CartManager XD

Moving Cart Retrieval Forward

FIELD TECHNICIAN GUIDE V1.2

GATEKEEPER SYSTEMS

THE LEADING PROVIDER OF INTELLIGENT CART SOLUTIONS

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What's in This Guide

This guide is intended as an aid to the service technician who is called to troubleshoot and correct CartManager XD problems that cannot, because of the need for more advanced skills or equipment, be routinely handled by on-site store personnel.

If you are still experiencing difficulties after completing the troubleshooting tasks, please go to the last page of this guide and contact the Gatekeeper Systems Inc. Customer Support Center closest to your location.

CartManager XD Maintenance

Daily and quarterly maintenance is generally performed by store personnel. The guidelines below are included so that the field tech can stress the importance of regular maintenance in keeping the CartManager XD in top running order.

Daily Maintenance:

- All checks listed on the **CartManager XD Pre-Operations Checklist** located inside on top of hood of the CartManager XD.
- Any noted maintenance needs such as tightening loose fittings, ordering replacements for broken or missing parts, checking the cart restraint strap for breaks or frayed areas, etc.
- Rinse or wash the CartManager XD at least weekly in weather where de-icing chemicals and solvents are being used.

Quarterly Maintenance:

- Batteries should be checked for leaks or cracks in the casing.
- Battery cables and terminals should be cleaned with a strong baking soda solution and lightly coated with waterproof grease.
- Check all fasteners and hardware. Tighten any loose items.
- Apply axle grease to the swivel wheel bearings.

CartManager XD PPM Checklist

This checklist is intended to be used as a guide while performing a scheduled Periodic Preventative Maintenance (PPM) or whenever a service call is made on a unit.

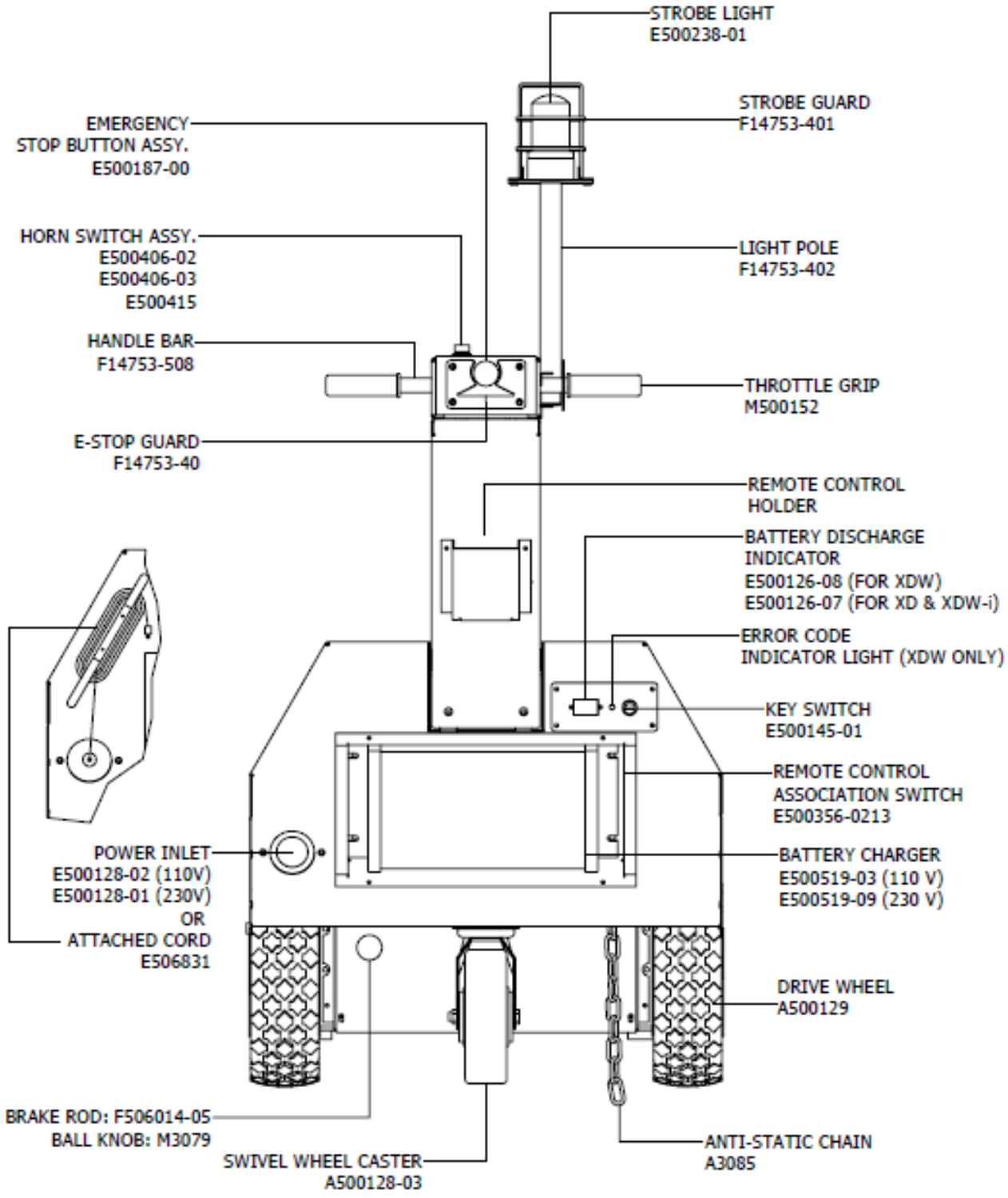
Serial # : **Date:**

	Throttle Body Control Working Properly Check resistance readings between red and black wires from potentiometer, in neutral it should be 2.400-2.600 K OHMS, when throttle is turned forward it should read close to 5.00 K OHMS, and backwards it should read close to 0.00 K OHMS. Ensure potentiometer is tight and gears have some play in them.
	Strobe Light is Tight and Working Check that the light is not loose and is flashing.
	E-Stop Switch is Working Properly Push E-Stop push button in; unit will not move forward or back. Twist the push button to release, and cycle key switch OFF and ON. Unit should move forward and back.
	Remote is Working Properly Confirm the unit is receiving signal from the distance of 20 carts from the CartManager XD. Make sure that the rabbit, turtle, and horn functions are working properly.
	Horn Works When Switch is Pressed Ensure that the switch is not sticking when pressed.
	Check Tightness of Neck Bolts Tighten two bolts on lower, backside of the neck. Also, remove the front neck cover and tighten two retaining bolts on inside of the neck. Replace cover.
	Plug Charger in. Does the Unit Shut Down? Charger inter-relay lock disables unit when plugged in.
	Caster and Rear Swivel Wheel is in Working Condition Grease the caster.
	Tighten Drive Wheel Lugs Nuts Tighten to 50 FT.LB torque.
	Batteries Holding a Charge, Not Leaking, Check Water Level
	Is the Static Chain Touching the Ground? Ensure the static chain is touching the ground.
	Wood Spacers are Located in Front of Batteries Prevents batteries from sliding around during use.
	Brake Rod Lever Working Properly Pull brake lever back. Unit should not move forward or backwards. Push lever back in.
	Motor Brake Working Properly Make sure that brake disengages when unit is moving and engages when unit is stopped. Also ensure that the CartManager XD will not roll when no throttle is applied; a good test is on a slope.
	Tighten the Cart Cradles The cart cradles should sit high enough so that they do not hit speed bumps or touch the ground.
	Check Charger Check charger lights and battery fuses.
	Road Test the CartManager XD Attach 20 carts and test drive the unit over speed bumps in parking lot.

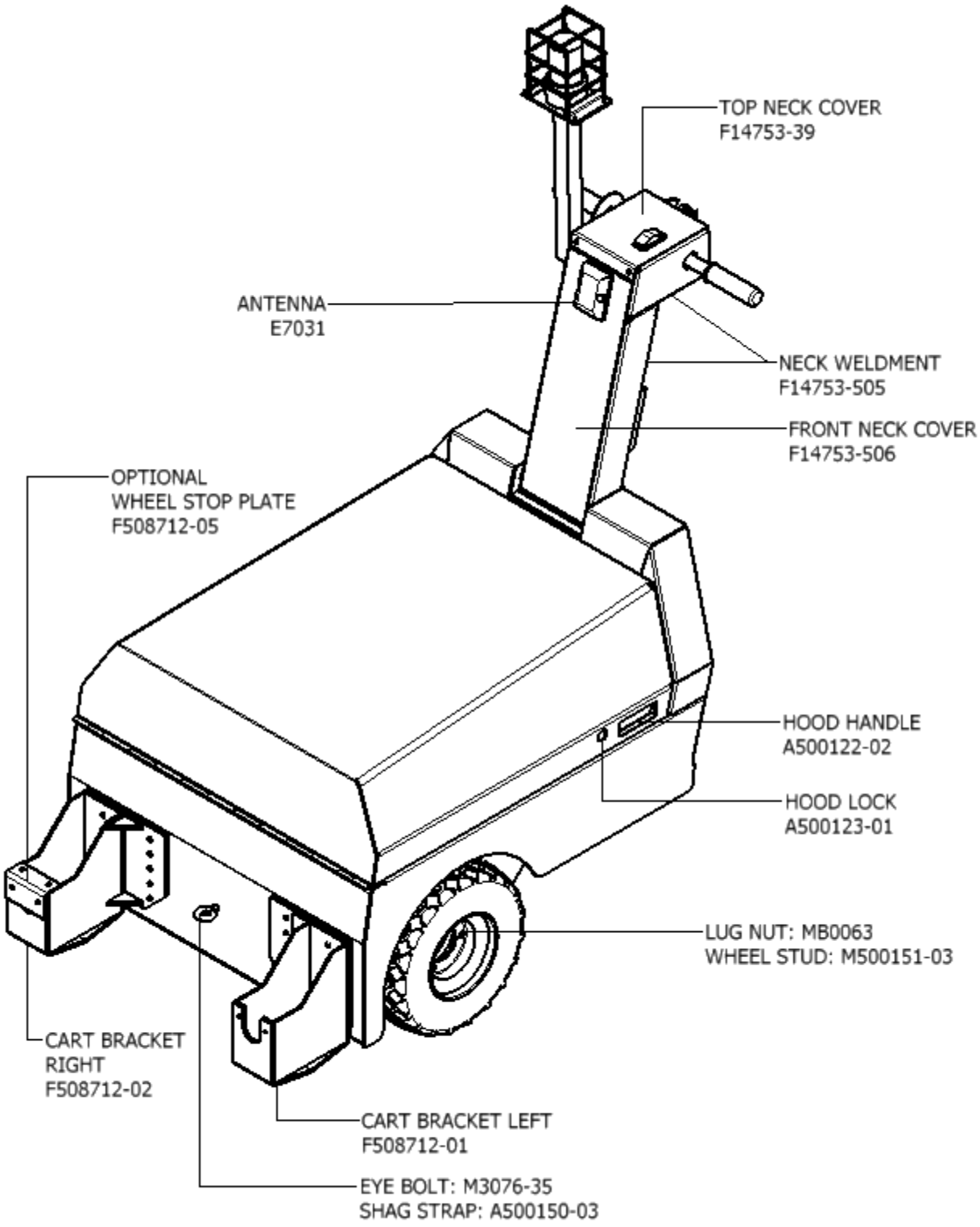
CODES: A= ADJUST R= REPAIR U= URGENT ✓=OK

CartManager XD Views

CartManager XD Rear View (XDW & XDWi)



CartManager XD Side/Front View



CartManager XD Features and Controls

This table provides a description of each of the parts shown in the preceding diagrams.

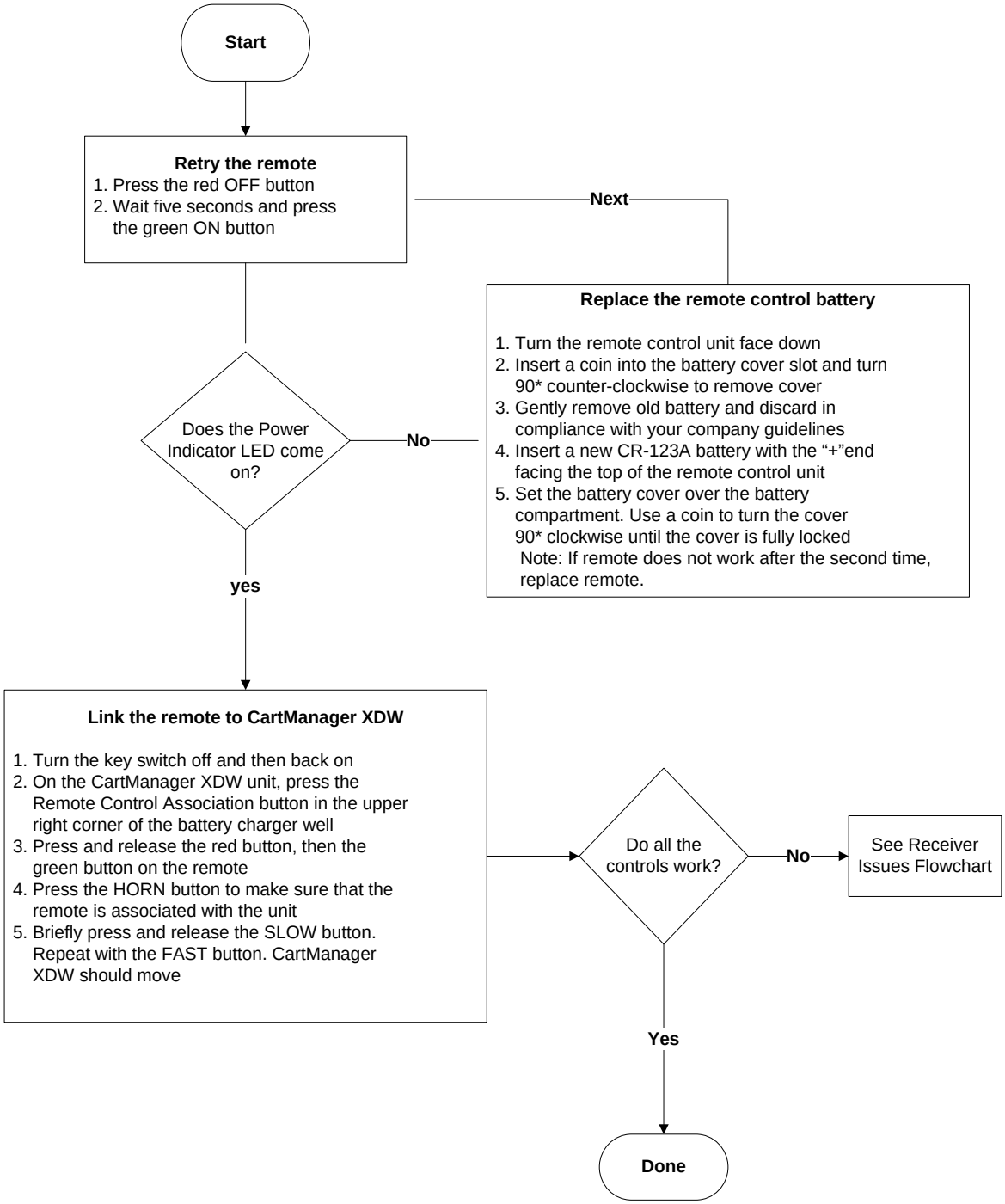
PART	DESCRIPTION OF THE FUNCTION
Antenna	Receives signals from the remote control. Also outputs the (unlock) signal for the shopping cart wheels.
Anti-Static Chain	The anti-static chain prevents damage to the CartManager electrical components by dissipating static electricity buildup. DO NOT DETACH THIS CHAIN.
Battery Charger	Controls and monitors the battery charging process.
Battery Discharge Indicator	Shows the percentage of charge left in the batteries. You should recharge the batteries any time the charge falls below 50%. The unit can also be plugged in between runs to keep the batteries “topped off” at full charge. Also displays error codes on HD,XD and XDWi models, by flashing a set of lights that can be corresponded with the (Trucharge Diagnostic Codes sheet).
Fault Indicator LED (XDW ONLY)	Displays error codes, by blinking a series of lights. This is used to diagnose problems with the CartManager XDW by corresponding with the (LED Error Codes sheet).
Brake Release (Brake Rod)	Engages/disengages the manual brake. When the lever is pulled out, the brake is disengaged and CartManager can be manually pushed without using the drive throttles. When the brake lever is pushed in, the brake is disengaged while the unit being driven using the drive motor and engaged when the unit is stopped. The brake release lever must be pushed in to use CartManager with the drive throttles or the remote control unit.
Drive Wheels	Foam filled, heavy tread tires and wheels connected to the transaxles hubs.
Hood	The hood covers and protects the batteries and components in the battery compartment. When opening and closing use the inset handles on either side of the hood. Do not grip the hood by the front edge; you could pinch your finger.
Light Pole	Holds the strobe light and strobe light cage. Swings up for operation and down for getting under low overhangs or doors.
Swivel Wheel	Allows the unit to swivel and turn completely around within its own length. This wheel is not connected to the drive motor.
Electronic Cover Panel	Covers and protects the controller and other electronic components.
Remote Control Holder	Convenient storage for the remote control when it is not in use.
Pushbutton	Allows the receiver to associate (with) the remote.
Coil Cord	Supplies A/C current to the charger and the charger inter-lock relay.
Cord Grip	Holds the coil cord in a stationary position.
Charger Inter-Lock Relay	Shuts down the CartManager when the unit is plugged in for charging. Does not allow the user to drive the CartManager while it is plugged in, causing damage to the coil cord.
Horn Switch	Allows you to sound the horn when pressed.
Controller	Regulates the speed of the CartManager in response of the throttle applied.
Motor Brake	The function of the motor brake is to not allow the machine to roll when stopped.
Motor	Drives the axles so that the unit will move forward and backwards .
Speed Board	Has inputs and outputs for both manual and remote operations.
80 Amp Fuse	Protects the entire electronics in case of a major amp draw or shortage.
Fuse Block Fuses 2, 5,10 Amp	To protect individual circuits from shortages or high amp draws.

PART	DESCRIPTION OF THE FUNCTION
4 Post Terminal Block	It is a connection block where power is distributed.
Brake relay (XDW, XD, XD+)	Turns the brake light off when the CartManager is moving.
Relay U (XDWi)	Turns the unlock signal on and off when the machine is moving and stopped respectively. This is for use with shopping carts that have a Gatekeeper Systems' wheel.
RELAY B (XDWi)	Puts the CartManager in slow speed mode when the battery is low to avoid damage to the batteries.
Receiver	First talks to the remote to be connected and then receives signal from the remote, to place output signals to the speed board or horn. It also send the (unlock) signal out through the antenna for the shopping carts.
Potentiometer	Outputs resistance for the throttle control.
Strobe Light	Warning beacon to allow the CartManager to be seen at night.
E-Stop Button	When engaged it stops the unit from moving.
Key Switch	Switches on the CartManager, initiates power to the rest of the machine.

Remote Control Issues

CartManager XD Does Not Respond to Remote

Use this process to diagnose and correct problems when the remote control unit does not turn on or turns on but does not communicate with CartManager XD.
If you are using a new remote for the first time, or using a remote other than the one usually issued to XD units, follow the steps in the **Link the remote to the CartManager XD** box below to establish a communications link between the remote and the receiver.



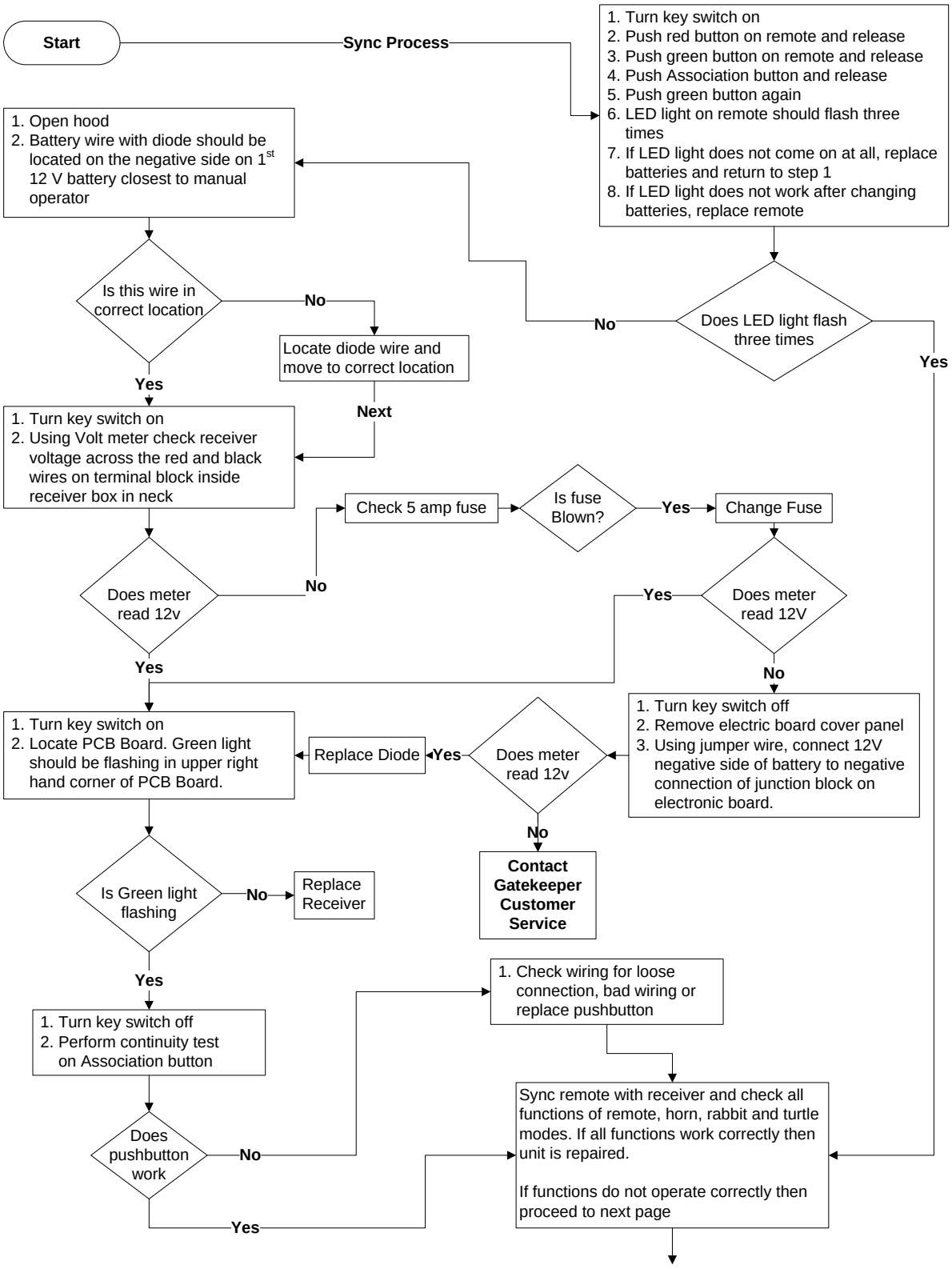
Checking the Speed Board Relays

If both the remote control unit and receiver are functioning properly, but the CartManager XD does still not respond, there may be a problem with the relays that actuate the motor in response to signals from the remote. Use the following procedure to troubleshoot these relays.

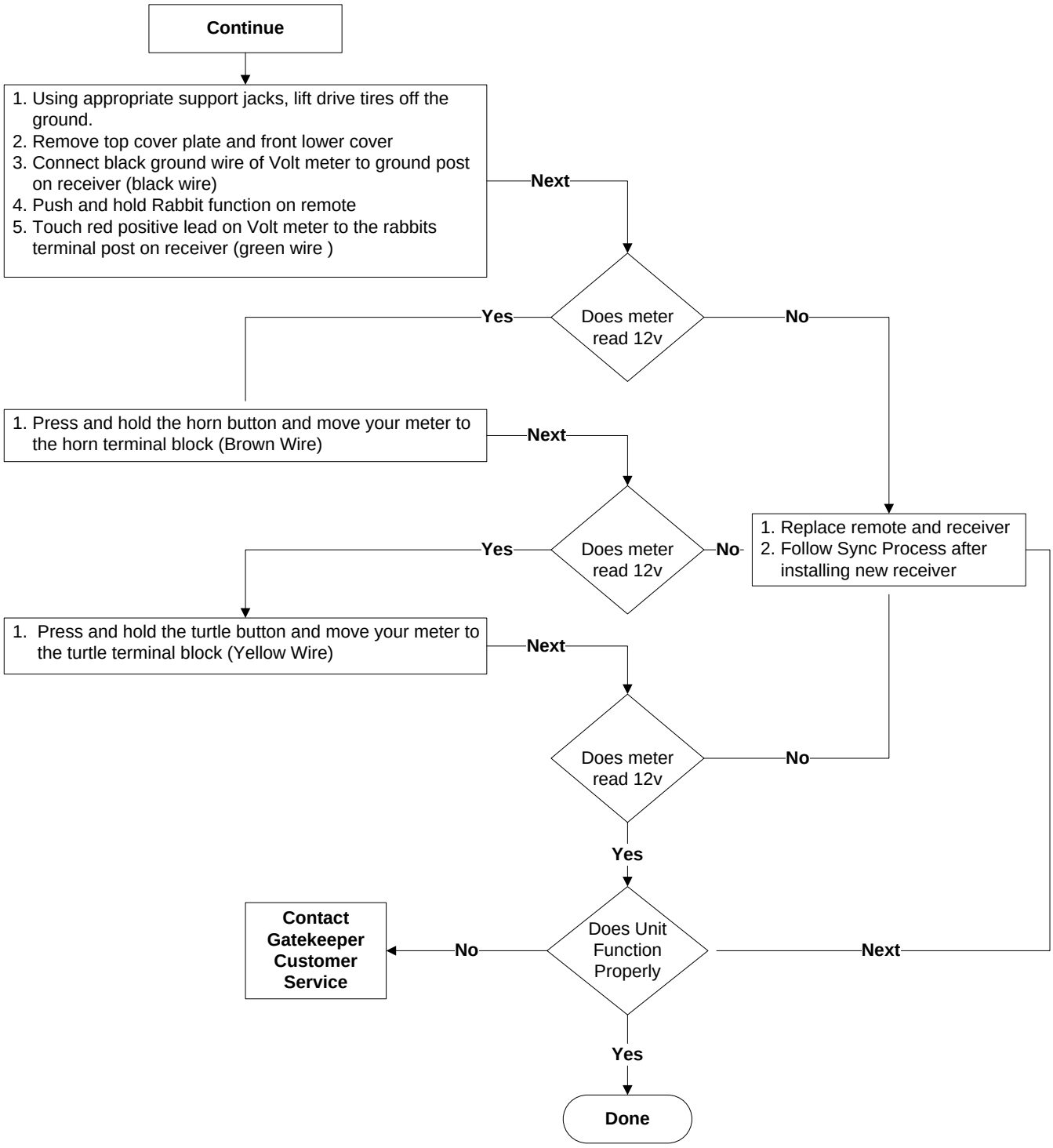
1. Remove the front access panel.
2. Disconnect the M- lead from the controller to prevent unexpected movement of the unit.
3. Check all terminals and tighten any that are loose.
4. Make sure that the remote control unit and CartManager XD are both on. Press the “SLOW” button on the remote. You should hear a distinct click as the relay responds to the remote.
5. Repeat the previous step with the “FAST” button on the remote control unit. If either relay does not engage, refer to the CartManager XD receiver Issues before replacing speed board.
6. When both relays have been checked and any repairs made, reattach the M- lead to the controller.

CartManager XD Receiver Issues

Follow the steps below if the CartManager XD is turned on but does not move when remote is initiated.



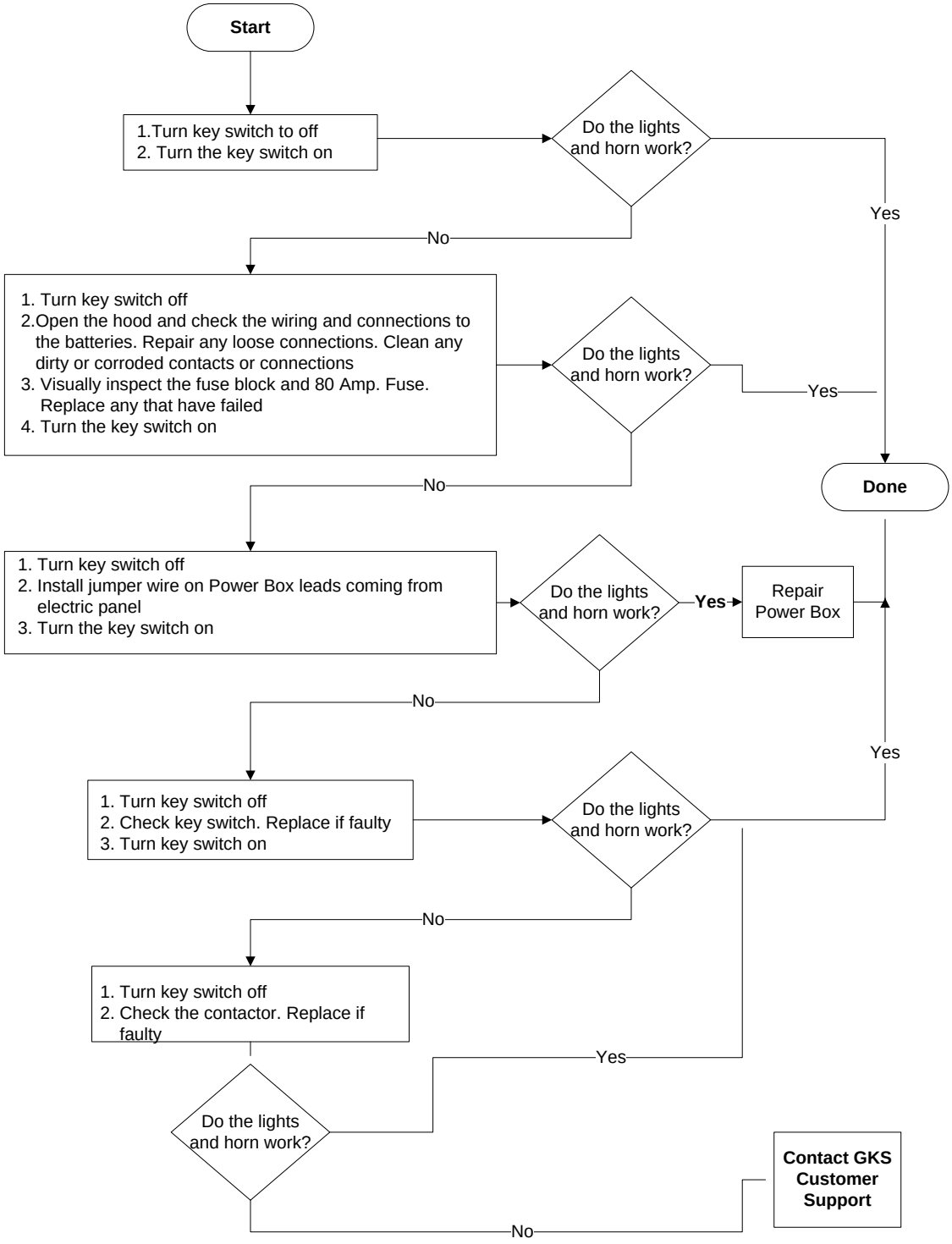
CartManager XD Receiver Issues - Continued



Electrical Issues

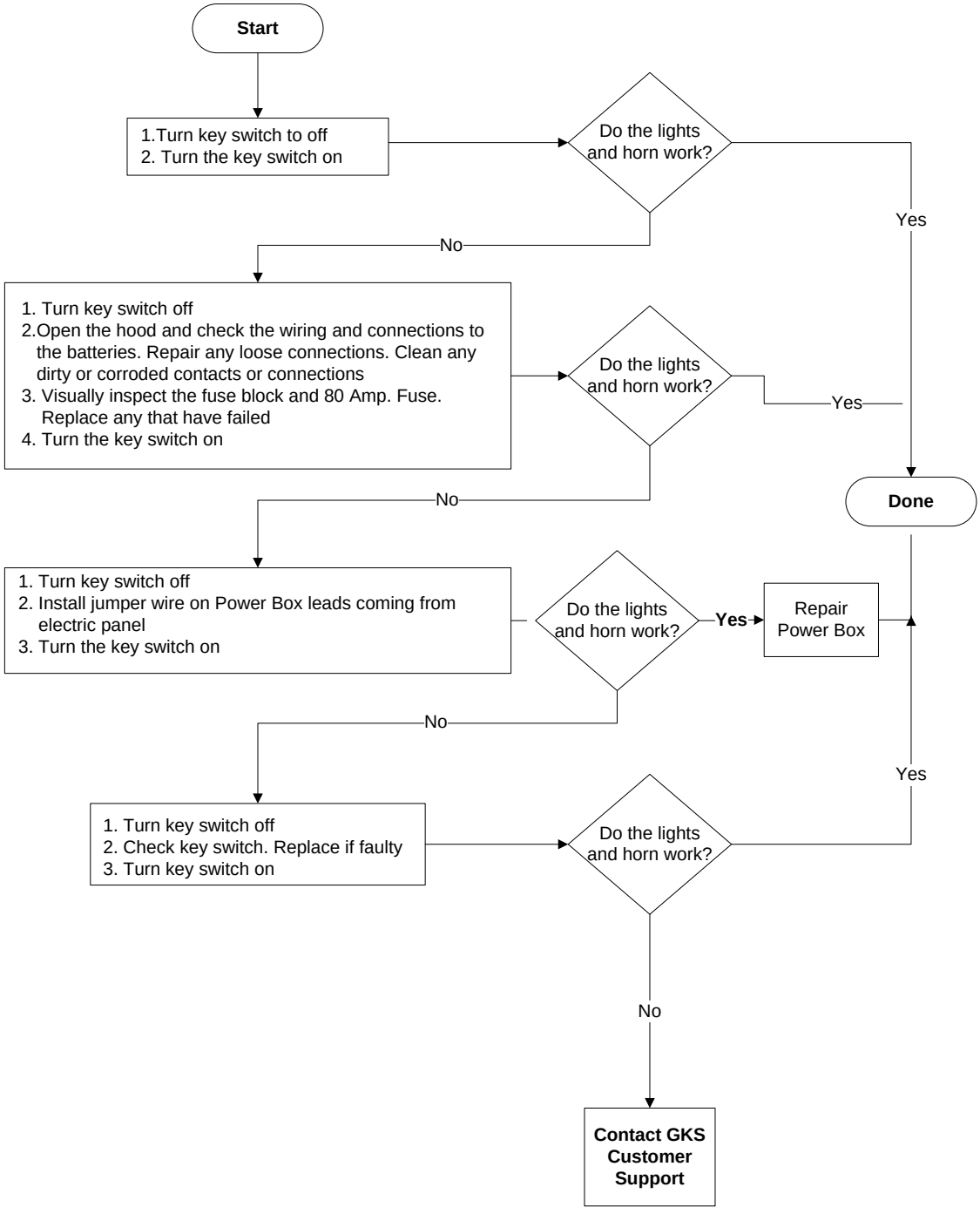
CartManager XDW Does Not Turn On

Use this troubleshooting flow chart when there is no power to lights, horn, or travel controls after key switch is on.



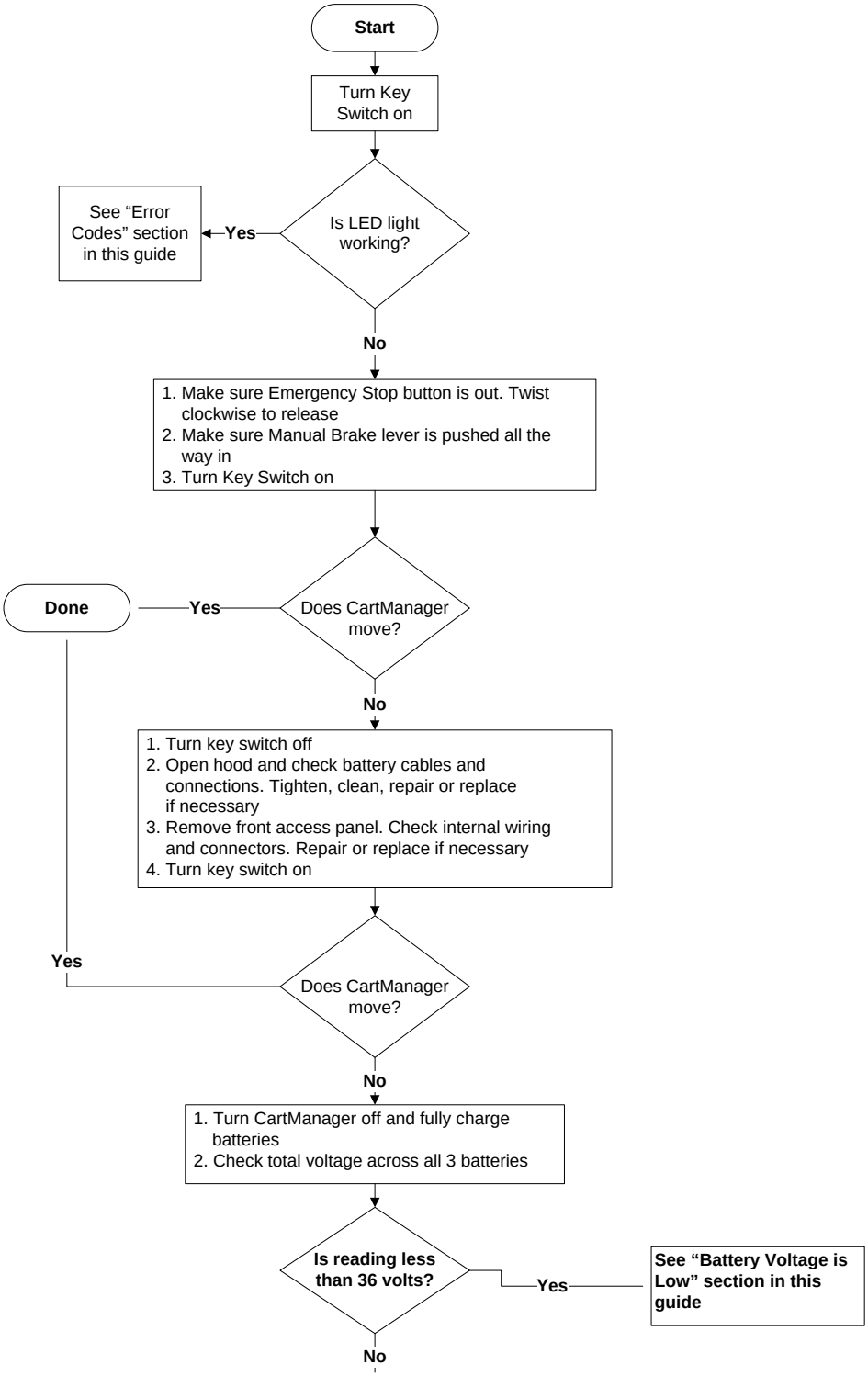
CartManager XDWi Does Not Turn On

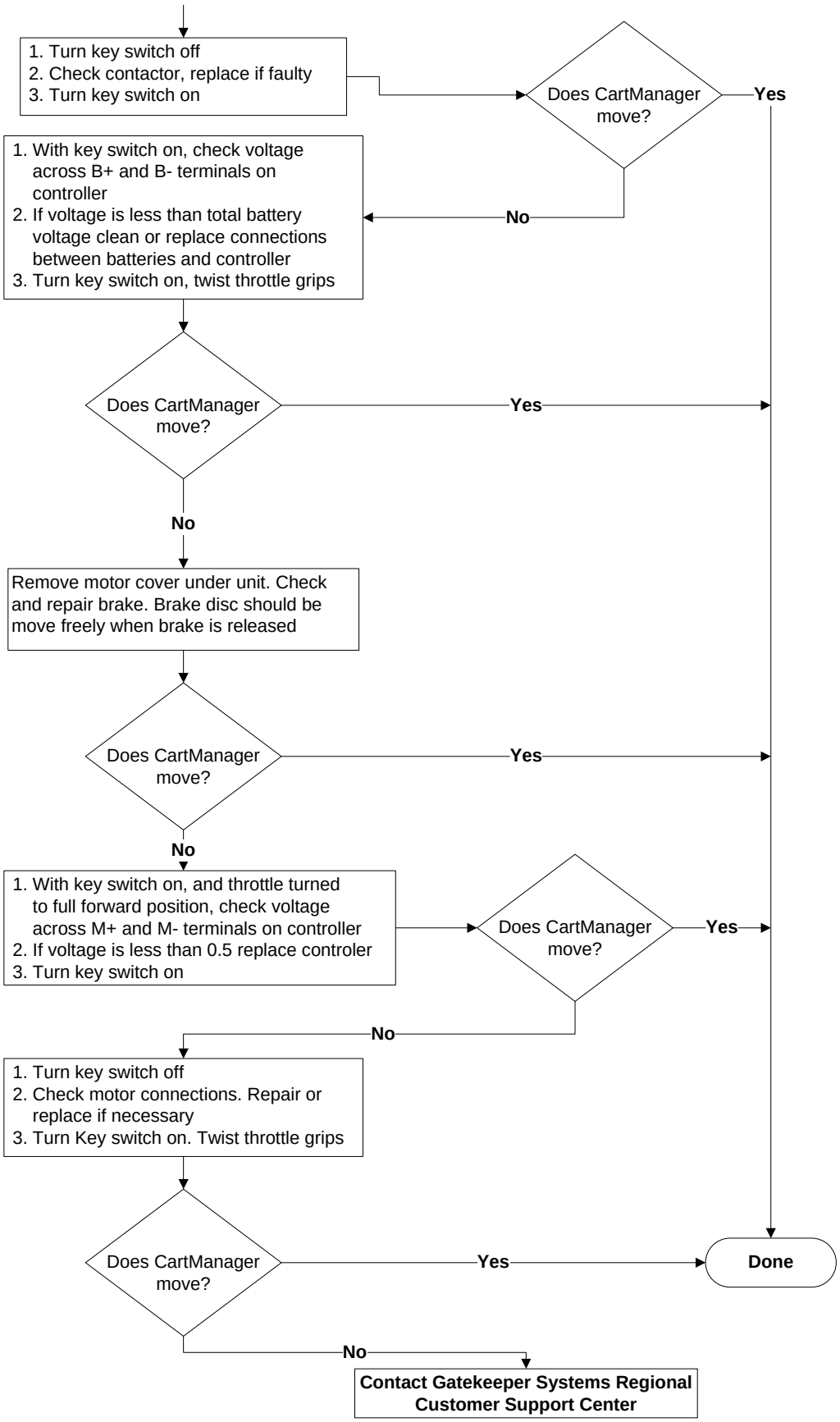
Use this troubleshooting flow chart when there is no power to lights, horn, or travel controls after key switch is on.



CartManager XDW Does Not Move

Follow the steps below if the lights work when key switch is turned on but does not move when throttle grips are initiated. If CartManager XD moves when throttle grips are turned but does not respond to the remote control, see **Remote Control Issues**.




1. Turn key switch off
2. Check contactor, replace if faulty
3. Turn key switch on
Does CartManager move?
Yes
No
1. With key switch on, check voltage across B+ and B- terminals on controller
2. If voltage is less than total battery voltage clean or replace connections between batteries and controller
3. Turn key switch on, twist throttle grips
Does CartManager move?
Yes
No
Remove motor cover under unit. Check and repair brake. Brake disc should be move freely when brake is released
Does CartManager move?
Yes
No
1. With key switch on, and throttle turned to full forward position, check voltage across M+ and M- terminals on controller
2. If voltage is less than 0.5 replace controler
3. Turn key switch on
Does CartManager move?
Yes
No
1. Turn key switch off
2. Check motor connections. Repair or replace if necessary
3. Turn Key switch on. Twist throttle grips
Does CartManager move?
Yes
Done
No
Contact Gatekeeper Systems Regional Customer Support Center

CartManager XDWi Does Not Move

Follow the steps below if the lights work when key switch is turned on but does not move when throttle grips are initiated. If CartManager XD moves when throttle grips are turned but does not respond to remote control, see **Remote Control Issues**.

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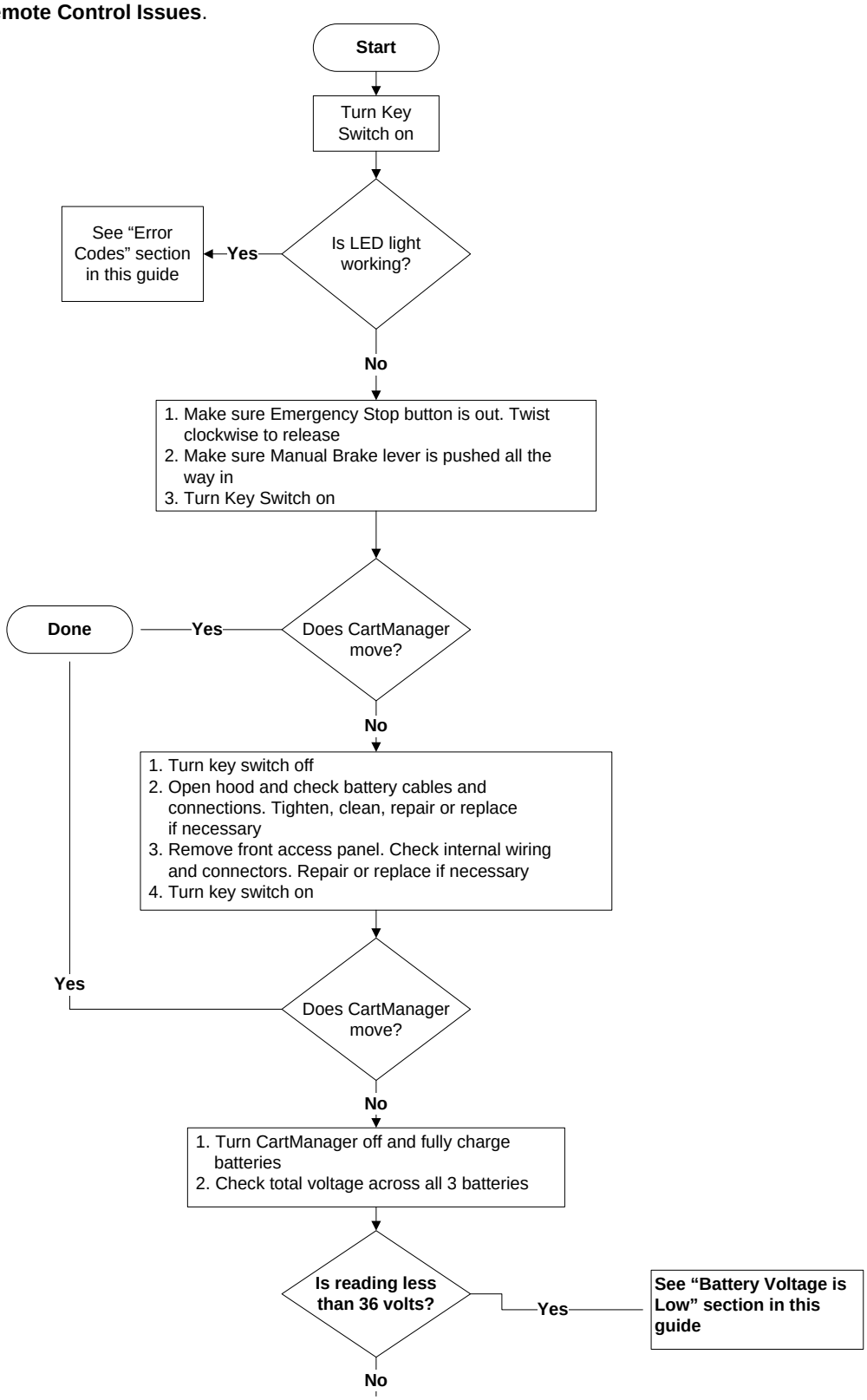
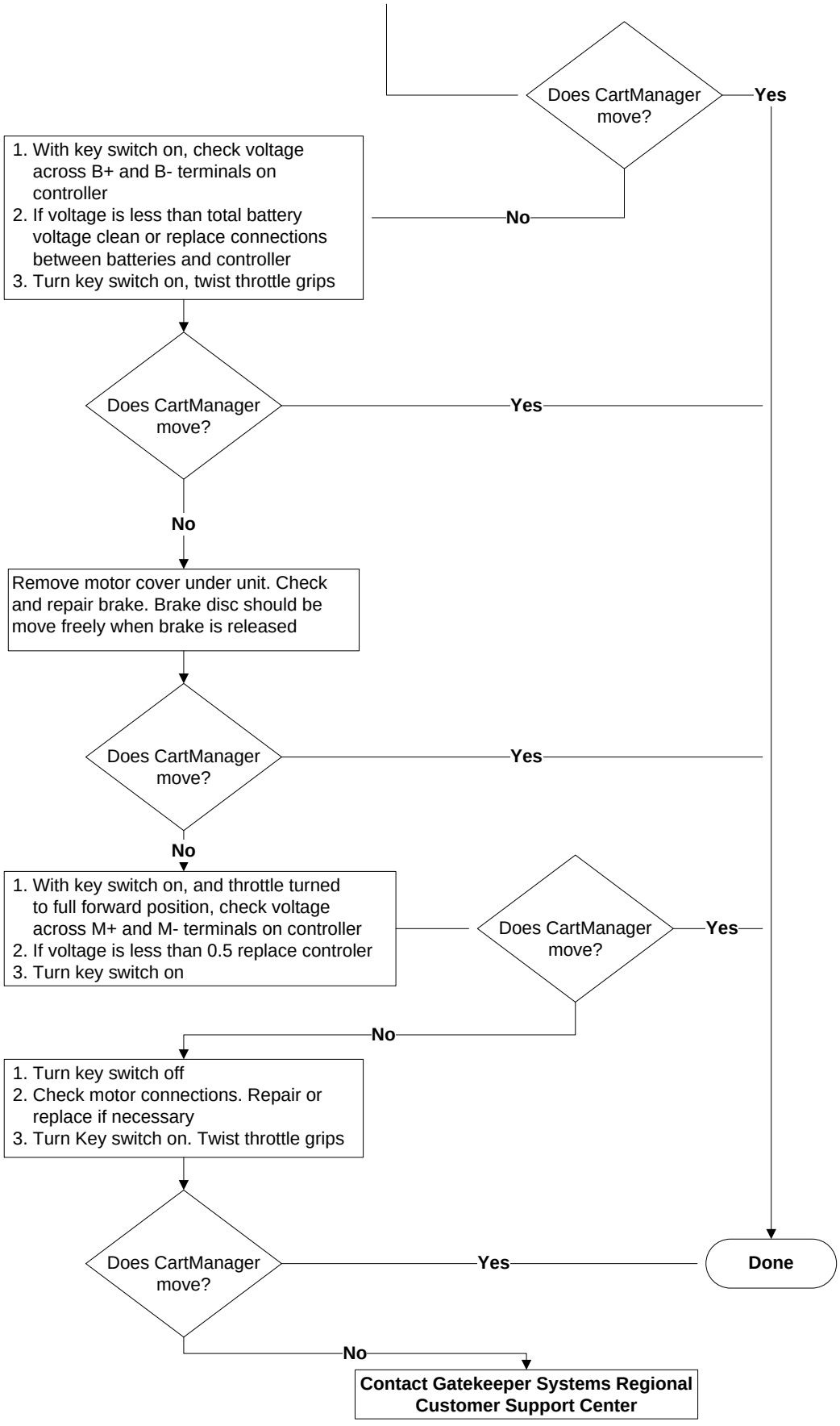
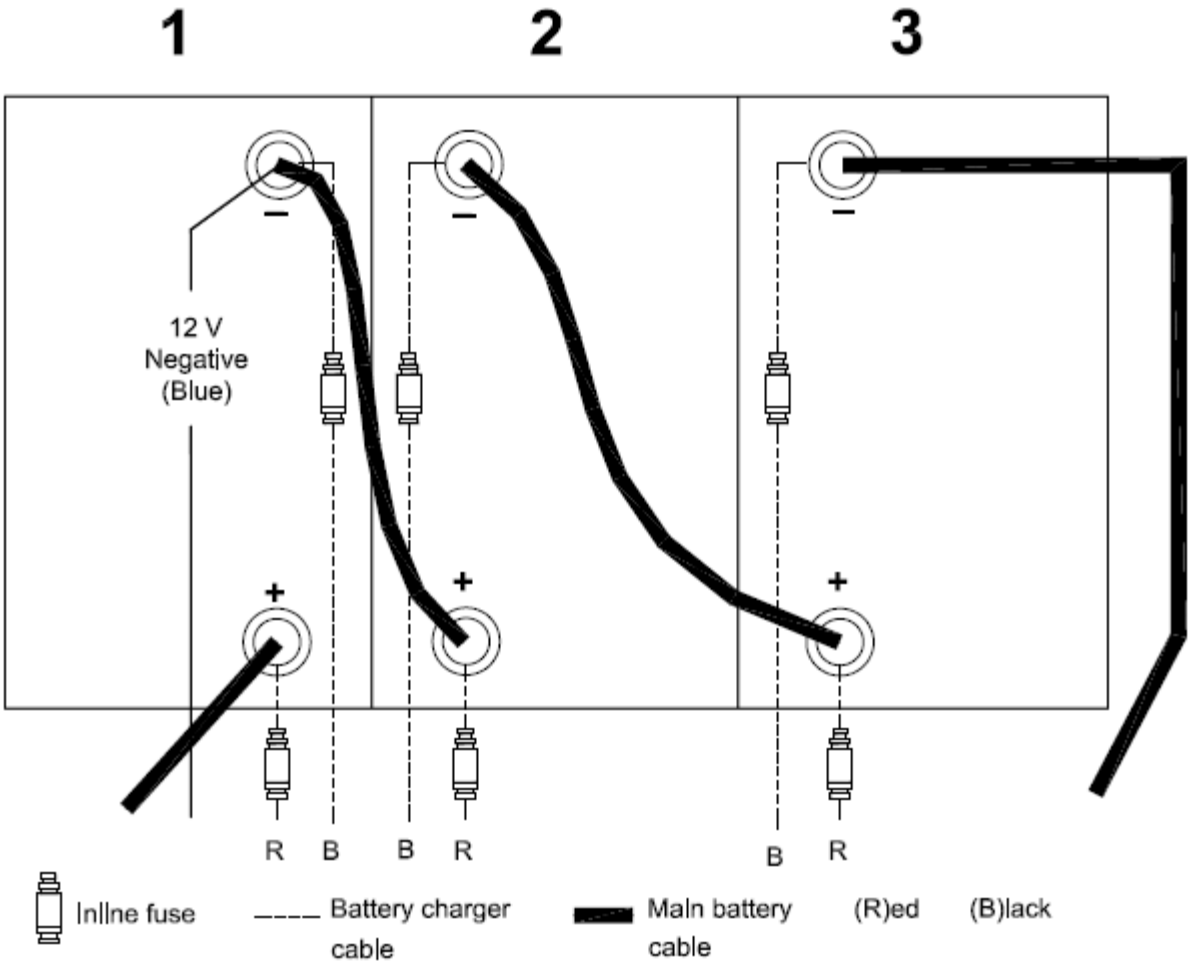



Does CartManager move?
Yes
1. With key switch on, check voltage across B+ and B- terminals on controller
2. If voltage is less than total battery voltage clean or replace connections between batteries and controller
3. Turn key switch on, twist throttle grips
No
Does CartManager move?
Yes
No
Remove motor cover under unit. Check and repair brake. Brake disc should be move freely when brake is released
Does CartManager move?
Yes
No
1. With key switch on, and throttle turned to full forward position, check voltage across M+ and M- terminals on controller
2. If voltage is less than 0.5 replace controler
3. Turn key switch on
Does CartManager move?
Yes
No
1. Turn key switch off
2. Check motor connections. Repair or replace if necessary
3. Turn Key switch on. Twist throttle grips
Does CartManager move?
Yes
Done
No
Contact Gatekeeper Systems Regional Customer Support Center

Batteries and Chargers



Battery Charger

The symptoms of battery charge malfunction will differ depending on the type of charger in your particular CartManager XD:

LEDs - the charger has three LEDS; red, yellow and green, for each of the batteries in the CartManager XD. Only one of these LEDs should be illuminated at a time.

Red – indicates a short circuit, blown inline fuse, reverse polarity (charger hooked up backwards to the battery), or battery voltage is below 4 volts or above 18 volts. If the red LED is illuminated while the battery is connected, immediately disconnect from the AC power and check the battery connections. The red LED will also illuminate if a battery is not connected to the DC battery leads.

Flashing Red – indicates damaged temperature sensor in that bank. This bank will not charge. (Not in older model)

Flashing Red and Green – indicates possible damage to battery. Load test and replace if necessary. (Not in older model)

Yellow – indicates the battery charger is in bulk charging mode. This LED will be on until the battery is over 75% charged.

Flashing Yellow – indicates the battery charger is in bulk charging mode. This LED will continue to flash while the battery charges from 75% to 95%.

Green – indicates that the battery is over 95% charged and is being maintained. Once the battery reaches full charge, the green LED will stay illuminated until the charger is unplugged.

Flashing Green – indicates the battery charged, is in maintenance mode and ready to use. (Not in older model)

Red and Green – indicates that temperature switch inside charger has blown or battery is below 4 volts and should be replaced.

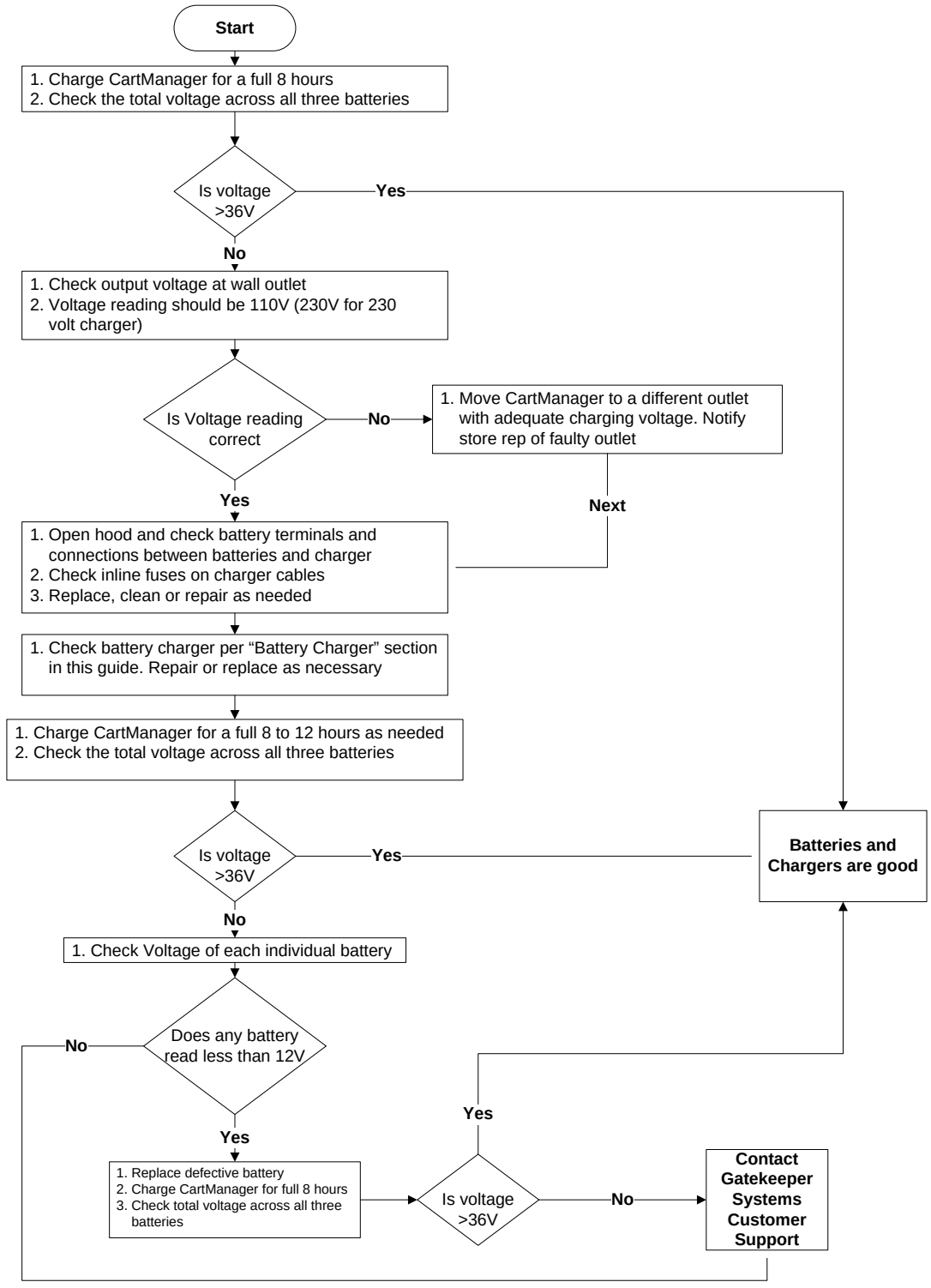
Inline fuses – inline fuses near the terminal end of each positive (red) DC lead serve as protection from extreme voltage surges or lightning strikes. If a fuse blows, replace it with the exact type and rating of the original fuse. Improper battery connections will normally not cause a fuse to blow since this is handled by the charger's internal circuitry.

Note: that the charger cannot charge a battery that is damaged or has been discharged to less than 8 volts.

Note: For the MK330, many older model XDW CartManagers contain the Minn Kota MK 330 charger, which does not have any of the flashing lights indicated above.

Battery Voltage is Low or Battery Runs Down Quickly

CartManager XD should operate for 8-10 hours on an eight hour charge. If run time is consistently low, despite a full charge, it means that the batteries are either not receiving a full charge or are not holding the charge.



Error Codes

When the key switch is turned on, the CartManager XD powers up and runs through a brief diagnostic routine. If any electrical or electrical-mechanical faults are detected, the battery charge indicator displays a series of lights that indicate the type of fault and the drive motor remains offline until the fault is corrected. The sections below list the possible error codes and give some diagnostic tips for finding and correcting the problem.

XDWi PG i-Drive 140 AMP Controller	XDW LED Codes 160 AMP Controller

1 Bar Flashing — XDWi — 4.1 & 1.2 — XDW

Cause Controller detects that total voltage has fallen below 16 volts. This can mean that the CartManager XD needs to be recharged, or there may be a bad connection to the battery.

Correction

1. Determine when the CartManager XD was last charged. Recharge and recheck.
2. Load test individual voltage of each battery and total voltage of all three batteries. If any are low, check connections for main battery cables and charging cables. Replace any damaged or leaking batteries.
3. Check the status lights on the battery charger. Refer to the Battery Charging Issues section for an explanation of the different charger light combinations.
4. If 1 flashing bar persists, check the controller and replace if needed.

2 Bars Flashing — XDWi — 1.1 — XDW

Cause There is a bad connection to the motor, or the motor has become disconnected.

Correction

1. Check the physical condition of the motor. Replace entire assembly if needed.
2. Check motor wire harness.
3. Check motor connection wire on the motor controller.

3 Bars Flashing — XDWi — 1.1 & 1.2 — XDW

Cause Motor is short circuited to a battery connection.

Correction

1. Check motor wires for shorts or bad connections.
2. Make sure motor wires are not grounded to the battery.

4 Bars Flashing — XDWi — 2.4 & 3.1 — XDW

Not used on the CartManager XD.

5 Bars Flashing — XDWi — 2.4 & 3.1 — XDW

Not used on the CartManager XD.

6 Bars Flashing

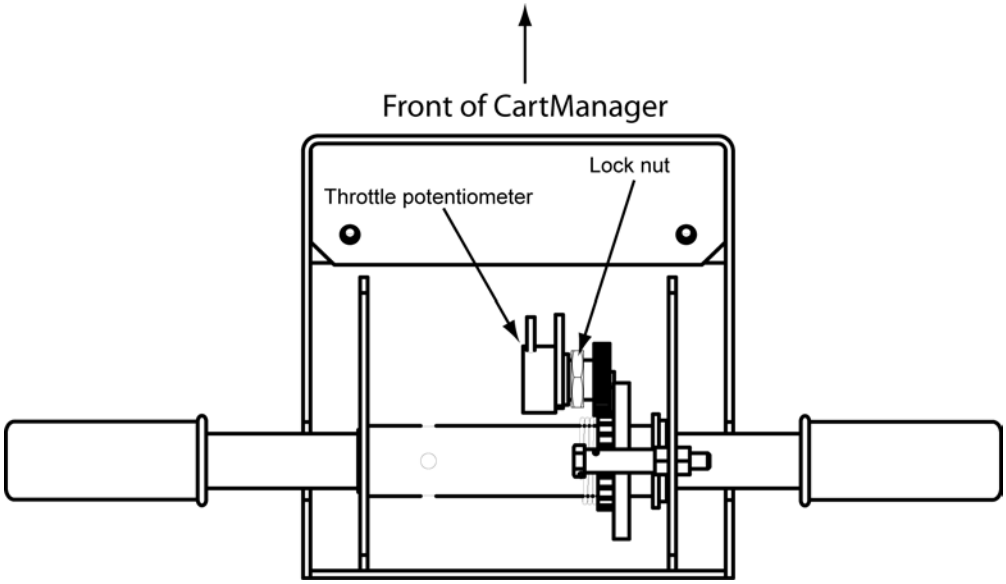
Twist and release E-Stop Button.

7 Bars Flashing XDWi 2.2, 2.3 & 3.3 XDW

Cause There is a problem with the throttle potentiometer or the wires leading to it.

Correction

1. Remove the white 14-pin connector from the bottom of the motor controller.
2. Make sure that the throttle is in the neutral position.
3. Measure the resistance between pins 1 and 8. You should get the values listed below when the throttle is in the indicated position. Check wiring diagram for pin numbers on controller.
   - neutral 2.5 ± 0.15 K ohms
   - forward 5.0 ± 0.15 K ohms
   - backward 0 ± 0.15 K ohms
4. If any of the findings deviate from the listed values, open the box that holds the throttle grips, horn button and Emergency Stop Button. A simplified diagram of the interior is shown below. Loosen the lock nut and adjust the throttle potentiometer until the proper resistance value is achieved.



8 Bars Flashing XDWi 1.2 XDW

Cause The motor controller has detected a self-fault.

Correction

1. Check that the wire harness at the bottom of the controller is securely in place.
2. Run the tests listed in the “7 Bars Flashing” section above.
3. Go through the “CartManager XD Does Not Turn On” algorithm on page 11.
4. Remove the front access panel.
5. Disconnect the M- lead from the controller to prevent unexpected movement of the unit.
6. Check all connections at the connector blocks and fix any loose connections.
7. Make sure that the remote control unit is on. Press the “SLOW” button on the remote. You should hear a distinct click as the relay on the back of the speed control as the relay responds to the remote. If you do not hear the click, replace the relay.
8. Repeat the previous step with the “FAST” button on the remote control unit.
9. If still flashing 8 bars, replace the controller.

9 Bars Flashing XDWi 3.2 XDW

Cause Failure of the motor brake solenoid or the wires leading to it.

Correction

1. Check the Manual Brake Release. Make sure it is pushed all the way in.
2. Turn the throttle grips. You should hear a distinct click as the motor brake disengages. If you do not hear the click:
   - Check the brake switch. Replace if needed.
   - Check that the wires to the motor brake are not loose or disconnected. Repair or replace wires as needed.
3. If fault is not cleared, measure the total voltage across all three batteries.
4. Check the voltage between two pins on the white 2-pin connector on controller. When the throttle is turned away from the neutral position, voltage across these pins should equal the total battery voltage measured in the previous step ± 1V. When throttles are in neutral position, voltage across these pins should be 0V ± 0.5V. If you do not get these values, the controller is faulty and should be replaced.
5. If fault is not cleared, replace the motor brake.

10 Bars Flashing XDWi 4.2 XDW

Cause Total battery voltage is greater than 45 volts.

Correction

1. Unplug the charging cord before starting the CartManager XD.
2. Turn the CartManager XD off. Wait 5 seconds and turn back on.
3. Check for faulty connections between battery and charger.

10 Bars Rippling Up and Down XDWi 2.1 & 2.2 XDW

Cause The throttle is engaged when the CartManager XD is started. This cutout prevents the CartManager XD from lurching forward if the throttle grips are not in neutral position when the key switch is turned on.

Correction

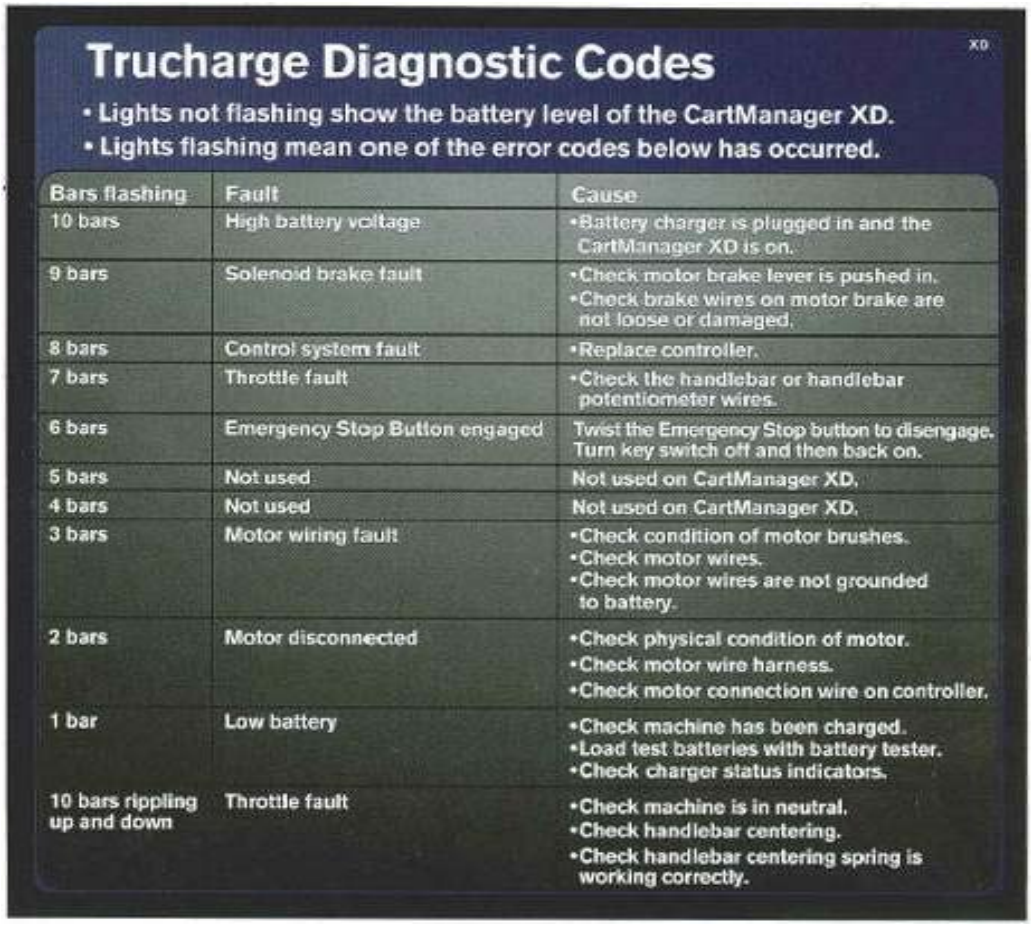
1. Release the throttle grips and do not turn them while starting the CartManager XD. If this clears the error, no further action is necessary.
2. Remove throttle grip housing cover and check throttle grip neutral position, adjust if necessary.
3. Check throttle grip centering spring. Replace if not returning throttle grips to neutral position when released.
4. With the throttle grips in neutral position, measure the resistance between potentiometer terminals 1 & 3. It should be 2.5 ± 0.2 K ohms. Adjust if necessary.

4.3 XDW only

Temperature Cut Back

- Controller is too hot or too cold (over 95ºC or under -25 ºC).
- Pushing too many carts, on a heavy grade.
- Extreme weather conditions.

Error Code Label Sheet on XDWi

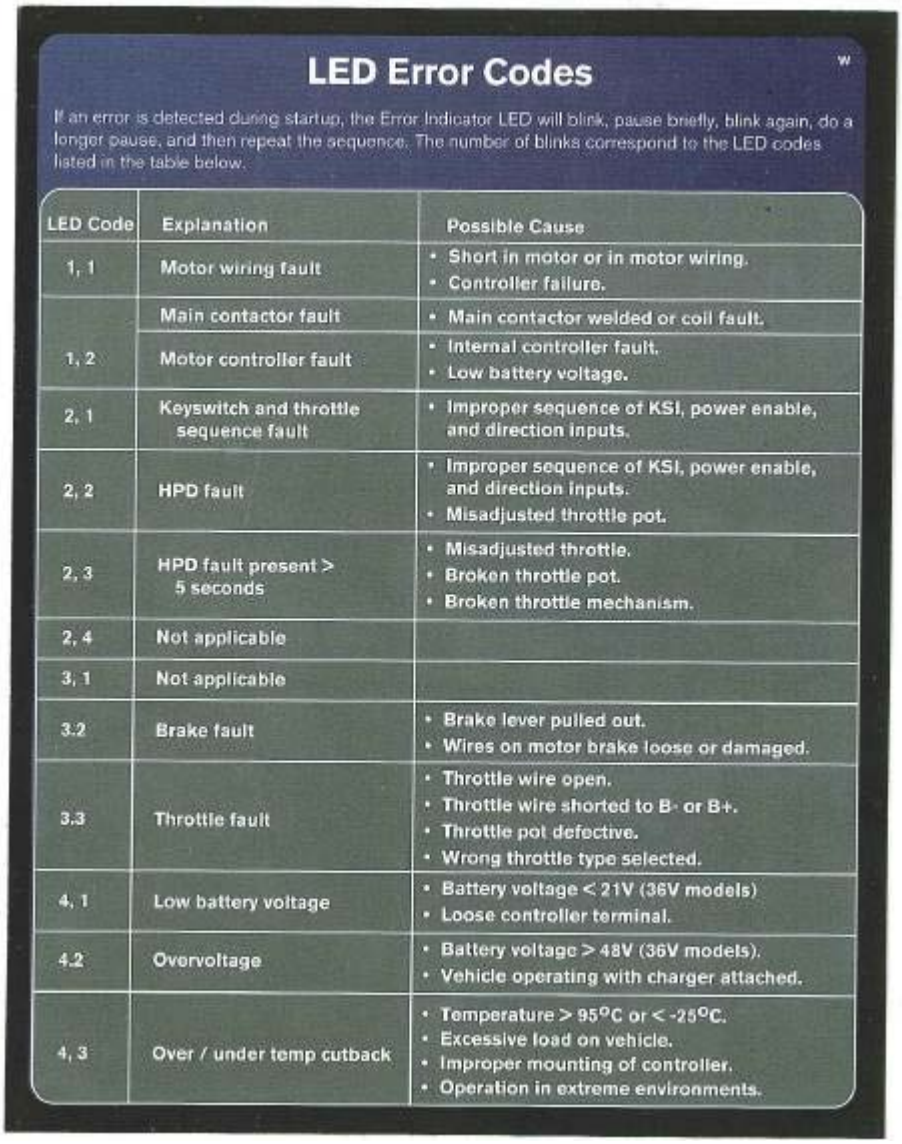


Trucharge Diagnostic Codes XD

- Lights not flashing show the battery level of the CartManager XD.
- Lights flashing mean one of the error codes below has occurred.

Bars flashing	Fault	Cause
10 bars	High battery voltage	•Battery charger is plugged in and the CartManager XD is on.
9 bars	Solenoid brake fault	•Check motor brake lever is pushed in. •Check brake wires on motor brake are not loose or damaged.
8 bars	Control system fault	•Replace controller.
7 bars	Throttle fault	•Check the handlebar or handlebar potentiometer wires.
6 bars	Emergency Stop Button engaged	Twist the Emergency Stop button to disengage. Turn key switch off and then back on.
5 bars	Not used	Not used on CartManager XD.
4 bars	Not used	Not used on CartManager XD.
3 bars	Motor wiring fault	•Check condition of motor brushes. •Check motor wires. •Check motor wires are not grounded to battery.
2 bars	Motor disconnected	•Check physical condition of motor. •Check motor wire harness. •Check motor connection wire on controller.
1 bar	Low battery	•Check machine has been charged. •Load test batteries with battery tester. •Check charger status indicators.
10 bars rippling up and down	Throttle fault	•Check machine is in neutral. •Check handlebar centering. •Check handlebar centering spring is working correctly.

Error Code Label Sheet on XDW



LED Error Codes

If an error is detected during startup, the Error Indicator LED will blink, pause briefly, blink again, do a longer pause, and then repeat the sequence. The number of blinks correspond to the LED codes listed in the table below.

LED Code	Explanation	Possible Cause
1, 1	Motor wiring fault	• Short in motor or in motor wiring. • Controller failure.
1, 2	Main contactor fault	• Main contactor welded or coil fault.
	Motor controller fault	• Internal controller fault. • Low battery voltage.
2, 1	Keyswitch and throttle sequence fault	• Improper sequence of KSI, power enable, and direction inputs.
2, 2	HPD fault	• Improper sequence of KSI, power enable, and direction inputs. • Misadjusted throttle pot.
2, 3	HPD fault present > 5 seconds	• Misadjusted throttle. • Broken throttle pot. • Broken throttle mechanism.
2, 4	Not applicable	
3, 1	Not applicable	
3.2	Brake fault	• Brake lever pulled out. • Wires on motor brake loose or damaged.
3.3	Throttle fault	• Throttle wire open. • Throttle wire shorted to B- or B+. • Throttle pot defective. • Wrong throttle type selected.
4, 1	Low battery voltage	• Battery voltage < 21V (36V models) • Loose controller terminal.
4.2	Overvoltage	• Battery voltage > 48V (36V models). • Vehicle operating with charger attached.
4, 3	Over / under temp cutback	• Temperature > 95°C or < -25°C. • Excessive load on vehicle. • Improper mounting of controller. • Operation in extreme environments.

Mechanical Procedures

Replacing the Strobe Light Bulb

You will need:

- A replacement strobe light bulb, part #E500238-02.
- A pair of pliers or vice grips and Phillips P2 screwdriver.

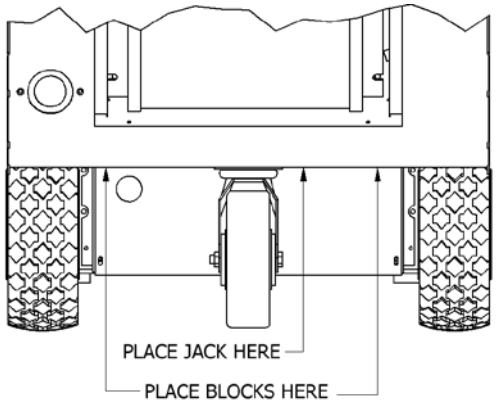
1. Remove four screws from protective cage and remove protective cage.
2. Grasp the orange strobe light cover with your hand and twist counter clockwise to remove it from the strobe housing.
3. Grasp the plastic housing on the old bulb just above the two small wings that stick out on either side. Pull firmly to remove the casing from the base.
4. Press the new bulb firmly into the bulb base, taking care not to bend the metal contacts. Make sure to align the rounded corners on the bulb socket with the rounded corners in the bulb base.
5. Screw the strobe cover back on to the strobe housing.
6. Replace protective cage.
7. Turn key switch on and confirm that the new strobe is working.

Replacing the Rear Swivel Wheel

You will need:

- One wheel assembly, foam filled: part #A500128-03.
- A car jack, ball jack, pallet jack, or similar type of device capable of lifting at least 750 pounds.
- Four wheel chocks.
- Several sturdy wood blocks.
- A 9/16 inch (15 mm) socket and driver, and a medium crescent wrench or 9/16 inch box end wrench.

1. Park the CartManager XD in a dry, flat area.
2. Push the manual brake all the way in.
3. Wedge chocks in front and behind both of the drive wheels.
4. Place the car jack or one tongue of the pallet jack on the metal frame at the back of the CartManager XD, just to the side of the square metal plate that supports the swivel wheel, as shown in the figure at right.
5. Raise the CartManager XD so that the swivel wheel is approximately1 inch off the ground.
6. Wedge the wood blocks under both corners of the bar that supports the swivel wheel plate. Make sure the blocks are the same height on both sides.
7. Lower the CartManager XD onto the blocks and remove the jack.
8. Remove the four bolts from the swivel wheel base plate. Save the bolts.
9. Attach the new swivel wheel assembly. Tighten the nuts securely.
10. Place the jack, remove the wood blocks and lower the CartManager XD back down.



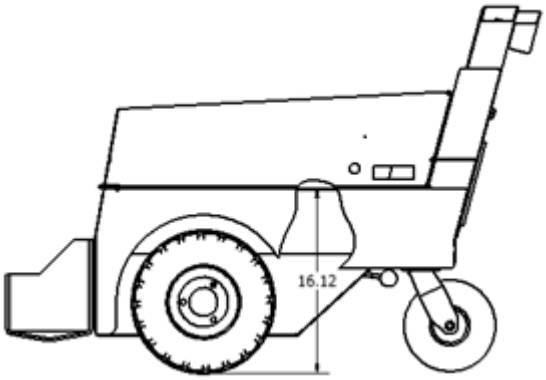
Replacing the Main Drive Tires

The foam-filled main drive tires are designed to give maximum traction and durability over a wide range of working conditions and surfaces. The only time you should need to replace a tire is in the case of excessive wear or damage. If you need to replace both tires, do them one at a time.

You will need:

- One or two replacement foam-filled tires, part #A500129.
- A car jack, ball jack, or similar type of device capable of lifting at least 750 pounds.
- Four wheel chocks.
- Several sturdy wood blocks.
- A 3/4 inch socket, socket driver and a short extension.

1. Park the CartManager XD in a dry, flat area.
2. Turn the unit off and push the manual brake level all the way in.
3. Wedge a wheel chock in front and in back of the wheel you are NOT working on.
4. Wedge two chocks to immobilize the back swivel wheel.
5. On the wheel being replaced, use the 3/4 inch socket to loosen the nuts about ½ turn.
6. Place the jack under the side panel on the same side as the wheel being changed, as shown in the diagram below. You can also use the forklift or pallet jack to lift from underneath.



7. Lift the CartManager XD so that you have just enough room to slide the new tire on.
8. Wedge the wood blocks under the front corner of the CartManager XD. This provides an extra safety measure in case the jack shifts.
9. Remove the nuts and pull the tire straight off the bolts.
10. Slide on the replacement tire and tighten the nuts.
11. Lower the jack and remove all tools and materials from the area.

Adjusting the Cart Cradles

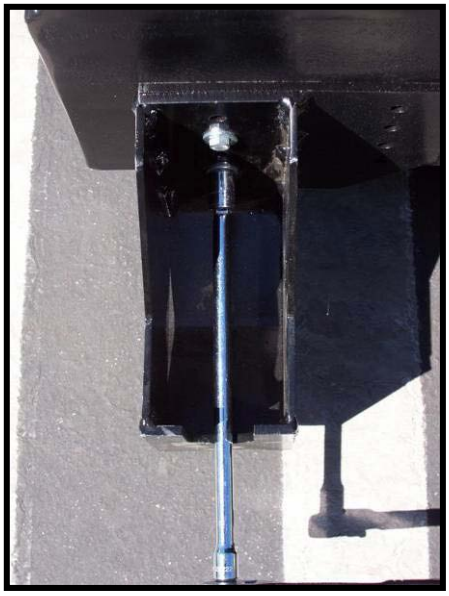
You will need to adjust the height of the cart cradles on the front of the CartManager XD if they consistently scrape when going over speed bumps, up ramps, over door sills, etc. You may also need to adjust the distance between the cradles if your store changes to carts with a different width between the back wheels.

- Adjust height to clear obstacles (example: Speed Bumps, etc.)

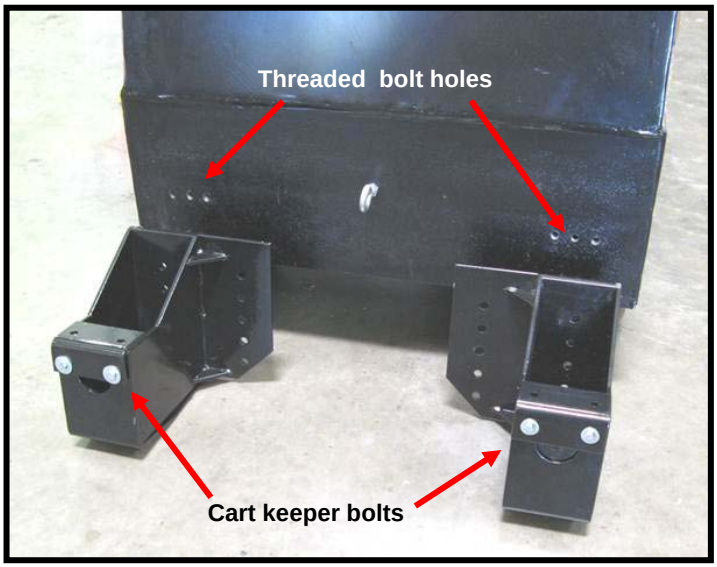
You will need:

- A 1/2 inch (13 mm) socket, a driver and a long extension.

1. Park the CartManager XD in a dry, flat area.
2. Make sure the unit is turned off and the manual brake lever is pushed all the way in.
3. Loosen the four bolts holding the cart cradles in place, as shown at right.

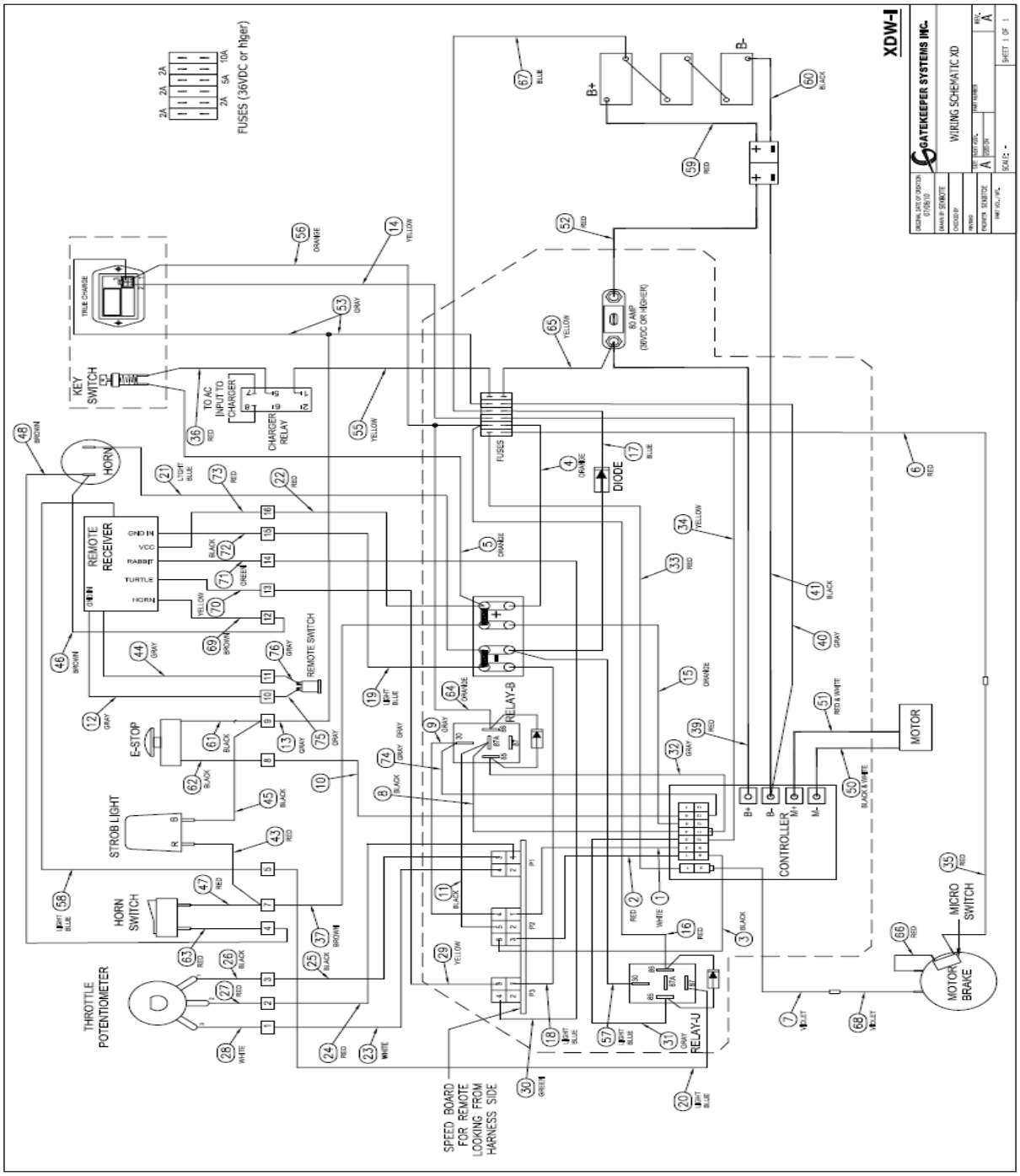


4. Move the cart cradles to the required position and replace the bolts.

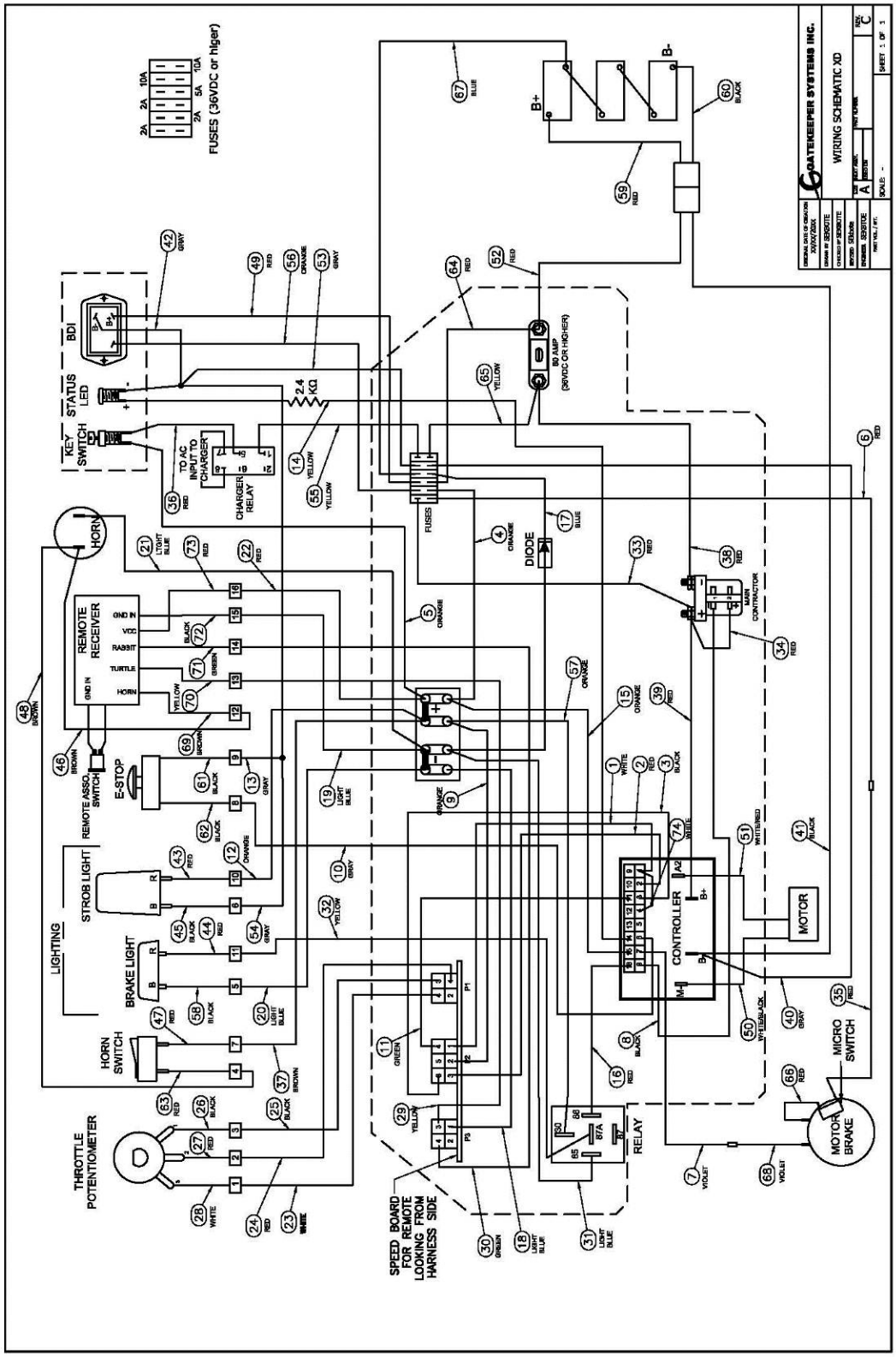


Wiring Diagram

XDWi



XDW


GATEKEEPER SYSTEMS INC.
WIRING SCHEMATIC XD
FUSES (36VDC or higer)
2A 2A 10A
2A 5A 10A
BDI
STATUS LED
KEY SWITCH
TO AC INPUT TO CHARGER
CHARGER RELAY
2.4 KΩ
80 AMP (36VDC OR HIGHER)
FUSES
DIODE
HORN
REMOTE RECEIVER
GND IN
VCC
RABBIT
TURTLE
HORN
REMOTE ASSO. SWITCH
E-STOP
STROB LIGHT
LIGHTING
BRAKE LIGHT
HORN SWITCH
THROTTLE POTENTIOMETER
MAIN CONTACTOR
CONTROLLER
MOTOR
MICRO SWITCH
MOTOR BRAKE
RELAY
SPEED BOARD FOR REMOTE LOOKING FROM HARNESS SIDE
B+
B-

Ordering Parts

When ordering parts, you will need the following information:

- Model of the unit
- Serial number
- Part number
- Part description

Part Number	Part Description	Model
A3085	Ground chain	XDW/XDWi
A500128-03	Caster (all carts)	XDW/XDWi
A500129-000	Tire (all carts)	XDW/XDWi
A500219	Battery strap	XDW/XDWi
D-5061	Speed board	XDW/XDWi
E14753-526	Remote receiver field kit	XDW/XDWi
E14753-528	Flat antenna kit to replace stick	XDW/XDWi
E4008	Throttle pot, w/ terminals	XDW/XDWi
E500124-04	Brake Relay, 36 V	XDWi
E500124-07	Micro switch (Only on the USA/Euclid transaxles)	XDW/XDWi
E500126-07	Trucharge indicator	XDWi
E500126-13	Controller XDWi	XDWi
E500126-215	Controller XDW	XDW
E500127-02	Relay, charger interlock, 120 V	XDW/XDWi
E500145-01	Key switch (all carts)	XDW/XDWi
E500145-02	Extra spare keys	XDW/XDWi
E500149-250	SW80 single pole contactor	XDW
E500187-00	E-stop button kit (all carts)	XDW/XDWi
E500238-01	Strobe light	XDW/XDWi
E500238-02	Strobe light bulb	XDW/XDWi
E500275-200	Motor, PM, 36 V, 425 Drive	XDW/XDWi
E500345-04	80 AMP fuse	XDW/XDWi
E500345-05	Fuse, 10A, ATO style	XDW/XDWi
E500345-06	Fuse, 5A, ATO style	XDW/XDWi
E500345-07	Fuse, 2A, ATO style	XDW/XDWi
E500356-0213	Pushbutton Switch 19mm	XDW/XDWi
E500356-043	Receiver	XDW/XDWi
E500402-04	12 V low tone horn	XDW/XDWi
E500406-02	Contura horn switch	XDW/XDWi
E500406-03	Horn switch actuator	XDW/XDWi
E500415	Horn switch holder	XDW/XDWi
E500519-03	Charger (all carts)	XDW/XDWi
E506023	Brake relay, 12 V	XDW

Parts List Continued…

Part Number	Part Description	Model
E506831	Charger cord (WMT)	XDW/XDWi
E7031	Antenna (all carts)	XDW/XDWi
E7031	Flat antenna	XDW/XDWi
F14753-38	Upper arm side bracket	XDW/XDWi
H500409-01	Light pole plug	XDW/XDWi
K9400	Remote transmitter	XDW/XDWi
M3079	Ball knob	XDW/XDWi
M3088	Motor brake	XDW/XDWi
M500141	Cord grip	XDW/XDWi
M500276-01	Spring plunger 5/8-11	XDW/XDWi
M500296	Throttle spring (all carts)	XDW/XDWi

CartManager XD Safety Guidelines

Note: The following guidelines are suggested practices for safely performing repairs on the CartManager XD and are designed to protect both the technician and the public at large. The safety guidelines are not meant to be a replacement for good maintenance practices or common knowledge.

Guidelines:

1. Always move the CartManager XD to safe location away from pedestrian traffic, flammable hazards or explosive gasses. If unit is not operable, pull brake rod out and disengage motor brake. You should now be able to push unit to safe location.
2. Repair work should never be performed on wet, slippery, or unleveled surface.
3. If repair location is not far enough away from pedestrian traffic, erect barricade utilizing orange cones and/or safety tape to keep pedestrians at a safe distance.
4. Raise and lower hood using hood handles to prevent pinching of fingers or hands.
5. If the repair requires working with battery connections or batteries, the service technician should wear appropriate eye protection and face protection should unexpected release of acid occur.
6. Do not open the sealed maintenance-free batteries.
7. If exchange of batteries is required, follow the manufacturer's safety guidelines for the safe handling, storage, transportation and disposal of batteries.
8. Before removing electrical parts for replacement, technician must first remove positive (red) connections from battery to prevent accidental shock or grounding of electrical system or unexpected movement of unit.
9. Service work should only be performed by authorized and trained technicians that have read and understand operations manual and safety guidelines. Technician should be familiar with safety aspects of the CartManager XD such as, Emergency Stop Button and Brake Rod. Technician should not wear loose clothing, ties, jewelry, rings or watches with metal bands when repairing the CartManager XD.
10. If repair requires tipping of unit or turning unit upside down, batteries should be removed and placed in safe location. Be sure to replace wooden blocks and battery strap when installing batteries.
11. If diagnostic testing of electrical system is required, pull brake lever to prevent accidental engaging of drive motor.
12. If diagnostic testing of drive unit is required, before beginning test, frame should be blocked so that drive wheels do not make contact with ground. Block in photo on the following page were made from two 2" x 4"s and one 1"x 4" s, 12" inches in length, that are joined together using screws.

CartManager XD Safety Guidelines - Continued

The photo to the left demonstrates a technician having tilted a unit by using a bottle jack placed behind the drive wheel, lifting carefully on one side, and placing a block under the front of the unit. Be sure to use caution, being careful to not pinch fingers.

Note: The bottle jack used should have lifting height greater than 16 1/2 “.

The photo to the left demonstrates blocks securely in place thus preventing drive wheels from contacting the ground.

A Gatekeeper Repair Specialist is available Monday through Friday from 8 a.m. – 5 p.m. CST to assist Service Technicians with questions they may have concerning repairs or safety issues with the CartManager XD.

Warranty Information

Limited Warranty

IMPORTANT: Read this entire Limited Warranty before using the CartManager XD product. The CartManager XD product (or other Gatekeeper Systems, Inc. product-collectively referred to herein as the “Product”) manufactured by Gatekeeper Systems, Inc (“Manufacturer”), is believed to be reliable if the directions for its use, maintenance and operating procedures are followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this Product. Risk of failure, including personal injury, dismemberment, injury to property or even death, may result from misuse, abuse, neglect, negligent use, accidental or intentional damage, ordinary wear and tear, violation or omission of standard operating procedures, improper maintenance, failure to perform routine and preventive maintenance, alterations, additions and/or modifications to the Product, use by any individual not a fully trained and fully authorized operator, and improper training of the operator, all of which are beyond the control of Manufacturer. All such risks are fully assumed by the purchaser/customer of the Product (“Customer”).

Manufacturer offers a limited warranty (the “Limited Warranty”) to each customer who is the original purchaser of this Product that, effective for a period one year (“Limited Warranty Period”) from the date of delivery of the Product to the Customer, that the Product is free from defects in material or workmanship in normal use and service. Should any Product prove not to conform to the foregoing Limited Warranty, the remedies of Customer for any breach of the foregoing Limited Warranty shall be limited to the repair or replacement of the Product IN NO EVENT SHALL MANUFACTURER’S OBLIGATIONS PURSUANT TO THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE PAID TO THE MANFACTURER BY THE CUSTOMER FOR THE PARTICULAR PRODUCT INVOLVED, TO THE EXCLUSION OF ALL OTHER REMEDIES OR LIMITATIONS, INCIDENTAL OR CONSEQUENTIAL DAMAGES. The Limited Warranty, which is Customer’s EXCLUSIVE REMEDY, shall be FURTHER LIMITED as follows:

5. If the defect in material or workmanship is disclosed to the Manufacturer by the Customer within the first ninety (90) days following delivery of the Product to the Customer, the Limited Warranty shall be the full cost of the labor and parts to repair or replace the defective Product or component parts thereof.
6. If the defect in material or workmanship is disclosed to the Manufacturer by the Customer prior to the expiration of the Limited Warranty Period but more than ninety (90) days following delivery of the Product, the Limited Warranty shall be the Manufacturer’s cost of the replacement parts (excluding repair labor) required to repair the defective Product or component part.

Any warranty repair or replacement of Products or defective component parts shall occur at the Manufacturer’s (or authorized service provider’s) place of business. In order to obtain warranty service, the Customer must return the defective Product to the Manufacturer within the Warranty Period, together with proof of purchase by Customer establishing date of delivery, with freight charges and applicable costs of repair, if any, prepaid, which Product the Manufacturer shall have determined to its satisfaction, after examination, to have been defective. The Manufacturer shall ship, prepaid; any repaired or replaced Product covered by the Limited Warranty, to the Customer’s facility located within the continental United States.

(continued on next page)

Limited Warranty Program (continued)

The Limited Warranty is invalid if the factory-applied number has been altered or removed from the Product. The Limited Warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, neglect, negligent use, accidental or intentional damage, ordinary wear and tear, violation or omission of standard operating procedures improper maintenance, failure to perform routine and preventative maintenance, alternations, additions and/or modifications to the Product, use by any individual not a fully trained and fully authorized operator, and improper training of the operator, or repair or attempted repair by anyone other than Manufacturer or its authorized agents, nor to any Product which is leased or used as rental equipment. The occurrence of any of the foregoing voids the Limited Warranty. This Limited Warranty does not cover Customer instruction or training.

THIS LIMITED WARRANTY PROGRAM IS EXCLUSIVE AND IS GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, EXPRESSED OR IMPLIED OR INFERABLE FROM THE COURSE OF DEALING OR USAGE OF TRADE, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY O MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTY ARISING FROM PERFORMANCE, COURSE OF DEALING OR USAGE OF TRADE, AND ALL OTHER OBLIGATIONS, LIABILITIES, RIGHTS, CLAIMS OR REMEDIES, INCLUDING ANY RIGHT IN CONTRACT, TORT, STRICT LIABILITY OR ANY RIGHT ARISINGFROM MANUFACTURER'S NEGLIGENCE, ACTUAL OR IMPUTED FOR CLARIFICATION ONLY (AND NOT IN ANY WAY TO EXPAND THE FOREGOING EXCLUSIVE REMEDIES):

7. Under no circumstances will manufacturer be liable for lost profits or any other incidental, on sequential, special or indirect damages resulting from the purchase or use of this product, including, without limitation, economic loss, cost of capital, claims of customers for failure of supply or loss of use or damage to persons or to other property, notwithstanding the fact that the manufacturer has been advised of the possibility of such damages.
8. The total liability of the manufacturer to customer shall not exceed the total purchase price paid by the distributor or manufacturer for the particular product involved.
9. No agreement varying or extending the foregoing warranties, remedies or limitations will be binding upon the manufacturer unless in writing and signed by a duly authorized corporate officer of the manufacturer.

If any term or condition of this Limited Warranty program is in violation of applicable local, state, or federal law, this having jurisdiction in the matter, shall rewrite and reform the Limited Warranty to the minimum extent required so as to be permitted under applicable law.

Contacting Gatekeeper Systems

For more information about CartManager XD training and troubleshooting, or to order replacement parts or report an issue, contact the Gatekeeper Systems, Inc. regional Customer Support office nearest to your location.

USA

Gatekeeper Systems, Inc.
2520 N. Great Southwest Parkway
Suite 110
Grand Prairie, TX 75050
USA

Toll-free: + (1) 888.808.9433
Tel: + (1) 949.453.1940

Canada

Gatekeeper Systems Canada, Ltd.
272 Galaxy Boulevard
Etobicoke, Ontario
Canada
M9W 5R8

Toll-free: + (1) 888.525.3564
Tel: + (1) 416.798.8719

UK

Gatekeeper Systems UK, Ltd.
Unit L1, MK: TWO Business Centre
1-9 Barton Road
Water Eaton Industrial Estates
Bletchly, Milton Keynes
MK2 3HU, England

Tel: +44 (0)1908 827333

All Other Areas

Gatekeeper Systems, Inc.
8 Studebaker
Irvine, CA 92618
USA

Toll-free: + (1) 888.808.9433
Tel: + (1) 949.453.1940

Addendum

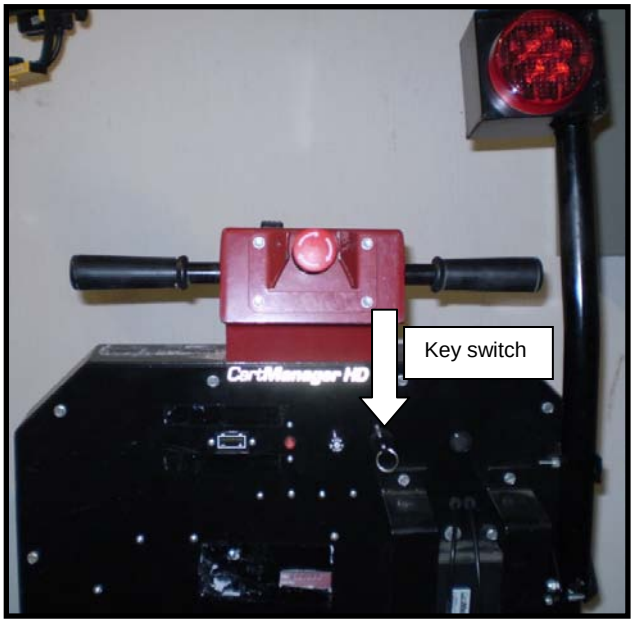
Decoding Model Types

There are many different ways for you to determine which model CartManager you are working on and or ordering parts for.

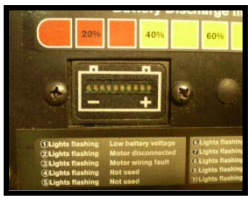
Models
CartManager HD
CartManager SD
CartManager XDW
CartManager XD+
CartManager XD
CartManager XDWi

Differentiating CartManager model types from outside.

CartManager HD and SD Models - the key switch will be located by your waist area.

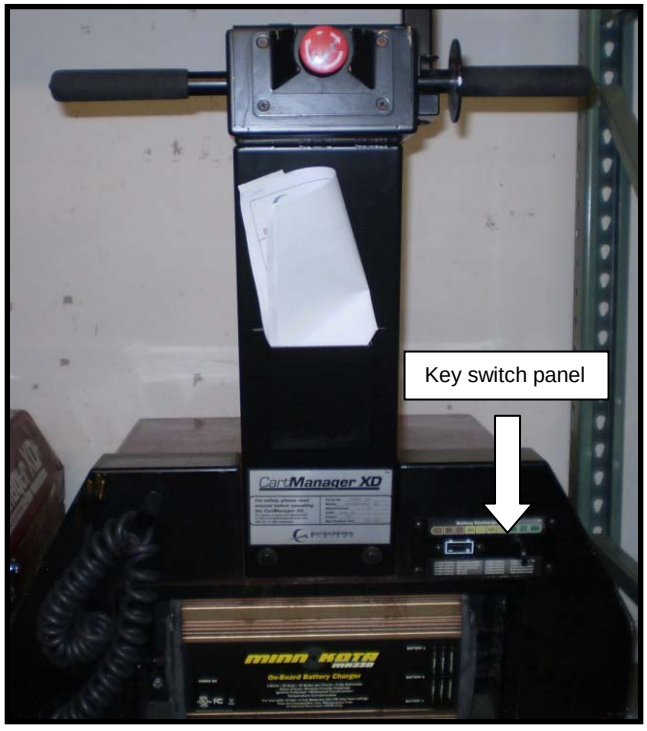


CartManager HD models will have a Truecharge Battery Discharge Indicator (BDI), which is rectangle in shape and has three red, four yellow and three green LED's from left to right.



CartManager SD models will have a 2 ¼ inch round digital BDI gauge with an LED under each symbol.

CartManager XD Models - XD, XD+, XDW and XDWi - the key switch will be located down by your right knee.



CartManager XDW models will have a single LED between the key switch and the BDI.

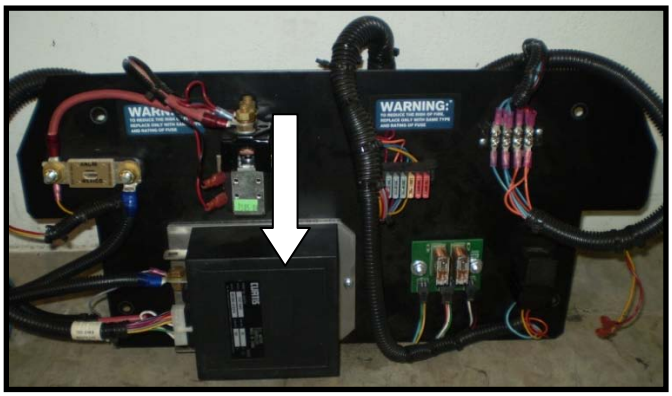
CartManager XD+ models will have a 2 ¼ inch round digital BDI gauge with an LED under each symbol.

CartManager XD & XDWi models will have a key switch and a BDI only. To differentiate between the XD and XDWi look at the electronic board differentiation as detailed below.

Differentiating CartManager XD model types by electronic board.

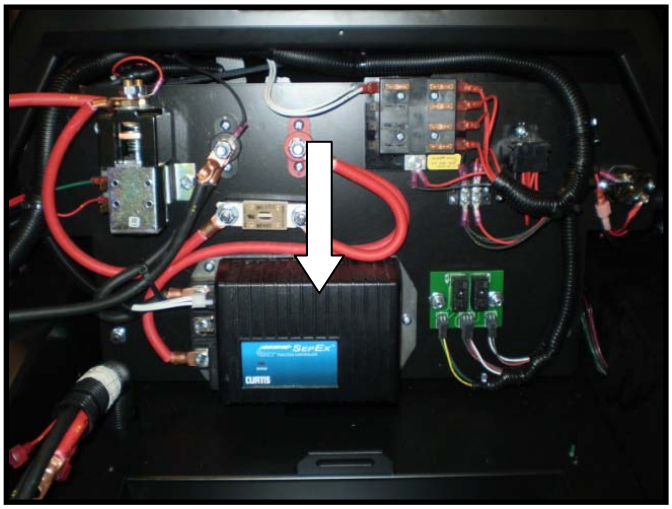
By opening up the hood and removing the electronic board cover you can determine which model of CartManager you are working with.

Model	Part Description
XDW	Uses Controller P/N: E500126-215
XD+	Uses Controller P/N: E500126-210
XDWi	Uses Controller P/N: E500216-13 **Note: This electronic board does not have a contactor!**
XD	**Note: XD units were built with two different model controllers.** 1. The XD had Controller P/N: E500126-03 **which is DISCONTINUED! It is Replaced by Controller P/N: E500126-23 (this is a KIT).** 2. The newer XD has Controller P/N: E500126-13.



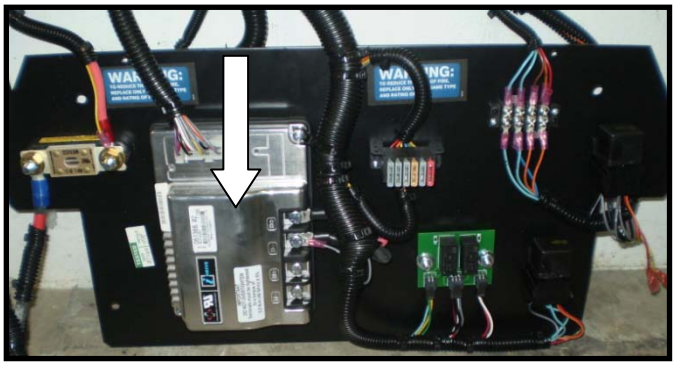
XDW

The CartManager XDW has Controller P/N: E500126-215.



XD+

The CartManager XD+ has Controller P/N: E500126-210.

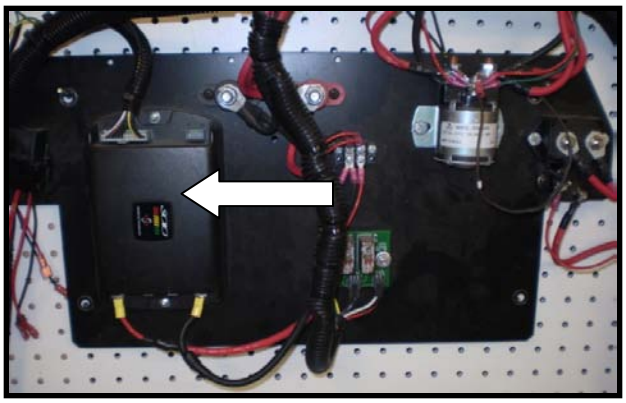


XDWi

The CartManager XDWi has Controller (i-Drive) P/N: E500216-13

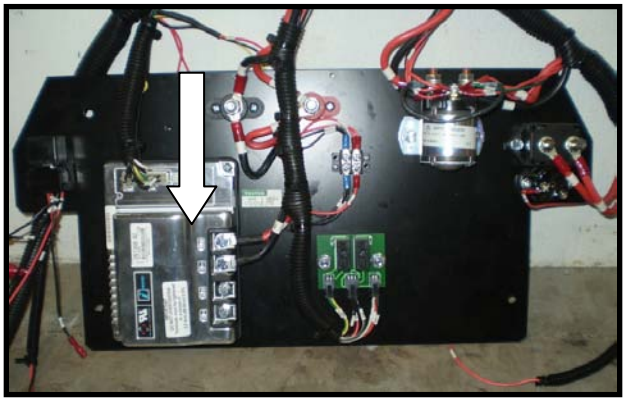
Note: This electronic board does not have a contactor!

The CartManager XD units were built with two different model controllers.



XD

Shown on left is the CartManager XD with the Controller P/N: E500126-03 **DISCONTINUED! Replacement part is Controller P/N: E500126-23 (this is a KIT).**



XD

Shown in the photo on left, the XD with the Controller P/N: E500126-13.

Note: This electronic board has a contactor!

E-Stop Replacement

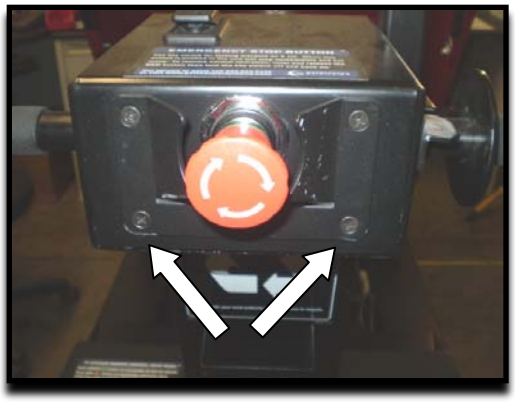
Parts needed:

Quantity	Part #	Part Description
1	E500187-07	Emergency stop switch (E-stop switch)
2	E500187-08	Plastic adapter
1	----------	6" zip tie

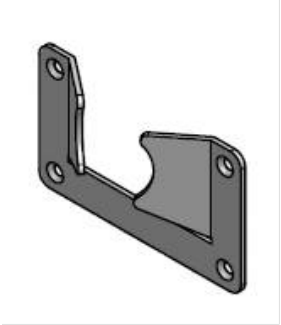
You will need:

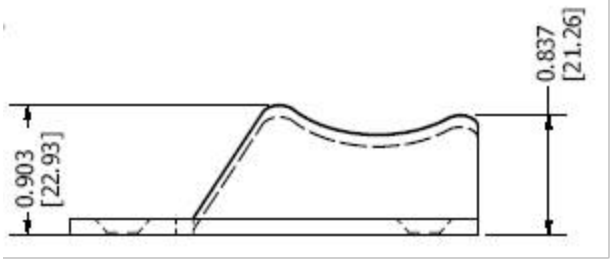
- Channel locks
- Small screwdriver
- Wire cutters
- Rubber mallet
- Tape measure

1. Using a #2 Phillips screwdriver, remove the upper arm cover (F14753-39) by removing the four black counter-sunk screws from the front and back of the upper arm cover. On the back of the cover, remove only the two screws which are located below the red E-stop button.

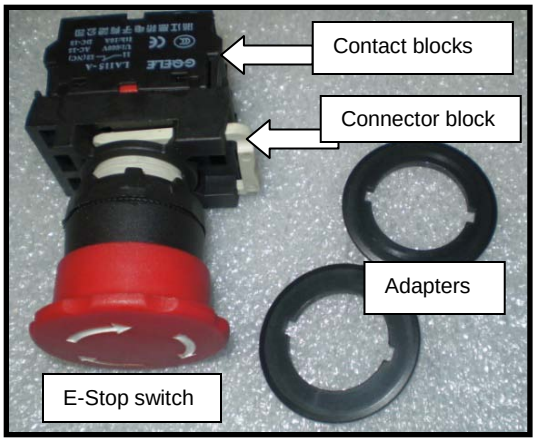


2. Disconnect the wires going to the horn switch and the connector block. Remove the E-stop switch.
3. Remount the top cover back onto the neck.
4. Take a rubber mallet and strike the two finger guards to bend them in. They should be bent in to a dimension of 0.837 [21.26] (top) and 0.903 [22.93] (bottom) from the top cover to the furthest point of the switch guard as shown below.



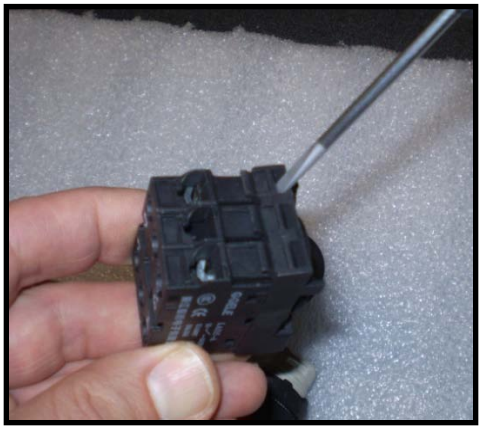


5. Unpack the E-stop assembly. The package comes with the red E-stop switch, contact blocks, connector block, and two plastic adapters (one side of the adapter has a flat surface and the other side has a 1/32" boss).

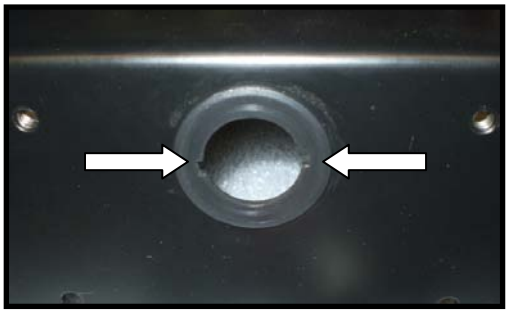


6. There is a "U" shape, silver colored plastic clip (which has spring-action built into it) on the side of the connector block. By pushing it in firmly and pulling the connector block away from the red switch, separate the connector block from the red switch.

7. There are three contact blocks attached to the connector block: normally closed (terminals 1, 2 - with the red tab between screw terminals), the shell, and normally open (terminal 3, 4 - with the green tab).
8. The model unit that you're working on will dictate which contact block is needed. Keep the same color as the one on the old E-stop switch removed in step 2. Remove either the contact block with the red tab and the shell or the contact block with the green tab and the shell. ***It is VERY important to leave the correct contact block attached to the connector block.***
9. Remove the unwanted contact blocks by inserting a small flathead screwdriver in the slot at the bottom of the connector block and prying them out carefully. Be careful not to break the contact block or the connector block.

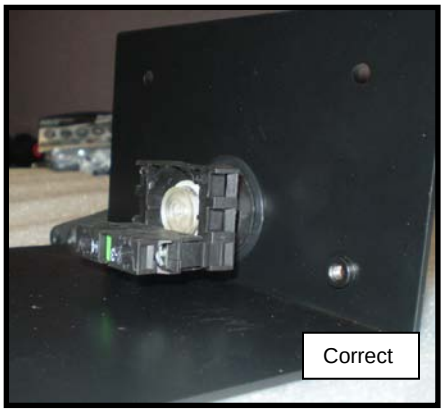


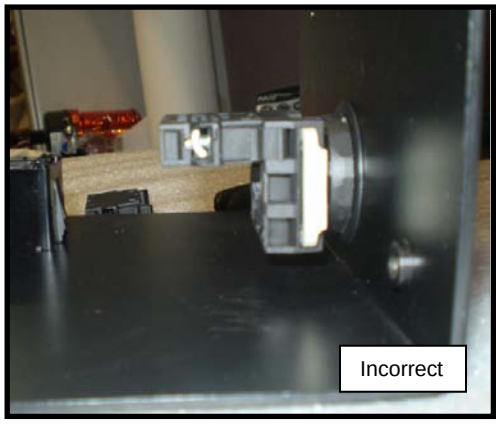
10. Remove the black nut from the red push button by unscrewing it counter-clockwise.
11. Insert one of the black plastic adapters onto the top cover with the flat side of the adapter facing outward.
12. Insert the red E-stop switch through the black plastic adapter. Align the notches on the adapter with two small knobs on the red E-stop switch. The notches must align with the E-stop button notches.

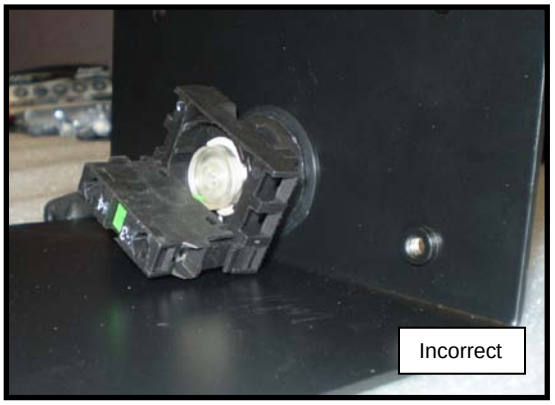


13. Turn over the top cover and insert the second black plastic adapter through the back of the E-stop push button. Again, the flat side of the adapter facing outward. Insert the plastic nut and tighten it first by hand and then by channel locks. ***Before tightening the plastic nut with the channel locks, make sure that the red E-stop switch (from the outside) is flush with the black plastic adapter. There are two grooves (cut-outs) on the cylindrical part of the red E-stop button. These grooves should be horizontal when the top cover lays flat on the table.*

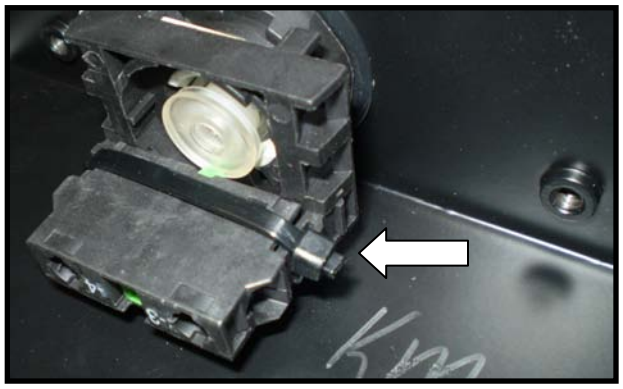
14. Insert the connector block with appropriate contact block attached to it through the cylindrical part of the red E-stop button by pushing the "U" shaped, silver color plastic clip in and the whole connector block forward. ***At this point make sure the contact block is <u>parallel</u> to the top of the top cover. ***







15. To further secure the contactor to the connector block, use a 6" zip tie and go around the contactor at the point of the snap-on clips. This helps secure it from coming loose.



16. Connect the proper wires to the contactor.
17. Test the E-stop switch to make sure it is functioning properly. Because of the modification to the E-stop guard, make sure that the switch engages and disengages properly. There should not be any binding of the E-stop. The E-stop should engage if a person's stomach/ abdomen area comes in contact with it. I.e. if a person was caught between the CartManager and a wall when backing up, the E-Stop would engage instantly.

Flat Antenna Kit Change Out

Parts Needed: BOM Part Number E14753-528

Quantity	Part Number	Part Description
2	E7026	RF cable, SMA plug, LMR195, 3ft
1	E7031	Flat antenna for the CartManager
1	F14753-506	Lower arm cover weldment
2	H6012	6-32 x 5/8 machine screw
1	H9258	Top cover plug

You will need:

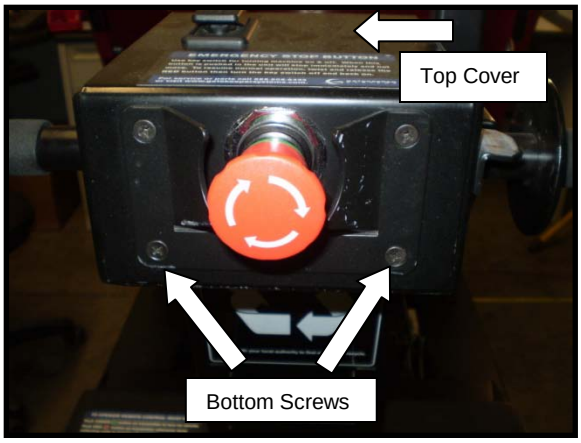
- Wire cutter
- Wire stripper
- Cordless driver with #1 and #2 Phillips
- 1/8" screwdriver
- 5/16" wrench
- Low strength Loctite

***** This kit is ONLY compatible with an E500356-043 receiver for remote*****

*****Caution, please disconnect power to the CartManager before working on the machine.*****

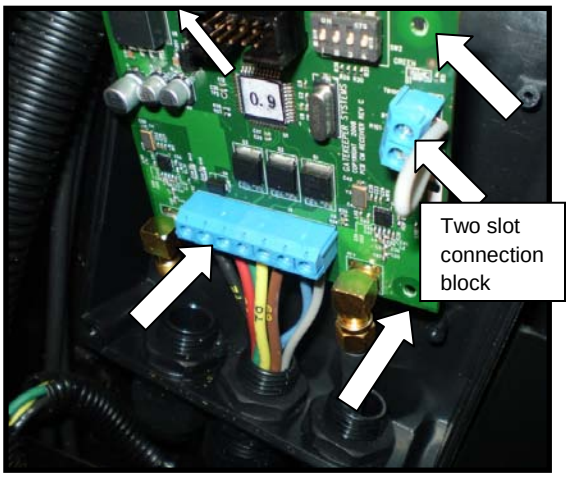
Assembly steps:

1. Using a #2 Phillips screwdriver, remove the top cover (F14753-39) by removing the four black counter-sunk screws from the front and back of the upper arm cover. From the back of the cover, remove only the two screws which are located below the red E-stop button and two from the front.

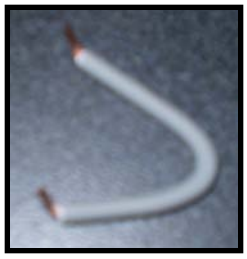


2. Remove the stick antenna and antenna cable from the upper arm cover and plug the hole with the plastic plug H9258.
3. Remove the lower arm cover by sliding it upward about 1 ½ " while pushing it up and out from bottom of the cover. In order to remove the neck cover, use a large flat head screwdriver or a tool for leverage to pry the cover up.

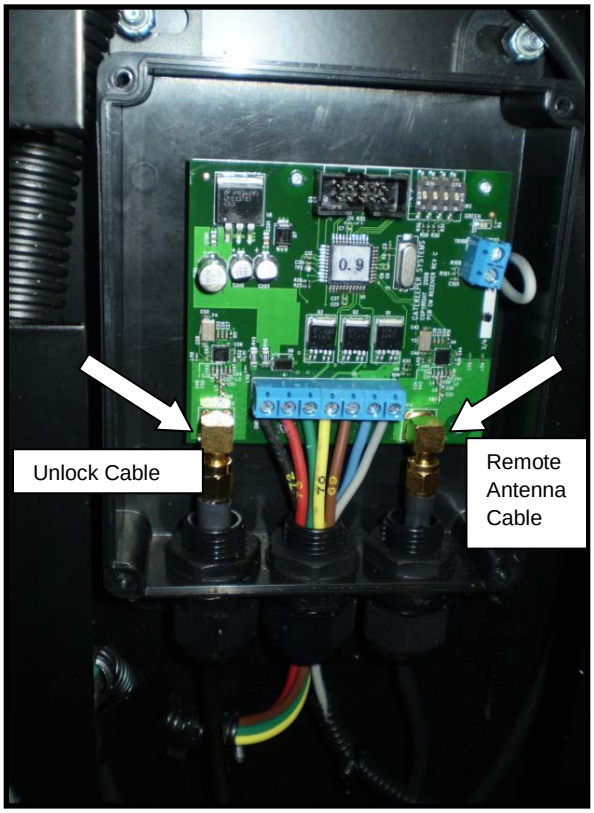
4. Now you are looking at the receiver (E500356-043). Remove the receiver's cover by using a #1 Phillips screwdriver. *****Note: If the PC board does not have the two slot connection block located in the top right corner, skip the rest of this step.***** Remove the small Phillips screws on the PC board and carefully tilt the PC board outward. ***Caution!! One of the screws is behind the black and red wires. Loosen the two cable grips which hold the antenna cable and harness before tilting the PC board outward.*



** Strip both ends of the 2" wire #20 AWG and bend it in a "U" shape.

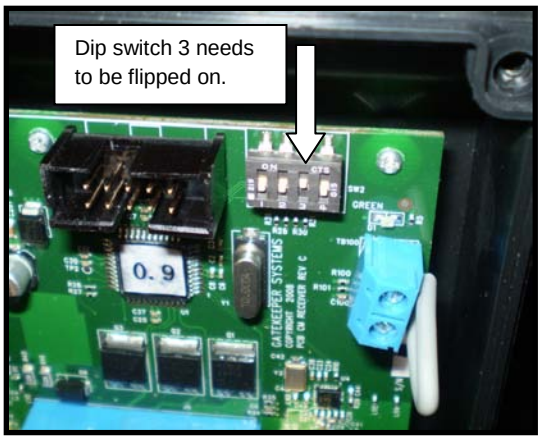


5. Bend the stripped part of the wire at 90˚. On the top right corner of the PC board, there is a two slot connection block. Install the "U" shape wire to that connection block and carefully screw back the PC board to its original position. From left to right the wires are black, red, green, yellow, brown, blue and gray. The antenna cable for remote is the cable next to the blue and gray switch wire.



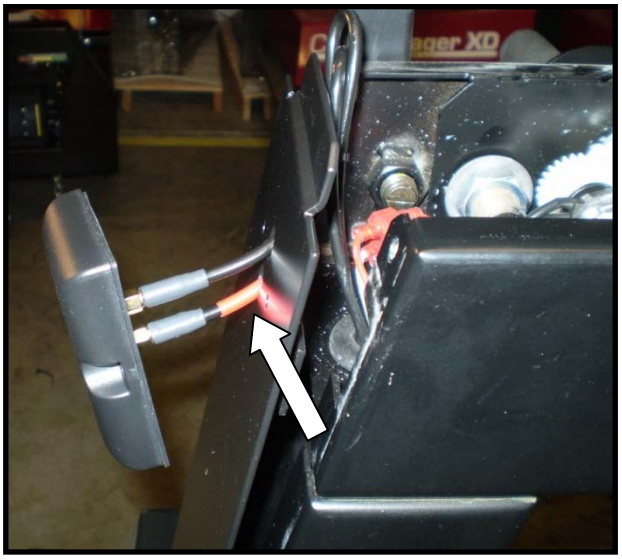
6. Look at your existing antenna cable for remote on the top end. If there is a male coaxial connection (pin in the center), you can still use it. Tape the cable red for identification. If there is not a male coaxial connection still, you should replace it with a new antenna cable which has male coaxial connection at both ends. Again, red tape the cable for identification.

7. Connect the second coaxial cable to the free coaxial connection on the receiver. The cable goes through the grip and grip hole then to the coaxial connection. Start tightening it first by hand, then use the 5/16" wrench. Tighten all the cable grips. Look at the top right side of the PC board and make sure the dip switches 1, 2, and 4 are off and 3 is on.

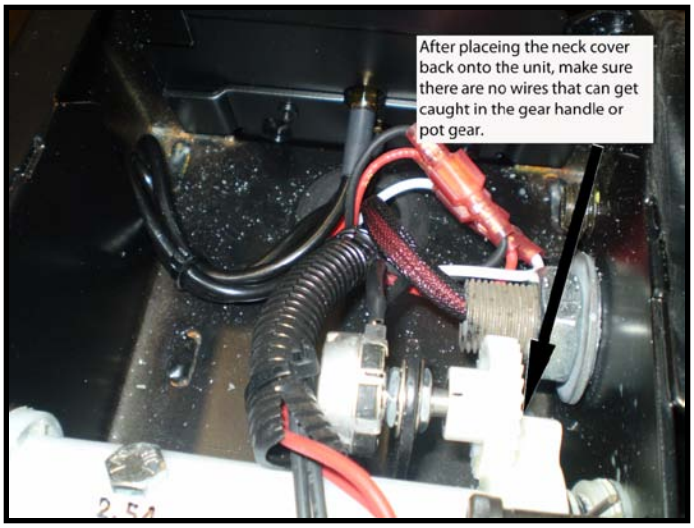


8. Put the receiver cover back and screw it down. Feed the second coaxial cable up through the hole on the top of the arm weldment. You should have about 8" of both coaxial cables coming out of the hole on the top of the arm weldment. At about 4" from the hole, bend both cables and tie them together to relieve pressure on the connections to the flat antenna.

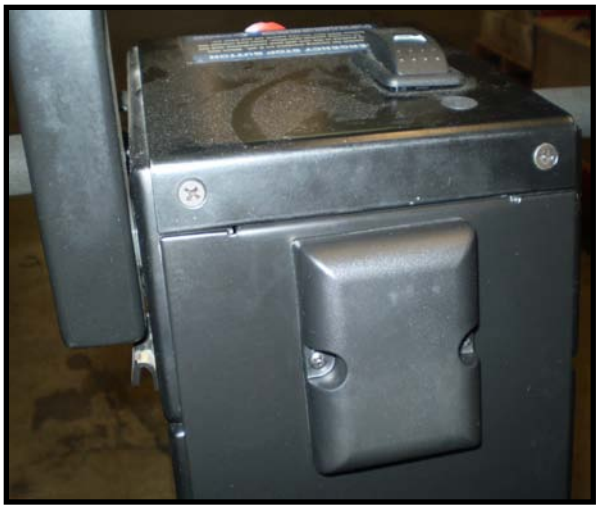
9. Your new style lower arm cover has two holes on it. Pass both coaxial cables through. The cable with red ID tape goes through the bottom hole. Hold the flat antenna so that the coaxial connection on the back of it stays vertical. Connect the coaxial cable using the 5/16" wrench. DO NOT over tighten. Again, the coaxial cable with the red ID tape goes to the bottom connection on the flat antenna. Be sure that you have connected the cables before mounting.



10. Apply a small amount of low strength Loctite on two pan head screws 6-32 x 5/8 (0145353) and secure the flat antenna to the lower arm cover. DO NOT over tighten. Slide back the lower arm cover in its place. Secure the coaxial cable inside the upper arm cover. Make sure there are no wires touching any moving parts.



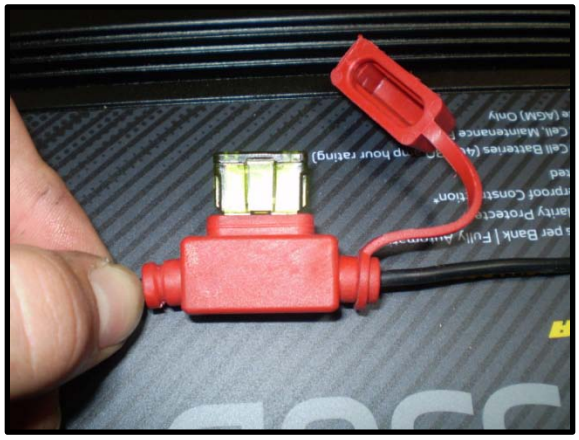
11. Screw back the upper arm cover to its original place.



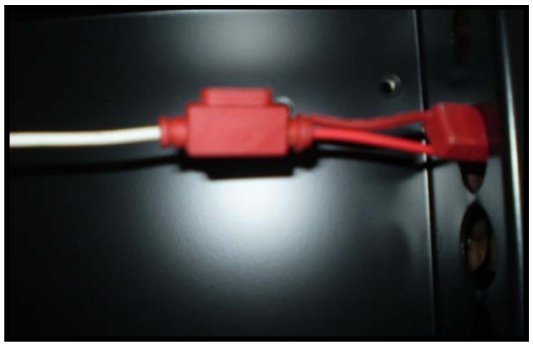
MK330D Charger Replacement Instructions

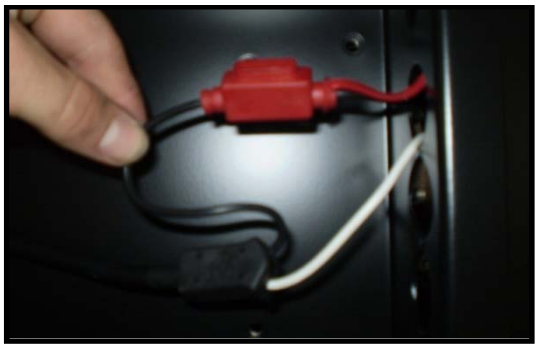
When replacing a charger you will receive the MK330D charger. This comes with everything you need. The in-line fuses on the MK330D are different from the MK330; instead of cylinder fuses they are equipped with ATO style (automotive). In order to run the charger battery leads through the holes on the frame (the inline fuse being larger than the hole), you will have to follow these steps.

1. Open the cap and remove the fuse, do not put the cap back on. Be sure not to rip the cap as it is attached to the cable.



2. Feed one wire lead at a time (with the cap off the inline fuse block) through the hole.





3. After the wires and inline fuse block is through, caddy corner the temperature switch block in order for it to pass through. You may have to apply force, or you can trim off the corners of the block. If you do decide you need to trim the corners only trim a very small amount, *if too much is removed it can cause damage to the temperature switch.*

4. Repeat steps 1 - 3 for the second and third battery charger lead.
5. After mounting the charger, routing the cables, and connecting the leads to the battery posts, then insert the 30 amp fuses.

Note: The 3rd lead may already be prepped for feeding (corners trimmed already). The chargers will be prepped for each order (if needed). In a case where you receive a charger and the 3rd lead has not been prepped call Gatekeeper Systems' Tech Support at (888) 808-9433 before deciding to shave the temperature switch yourself.

Strobe Light Kit Upgrade

Parts Needed: BOM Part Number: E500131-002

Quantity	Part Number	Part Description
1	F14753-402	Upper arm weldment
1	F14753-401	Guard strobe light
1	E500238-01	Strobe light
2	F14753-41B	Arm I mount bushing
2	30512	Large male connector
2	30513	Large female connector
4	0145385	10-24 x 38 screws
1	H500409-01	Light pole plug
20”		Expandable sleeve

You will need:

- Wire cutter
- Wire stripper
- Crimper
- #2 Phillips screwdriver
- 1-1/8” wrench

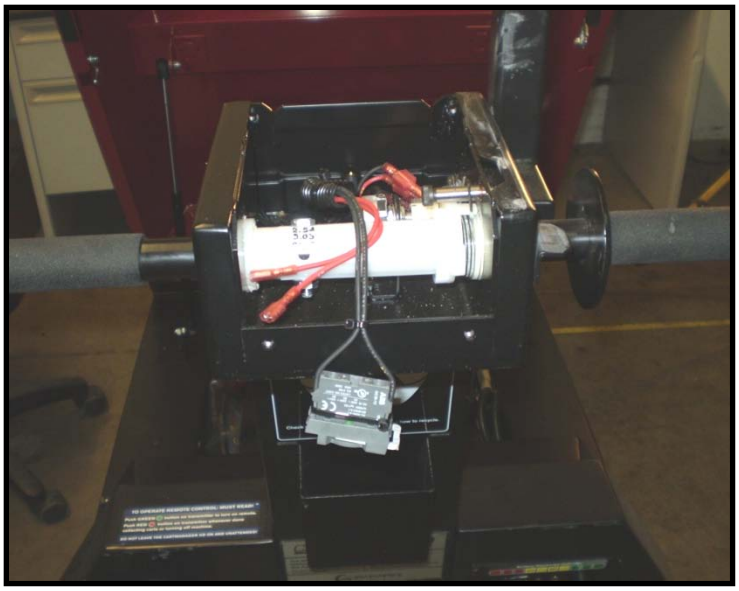
*****Caution, please disconnect power to the CartManager before working on the machine. *****

Assembly Steps:

1. Remove the brake light assembly. Disconnect all four wires which go to the brake light and strobe light. Remove the strobe light. Cut off the four female connectors which are on wires #45, 43, 58, and 44.

2. Using a #2 Phillips screwdriver, remove the upper arm cover (F14753-39) by removing the four black counter-sunk screws from the front and the back of the upper arm cover. On the back of the cover remove only two screws which are located below the red E-stop button.

Remove the top cover completely by disconnecting the horn switch and E-stop.



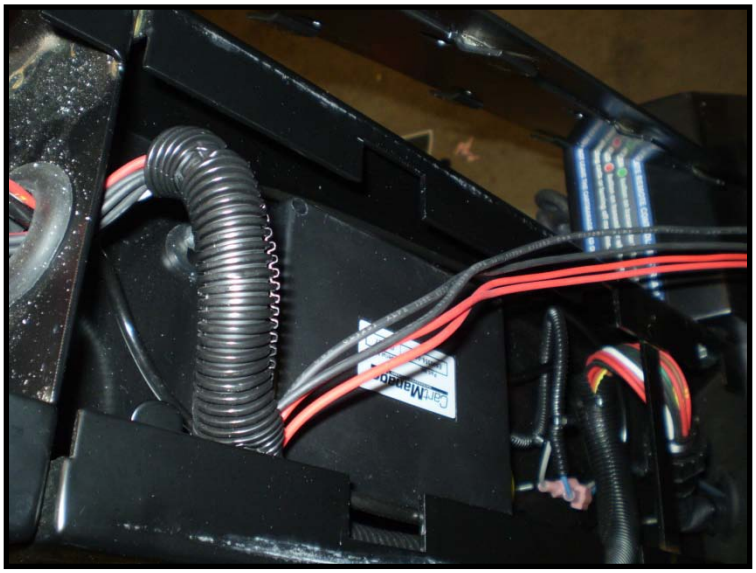
3. Using 1-1/8" wrench, remove the 3/4-16 nut and pull out the light pole. ***Note: by removing the plug at the bottom of the light pole, you have access to the wire. It is easier to pull out the wire from the vertical pole first then from the short horizontal pipe. After the pole has been removed, the wires need to be fed out as shown below.***

4. Remove the lower arm cover by sliding it upward while pushing it up and outward from bottom of the cover.

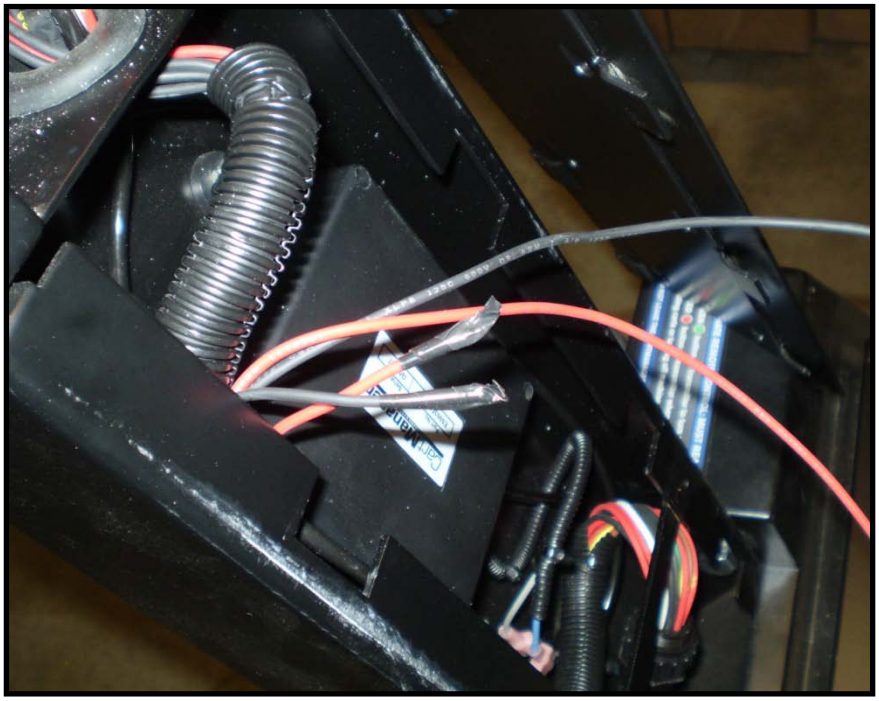
5. Remove the two washers and nut from wires (with expandable sleeve) and feed them down through the hole toward the receiver.
6. Remove the expandable sleeve. Now compare the length of the new light pole to the old light pole you just removed, if it is longer pull out about 4 more inches of these wires from the corrugated loom as shown in the picture. If the new light pole is shorter you don't need to pull extra 4" of wire only pull it out of the corrugated loom.

***Note: This way you are extending the length of the wires to go up the light pole. Because the new light pole is longer than the old light pole, you need to lengthen wires #45 and #43.** There is enough wire inside the loom for this extension.*

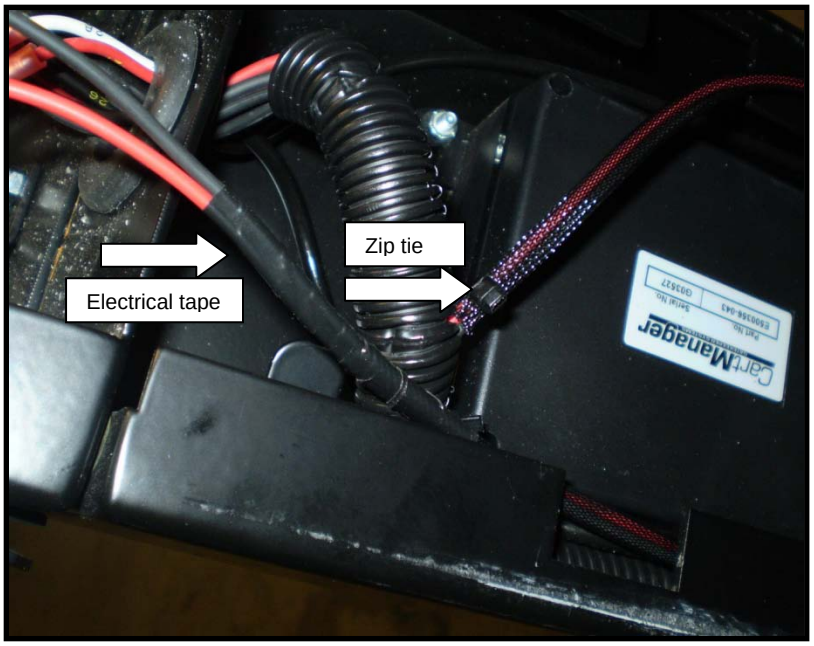
The light pole has been shortened recently, so pull these wires only if you have the longer light pole.



7. Cut back wires #44 and #58 at about 21". Because there is no brake light, these two wires are no longer needed. Tape the exposed end of the wires and push them inside the loom. DO NOT push wires #43 and #45 back inside the loom.



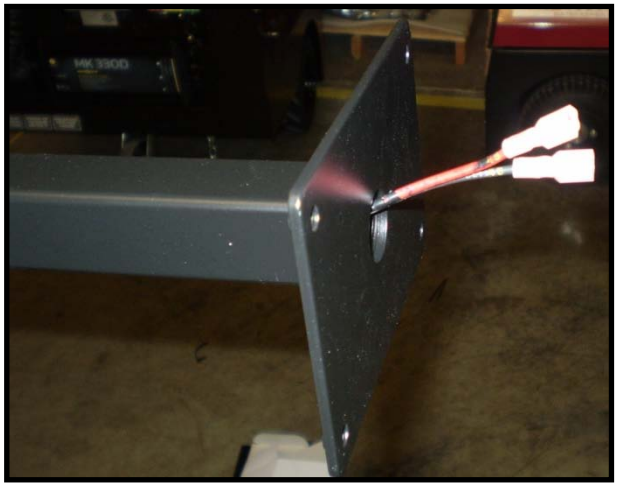
Secure the loom by cable tie. Install 20" of expandable sleeve over wires #43 and #45. Use a cable tie to secure the sleeve at the bottom and electrical tape at the open end.



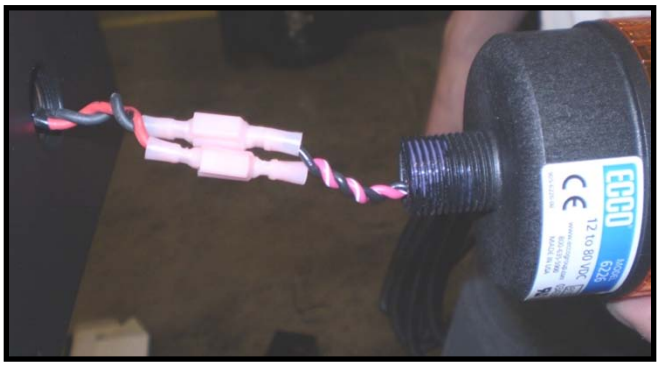
Thread back the expandable sleeve with the wires through the top hole back to the upper arm cover. Slide the lower arm cover back to its place.

8. Reinstall the light pole bushings.
9. Install the upper arm weldment. Make sure the Belleville washers make a convex shape when they come together.
10. Use a 16" fishing wire to pull the wires with the expandable sleeve through the light pole. First go through the horizontal pipe part of it. Then go through the vertical part.

There should be about 2" of wires coming out of the top. Strip the wires and crimp two large female connectors on them. Cover the hole at the bottom of the light pole with the plug.

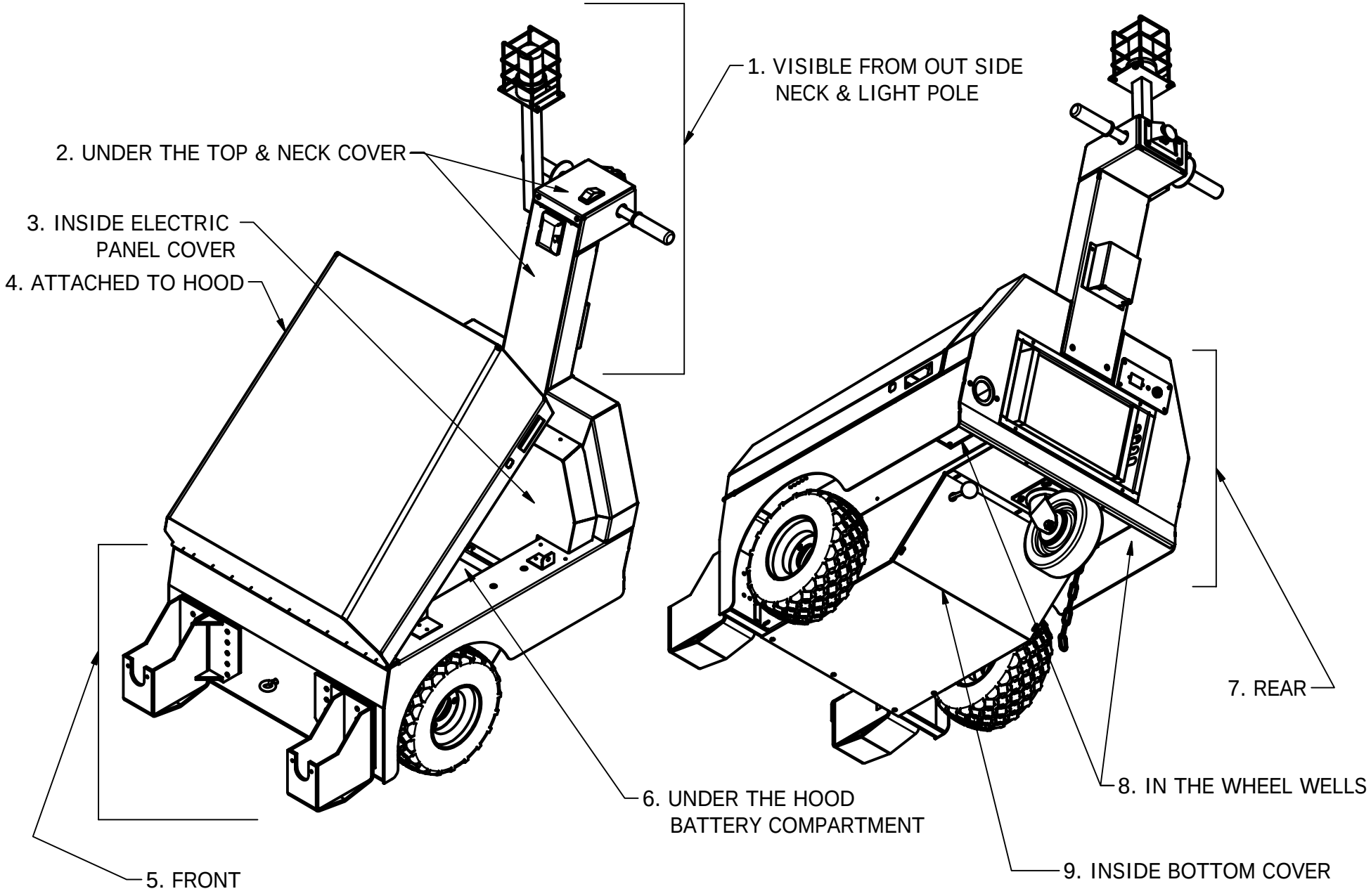


11. Preparing the strobe light: remove the nut from the strobe light. Cut the wires to 2" in length. Install two large ¼" male push on quick connectors on them.
12. Connect the black wire #45 to the black wire from the strobe light and red #43 to the red wire from the strobe light. Before screwing the strobe light to the light pole, rotate the strobe light eight complete turns counter-clockwise to twist the wires backwards, and then screw the strobe light to the light pole.



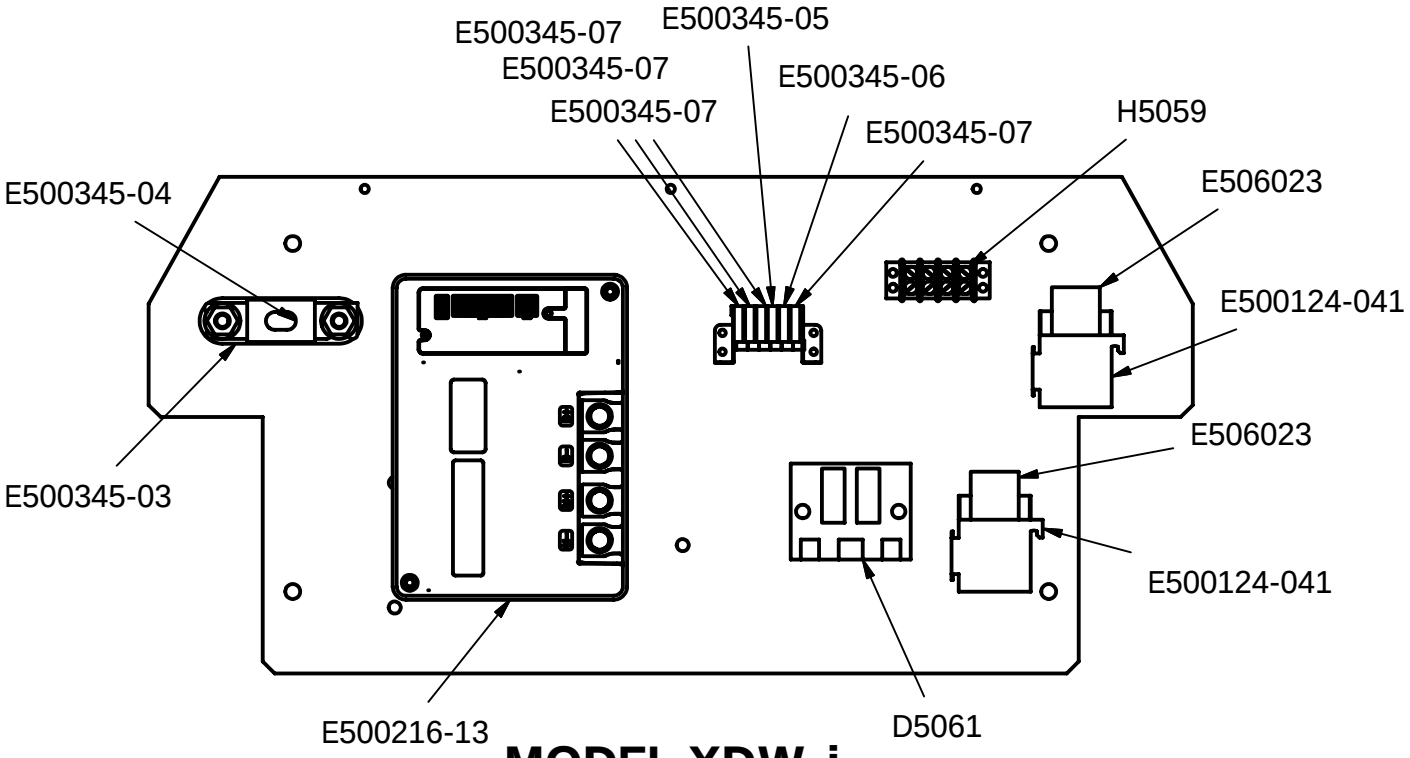
13. Make a mark on the lens and base of the strobe light. This mark should be in front of the operator. Remove the lens and apply the "blind spot sticker" inside the lens. Be sure to align the sticker with the mark you made. Screw back the lens. The blind spot sticker should be in front of the operator. Install the guard with four 10-24 x 3/8 screws.

14. Install the upper arm cover by first connecting the horn wires, E-stop switch block, and screw the cover down.

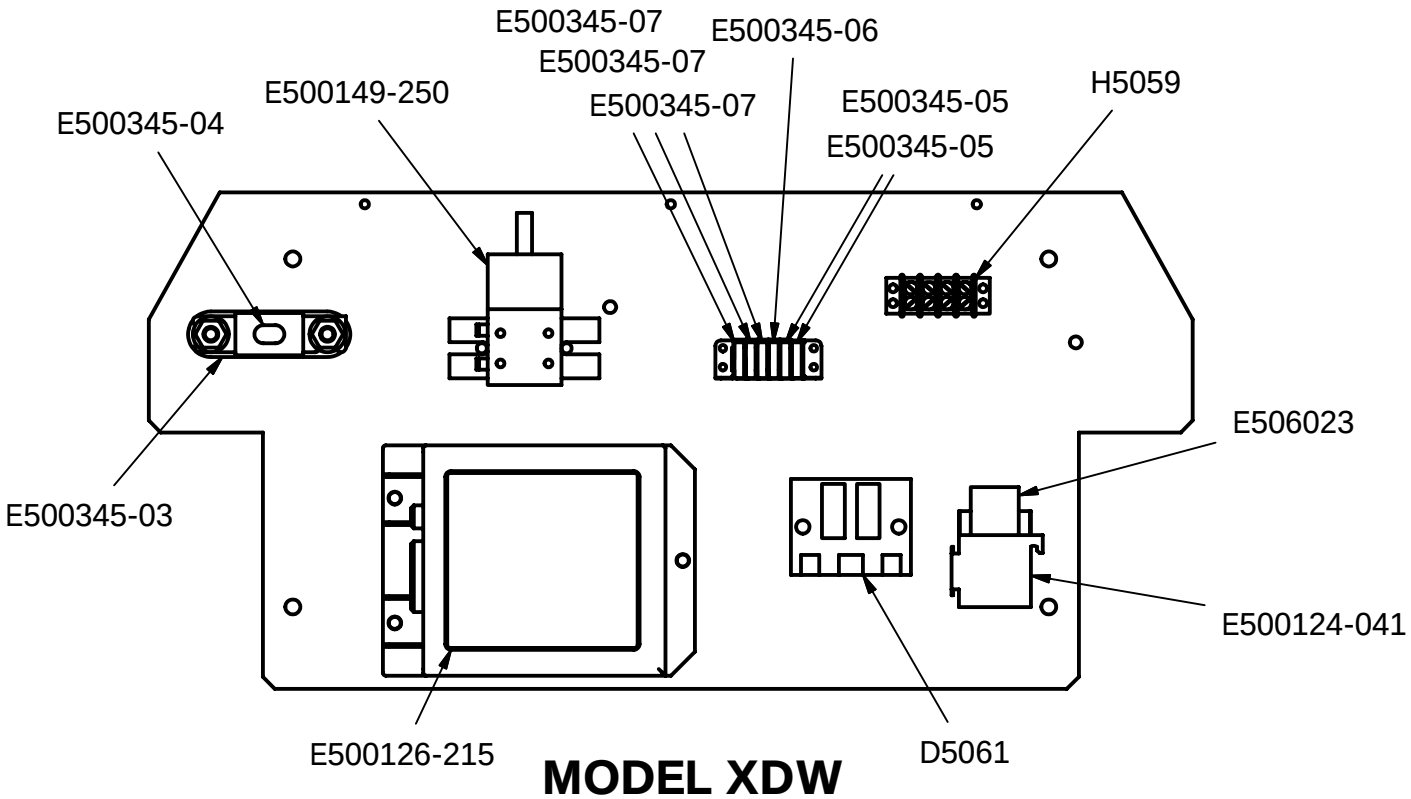


PART'S LOCATIONS IDENTIFIED FOR PARTS LIST

PARTS UNDER ELECTRIC PANEL COVER



MODEL XDW-i



MODEL XDW

For immediate assistance:

Please contact Customer Service at (888) 808.9433 (within the U.S.)
or by email at customerservice@gatekeepersystems.com.

Outside of the U.S.:

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