OPERATOR'S SAFETY AND SERVICE MANUAL

BULLVIBE®

This manual covers the following serial numbers and higher for each model listed:
BULLVIBE®.....3510001



BULLVIBE®

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SAFETY INFORMATION

Introduction

This Safety Alert Symbol is used to call attention to items or operations which may be dangerous to those operating or working with this equipment. The symbol can be found throughout this manual and on the unit. Please read these warnings and cautions, along with all decals, carefully before attempting to operate the unit. Make sure every individual who operates or works with this equipment is familiar with all safety precautions.

WARNING

GENERAL WARNING. Indicates information important to the proper operation of the equipment. Failure to observe may result in damage to the equipment and/or severe bodily injury or death.

CAUTION

GENERAL CAUTION. Indicates information important to the proper operation of the equipment. Failure to observe may result in damage to the equipment.

Safety Precautions



LETHAL EXHAUST GAS: An internal combustion engine discharges carbon monoxide, a poisonous, odorless, invisible gas. Death or serious illness may result if inhaled. Operate only in a properly ventilated area. NEVER OPERATE IN A CONFINED AREA!



DANGEROUS FUELS: Use extreme caution when storing, handling and using fuels as they are highly volatile and explosive in vapor state. Do not add fuel while engine is running. Stop and cool the engine before adding fuel. DO NOT SMOKE!



SAFETY GUARDS: It is the owner's responsibility to ensure that all guards and shields are in place and in working order.



IGNITION SYSTEMS: Breakerless, magneto, and battery ignition systems can cause severe electrical shocks. Avoid contacting these units or their wiring.



SAFE DRESS: Do not wear loose clothing, rings, wristwatches, etc. near machinery.



NOISE PROTECTION: Wear OSHA specified hearing protection devices.
EYE PROTECTION: Wear OSHA specified eye shields, safety glasses, and sweat bands.



FOOT PROTECTION: Wear OSHA specified steel-tipped safety shoes.
HEAD PROTECTION: Wear OSHA specified safety helmets.



OPERATOR: Keep children and bystanders off and away from the equipment.



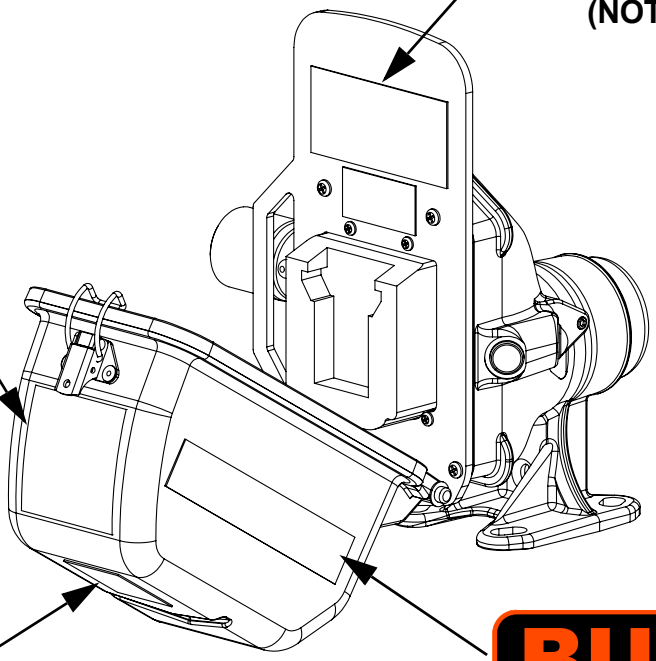
DUST PROTECTION: Machining, crushing or handling of stone, concrete, masonry, metal and other materials may generate dust, mist and fumes containing chemicals such as silica known to cause serious or fatal injury or illness such as respiratory disease, silicosis, cancer, birth defects, or other reproductive harm.

- Control dust, mist and fumes at the source where possible. Water should be used to control dust whenever feasible.
- Use good work practices and follow the recommendations of the manufacture, OSHA/NIOSH and other occupational trade associations.
- When hazards cannot be eliminated the operator and any bystanders should always wear a OSHA specified respirator for materials being handled.

REFERENCES: For details on safety rules and regulations in the United States, contact your local Occupational Safety and Health Administration (OSHA) office. Equipment operated in other countries must be operated and serviced in accordance and compliance with any and all safety requirements of that country. The publication of these safety precautions is done for your information. MBW does not by the publication of these precautions, imply or in any way represent that these are the sum of all dangers present near MBW equipment. If you are operating MBW equipment, it is your responsibility to insure that such operation is in full accordance with all applicable safety requirements and codes. All requirements of the United States Federal Occupational Safety and Health Administration Act must be met when operated in areas that are under the jurisdiction of that United States Department.

Safety Decals

Carefully read and follow all safety decals. Keep them in good condition. If decals become damaged, replace as required. If repainting the unit, replace all decals. Decals are available from authorized MBW distributors. Order the decal set listed on the following page.



WARNING

Operating, servicing and maintaining this equipment can expose you to chemicals, including engine exhaust, phthalates and lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm. Avoid breathing engine exhaust. Do not operate equipment in confined areas. For more information go to **www.P65Warnings.ca.gov**

21820

21820
(NOT IN DECAL SET)

MBW
MBW.COM
POWERED BY M18 REDLITHIUM

22726

MBW.COM
BULLVIBE® 22929

22929

BULLVIBE®

22781

PATENT PENDING
01504

01504
(NOT IN DECAL SET)

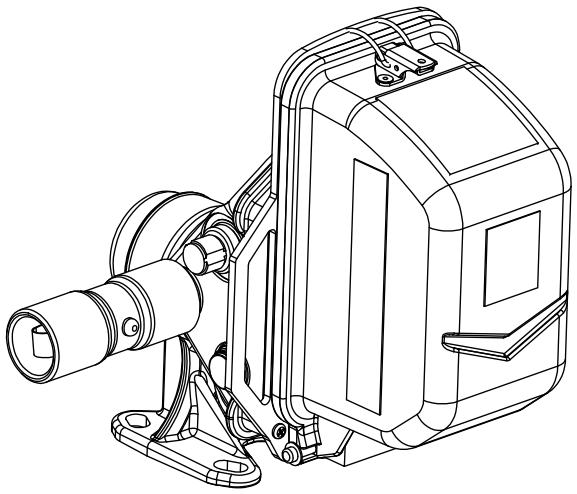
MBW

22486
(NOT IN DECAL SET)

22657

Safety Decals (Decal Set #22933)

SPECIFICATIONS



	20MLP
Length	11 in (27.94 cm)
Width	9.625 in (24.44 cm)
Height	10.75 in (27.30 cm)
Operating Weight	7.2 lbs (3.26 kg) battery not included
Estimated Run Time	1.5 amp = 2 Hours
	2 amp = 4 Hours
	5 amp = 15 Hours

Specifications subject to change without notice.

OPERATION

Introduction

MBW equipment is intended for use in very severe applications. They are available in different sizes and a selection of engines and motors.

This parts manual contains only standard parts. Variations of these parts as well as other special parts are not included. Contact your local MBW distributor for assistance in identifying parts not included in this manual.

Before Starting & Operating

- REMEMBER! It is the owner's responsibility to communicate information on the safe use and proper operation of this unit to the operators.
- Review ALL of the Safety Precautions listed on page 1 of this manual.
- Familiarize yourself with the operation of the machine and confirm that all controls function properly.
- Know how to STOP the machine in case of an emergency.
- Make sure hands, feet, and clothing are at a safe distance from any moving parts.

Attaching 1 3/4 Handle

1. Insert pole pin into handle shaft.
2. Push the handle on the BullVibe® handle shaft till the pole pin snaps into the handle holes.

Attaching 1 3/8 Handle

Refer to Figure 1.

1. Remove pole pin from handle shaft if needed.
2. Insert pole pin into handle as shown.
3. Insert handle into handle shaft until the handle pole pin snaps into the handle shaft.

Attaching Float

1. Remove bolts from existing bull float and knuckle.
2. Clean mating surface of float to ensure BullVibe® sits flat.
3. Place bolts into the BullVibe® bolt pattern and tighten to the require bull float bolt torque specs.

Starting BullVibe®

1. Insert battery and latch cover. Throttle knob must be off when battery is inserted.

For best performance use only Milwaukee Tool's M18™ REDLITHIUM™ batteries.

2. Press button under throttle knob to turn BullVibe® on.
3. Turn throttle knob clockwise to desired vibration setting.
4. Turn inner lock knob clockwise to lock throttle knob in position.

Stopping BullVibe®

1. Turn inner lock knob counter-clockwise to unlock the throttle knob.
2. Turn throttle knob counter-clockwise to the off position.
3. Press button to turn BullVibe® off.

⚠ WARNING ⚠

Always stop the motor before:

Replacing battery.

Leaving the equipment unattended for any amount of time.

Before making any repairs or adjustments to the machine.

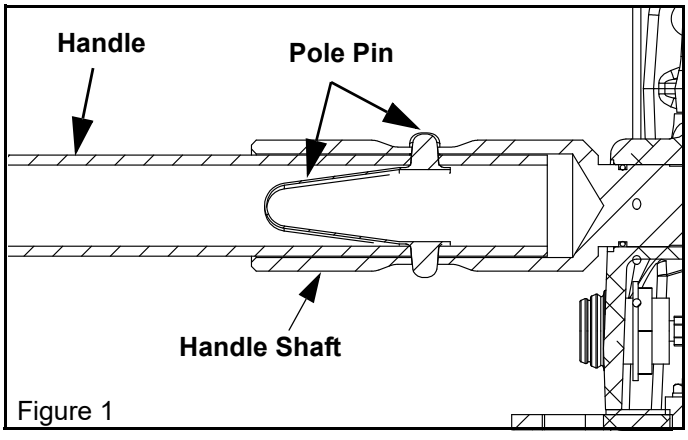


Figure 1

MAINTENANCE

⚠ WARNING ⚠

Always exercise the stopping procedure and remove battery before servicing or lubricating the unit.

After servicing the unit, replace and fasten all guards, shields, and covers to their original positions before resuming operation.

⚠ CAUTION ⚠

Always verify fluid levels and check for leaks after changing fluids.

Do not drain oil onto ground, into open streams, or down sewage drains.

Maintenance Schedule

SYSTEM	MAINTENANCE	EACH USE	EVERY 20 HOURS	EVERY 100 HOURS	YEARLY
Hardware	Check and tighten as needed[1]		X		X

1. Check all hardware after the first 5 hours of use, then follow the maintenance schedule.

Motor Maintenance

The electric motor is a sealed unit and no periodic maintenance is required.

Battery Maintenance

For battery care, maintenance, and charging information refer to Milwaukee Tool Technical documentation included with the battery.

Cleaning

Clean any concrete from BullVibe® immediately after each use. DO NOT allow concrete to harden on the BullVibe®.

1. Remove battery.
2. Use a low pressure water hose to remove any excess concrete. Avoid spraying water into the battery compartment.
3. Remove any buildup with a hard plastic bristle brush.

Assembly and disassembly should be performed by a service technician who has been factory trained on MBW equipment. The unit should be clean and free of debris. Washing before disassembly is recommended.

- Prior to assembly, wash all parts in a suitable cleaner or solvent.
- Check moving parts for wear and failure. Refer to the Replacement Parts section in this manual for tolerance and replacement cycles.
- All shafts and housings should be oiled prior to pressing bearings. Also, ensure that the bearings are pressed square and are seated properly.
- All bearings should be replaced when rebuilding any exciter or gearbox.
- All gaskets and seals should be replaced after any disassembly.

Torque Chart

SIZE	GRADE 2	GRADE 5	GRADE 8
1/4-20	49 in•lbs	76 in•lbs	9 ft•lbs
1/4-28	56 in•lbs	87 in•lbs	10 ft•lbs
5/16-18	8 ft•lbs	13 ft•lbs	18 ft•lbs
5/16-24	9 ft•lbs	14 ft•lbs	20 ft•lbs
3/8-16	15 ft•lbs	23 ft•lbs	33 ft•lbs
3/8-24	17 ft•lbs	26 ft•lbs	37 ft•lbs
7/16-14	24 ft•lbs	37 ft•lbs	52 ft•lbs
7/16-20	27 ft•lbs	41 ft•lbs	58 ft•lbs
1/2-13	37 ft•lbs	57 ft•lbs	80 ft•lbs
1/2-20	41 ft•lbs	64 ft•lbs	90 ft•lbs
9/16-12	53 ft•lbs	82 ft•lbs	115 ft•lbs
5/8-11	73 ft•lbs	112 ft•lbs	159 ft•lbs
5/8-18	83 ft•lbs	112 ft•lbs	180 ft•lbs
3/4-16	144 ft•lbs	200 ft•lbs	315 ft•lbs
1-8	188 ft•lbs	483 ft•lbs	682 ft•lbs
1-14	210 ft•lbs	541 ft•lbs	764 ft•lbs
1-1/2-6	652 ft•lbs	1462 ft•lbs	2371 ft•lbs
M 6	3 ft•lbs	4 ft•lbs	7 ft•lbs
M 8	6 ft•lbs	10 ft•lbs	18 ft•lbs
M 10	10 ft•lbs	20 ft•lbs	30 ft•lbs

CONVERSIONS

in•lbs x 0.083 = ft•lbs

ft•lbs x 12 = in•lbs

ft•lbs x 0.1383 = kg•m

ft•lbs x 1.3558 = N•m

BullVibe® Disassembly

Refer to Main Assembly, page 10.

1. Open battery cover and remove battery.
2. Remove (4) #40 screws from #33 battery plate and pull the assembly away to gain access to the wiring compartment.
3. Identify and detach the motor wiring (terminal 1-black and terminal 2-red) by inserting a small screwdriver in terminal strip hole above wire to be disconnected and levering screwdriver to release wire clamp and gently pull on the wire.
4. Remove #26 bearing cap to expose motor/exciter assembly.
5. Remove (2) #35 screws and pull out the motor/exciter assembly. Use caution when pulling the 2 motor wires through the #22 motor housing wire hole.
6. Loosen #34 set screw from #12 exciter and remove exciter from the motor shaft.
7. Remove (2) #35 screws to separate #13 motor mounting plate from #11 motor.
8. Remove #35 screw and #18 bearing access cover to gain access to the #17 bearings. To remove the bearings use a 1/8” solid copper wire and push/feed wire around bearing channel. Push slow to recover 42 bearings.
9. Remove #22 motor housing from #23 battery mount to gain access to the #14 handle shaft.
10. Remove #16 retaining pin from #23 battery mount, thread your #8-32 removal device into the end of the pin and pull from the battery mount.
11. Remove the #14 handle shaft from #23 battery mount.

BullVibe® Assembly

Refer to Main Assembly, page 10.

1. All parts should be cleaned before assembly.
2. Replace #8 o-ring.
3. Grease #14 handle mount shaft and helix and insert the shaft to #23 battery mount.
4. Insert #16 retaining pin in #23 battery mount hole and adjust #14 handle mount shaft so the pin seats in the front groove of the shaft.
5. Replace #9 o-ring and apply a think layer of grease to the o-ring.

6. Place #22 motor housing in the #23 battery mount. Rotate #14 handle shaft to catch #28 brass screw head in the shafts helix groove.
7. While #22 motor housing and #23 battery mount are together, add the (42) #17 ball bearings to the bearing opening on #23 battery mount. Rotate #14 handle mount shaft while installing the ball bearings.
8. Add #18 bearing access cover and install #35 screw to cover the bearing access on #23 battery mount.
9. Add #13 motor mounting plate to #11 motor with (2) #35 screws. Orient the slot with the wires.
10. Place #12 exciter on the motor shaft and add #34 set screw to secure the exciter in place.
11. Add the exciter/motor assembly to #22 motor housing and feed the motor wire through the motor housing and battery mount wire holes.
12. Screw the #13 motor mounting plate to the #22 motor housing with (2) #35 screws.
13. Install #26 bearing cap to seal the exciter/motor assembly.
14. Identify and attach the motor wiring to the terminal strip. Terminal 1-black, terminal 2-red.
15. When reinserting wires, be very cautious that all of the conductors remain contained in the terminal.
16. Add battery assembly to #23 battery mount. Screw #33 battery plate in place with (4) #40 screws.
17. Remove #41 set screw and install a 1/4-28 grease zerk (not supplied). Attach grease gun to zerk and pump one time.
18. Remove grease zerk and install #41 set screw.
19. Install battery and close battery cover.

Parts Replacement Cycles and Tolerances

Bearings	Replace anytime a bearing is rough, binding, discolored or removed from housing or shaft.
Hardware	Replace any worn or damaged hardware as needed. Replacement hardware should be grade 5 and zinc plated unless otherwise specified.
Safety Decals	Replace if they become damaged or illegible.
Seals & Gaskets	Replace if a leak is detected and at every overhaul or tear down.

TROUBLESHOOTING

If your electric BullVibe® fails to operate as expected, the first test will always be to confirm a genuine Milwaukee battery is fully installed and charged. Removing and reinstalling the battery will re-initialize the throttle control board, clearing any faults that were detected during operation.

Battery Interface

The purpose of the battery interface is to supply 18 volts to the throttle control board. Typically the battery interface is known to be in good condition if the LED lights come on when a battery is inserted. To further trouble shoot the battery interface, follow the steps below.

Refer to Wiring Diagram, page 12.

1. Open the battery cover and remove battery.
2. Remove (4) #40 screws from #33 battery plate and pull the assembly away to gain access the wiring compartment.
3. Identify wires at terminals 3 and 4. These are the wires which supply power to the board.
4. Insert a known-good battery.
5. Measured voltage between terminals 3 and 4 should be 18 volts, within 3 volts.
6. If voltage levels are not as described, replace battery interface.

Electronic Throttle Knob

The purpose of the electronic throttle knob is to provide a signal to the throttle control board. The throttle knob is the potentiometer that will supply the signal. To verify function of the throttle knob, complete the following steps.

1. Open battery cover and remove battery from machine.
2. Remove (4) #40 screws from #33 battery plate and pull the assembly away to gain access to the wiring compartment.
3. Identify and remove 3 white wires from terminals 6, 7 and 8, respectively. To remove wires, press small button above terminal with small screwdriver while gently pulling on wires.
4. The measured resistance between wire terminals 6 & 8 should be 5k ohms, within 500 ohms.
5. The measured resistance between wire terminal 6 & 7 should be under 20ohms and increase smoothly to over 4.5k ohms as the throttle is turned.
6. If resistance measured isn't as described, replace throttle knob.
7. When reinserting wires, be very cautious that all of the conductors remain contained in the terminal.

18v Motor

The motor utilized by the MBW BullVibe® is a permanent magnet, brushed dc motor. Motor is designed to last the life of the machine and survive wash down with a low pressure hose. To verify that the motor is preforming to specifications, follow the steps below.

1. Insert battery and turn throttle knob. Motor shaft should spin and vibrate the unit.
2. If the motor does not spin, verify power is being supplied to it appropriately by the following steps.
3. Open the battery cover and remove battery.
4. Remove (4) #40 screws from #33 battery plate and pull the assembly away to gain access the wiring compartment.
5. Probe wires in location 1 and 2. While applying throttle, voltage should increase from 0 to 18 volts.
6. If proper voltage as described above and motor does not spin, replace motor.

Throttle Control Circuit Board

The MBW BullVibe® uses an integrated circuit to control the power flow between the battery interface and the motor. This circuit board also controls the LED lights, and provides over-current protection for the motor. If over-current protection circuitry is tripped, the LED lights will blink several times before the board resets. To verify performance of the throttle control board, follow the steps below.

1. LED lights should illuminate for approximately 30 seconds after battery is installed, while the motor is running, and approximately 30 seconds after the motor stops running. A short dip in the brightness of lights during these periods might be observed and it is normal.
2. If over-current conditions persistently occur, confirm that the eccentric weight freely rotates, and remove any excessive concrete buildup.
3. If BullVibe® does not operate, and tests for the battery interface, throttle knob, and motor does not show faults, replace throttle circuit board.

REPLACEMENT PARTS

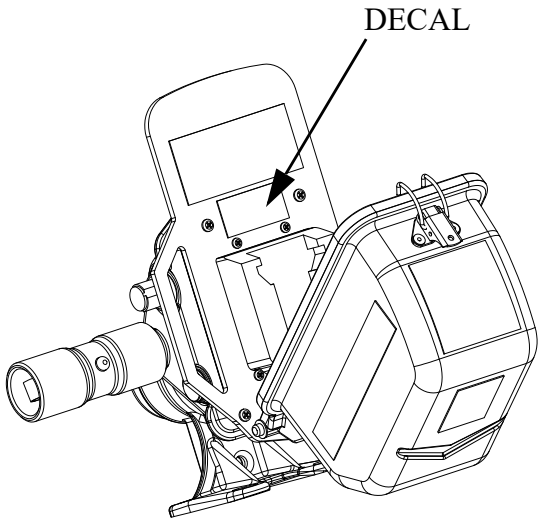
The warranty is stated in this book on page 14. Failure to return the Warranty Registration Card renders the warranty null and void.

MBW has established a network of reputable distributors/ dealers with trained mechanics and full facilities for maintenance and rebuilding, and to carry an adequate parts stock in all areas of the country. Their sales engineers are available for professional consultation. If you cannot locate an MBW distributor in your area, contact MBW or one of our Sales Branches listed below.

When ordering replacement parts, be sure to have the following information available:

- Model and Serial Number of machine when ordering MBW parts
- Part Number, Description, and Quantity
- Company Name, Address, Zip Code, and Purchase Order Number
- Preferred method of shipping

REMEMBER - You own the best! If repairs are needed, use only MBW parts purchased from authorized MBW distributors.



The unit's serial number can be found in the following locations:

- Decal inside battery compartment.

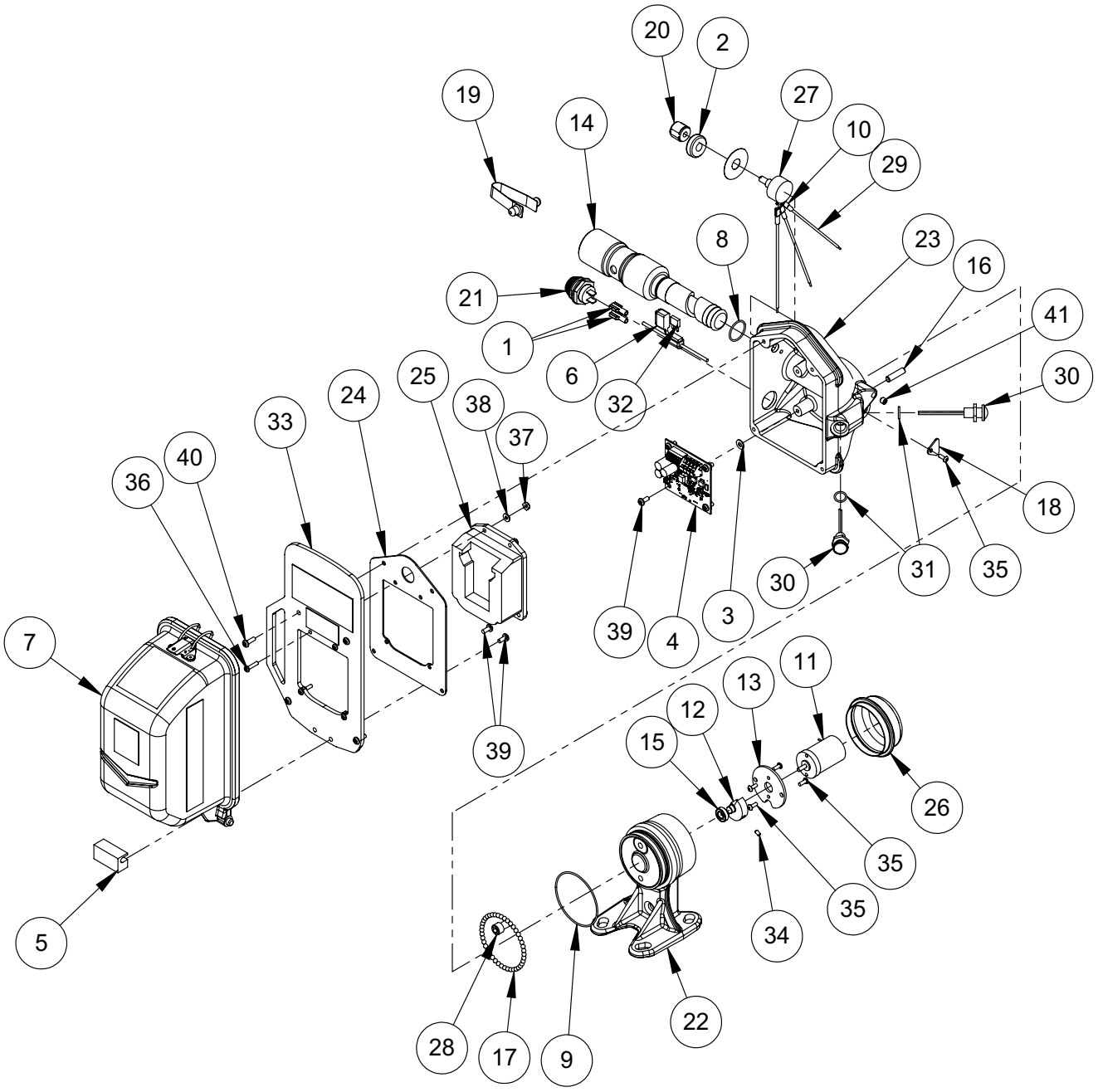
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Contact Information

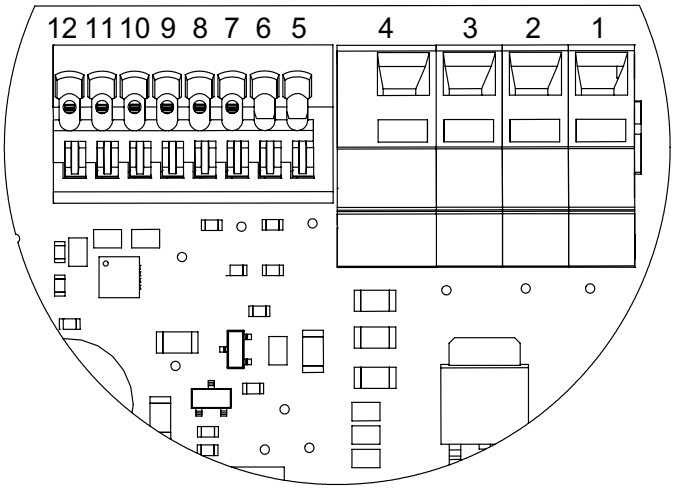
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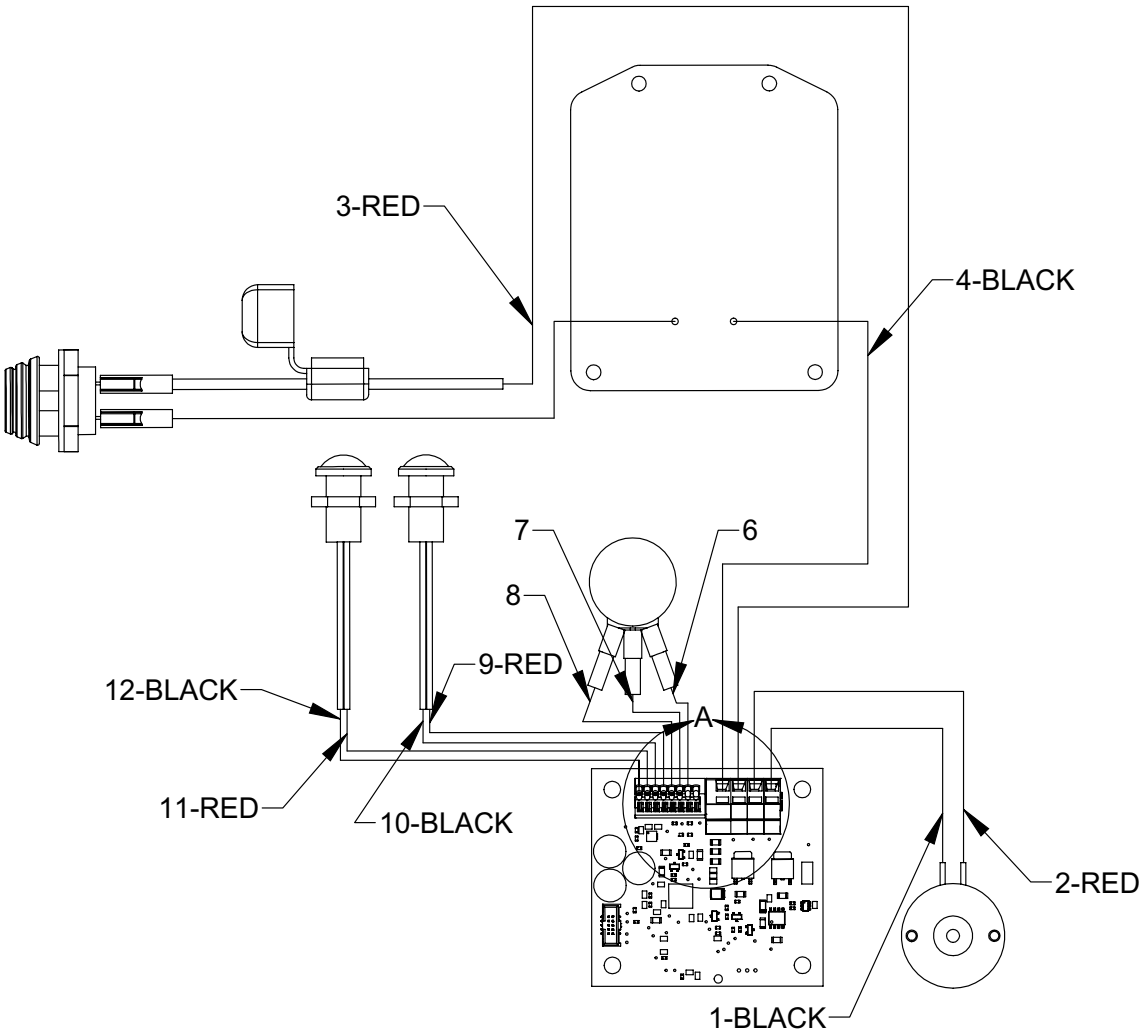


Main Assembly

ITEM	PART NO.	DESCRIPTION	QTY
1.	11444	TERMINAL FEMALE DISCONNECT	2
2.	11458	KNOB, LOCK	1
3.	23241	#8 SELF-RETAINING WASHER, BLACK	4
4.	22141	THROTTLE CONTROL BOARD	1
5.	22374	HINGE BLOCK, BATTERY COVER	1
6.	22465	FUSE HOLDER, INLINE	1
7.	22594	M18 COVER ASM	1
8.	22627	ORING, 1” OD X 1/16	1
9.	22628	ORING, 2-1/2” X 1/16	1
10.	22641	QUICK CONNECT, .110	3
11.	22642	MOTOR, 18V	1
12.	22644	EXCITER, VIB FLOAT	1
13.	22645	MOUNTING PLATE, MOTOR	1
14.	22647	HANDLE SHAFT	1
15.	22648	BEARING, 688	1
16.	22651	RETAINING PIN	1
17.	22652	BALL BEARING, 3/16 X 42	1
18.	22654	COVER, BEARING ACCESS	1
19.	22655	POLE PIN	1
20.	22656	KNOB, ALUMINUM	1
21.	22658	BUTTON	1
22.	22659	MOTOR HOUSING, MACHINED	1
23.	22662	BATTERY MOUNT, MACHINED	1
24.	22664	GASKET, BATTERY	1
25.	22665	SOCKET, 18V, TWO WIRE	1
26.	22667	BEARING CAP, 2.441	1
27.	22668	POTENTIOMETER, 5K	1
28.	22677	SCS, 5/16-18 x 1/2”, BRASS	1
29.	22678	WIRE, 22 GA X 5”	3
30.	22798	LED, 11MM	2
31.	22799	ORING, 7/16 ID x 1/16	2
32.	22818	FUSE, MINI, 4 AMP	1
33.	22936	PLATE, BATTERY, COATED	1
34.	F013202SSS	SSS, #6-32 x 1/4”	1
35.	F013203BCS	BCS, #6-32 x 3/8”	5
36.	F013205PMS	PMS, #6-32 x 5/8”	4
37.	F0132HN	NUT, HEX #6-32 ZP	4
38.	F01PW	WASHER, 5/32 x 3/8” x 18GA ZP	4
39.	F023203PMS	PMS, #8-32 x 3/8” ZP	6
40.	F023204PMS	PMS, #8-32 x 1/2”	4
41.	F042802SSS	SSS, 1/4-28 x 1/4”	1
42.			
43.			
44.			
45.			
46.			
47.			
48.			
49.			
50.			



DETAIL A
SCALE 2 : 1



Wiring Diagram

NOTES

WARRANTY

1.IN GENERAL - The warranties described in this document are provided by M-B-W, INC. and MBW EUROPE, LTD. ("MBW") to define what is, what is not, and for how long machines and parts are covered against material defects and/or defective workmanship. To obtain warranty service, the purchaser must, within the Warranty Period (defined in Paragraph 3): (i) report the product defect to an authorized repair center, (ii) make a written request for repair, (iii) provide proof of purchase to the authorized repair center, and (iv) deliver the equipment to the authorized repair center. A list of authorized repair centers is available on the MBW website (mbw.com) or by contacting MBW at 800-678-5237.

2.COVERED - MBW's obligation under this limited warranty is limited to the cost of the parts and the labor to repair any defect in material and/or workmanship at an authorized MBW repair center. Transportation charges are not covered by this limited warranty.

3.WARRANTY PERIODS - The Warranty Period begins on, as applicable: (i) the product purchase date by an end user or (ii) the first day the product is put into rental or two years after invoice date from MBW to Dealer, whichever starts the warranty period first. To insure that your warranty is in place, fill out the warranty card and mail it in or register your product online at www.mbw.com/service-support/warranty-registration. The warranty is nontransferable.

The Warranty Period ends after:

A.New Ground compaction equipment - 2 years.
B.New Concrete finishing equipment - 1 year.
C.New Utility equipment - 1 year.
D.Demonstration equipment - 6 months.
E.Wear parts: lubricants, filters, belts and shock mounts - 30 days.

4.NOT COVERED- This warranty does not include, and MBW specifically excluded from any warranty:

A.Used equipment - all used equipment is not warranted and is sold 'as is' 'where is' with all defects.
B.Replacement electrical parts, including but not limited to: electric motors, circuit boards, switches, are not warranted or returnable.
C.OEM: engines, batteries, and chargers. Those warranties are covered by the manufacturer.
D.Consumable parts: trowel and screed blades.
E.Equipment that has been: altered, abused, neglected, not maintained, or modified to run outside its specifications. Any modification to the machine or its parts makes this warranty null and void.
F.Other: damage to a product from normal wear, air freight, overtime, pickup and delivery, temporary replacement rentals, freight damage, or other similar incidents.
G.Product used in a fashion it was not designed for.
H.Parts and labor not performed by authorized dealers.

It is at MBW's discretion if warranty applies and has the right to adjusts labor rates on a claim by claim basis.

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