

WHEEL BUGGIES

AW16-B



SAFETY & OPERATIONS MANUAL

Manual Part #: 068517 | Revision: E
Language: English | Original Instructions



SAFETY & OPERATIONS MANUAL

This manual covers the Trowel Parts listed below

<u>Part No.</u>	<u>Description</u>
073000	AW16-B, All Electric Wheel Buggy, Poly-Bucket, Foam Filled Tires

NOTICE

This manual, or a copy of it, must be kept with the machine at all times.
There is a manual storage container located on the machine for your convenience.

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Allen Products are covered under one or more of the following patent numbers:
10,100,537; 9,068,301; 9,068,300; 8,360,680; 7,690,864; 7,114,876B1; 6,857,815B2; 6,582,153
With other Patents Pending.

Printed in U.S.A.

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I. LIMITED WARRANTY & LIMITATION OF LIABILITY

Allen Engineering Corporation ("Allen") warrants its products to be free of defects in material or workmanship for:

TWO YEARS FROM END USER'S DATE OF PURCHASE, SUBJECT TO THE EXCEPTIONS AND SHORTER WARRANTY PERIODS DESCRIBED HEREIN.

The warranty period begins on the date of purchase by the End User of the product. All warranty is based on the following limited warranty terms and conditions, including the disclaimer of all implied warranties of any type and the disclaimer of consequential damages.



1. Allen's obligation and liability under this warranty are limited to repairing or replacing parts if, after Allen's inspection, there is determined to be a defect in material or workmanship. Allen reserves the choice to repair or replace.
2. All warranty-related parts must be purchased in advance through an Allen dealer. The parts will be made available to the Allen Distributor, Dealer, or Rental Center from whom the End User purchased the product.
For machines being prepared, a warranty request form and/ or RGA request form must be submitted to AEC after the repairs are completed.
3. Replacement warranty parts, installed in the product, are warranted only for the remainder of the warranty period of the product as though they were the original parts.
4. BATTERY POWERED PRODUCTS ARE WARRANTED FOR ONE YEAR FROM END USER'S DATE OF PURCHASE.
5. Allen does not warranty engines or batteries. Engine warranty claims should be made directly to an authorized factory service center for the particular engine manufacturer. Batteries are not warranted due to unknown treatment during transport, etc., and any battery claims should be directed to the battery manufacturer.
6. Allen's warranty does not cover the normal maintenance of products or their components (such as engine tune-ups and oil & filter changes). The warranty also does not cover normal wear and tear items (such as belts, tires, blades, pans and other consumables).
7. Hydraulic Component's are required to be maintained per Allen's mandatory service intervals in each machine's owner's manual. OEM Allen hydraulic filters and consumables are required to service machines during the warranty period. Failure to use OEM Allen hydraulic filters will result in denied warranty.
8. Allen's warranty will be void if it is determined that the defect resulted from operator abuse, failure to perform normal maintenance on the product, modification to product, alterations, or repairs made to the product without the written approval of Allen. Allen specifically excludes from warranty any damage to any trowels resulting from a drop or impact to the rotors.
9. Impact damage to gearboxes is not covered under the Allen warranty and is deemed customer abuse.
10. Impact damage to trowels in any way is not covered under the Allen Warranty and is deemed customer abuse. (Example: Dropping a machine)
11. Allen will pay shop labor on warranty items at the Allen Shop Labor Rate in existence on the date of the warranty claim. An Allen labor chart will determine the time allowed to complete a repair and will govern the shop labor hours that will be allowed.
12. Allen will credit the cost of ground freight on warranty replacement parts after approval of the warranty claim. No warranty replacement parts will be shipped air-freight at the expense of Allen. Allen does not pay any inbound freight.
13. ALLEN ENGINEERING CORPORATION'S WARRANTY POLICY WILL NOT COVER THE FOLLOWING: TAXES; SHOP SUPPLIES; ENVIRONMENTAL SURCHARGES; AIR FREIGHT; TRAVEL TIME; LOSS OF TIME; INCONVENIENCE; LOSS OF RENTAL REVENUE; RENTAL COSTS OF EQUIPMENT USED TO REPLACE THE PRODUCT BEING REPAIRED; LOSS OF USE OF THE PRODUCT; COMMERCIAL LOSS; OR ANY OTHER CHARGES WHATSOEVER OR ANY LIABILITIES FOR DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGE OR DELAY.
14. ALLEN ENGINEERING CORPORATION MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THIS LIMITED WARRANTY IS IN LIEU OF THE WARRANTY OF MERCHANTABILITY AND FITNESS. THERE ARE NO OTHER WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THIS DOCUMENT.
15. No Allen employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Allen Engineering Corporation.
16. Warranty claims must be submitted within 30 days from the date of failure.
17. Once a warranty claim has been submitted, AEC has up to 90 business days to process the request.
18. Standard service part warranty will not exceed 90 days from the date of purchase. Exceptions to this are:
#1 Gearboxes: 1 year warranty from date of purchase.
#2 Electrical Components: 30 day warranty from date of purchase. This applies to wiring harnesses, transmitters, ECUs, display screens, and toggle switches.
19. All purchased components are subject to the inspection and warranty of the respective manufacturer. This inspection may extend beyond 90 days.
20. If warranty is suspected do not disassemble any hydraulic or electrical components. Failure to comply with this instruction will lead to denial of a warranty claim.



This manual provides information and procedures to safely operate and maintain the Allen Machine.

For your own safety and protection from personal injury, carefully read, understand, and observe the safety instructions described in this manual. Keep this manual or a copy of it with the machine at all times.

Always operate this machine in accordance with the instructions described in this manual. A well maintained piece of equipment will provide many years of trouble free operation.

This manual is divided into the following sections:

SECTION 1 SAFETY

SECTION 2 ASSEMBLY

SECTION 3 SERVICE

SECTION 4 ACCESSORIES

Complete any warranty requirements as specified by the engine manufacturer in their instructions found inside the manual box located on the back of the riding trowel operator's seat.

Your engine and clutch is not manufactured by Allen Engineering Corporation, Inc, and therefore is not covered under Allen Engineering Corporation, Inc warranty.

Your engine manufacturer should be contacted if you wish to purchase a parts manual or a repair manual for your engine.

Refer to enclosed owners engine manual for complete OEM instructions. See your battery manufacturer for battery warranty.

**Sound Pressure Level Information:**

Sound pressure is “A” weighted . Measured at the operators ear position while the ride-on trowel is operating at full throttle on concrete in a manner most often experienced in “normal ” circumstances. Sound pressure may vary depending upon the condition of the concrete. Hearing protection is always recommended.

**Vibration Level Information:**

The vibration level indicated is the maximum RMS (Root Mean Square) velocity value obtained at the handle grip while operating the ride-on trowel on curing concrete in a manner most often experienced in “normal ” circumstances. Values were obtained from all three axes of motion. The values shown represent the maximum RMS value from these measurements.

Summary Data Of Sound And Vibration Testing

Operator Ear SPL	Seat Vibration Average	Left Hand Vibration Average	Right Hand Vibration Average
- dB (A)	- m/sec ²	- m/sec ²	- m/sec ²
This information was acquired from sound and vibration analysis tests conducted at Allen Engineering Corporation test facilities.			

PENDING INFORMATION

Your Dealer has Allen Engineering Corporation trained mechanics and original Allen replacement parts. Always contact the Allen Dealer who sold you this machine for Allen Certified repairs and replacement parts.

Place Allen Dealer information below for future reference.

<p>Dealer Name: _____</p> <p>Dealer Phone #: (____) - ____ - _____</p> <p>Address: _____ _____</p> <p>City / State / Zip: _____ _____</p>	<p>Salesman: _____</p> <p>Salesman Phone #: _____</p> <p>Additional Comments: _____ _____ _____</p>
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The “PARTS & DECALS MANUAL” contain illustrated parts lists for help in ordering replacement parts for your machine. Follow the instructions below when ordering parts to ensure prompt and accurate delivery:

1. All orders for service parts - include the serial number for the machine. Shipment will be delayed if this information is not available.
2. Include correct description and part number from the “PARTS & DECALS MANUAL”
3. Specify exact shipping instructions, including the preferred routing and complete destination address.
4. **DO NOT** return parts to AEC without receiving written authorization from AEC. All authorized returns must be shipped pre-paid.
5. When placing an order, please contact the AEC dealer nearest you.

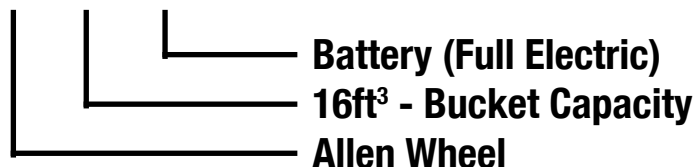
**ALL INFORMATION, SPECIFICATIONS, AND ILLUSTRATIONS IN THIS MANUAL
ARE SUBJECT TO CHANGE WITHOUT NOTICE AND ARE BASED ON THE
LATEST INFORMATION AT THE TIME OF PUBLICATION.**

Manufacturer's Codes:

When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine. The legends below specifically defines each significant character or group of characters of the Model Number and Serial Number codes.

Model Number

AW 16 - B

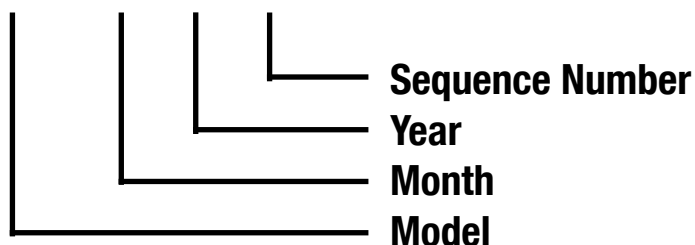


Serial Number:

The serial number found on the identification plate is a ten digit format. The model number identifies your machine and will ensure that you receive the correct replacement parts.

Serial Number Example

BW16 01 20 01



Unit Identification Plate Location:

An identification plate listing the model number and the serial number is attached to each unit and is located **on the inside behind the front door of the unit**. This plate should not be removed at any time.

Please record the information found on this plate below so it will be available should the identification plate become lost or damaged. When ordering parts or requesting service information, you will always be asked to specify the model and serial numbers of the machine.

Model Number: _____

Serial Number: _____

Date Purchased: _____

Purchased From: _____

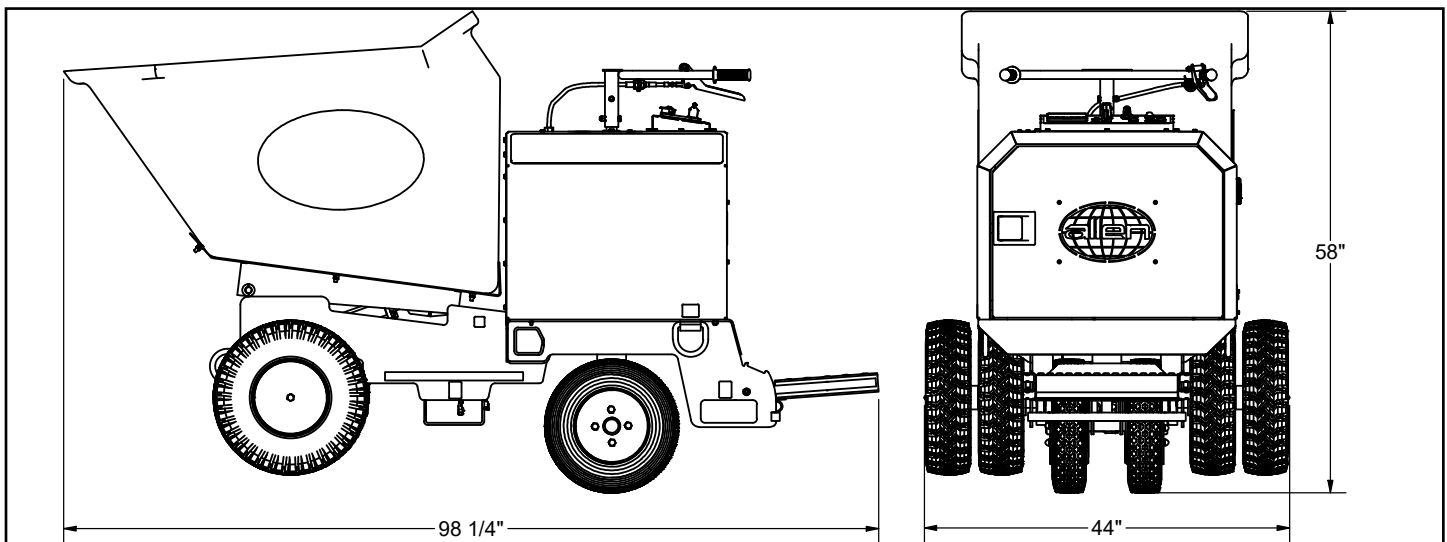
MODEL	 allen ENGINEERING CORPORATION
PART NUMBER	
POWER	
WEIGHT	
SERIAL NO.	
PRODUCTION DATE (MM.DD.YYYY)	
P.O. BOX 819 PARAGOULD, AR. 72450, USA 800.643.0095 (USA ONLY) 870.236.7751 800.643.0097 (USA ONLY) 870.236.3934 WWW.ALLENENG.COM	

Measurements in this manual are in standard units

Machine Features for AW16-B:

- No Emissions
- Ingress Rating.....IP67
- Run Time 6+ hours
- Charge Time4 to 6 hours
- MotorBrushless AC Induction
- Charger Power Input100VAC @ 60Hz - 240VAC @ 50 Hz
- DC Output1050 Watts
- BatteryLithium-Ion 14S
- Weight (unloaded) 1,300 lbs
- Dimensions (L x W x H) 98-1/4" x 44" x 58"
- Battery Voltage58v
- Wheelbase40"
- Payload2,500 lbs
- Bucket Capacity 16 ft³
- Lift Cylinder2" Diameter
- Dump/Return Speed (Empty) 5 Seconds
- Top Speed
 - Forward 6 MPH
 - Reverse - MPH

Dimension with Accessories



SECTION 1: SAFETY

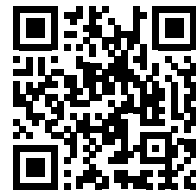


RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm.

SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica.



For more information regarding Prop 65, please scan QR code.

CALIFORNIA PROPOSITION 65 WARNING

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

Safety-Alert Signs

This manual contains Safety-Alert Signs, as defined below, which must be followed to reduce the possibility of improper service damage to the equipment or personal injury. Read and follow all Safety-Alert Signs included in this manual.



NOTE defines an operating procedure, condition, etc. which is essential to highlight that contains useful or important information.

EMERGENCY

EMERGENCY is used for the identification of safety equipment, first aid, or emergency egress locations.



NOTICE used to convey safety information on labels and signs.









CAUTION is indicative of a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



WARNING Indicative of a potentially hazardous situations that could result in death or serious injury



DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Rotating parts/crush hazards
	Pressurized fluid hazards
	Hydraulic fluid hazards



Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety notes.



Familiarity and proper training are required for the safe operation of this equipment! Equipment operated improperly or by untrained personnel can be dangerous! Read the operating instructions contained in this manual and familiarize yourself with the location and proper use of all controls.

- **NEVER** operate this machine in applications for which it is not intended.
- **NEVER** operate this machine while under the influence of drugs or alcohol.
- **NEVER** allow anyone to operate this equipment without proper training. People operating this equipment must be familiar with the risks and hazards associated with it.
- **NEVER** use accessories or attachments that are not recommended by AEC. Damage to equipment and injury to the user may result.
- **NEVER** leave machine running unattended.
- **ALWAYS** remain aware of moving parts and keep hands, feet, and loose clothing away from the moving parts of the equipment.
- **ALWAYS** read, understand, and follow procedures in the Operator's Manual before attempting to operate the equipment.
- **ALWAYS** be sure operator is familiar with proper safety precautions and operation techniques before using machine.
- **ALWAYS** store the equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children.
- **ALWAYS** operate the machine with all safety devices and guards in place and in working order.
- **ALWAYS** disconnect the battery before servicing the equipment.
- **DO NOT** attempt to clean or service the machine while it is running. Rotating parts can cause severe injury.
- **ALWAYS** turn engine off and lockout machine before performing maintenance or making repairs.
- **ALWAYS** replace worn or damaged components with spare parts designed and recommended by AEC Corporation.
- **ALWAYS** switch off the power supply at the battery disconnect before adjusting or maintaining the electrical equipment.
- **ALWAYS** keep the machine clean and labels legible. Replace all missing and hard-to read labels. Labels provide important operating instructions and warn of dangers and hazards.

FORKLIFT LIFT ONLY!

This product is designed to **ONLY** be lifted by a forklift.

- **DO NOT** use straps or chains to attempt to lift the machine.
- When lifting the machine, all personnel must be clear of the machine.
- Make sure the bucket is free of any material or debris before lifting.
- The bucket should be in the “down” position during the lifting process
- **DO NOT** stand near or under the machine while it is being lifted.
- **ALWAYS** turn off the buggy before transporting.



PLACE FORKS HERE

PLACE FORKS HERE



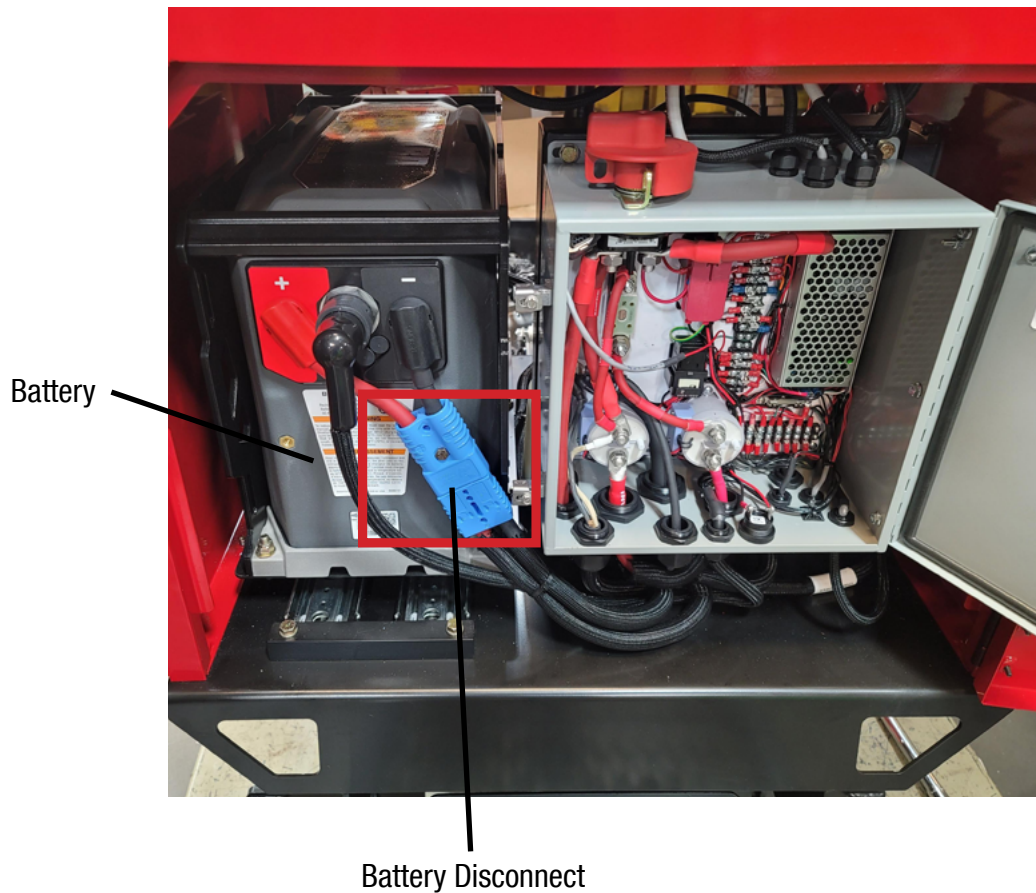
PLACE FORKS HERE

PLACE FORKS HERE

- Make sure the hitch and coupling of the towing vehicle are rated equal to, or greater than the trailer “gross vehicle weight rating.”
- **ALWAYS** inspect the hitch and coupling for wear. Never tow a trailer with defective hitches, couplings, chains, etc.
- Check the tire air pressure on both towing vehicle and trailer. Trailer tires should be inflated to 50 psi cold. Also check the tire tread wear on both vehicles.
- **ALWAYS** make sure the trailer is equipped with a safety chain.
- **ALWAYS** properly attach trailer’s safety chains to towing vehicle.
- **ALWAYS** make sure the vehicle and trailer directional, backup, brake and trailer lights are connected and working properly.
- DOT Requirements include the following:
 - Connect and test electric brake operation.
 - Secure portable power cables in cable tray with tie wraps.
- The maximum speed for highway towing is 55 MPH unless posted otherwise. Recommended off-road towing is not to exceed 15 MPH or less depending on type of terrain.
- Avoid sudden stops and starts. This can cause skidding, or jack-knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Trailer should be adjusted to a level position at all times when towing.
- Raise and lock trailer wheel stand in up position when towing.
- Place chock blocks underneath wheel to prevent rolling while parked.
- Place support blocks underneath the trailer’s bumper to prevent tipping while parked.
- Use the trailer’s swivel jack to adjust the trailer height to a level position while parked.
- Use tie downs to ensure machine does not move during transportation.

Transportation - Battery Disconnect:

When transporting the buggy always disconnect the battery. To disconnect the battery from the electronic controls pull apart the blue connector, shown in the figure below.



Reconnect the battery after transporting the buggy to the desired location.



Battery powered equipment present special hazards during operation and charging. Battery packs contain combustible organic solvents as an electrolyte solution. Read and follow the warning instructions in the battery owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

- **DO NOT** use the machine if there is damage (cracks, bulging, warpage, etc.) leakage, or burns present on the battery & power unit system.
Damage to the battery may result in liquids spraying or leaking out. Contact with this liquid may result in irritation or burns. If contact with the liquid occurs, flush the area with water immediately. If vulnerable areas such as the eyes are exposed to the liquid flush the area with water and seek medical attention immediately.
- **DO NOT** use the machine if there are unusual noises, odors and/or visible signs of smoke.
In case of fire, stop using the machine and extinguish with dry chemical, sandy soil, carbon dioxide or an appropriate foam
- **DO NOT** use the battery if it has been exposed or submerged in water.
- **DO NOT** service or open the battery pack, service should only be done by authorized OEM service dealers.
- **DO NOT** modify the battery and battery power unit. **DO NOT** use the machine if the battery has been submerged and/or if the battery connections has been exposed to water.
- **DO NOT** operate the machine near an open flame or excessive heat zones (above 265°F or 130°C), keep away from spark prone areas.
- **DO NOT** run the equipment/battery near open flames.
- **DO NOT** drop or impact the battery
- **DO NOT** use the battery in areas with low airflow, store and use the battery in areas with good airflow.
- **DO NOT** use the machine if the battery is outside of the operating temperature range of -4°F to 140°F (-20°C to 60°C). Performance will be reduced at temperatures under -4°F (-20°C).
- **ONLY** use the battery with compatible machines.
- **ONLY** charge the battery with a charger that is specified by the manufacturer. Use of unspecified battery chargers may damage the battery and/or create a risk of fire or explosion.
When charging the battery follow the instructions specified by the manufacturer. DO NOT charge a battery that is outside the rated charging temperature. Incorrect charging may result in battery failure, fire, or explosion.
- **DO NOT** charge the battery outside of the recommended temperature range of 32°F to 122°F (0°C to 50°C).
- **ALWAYS** keep the battery away from other metal objects. Certain metal objects may be capable of making a connection between battery terminals, shorting the battery and may result in battery failure, fire, or explosion.
The battery has a risk of high short circuit current, REMOVE metal objects such as watches and rings before interacting with the battery.
- **DO NOT** store the battery outside of the recommended temperature range of 1 MONTH -4°F to 140°F (-20°C to 60°C), 1 YEAR -4°F to 77°F (-20°C to 25°C).
- **DO NOT** store the battery for long periods below 40% state of charge.



Battery powered equipment present special hazards during operation and charging. Battery packs contain combustible organic solvents as an electrolyte solution. Read and follow the warning instructions in the battery owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death.

Battery Transportation:

If applicable, when transporting battery operated equipment and battery packs refer to relevant transportation regulations.

- **DO NOT** touch the external battery terminals. Contacting the terminals may create a connection and cause a short circuit creating a risk of battery failure, fire or explosion.
- **DO NOT** swing or throw the battery when transporting
- **DO NOT** stack battery packs when loading or transporting. **DO NOT** place addition objects or baggage on top of the battery pack.
- Ensure that the equipment and battery are properly secured. Do not allow other the battery and other objects to slide, move or collide with each other.
- Avoid placing the battery in direct sunlight or in areas subject to excessive heat such as in an enclosed vehicle.
- If intake and exhaust ports are present, do not allow water to get inside. In case of rain secure the battery in a manner that does not allow water intrusion.

SECTION 2: OPERATION



This machine is built with user safety in mind. However, it can present hazards if improperly operated and serviced. Follow operating instructions carefully. If you have any questions about operating or servicing this equipment, please contact your Allen Engineering Dealer or AEC Customer Service at 800-643-0095 or 870-236-7751.

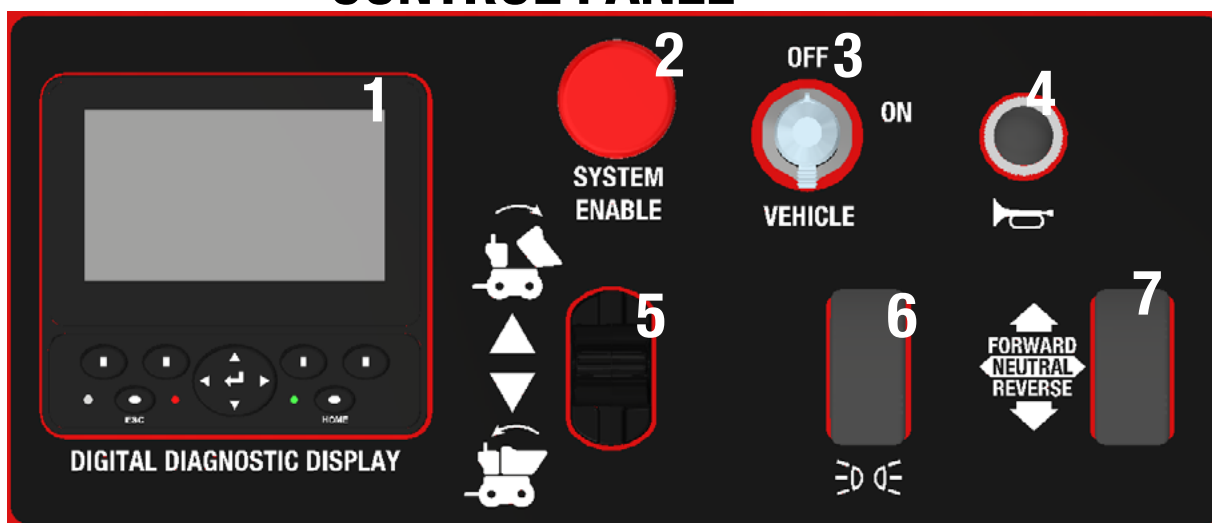
Before Starting Procedures

Before operation each day check for the following:

1. All guards, side screens and panels are in place
2. All safety and information signs are in place and legible
3. Check that the battery is connected, reference Transportation Safety (pg 17)
4. Hydraulic Oil levels
5. Check the battery level
6. Verify that daily maintenance of grease points have been performed.
7. Check operating controls for proper operation and adjustment
8. Check speed control operation before and after starting the buggy for proper operation
9. Check the steering left and right, for proper operation
10. Check for any hydraulic leaks (if applicable)
11. Remove any loose objects that could interfere with the operation of the machine

Note: If there is any indication that faulty equipment exists, shutdown safely, inform the proper authority and **DO NOT** operate the machine until the problem has been fixed.

CONTROL PANEL



1. Digital Diagnostic Display:

Display will allow access to settings, error warnings, and system information. Pressing the **“Left Button”** will cycle through the different pages.

2. System Enable (E-Stop):

Emergency stop button. Button will disable operation of machine when engaged. Disengage button (pull out) to enable operation of the machine.

3. Vehicle ON/OFF Switch:

Turn switch to the **“ON”** position to enable operation of machine. Turning the switch to the **“OFF”** position will disable operation of the machine.

4. Horn:

Use momentary switch to enable machine horn.

5. Bucket Dump:

Push switch forward to **“raise”** the dump bucket. Pull switch backward to **“lower”** the dump bucket.

6. Light Switch:

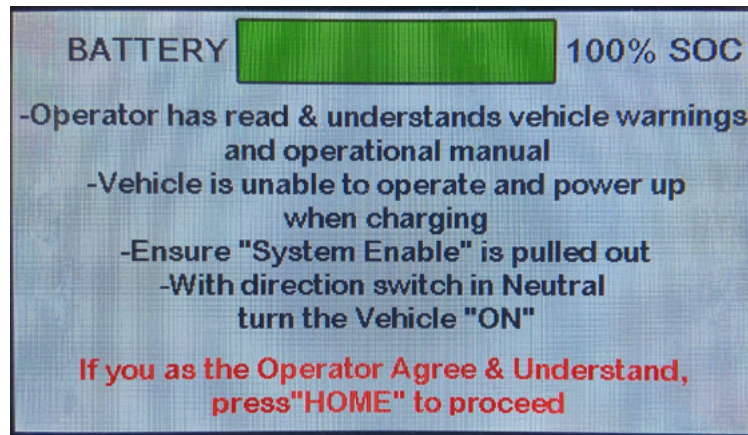
Switch will enable the machine light. Light is located at the front of the machine, under the bucket.

7. Forward/Neutral/Reverse Switch:

- Placing the switch in the **“UP”** position will allow the machine to move forward.
- Placing the switch in the **“MIDDLE”** position will put the machine in neutral and not allow the machine to move.
- Placing the switch in the **“DOWN”** position will allow the machine to move in reverse.

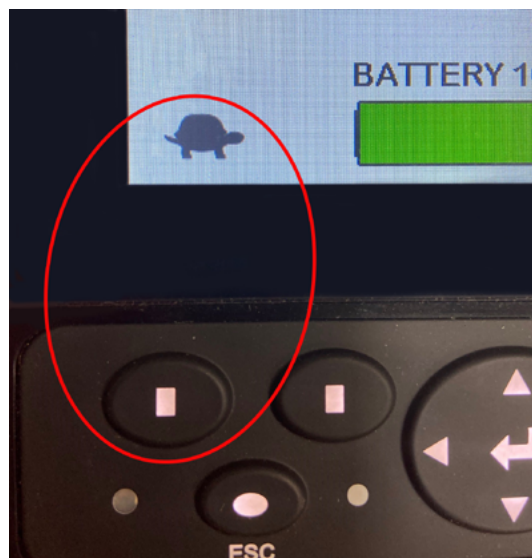
Digital Diagnostic Display: Startup and Operation

1. Turn Vehicle ON/OFF Switch to the “ON” position.
2. The display will power up. The start page will need to be confirmed to go to home page.
3. The main screen will have pop-ups if the “System Enable” switch is engaged (pushed in)



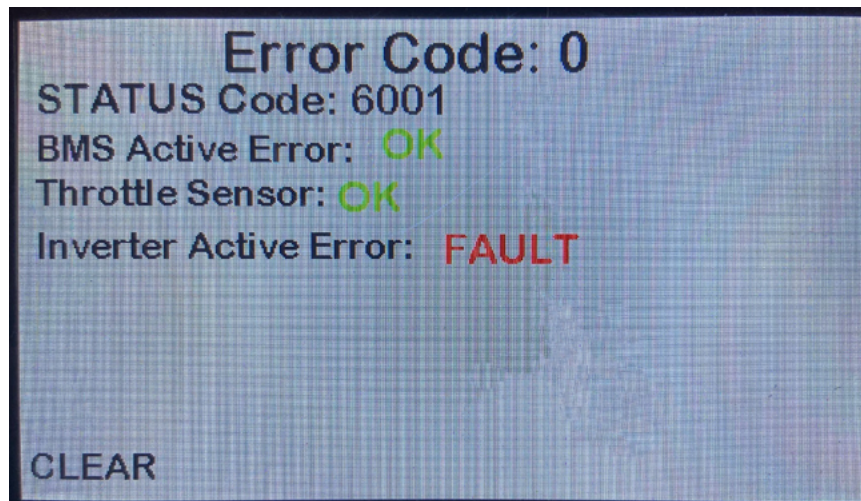
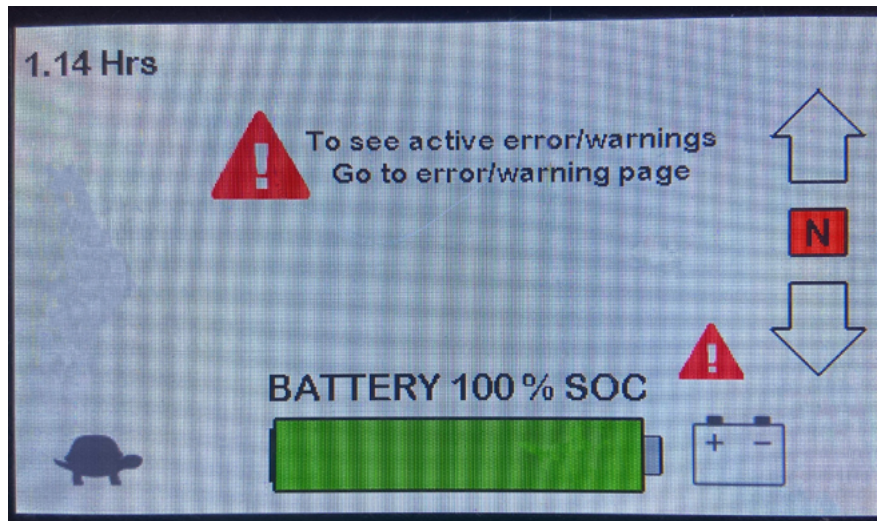
or the “Forward/Neutral/Reverse” switch is actuated during power up. If a **RED** pop-up is displayed, correcting situation will resolve the warning error. Either disengage (pull out) the System Enable switch or return the “Forward/Neutral/Reverse” switch to the “Neutral” position.

4. The system will start by default in “Turtle” (Low speed) mode. To change into “Rabbit” (High speed) mode, press the button directly below the turtle/rabbit. The speed can be toggled back-and-forth between speed ranges.



5. If the active error triangle is visible and no pop-up directions are present, a “System Error” is active.

6. Press the “Left Button” on the directional keypad to advance to error page for more details on active faults.

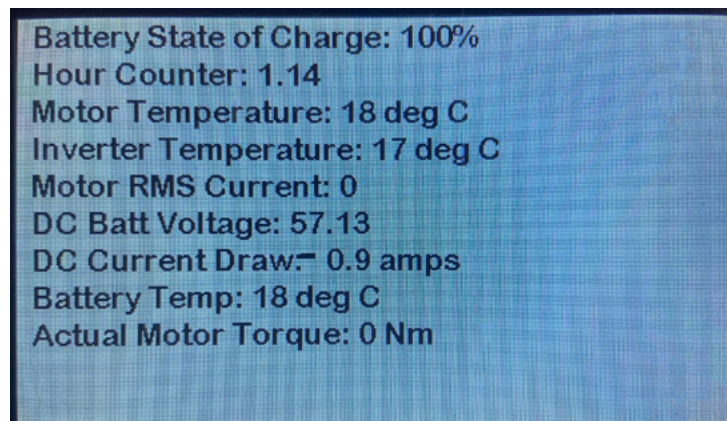
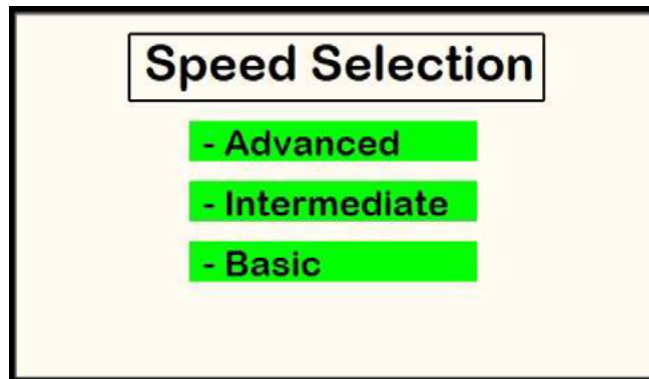


7. A maximum speed selection page can be utilized to reduce maximum speed differently than Turtle/Rabbit. It is defaulted to start on “Advanced” and will reset to this after power cycle. Below is a breakdown of the different maximum speeds at each level with the throttle fully engaged.

- Forward
 - Advanced Mode (default)
 - » Rabbit: 6 MPH
 - » Turtle: 2.4 MPH
 - Intermediate Mode
 - » Rabbit: 4.5 MPH
 - » Turtle: 1.8 MPH

Basic Mode

- » Rabbit: 3.5 MPH
 - » Turtle: 1.0 MPH
 - Reverse speed is not effected by the speed selection shown above. Reverse speed has a maximum setting of 2.4 MPH across all levels, but can be programmed to as slow as 1.0 MPH.
8. There is a page that will give system information.

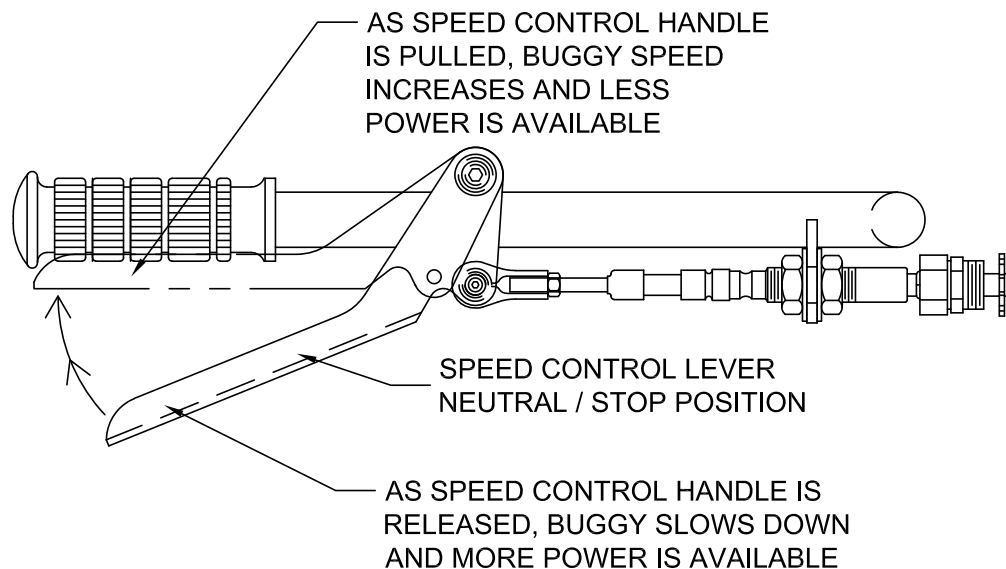


Driving Equipment

- The Directional Control Lever (located on the top right side of the dash) controls the direction of travel - forward, reverse and neutral (free-wheeling). Select the direction of travel desired. The Speed Control Lever (located on the right side of the handle bar) controls the vehicle speed, power, and dynamic hydraulic braking.

IMPORTANT OPERATOR NOTE: When starting from a stop, steadily pull the Speed Control Lever towards the hand grip. The more the Speed Control Lever is squeezed towards the hand grip the faster the buggy will move. Position the Speed Control Lever where the engine does not lug to achieve maximum speed or power depending on job site conditions.

Do not use the engine rpm speed to control buggy speed. Letting the Speed Control Lever return to the neutral position will slow the buggy (by means of dynamic hydraulic braking) and increase power at the drive wheels, acting as a “downshift”



To slow and/or stop the vehicle:

- Release Speed Control Lever.
- Avoid sudden stops whenever possible.



In all cases, upon release of the speed control lever, the speed control linkage should operate smoothly and freely and completely stop machine travel within 6' – 8' in both forward and reverse.

If the speed control linkage does not operate smoothly and freely and/or does not automatically stop machine travel upon release of the speed control lever, then remove machine from service until repairs have been made.

Dumping Bucket



CAUTION DO NOT DUMP BUCKET WHILE BUGGY IS MOVING

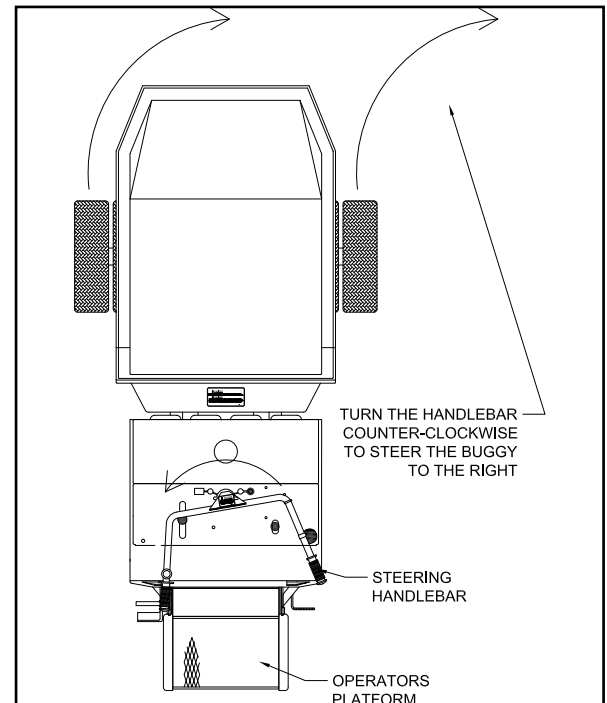
- Stop the vehicle.
- Push the Dump Control Lever forward toward the front of the buggy to dump bucket.
- Pull the Dump Control Lever (either Console Mounted or Handle Mounted) backward towards the operator to retract the bucket. Console Mounted Dump Controls have a foot pedal on the left of the operator's platform that can be pulled backward to return the bucket.

Steering the Buggy

- Allen Buggies, models AW16, AW16-B and AW21 are steered using the Handlebars in front of the operator's platform.
- Turning the Handlebars **Clockwise** will cause the Buggy to turn to the **Left** when **traveling in the Forward Direction**.
- Turning the Handlebars **Counter-Clockwise** will cause the Buggy to turn to the **Right** when **traveling in the Forward Direction**.
- When steering the Buggy turn the handlebar slowly. Avoid sudden, quick steering of the buggy. When traveling on a grade always travel facing the controls and travel in a straight line either up or down the grade.



**DO NOT TURN THE BUGGY WHEN TRAVELING ON A GRADE.
TRAVEL IN A STRAIGHT LINE EITHER UP OR DOWN THE GRADE**



Charging the Unit



- Charge time for the unit is approximately 4 to 6 hours.
- The unit needs to be stored in an environment above 40°F (4°C). If it is stored below this temperature, charging the unit may be effected. If the unit is used in an environment below this temperature, please allow the unit to acclimate to a temperature above 40° before charging begins.

- The recommended charging temperature range is 32°F to 122°F (0°C to 50°C)
- Do not charge the unit where moisture may ingress the charging port. Charge the machine inside a building or under a covering.
- The unit uses a standard 3-prong U.S. plug for charging.
- Always make sure the ground plug is attached to both sides of the extension cord that is used.
- Charge Voltage: 100VAC @ 60Hz / 240VAC @ 50Hz
- Minimum Extension Cord Rating:
 - 0-75ft Length: 12 AWG
 - Over 75ft Length: 10 AWG

SECTION 3: SERVICE

Machine Cleaning Procedure

When cleaning the machine, please adhere to the following information to ensure proper cleaning and to keep the machine in the best condition possible.

Power Washing Procedure:

NOTICE

- Ensure that the water pressure is below 2000 PSI (14 MPa)
- Always keep the water temperature below 180°F (80°C)
- Use a spray nozzle with at minimum 40° wide spray angle
- Keep the nozzle at least 1 foot (300mm) away from the machine
- Avoid spraying water on the battery and electronic components. Examples include electronic displays, lights, switches, wiring, etc. The electronic components may be damaged if water is sprayed on them.
- Keep a perpendicular angle (90°) when cleaning over a decal.
 - Holding nozzle of a pressure washer at an angle different from 90° may lift the decal from the machine.
- Recommended using a safe cement dissolver, **BACK-SET** or similar, to remove hardened concrete.
- It is **NOT** recommended to use chemicals such as:
 - Muriatic Acid
 - Hydrochloric Acid
 - Hydrofluoric Acid
 - Sulfuric Acid
 - Phosphoric Acid
- To prevent build-up of concrete on the machine, use **BODY GUARD** or similar protection wax.

Filter Cleaning Procedure:

- Remove air filters and blow out with compressed air, **NOT** to exceed 80 PSI.



Battery powered equipment present special hazards during operation and charging. Battery packs contain combustible organic solvents as an electrolyte solution. Read and follow the warning instructions in the battery owner's manual and the safety guidelines below. Failure to follow the warnings and safety guidelines could result in severe injury or death. Always unplug the battery before servicing.

Refer to the Vanguard battery pack manual for addition information.

Battery Storage:

Incorrect storage of the battery and equipment can cause irreversible damage, or a permanent loss of battery capacity.

If a battery is fully discharged the battery will become unserviceable

For short term storage (up to 1 month) store within temperatures ranging from -4°F to 140°F (-20°C to 60°C)

For long term storage (up to a year) store within temperatures ranging from -4°F to 77°F (-20°C to 25°C)

- **DO NOT** store the battery in damp locations
- **DO NOT** store the battery near metal objects. Certain metal objects may be capable of making a connection between battery terminals, shorting the battery and creating a risk of battery failure, fire, or explosion.
- **DO NOT** store the battery in areas that not within the temperature limits.
- **DO NOT** store the battery while connected to the charger. This may result in a reduction in battery cycle life.
- **DO NOT** remove or disconnect the battery from the Buggy.
- If the battery is stored outside of the recommended condition/temperatures a **decrease in battery performance will occur and will result in life cycle degradation.**

Battery Storage, State of charge:

Vanguard

Refer to the Vanguard battery pack manual

- If a battery is in storage or not in use for more than 1 month, charge or discharge the battery to be in a state of charge of 40-70%.

Cleaning the battery:

While cleaning, ensure that the circular connectors remain attached, these must be connected to have a proper seal.

- If the battery and/or the connector are dirty, carefully wipe them down with a clean dry cloth.
- **DO NOT** use harsh chemicals or powdered abrasives to clean the battery.
- When using a pressure washer **DO NOT** use a 0° nozzle, pressure wash spray **MUST** be a minimum of 12in from the battery. **DO NOT directly spray the digital display and connections.**
- Clean the battery more frequently in coastal or environments that have exposer to salt or sea salt.

MANUAL REVISION DETAIL			
REVISION #	REVISION DATE	REVISION REFERENCE #	REVISION BY
-	01/21	Initial Release	MW
A	01/22	Updated Covers	MK
B	08/22	Updated Transportation Safety Info.	MK
C	03/23	Removed Incorrect Operational Info, pg 24	MK
D	12/25	Added Additional Battery Info	MK
E	01/26	Updated Warranty Policy 2026	MK

NOTICE**Parts Manual**

In order to provide a premier experience to our customers, we have moved the “Parts” section out of this manual and placed it in a separate “Parts & Decals Manual”. This will allow us to provide any changes or other important information quicker to you, the customer. See below for ways to access the “Parts & Decals Manual”.

Mobile Device:

Scan this QR code with a compatible device (cellular phone, tablet, etc.)

**Computer:**

Click the link, or go to the following website

<https://www.alleneng.com/aw16-b>

Mail:

A physical copy of the manual can also be mailed to you upon request. Please contact Allen Engineering and one will be sent to you.

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