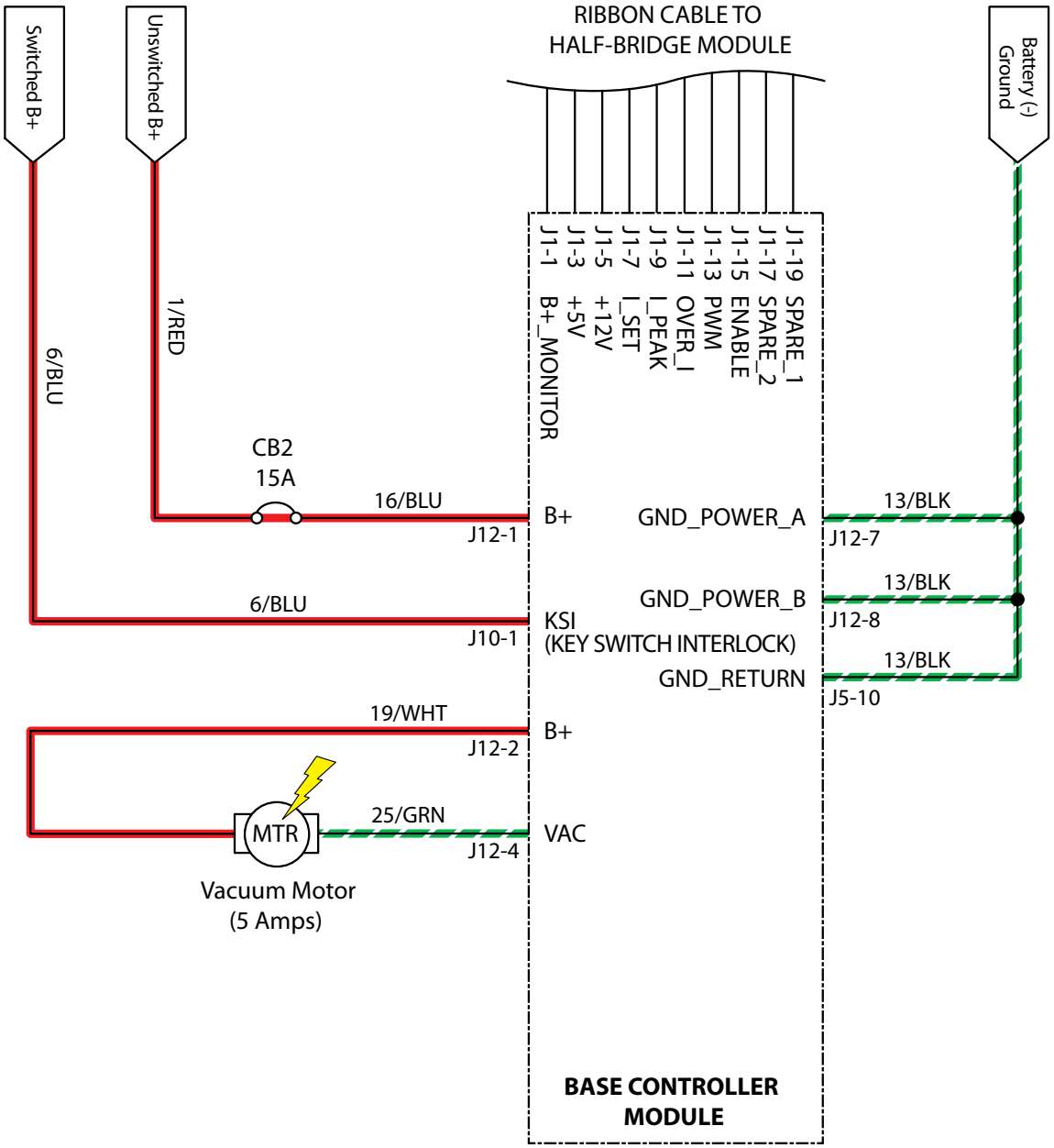
	Enabled	Disabled
Lift Actuator (Option)	• Burnish head down • Burnish bail activated	• Burnish Head Up • Burnish Bail Release • Low Battery Voltage(< 32.5 V) • Load Current Fault • Battery Charger ON Interlock • Access Cover Open • High Motor Temp

Burnish Head Failed to Raise/Lower

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Enable burnish motor • Is there a blinking BDI (Battery Discharge Indicator) fault present?		See "BDI Faults" in the Troubleshooting section of this manual	Go to Step #2
2	• See *SOFTWARE CONFIGURATION TOOL* in the *SERVICE* section of this manual and confirm the software is properly configured to enable the automated down pressure feature • Is the software configured properly?		Go to Step #3	Reprogram software
3	• Key Off • Enable burnish motor • Test voltage applied to the actuator subsystem as shown on the electrical schematic • Are the electrical circuits operating as shown on the electrical schematic?		Go Back to Step #1	Identify Voltage Drop Location and Repair or Replace Necessary Components

Terms:
BDI = Battery Discharge Indicator

Vacuum Fan ON (Optional)



Battery Positive +

Battery Negative -

Operational Matrix:

	Enabled	Disabled
Vacuum Fan (Optional)	• Burnish head down • Burnish bail activated	• Burnish Head Up • Burnish Bail Release • Low Battery Voltage(< 32.5 V) • Load Current Fault • Battery Charger ON Interlock • Access Cover Open • High Motor Temp

PMC011

Vacuum Fan Failed to Turn ON (Optional)

STEP	ACTION	VALUE(S)	YES	NO
1	• Key On • Enable vacuum fan • Is there a blinking BDI (Battery Discharge Indicator) fault present?		See "BDI Faults" in the Troubleshooting section of this manual	Go to Step #2
2	• See *SOFTWARE CONFIGURATION TOOL* in the *SERVICE* section of this manual and confirm the software is properly configured to enable the vacuum fan feature • Is the software configured properly?		Go to Step #3	Reprogram software
3	• Key Off • Enable vacuum fan • Test voltage applied to the vacuum fan subsystem as shown on the electrical schematic • Are the electrical circuits operating as shown on the electrical schematic?		Go Back to Step #1	Identify Voltage Drop Location and Repair or Replace Necessary Components

Terms:
BDI = Battery Discharge Indicator

SECTION 5

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SOFTWARE CONFIGURATION TOOL

Machine software must be reconfigured if the i-Drive or interface modules are replaced in the field or optional features are installed in the field. The tool consists of proprietary software installed on a notebook computer. A USB cable connects from the notebook to an external port on the control console. The software configuration tool configures up to five control modules depending on options installed. The interface module stores configuration data and communicates via RS232 communication with the i-Drive and through a CAN-Bus to all other modules.

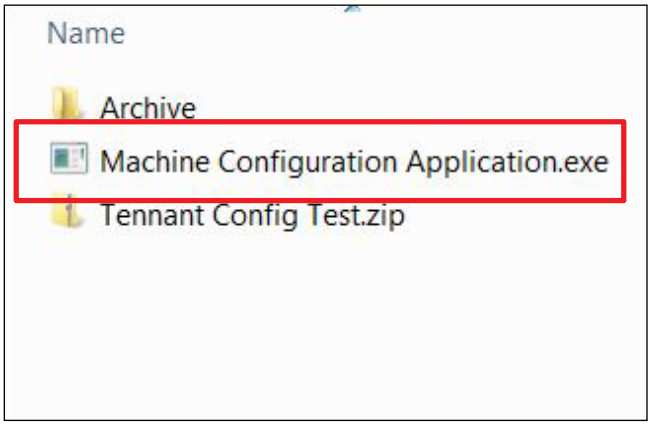
- ***Interface Module:*** *Controls touch panel and stores configuration settings for all other modules. The interface module is located in the operator's console.*
- ***Base Module:*** *Controls vacuum fan (optional), head lift actuator (optional) and hourmeter. The base module is located near the burnish mo tor beneath the plastic cover.*
- ***Half-Bridge Module:*** *Controls burnish motor. The half-bridge module is located near the burnish motor beneath the plastic cover.*
- ***i-Drive Module:*** *Controls propel (optional). The i-Drive module is located near the burnish motor.*
- ***Onboard Battery Charger Module*** *(optional). The onboard battery charger is located at the rear of the unit, beneath the plastic cover.*

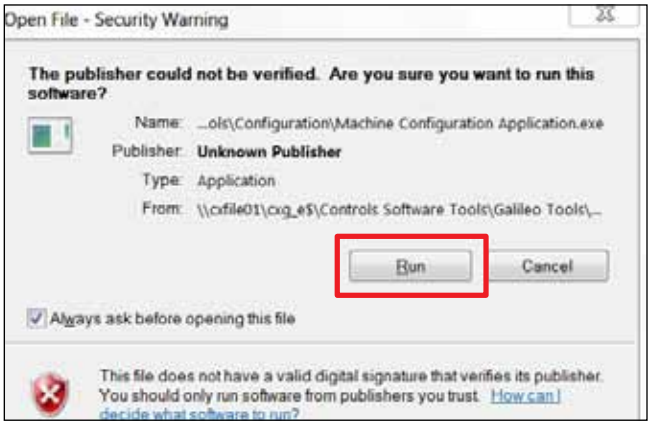
CONNECTING TO THE INTERFACE MODULE

SYSTEM REQUIREMENTS: Windows® 7 OS, Microsoft .NET 4.0 *or later, USB to Mini-USB cable.*

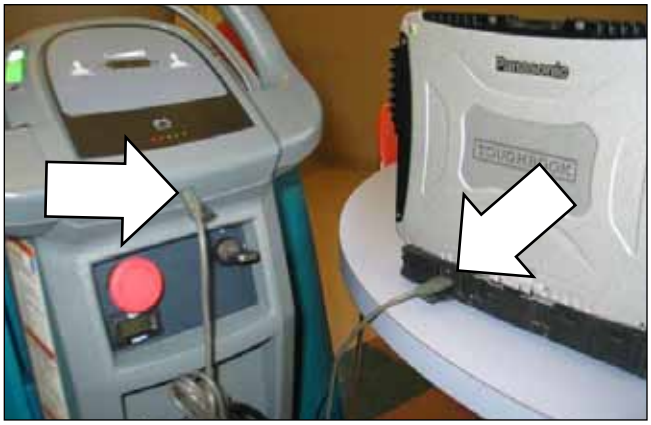
1. Install a flash drive containing the application software into a USB port on a notebook computer.

2. Launch the software by double clicking the flash drive file "Machine Configuration Application.exe" and then click "Run."





3. Connect a USB cable from a notebook computer to the machine and turn the key switch On.



MACHINE CONFIGURATION SOFTWARE

NOTE: The optional onboard battery charger has a rotary selector switch beneath the front label. The switch must be in the "0" position to enable battery charger CAN-Bus programming via the Machine Configuration Tool. See "BDI FAULTS" for more information on battery charger faults.

1. Select the desired configuration for the burnisher model and then click on *Program iDrive* or *Program Machine*. ***Program iDrive should only be clicked if the iDrive module has been replaced. Program Machine should only be clicked if the interface module has been replaced or if aftermarket options have changed (e.g. batteries changed from lead-acid to sealed).***

NOTE: The user interface for the application software is shown below. Changing fields will do nothing until the "Program iDrive" or "Program Machine" buttons are clicked.

FEATURE	DESCRIPTION
Model	Changes model-specific features and software listed below:
Drive Type	Enables self-propel or pad-assist drive
Dust Control	Enables passive dust control (no vacuum fan) or active dust control (vacuum fan).
Down Pressure	Enables automated down pressure (lift actuaor) or mechanical (no actuator)
Charger Location	Enables either on-board or off-board battery charger programming
Head Size	*B7/SpeedGleam 7 Only* - 20" or 27"
Dust Bag Time	Sets the dust bag maintenance timer for passive dust control (no vacuum fan) or active dust control (vacuum fan). The time interval changes with regards to model and active/passive settings.
Battery Pack	Enables an onboard charging profile for wet, AGM, or no batteries as well as the BDI discharge curve.

NOTE: BDI (Battery Discharge Indicator) performance is affected by the battery pack selection. Be sure to match the selection with the type of batteries or perceived run time problems may occur (i.e. BDI disables machine prematurely).

2. Cycle the key switch to save the changes.

BATTERY CHARGER SETTINGS

The battery charger is set to charge the battery type supplied with your machine. If you choose to change to a different battery type or capacity, the battery charger and the machine's battery discharge indicator (BDI) must be reprogrammed to prevent battery damage.

To have machine reprogrammed, contact service or order the Software Installation Kit (p/n 9012788).

For models equipped with the on- board charger, as an alternative to having the machine reprogrammed, the on- board battery charger settings can be manually changed. Once the on- board charger settings are properly changed as described in the following instructions, the machine's software will automatically reprogram the BDI to the new battery type.

For machine's equipped with an off- board battery changer, the Reprogramming Kit is required to change the BDI setting. After the BDI is reprogrammed, refer to the off- board charger's owner manual to change charging profile settings.

To Change the On- Board Battery Charger Settings:

1. Unwrap the battery charger power cord from the cord hooks.
2. Using a T25 star screwdriver, remove the two screws located at the bottom of the control console to access battery charger (Figure 32).

FIG. 32

3. Carefully peel up the charger display label to access the dial settings (Figure 33).

4. Using a small standard screwdriver, turn the dial to the appropriate battery type according to the following chart (Figure 34).

NOTE: *The "0" position is only used when machine is programmed at the factory or when the Software Installation kit is used. Once the setting is changed from "0", it should not be changed back to "0" unless machine is reprogrammed with the software installation kit otherwise battery damage may result.*

FIG. 34

Dial Position	Battery Description Settings
0	Factory and Software Kit Setting
1	Wet, Trojan 180- 250 AH
2	Wet, Trojan 260- 360 AH
3	Wet, Enersys 200- 350 AH
4	AGM, Discover 200- 300 AH
5	AGM, Fullriver 200- 350 AH
6	Gel, Sonnenschein 150- 250 AH

4. Re- apply the display label.
5. Replace the control console.
6. To set the BDI to the new battery type, plug the on- board battery charger cord into an electrical outlet.

PAD PRESSURE SETTING (Models equipped with mechanical pad pressure adjustment)

For models equipped with mechanical pad pressure adjustment, the pad pressure is factory set at the optimal setting. Many variables come in to play to achieving optimal burnishing performance; floor type, floor finish, floor condition and pad type.

To confirm that the factory setting best meets your burnishing application, it's recommended to perform the following procedure. Once the pad pressure is properly set for your burnishing application, this will provide consistent performance for your routine burnishing schedule. This is referred to as the *"Set and Forget"* method.

1. To activate the pad pressure mode, locate the hidden button (small indent) on the left side of the control panel (Figure 7).
2. Press and hold the hidden button and turn the key on. Hold the button until a single green light appears at the battery discharge indicator (Figure 7). When the button is released, the green light will turn off and the service indicator symbol will turn on.

   The machine is now ready to verify the current pad pressure.

FIG. 7

3. Pull the start bail and begin burnishing for a minimum of 10 seconds (Figure 8). The LED's will ripple then a single light will appear confirming the current pad pressure setting. See the following chart for down pressure settings.

FIG. 8

LED Code ○=On	Down Pressure Setting
○ ● ● ● ●	Flashing - Too Low
○ ● ● ● ●	Low
● ○ ● ● ●	Medium Low
● ● ○ ● ●	Medium
● ● ● ○ ●	Medium High
● ● ● ● ○	High
● ● ● ● ○	Flashing - Too High

The medium down pressure setting is recommended. Determine the burnishing performance at this setting and adjust as necessary.

To adjust pressure setting proceed to the next step.

4. Raise the burnishing head and remove key. Locate the pad pressure adjustment cotter pin (Figure 9).

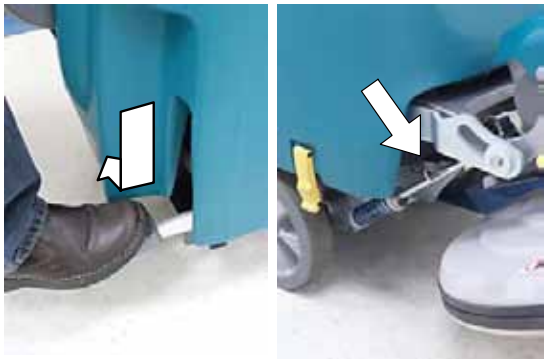


FIG. 9

5. To increase down pressure, move the cotter pin to the next hole towards the motor. To decrease the down pressure move the cotter pin in opposite direction (Figure 10).

FIG. 10

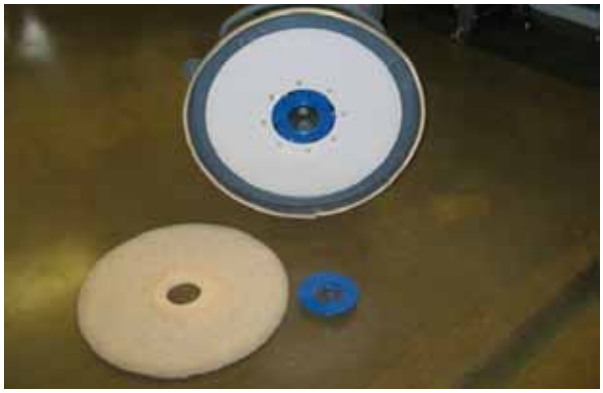
6. Repeat steps 1- 3 and adjust the pin until desired down pressure is achieved.

REMOVING BURNISH MOTOR

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and disconnect batteries.

1. Key Off and disconnect batteries.

2. Remove burnish pad.



3. Remove burnish pad driver mounting hardware (1).

4. Remove burnish pad driver from head assembly.

5. Tilt burnish head down, release the plastic fasteners and remove motor cover.

6. Disconnect electrical cables from burnish motor.

7. Tilt head up and remove (4) motor mounting bolts.

INSTALLING BURNISH MOTOR

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and disconnect batteries.

1. Installation is the reverse of removal. Be sure to apply anti-sieze to the motor shaft before reassembly.

CARBON BRUSHES

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and disconnect batteries.

1. Key Off and disconnect batteries.

2. Remove upper motor cover mounting hardware and and set cover aside.

3. Remove brush holder ring mounting hardware (4) and brush mounting ring (1).

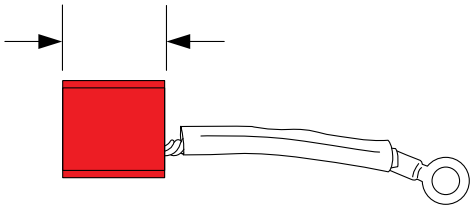
NOTE: Do not remove (4) brush holder phillips screws. The mounting nuts on the bottom side will fall into motor.

4. Remove brush tensioner springs (8).

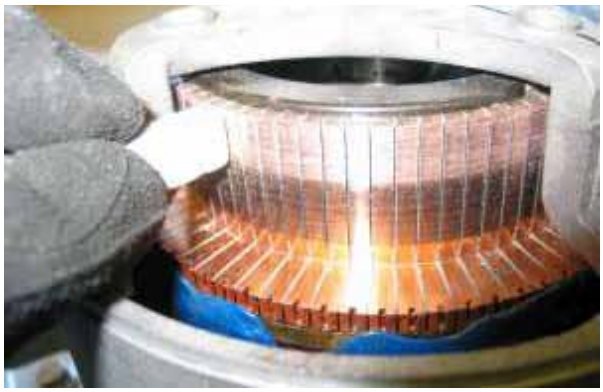
5. Inspect and replace carbon brushes if they are less than 10mm (0.375 in).

Carbon Brush Wear Limit:

10mm (0.375 in)



6. Clean the commutator using a stone and then use compressed air to clean any dust from inside the motor.



REMOVING VACUUM FAN

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and disconnect batteries.

1. Key Off and disconnect batteries.

2. Open access cover and remove batteries.

3. Carefully tip the machine onto a protective blanket to avoid damage to the side of the burnisher.

5. Remove vacuum fan mounting hardware (4).

6. Disconnect vacuum fan from wire harness.

7. Remove vacuum fan assembly.

INSTALLING VACUUM MOTOR

FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, remove key and disconnect batteries.

1. Installation is the reverse of removal.

CONTROL MODULES

REMOVING HALF-BRIDGE/BASE CONTROL MODULES

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Key Off and batteries disconnected.

2. Attach a static wrist strap to the battery (-) terminal to prevent ESD damage to the modules.

3. Remove electrical access panel mounting hardware (3) and lower access panel.

4. Remove control module cover.

5. Disconnect all electrical connections.

6. Remove modules from machine.

INSTALLING HALF-BRIDGE/BASE CONTROL MODULE

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Installation is reverse of removal.

NOTE: Always use two wrenches when securing the power supply terminals or damage to the circuit board will occur. Also, make sure the power supply terminals are secured on the new board before installation. The torque specification 52 in-lbs (6 Nm).

REMOVING I-DRIVE MODULE

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Key Off and batteries disconnected.

2. Attach a static wrist strap to the battery (-) terminal to prevent ESD damage to the logic board.

3. Disconnect electrical connections and remove i-Drive mounting screws (2).

INSTALLING I-DRIVE MODULE

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Installation is reverse of removal.

2. The new i-Drive module must be programmed to operate in the burnisher. See SOFTWARE CONFIGURATION TOOL in the SERVICE section of this manual.

REMOVING ONBOARD BATTERY CHARGER

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Key Off and batteries disconnected.

2. Remove T-25 torx mounting screws (2).

3. Carefully lower access cover.

4. Disconnect charger electrical connections.

5. Remove battery charger mounting hardware (4).

6. Remove battery charger.

INSTALLING ONBOARD BATTERY CHARGER

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Installation is reverse of removal.

REMOVING INTERFACE MODULE

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Key Off and batteries disconnected.

2. Attach a static wrist strap to the battery (-) terminal to prevent ESD damage to the logic board.

3. Remove T-25 torx mounting screws (2).

4. Carefully lower access cover.

5. Remove T-25 torx mounting screws (2).

6. Lift up on the bottom of the panel and slide downward to remove.

7. Disconnect electrical connections and remove interface module.

INSTALLING INTERFACE MODULE

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Installation is reverse of removal.

2. The new interface module must be programmed to operate in the burnisher. See SOFTWARE CONFIGURATION TOOL in the SERVICE section of this manual.

REMOVING BAIL SWITCH OR POTENTIOMETER

FOR SAFETY: When servicing machine, disconnect battery connections before working on machine.

1. Key Off and batteries disconnected.

2. Remove T-25 torx mounting screws (2).

3. Carefully separate the touch panel from the console and disconnect all electrical connections. Set instrument panel aside.

4. Remove T-25 torx mounting screws (3).

5. Remove cover and set aside.

6. Remove rear access cover mounting screws (2).

7. Carefully lower access cover.

8. Remove operator console mounting bolts (2).

9. Lift up and forward to remove the operator console and place console on a work bench.

10. Remove bail screws (2) and set bail aside.

11. Remove screws (4) from front of operator's console.

12. Remove screws (9) from rear of operator's console and separate console assembly.

13. Release spring, rotate mechanism towards bottom of operator console, and slide assembly to the side to remove.

14. Remove bail switch or throttle poteniometer depending on model.

INSTALLING NEW BAIL SWITCH OR POTENTIOMETER

1. Installation is reverse of removal.