

EMS System Troubleshooting

This chapter includes general guidelines and troubleshooting tables as an aid in isolating and recovering from malfunctions. **ONLY QUALIFIED, AUTHORIZED PERSONNEL SHOULD OPERATE OR MAINTAIN EQUIPMENT.**

Proper troubleshooting is finding the cause of a problem and correcting it in a safe and systematic manner. A change in the system often causes trouble. An understanding of the system, its modes of operation, and how these modes are to work will aid in finding the cause of the trouble.

WARNING

- Insure that all requisite safety precautions are taken while diagnostic procedures are performed.
- Before attempting any maintenance or service operation, make sure that:
 - You do not begin any repair procedure until the proper shutdown procedures and the appropriate power lockout procedures have been applied.
 - The system is de-energized; main electrical switches are open.
- Some maintenance/troubleshooting procedures require the equipment to be running to perform the procedure. In this case only one person should be in command of operating the equipment in maintenance mode only. Constant communication with the person commanding the equipment should be maintained through the procedure.

EMS Trolley Troubleshooting		
Problem	Possible Cause	Remedy
Trolley stopped working	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-Stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Station light screen access violation	<ul style="list-style-type: none"> Reset gates and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Defective integrated drive controller	<ul style="list-style-type: none"> Check that the IDC disconnect is switched to the ON position. Check for faulty wiring or loose connection. Replace defective unit.
	Defective motor	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. Replace motor.
	Communication faults	<ul style="list-style-type: none"> Control power boss cable disconnected. DeviceNet cable disconnected. Check for loose wiring connection or faulty wiring. Check for faulty DeviceNet communication module.
	Trolley is not detected in station	<ul style="list-style-type: none"> Replace faulty sensor. Check for loose wiring connection or faulty wiring.
	Broken/ missing Vahle brush(es)	<ul style="list-style-type: none"> Replace brush(es).
Rail power buss disconnected	<ul style="list-style-type: none"> Connect cable. 	
Trolley not detected in station	Faulty sensor	<ul style="list-style-type: none"> Replace sensor.
	Faulty wiring or loose connection	<ul style="list-style-type: none"> Replace cable. Tighten connections.
	Faulty ArmorStart	<ul style="list-style-type: none"> Replace ArmorStart.
	Damaged or missing trolley flag	<ul style="list-style-type: none"> Repair or replace flag.

EMS Trolley Troubleshooting		
Problem	Possible Cause	Remedy
Overtravel indication	Faulty sensor	<ul style="list-style-type: none"> • Replace sensor
	Faulty wiring	<ul style="list-style-type: none"> • Check for loose wiring connection. • Replace faulty wiring.
	ArmorStart not programmed	<ul style="list-style-type: none"> • Download ArmorStart software.
	Faulty ArmorStart	<ul style="list-style-type: none"> • Replace ArmorStart.
	Damaged or missing trolley flag	<ul style="list-style-type: none"> • Repair or replace flag.
Overload faults	Defective motor disc brake	<ul style="list-style-type: none"> • Replace disc brake.
	Gearmotor reducer gearing seizing up	<ul style="list-style-type: none"> • Replace gearmotor.
	Defective motor	<ul style="list-style-type: none"> • Replace motor.
	Defective ArmorStart	<ul style="list-style-type: none"> • Replace ArmorStart. • Check for loose wiring connection. • Replace faulty wiring.
	Increased friction with drive assembly	<ul style="list-style-type: none"> • Replace pivot unit bearing & thrust washer. • Replace idle wheel bearing.

EMS Track Switch Troubleshooting		
Problem	Possible Cause	Remedy
Inoperable operation	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-Stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Station light screen access violation	<ul style="list-style-type: none"> Reset gates and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Defective integrated drive controller	<ul style="list-style-type: none"> Check that the IDC disconnect is switched to the ON position. Check for faulty wiring or loose connection. Replace defective unit.
	Defective gearmotor	<ul style="list-style-type: none"> Check for loose wiring connection or faulty wiring. Replace motor.
	Mechanical binding or failure	<ul style="list-style-type: none"> Check for bearing/mechanical failure. Check for track alignment.
Mobile frame does not extend or retract	Faulty in-position proximity switch	<ul style="list-style-type: none"> Replace switch.
	Faulty cable	<ul style="list-style-type: none"> Replace cable.
Overload faults	Defective motor disc brake	<ul style="list-style-type: none"> Replace disc brake.
	Gearmotor reducer gearing seizing up	<ul style="list-style-type: none"> Replace gearmotor.
	Increased friction with drive assembly –	<ul style="list-style-type: none"> Perform maintenance procedures.
	Mobile frame binding.	<ul style="list-style-type: none"> Replace out of tolerance v-wheel (guide wheel).
	V-wheel/track roller seizing up.	<ul style="list-style-type: none"> Replace V-wheel/track roller.

EMS Track Switch Troubleshooting		
Problem	Possible Cause	Remedy
Over/Under travel faults	Faulty motor controller	<ul style="list-style-type: none"> • Check for loose or faulty wiring. • Replace motor controller.
	Loose mechanical linkage/connections	<ul style="list-style-type: none"> • Perform maintenance procedures. • Worn tie-rod ends.
Trolley stops when entering track switch	Loss of power in rail buss	<ul style="list-style-type: none"> • Check for faulty motor controller. • Check for loose or faulty wiring.
	Excessive brush wear build up in bus rail	<ul style="list-style-type: none"> • Clean buss rail.
	Worn conductor bus rail	<ul style="list-style-type: none"> • Replace conductor bus rail.
	Trolley brush broken or out of conductor rail	<ul style="list-style-type: none"> • Excessive lateral rail offset, perform alignment procedure.

Crowder Troubleshooting		
Problem	Possible Causes	Remedy
Inoperable operation	System not in Auto mode	<ul style="list-style-type: none"> Put system in Auto mode.
	E-stop pushbutton pushed in	<ul style="list-style-type: none"> Reset system and resume Auto mode.
	Power circuit breaker tripped	<ul style="list-style-type: none"> Investigate and fix the cause of the tripped breaker. Reset breaker and put system in Auto mode.
	Air supply turned off	<ul style="list-style-type: none"> Turn on air supply
	Mechanical binding or failure	<ul style="list-style-type: none"> Check for bearing/mechanical failure. Check for defective air cylinder.
	Communication faults	<ul style="list-style-type: none"> Check for faulty wiring or loose connection. Check for faulty DeviceNet port block or DeviceNet communication module.
Trolley over travels in station	Faulty in-position proximity switch Faulty cable	<ul style="list-style-type: none"> Replace switch. Replace cable.
Positioner clamps do not open/close	Tag reader/tag defective	<ul style="list-style-type: none"> Replace reader/tag. Replace cable.
	Gear box gearing seizing up	<ul style="list-style-type: none"> Replace gears.
	Defective clamp arm switch defective Faulty cable	<ul style="list-style-type: none"> Replace switch. Replace cable.
	Check for defective air cylinder.	<ul style="list-style-type: none"> Check if air switch is on. Check if valve board is functional.