Electrical Troubleshooting

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
AUTOLOADER START-UP	Autoloader does not start up	System comes up in Base Machine Mode	Autoloader does not have power	Check BLACK power switch on MCU/SCU
			Faulty 24 Volt Power Supply	Check Voltages on PDB. Replace Power supply if necessary.
			Faulty CANBUS cable	Check lights on GENINE 0. Replace cable if necessary.
			Power from GENINE 0 not sensed by Engine Satellite Electronics Board.	Check Cable from GENINE 0 J1 to Relay[10-4453], from Relay to Engine Satellite Electronics Board J30 [10-4905]
	No communications with PDB	Message 'Unable to establish comms with PDB'	RS232 cable from MPE to PDB.	Replace ESE board. Ensure cable is plugged in properly.
			Faulty CANBUS cables	Check that NULL MODEM cable is used in MCU/SCU Check all CANBUS cables/connections.
			CANBUS not terminated correcty.	Ensure Conveyor and Picker GENINEs have Terminators.
			Faulty 24 Volt Power Supply	Check Voltages on PDB. Replace Power supply if necessary.
			PDB faulty	Check Firmware version. Download new code if necessary. Replace PDB.
			MPE code corrupted/hardware error.	Reload MPE code, or replace board.
	No communications with CANBUS boards.	Message 'Unable to establish comms with ??? GENINE'. Or GENINE # not responding.	Incorrect/faulty GENINE firmware code.	Reload/load GENINE firmware.
			Faulty CANBUS cables	Check all CANBUS cables/connections.
			CANBUS not terminated correcty.	Ensure Conveyor and Picker GENINEs have Terminators.
			CANBUS boards not addressed correcty.	Ensure All GENINES have correct address 'straps' on J26.
			Faulty GENINE	Replace Board.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Autoloader does not initialise.	Message 'Extended 24v safe disabled.	Firmware has not enabled the 24v safe supply.	Check that the correct bits are set in the PDB register.[See 'Troubleshooting the Autoloader Safety Loop']
			Autoloader Safety Loop Open.	See 'Troubleshooting the Autoloader Safety Loop'
		PICKER lights not on.	Firmware has not enabled the 24v safe supply.	Check that the correct bits are set in the PDB register.[See 'Troubleshooting the Autoloader Safety Loop']
			Autoloader Safety Loop Open.	See 'Troubleshooting the Autoloader Safety Loop'
		PICKER does not move.No sound.	Home/Away/Safe Home/Safe Away Sensors disconnected/faulty.	Check that all sensors are functional and plugged in correctly. Check cable from sensors to GENINE 1 [Power Box] Replace as necessary.
			Motor Cable faulty/disconnected.	Check Cable from motor back[11-0851, 10-4381] to Stepper driver [10-4465, 10-3761] in Power Box.
			Faulty Stepper Motor Driver.	Check Lights on Stepper Driver board. Replace if necessary.[11-0851]
			48volt Power Supply Faulty.[13-4832]	Check voltage on PDB. Replace if necessary.
		PICKER does not move.Buzzes but goes nowhere.	One/both Phases missing/faulty.	Motor cable faulty/ swopped phases. Check cable.
			Faulty Stepper Motor Driver.[10-3761]	Check Lights on Stepper Driver board. Replace if necessary.
			Motor faulty. [11-0851]	Check motor wiring. Replace if necessary.
			Mechanical Faults. Loose pulley, Broken Belt, Loose Belt, Broken shaft.	See Mechanical.
	PICKER movement incorrect	PICKER always moves in opposite direction to command	Incorrect NVS settings.	Check 'set val' parameters.
			Swopped phases on motor cable.	Check Cables.[11-0851]10-4381, 10-4465]

Electrical Troubleshooting

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
BASE MACHINE +GUARD RAIL	No CANBUS comms with Base Machine	Message 'Base GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [0] by not having any jumpers on address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Y Axis movement	Y Axis doesn't move. [No Sound]	Home/Away Sensors disconnected/faulty.	Check that all sensors are functional and plugged in correctly. Check cable from sensors to GENINE 0. Replace as necessary.
			Motor Cable faulty/disconnected.	Check Cable from motor to GENINE 0.
			Faulty GENINE.	Check GENINE. Replace if necessary.
			48volt Power Supply Faulty.	Check voltage on PDB. Replace if necessary.
		Y Axis doesn't move. [Motor Buzzes but Y axis goes nowhere.]	One/both Phases missing/faulty.	Motor cable faulty/ swopped phases. Check cable.
			Faulty Stepper Motor Driver on GENINE.	Check GENINE board. Replace if necessary.
			Motor faulty	Check motor wiring. Replace if necessary.
		Y Axis moves in wrong direction.	Mechanical Faults. Loose collar, Broken shaft.	See Mechanical.
			Swopped phases on motor cable.	Check Cables.
	Pdoor won't open.	Message 'Not Safe to open Pdoor'	Home/Away Sensors disconnected/faulty.	Check that all sensors are functional and plugged in correctly. Check cable from sensors to GENINE 0. Replace as necessary.
			Y Axis not home.	Check position. Manually rotate drive shaft to position Y-Axis in fully home position if necessary.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Guard Rail Lock operates incorrectly	Message 'Guard Rail Gate Unlocked'	Guard Rail Lock Manually unlocked.	Rotate manual lock on Guard rail Lock to the 'locked' position.
			Autoloader Safety Loop Open.	Ensure that safety loop is closed. Check lights on Picker.[Lights will be on if Safety Loop closed]
			Cable 10-4468 and/or 10-4467 faulty or not plugged in correctly.	Check cable and Connections at J18/J23 on GENINE 0 and on Guard Rail Lock, and at bulkhead above Base machine power box.
			Firmware has unlocked the Gate because it is expecting operator intervention which requires access through the guard rail.	Check Firmware/Software
	Underside Slip Sheet Sensor	Table Slip Sheet Sensor gives wrong reading.	Guard Rail Lock Faulty	Replace Lock.
			Sensor incorrectly set up	See sensor set up procedure.
			Sensor Faulty [36-3205] or cable faulty [10-4886], or not plugged in correctly at J10.	Replace sensor and/or cable and check connection at J10.
PICKER + TRACK	No CANBUS comms with Picker	Message 'Picker GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [2] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
		PICKER does not move.No sound.	Home/Away/Safe Home/Safe Away Sensors disconnected/faulty.[10-4350, 10-4379, J4, GENINE 1]	Check that all sensors are functional and plugged in correctly. Check cable from sensors to GENINE 1 [Power Box] Replace as necessary.
			Motor Cable faulty/disconnected. [10-4465, 10-4381, 11-0581]	Check Cable from motor back to Stepper driver in Power Box.
			Faulty Stepper Motor Driver.[10-3761]	Check Lights on Stepper Driver board. Replace if necessary.
			48volt Power Supply Faulty.[13-4832]	Check voltage on PDB. Replace if necessary.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
		PICKER does not move.Buzzes but goes nowhere.	One/both Phases missing/faulty.	Motor cable faulty/ swopped phases. Check cable.[11-0851, 10-4381, 10-4465]
			Faulty Stepper Motor Driver.[10-3761]	Check Lights on Stepper Driver board. Replace if necessary.
			Motor faulty. [11-0851]	Check motor wiring. Replace if necessary.
			Mechanical Faults. Loose pulley, Broken Belt, Loose Belt, Broken shaft.	See Mechanical.
		PICKER always moves in opposite direction to command	Incorrect NVS settings.	Check 'set val' parameters.
			Swopped phases on motor cable.	Check Cables.[11-0851, 10-4381, 10-4465]
	Slip Sheets not detected by laser sensor.	Laser sensor doesn't come on	Cable faulty or not correctly plugged in.	Check cable 10-4904 and connection J18 and J1 on GENINE 0. Check Relay.
			Laser sensor faulty.[10-4389]	Replace sensor.
			GENINE 0 faulty. [10-4227]	Replace GENINE.
			Firmware not turning laser on.	Check Firmware.
			Mechanical fault. Mirror out of alignment, dirty, laser beam obstructed.	Correct mechanical defect.
		Laser sensor does come on	Firmware threshold incorrect	Check/reload firmware.
			Cable faulty or not correctly plugged in.	Check cable 10-4904 and connection J18 and J1 on GENINE 0. Check Relay.
			Laser sensor faulty. [10-4389]	Replace sensor.
			Mechanical fault. Mirror out of alignment, dirty, laser beam obstructed.	Correct mechanical defect.
	Empty cassette not detected.	Laser sensor does not recognise the empty cassette reflective tape	Firmware threshold incorrect	Check/reload firmware.
			Cable faulty or not correctly plugged in.	Check cable 10-4904 and connection J18 and J1 on GENINE 0. Check Relay.
			Laser sensor faulty. [10-4389]	Replace sensor.
			Mechanical fault. Mirror out of alignment, dirty, laser beam obstructed.	Correct mechanical defect.

Slip Sheets not detected on wedgemaster.	Vacuum level low or incorrect.	Mechanical fault. Wedgemaster vacuum pipes blocked or kinked. Vacuum generator faulty.	Correct mechanical defect.
		Vacuum sensor board [10-4581] faulty.	Replace board.
		Vacuum sensor board cable [10-4669] faulty or not plugged in correctly [J3].	Replace cable or plug in correctly.
		GENINE 2 faulty	Replace GENINE.
		Firmware corrupt or faulty.	Reload Firmware.
Plate not detected on P Cups.	Vacuum level low or incorrect.	Mechanical fault. Vacuum pipes blocked or kinked. Vacuum generator faulty.	Correct mechanical defect.
		Vacuum sensor on GENINE 2 faulty.	Replace board.
		GENINE 2 faulty	Replace GENINE.
		Firmware corrupt or faulty.	Reload Firmware.
Plate not detected on Picker	Reflective sensor not detecting plate	Sensor aperture blocked or obscured.	Clear obstruction.
		Cable faulty [10-4367]or not plugged in correctly. [J2]	Check cable and connection.
		Faulty sensor [36-3141]	Replace sensor.
		GENINE 2 faulty	Replace GENINE.
		Firmware corrupt or faulty.	Reload Firmware.
Wedgemaster not detected at HOME position.	Wedgemaster not detected by HOME sensor.	Faulty Opto-interruptor sensor [10-4273].	Replace sensor.
		Cable faulty [10-4367]or not plugged in correctly. [J2]	Check cable and connection.
		Mechanical problem. Tab not cutting optical beam. Mechanical obstruction.	Correct mechanical defect.
Ejector Fingers not detected at HOME position.	Ejector fingers not detected by HOME sensor.	Faulty Opto-interruptor sensor [10-4273].	Replace sensor.
		Cable faulty [10-4367]or not plugged in correctly. [J2]	Check cable and connection.
		Mechanical problem. Tab not cutting optical beam. Mechanical obstruction.	Correct mechanical defect.
P Cups not detected at HOME position.	P Cups not detected by HOME sensor.	Faulty Opto-interruptor sensor [10-4273].	Replace sensor.
		Cable faulty [10-4367]or not plugged in correctly. [J2]	Check cable and connection.
		Mechanical problem. Tab not cutting optical beam. Mechanical obstruction.	Correct mechanical defect.

	Air Pressure in PICKER too low.	Message 'SYSTEM PRESSURE LOW'	System air pressure is too low for reliable PICKER operation..	Check incoming Compressed air supply to AUTOLOADER. Check for kinks or blockages in internal air tubing.
			Faulty SYSTEM air pressure board, [10-4887], or cable [10-4669] to J6 on GENINE 2.	Check/replace Board, cable, check that connector is plugged in correctly at J6.
			Firmware Threshold incorrect	Reload Firmware.
Subsystem	**PROBLEM**	**SYMPTOM**	**CAUSE**	**SOLUTION**
S CONVEYOR	No CANBUS comms with Conveyor	Message 'Conveyor GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [4] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Conveyor plate handling.	Drive belts do not start up when plate arrives on conveyor.	Plate not detected by 'Plate in' sensor. [10-4604] Cable faulty or not plugged in correctly	Check cable 10-4373 and J10
			'Plate In' sensor faulty. [10-4604]. A red LED on the sensor should come on when a plate is held above the sensor.	Replace sensor.
			HOME/AWAY Sensor 'Bypass' [10-4388] faulty or not plugged in properly. [J20]	Replace/correctly insert HOME/AWAY Bypass [10-4388]
		Drive belts run at wrong speed when plate arrives on conveyor.	GENINE 4 faulty	Replace GENINE.
			Speed parameter incorrect in NVS	Check NVS parameters and correct if necessary
			Mechanical problems. Belts slipping, motor pulley loose, drive shaft bearings..	Correct mechanical defect.
		Drive belts run in wrong direction.	Incorrect NVS settings.	Check 'set val' parameters.
			Swopped phases on motor cable.	Check Cables.[10-4376 and 11-0852]
		Drive belts do not slow down to match pre-heat oven input speed when plate leaves conveyor.	Plate not detected by 'Plate out' sensor. [10-4604] Cable faulty or not plugged in correctly	Check cable 10-4373 and J10
			'Plate Out' sensor faulty. [10-4604]. A red LED on the sensor should come on when a plate is held above the sensor.	Replace sensor.
			Incorrect NVS settings.	Check 'set val' parameters.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
L CONVEYOR		Drive belts do not stop after plate leaves conveyor.	Plate not detected by 'Plate out' sensor. [10-4604]Cable faulty or not plugged in correctly	Check cable 10-4373 and J10
			'Plate Out' sensor faulty. [10-4604]. A red LED on the sensor should come on when a plate is held above the sensor.	Replace sensor.
	No CANBUS comms with Conveyor	Message 'Conveyor GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [4] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Conveyor X Axis plate handling.	X Axis drive does not start up when plate arrives on conveyor.	Plate not detected by 'Plate in' sensor. [36-3141] Cable faulty or not plugged in correctly	Check cable 10-4714 and 10-4713, also check bulkhead connectors at X Axis box, and connection at J4 on GENINE 4.
			'Plate In' sensor faulty. [36-3141].	Replace sensor. [36-3141]
		X Axis drive runs in wrong direction.	X Axis HOME/AWAY sensors/cables not detected or faulty	Check/change sensors [10-4273] and cables 10-4714 and 10-4713. Check connectors at bulkhead and J20 on GENINE 4
			Mechanical faults. Shark Fins trapped under skin. Motor jammed. Drive shaft bearings.	Correct mechanical defect.
			Incorrect NVS settings.	Check 'set val' parameters.
			Swopped phases on motor cable.	Check Cables.[10-4717, 10-4452, 10-4765] and connections at X Axis box bulkhead and J25 on GENINE 4
		X Axis drive hits mechanical end stops.	X Axis HOME/AWAY sensors/cables not detected or faulty	Check/change sensors [10-4273] and cables 10-4714 and 10-4713. Check connectors at bulkhead and J20 on GENINE 4
			Firmware Problem. [drive not shut down by firmware]	Check/reload firmware.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
L CONVEYOR	Conveyor X Axis plate handling.[cont.]	Plate not rotated on Conveyor.	Firmware problem. [Rotator disabled by firmware]	Check NVS parameters. Check/reload firmware.
			Low/no vacuum on rotator.	Faulty Vacuum generator. Blocked or kinked vacuum tubing.
			Faulty Drive signal/cables	Check Solenoid/cables 10-4747
			Vacuum generator not turned on by Firmware	Check/reload firmware.
			Rotator zero and ninety degree sensors/cable faulty	Check sensors [10-4273] and cables [10-4715] and connection at J2 on GENINE 4.
			Faulty/jammed Rotator.	Correct mechanical defect.
			Mechanical Problem. Rotator plate surface too far below conveyor table surface. Plate bent.	Correct mechanical defect.
		'Low Rotator Vacuum' message reported by firmware.	Incorrect Vacuum threshold setting in firmware.	Check/reload firmware.
			Sensor tube to vacuum sensor on GENINE 4 blocked or kinked	Check tubing to sensor.
			Faulty Sensor/GENINE 4	Replace GENINE 4.
			Mechanical Problem. Rotator plate surface too far below conveyor table surface. Plate bent.	Correct mechanical defect.
	Conveyor Y Axis Plate Handling	Y Axis does not start up	Y Axis HOME/AWAY sensors/cables not detected or faulty	Check/change sensors [10-4273] and cables 10-4711 and 10-4712. Check connectors at J14 on GENINE 4
			Faulty Motor or cable.	Check Cables.[10-4716, 10-4765] and connections at J3 on Drive Amp [10-3761]
			Faulty Stepper Motor Driver.[10-3761]	Check Lights on Stepper Driver board. Replace if necessary.
			Plate stuck on exit of Conveyor.	Remove plate.
			Faulty Plate Exit Sensor. [36-3141]	Replace Sensor.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Conveyor Y Axis Plate Handling [cont.]	Y Axis does not start up [cont.]	Faulty Exit Sensor Cable or cable not plugged into GENINE 4 J2 correctly.	Check/replace Sensor Cable [10-4715]
			Faulty GENINE 4 [10-4227]	Replace GENINE 4.
			Mechanical faults. Plate pusher jammed. Motor jammed. Drive shaft bearings.	Correct mechanical defect.
L CONVEYOR	Table UP/DOWN movement.	Conveyor Table does not move up	Faulty Drive signal from GENINE 4 or faulty cables	Check Solenoid/cables 10-4747
		Message 'Table Stuck'	Firmware does not read the four up sensors true simultaneously, or four down sensors true simultaneously. Thinks table is stuck half way, or is tilted.	Check the four 'up' [magnetic reed sensors ,15-3444], and four 'down' [opto-reflector sensors, 36-3141] mounted on the corner air cylinders. Ensure metal side of reed switch is installed closest to cylinder wall.
			Faulty cabling to Sensors, or not plugged in correctly on GENINE 4.	Check/Replace cables 10-4732 [one at each corner], 10-4731, plugged into J5,
			Faulty GENINE 4 [10-4227]	Replace GENINE 4.
			Mechanical Obstruction, or no compressed air.	Correct mechanical defect.
RS CONVEYOR	No CANBUS comms with Conveyor	Message 'Conveyor GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [4] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Conveyor plate handling.	Drive belts do not start up when plate arrives on conveyor.	Plate not detected by 'Plate in' sensor. [36-3141]. Problem with cable.	Check/replace cable 10-4715. Check that connector is plugged in correctly to J2, GENINE 4.
			'Plate In' sensor faulty. [36-3141].	Replace sensor.
			Y Axis HOME/AWAY sensors/cables not detected or faulty	Check/change sensors [10-4273] and cable 10-4712. Check connectors at J14 on GENINE 4
			Faulty Motor or cable.	Check Cables.[10-4716, 10-4765] and connections at J3 on Drive Amp [10-3761]
			Faulty Stepper Motor Driver.[10-3761]	Check Lights on Stepper Driver board. Replace if necessary.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Conveyor plate handling.[cont.]	Drive belts do not start up when plate arrives on conveyor.	Plate stuck on exit of Conveyor.	Remove plate.
			Faulty Plate Exit Sensor. [36-3141]	Replace Sensor.
			Faulty Exit Sensor Cable or cable not plugged into GENINE 4 J2 correctly.	Check/replace Sensor Cable [10-4715]
			Faulty GENINE 4 [10-4227]	Replace GENINE 4.
		Plate not rotated on Conveyor.	Mechanical faults. Plate pusher jammed. Motor jammed. Drive shaft bearings.	Correct mechanical defect.
			Firmware problem. [Rotator disabled by firmware]	Check NVS parameters. Check/reload firmware.
			Low/no vacuum on rotator.	Faulty Vacuum generator. Blocked or kinked vacuum tubing.
			Faulty Drive signal/cables	Check Solenoid/cables 10-4747
			Vacuum generator not turned on by Firmware	Check/reload firmware.
			Rotator zero and ninety degree sensors/cable faulty	Check sensors [10-4273] and cables [10-4715] and connection at J2 on GENINE 4.
			Faulty/jammed Rotator.	Correct mechanical defect.
			Mechanical Problem. Rotator plate surface too far below conveyor table surface. Plate bent.	Correct mechanical defect.
		'Low Rotator Vacuum' message reported by firmware.	Incorrect Vacuum threshold setting in firmware.	Check/reload firmware.
			Sensor tube to vacuum sensor on GENINE 4 blocked or kinked	Check tubing to sensor.
			Faulty Sensor/GENINE 4	Replace GENINE 4.
			Mechanical Problem. Rotator plate surface too far below conveyor table surface. Plate bent.	Correct mechanical defect.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
SCU	No CANBUS comms with SCU	Message 'SCU GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [1] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Cassette Door Does not operate correctly	Message 'Door Stuck'	Main and Picker Door opto-interruptor sensors [10-4273] faulty or not connected correctly.	Check/replace Sensors.
			Cables from sensors to J4 GENINE 1 faulty or not plugged in correctly	Check cables [10-4350] and connection at J4
			Mechanical problem. Tab not cutting opto beam. Mechanical obstruction.	Correct mechanical defect.
		Door does not open.	Main and Picker Door opto-interruptor sensors [10-4273] faulty or not connected correctly.	Check/replace Sensors.
			Cables from sensors to J4 GENINE 1 faulty or not plugged in correctly	Check cables [10-4350] and connection at J4
			Drive signal from GENINE 1 or cables to solenoid valves faulty, not plugged in correctly at J21	Check cable 10-4354 and connection at J21
	Cassette lock does not operate.	Unable to lock cassette to SCU.	Mechanical obstruction.	Correct mechanical defect.
			Cassette not detected by docking sensor.	Check magnetic reed switches [15-3063] on garage, and cable 10-4351.
			No Magnet on Cassette.	Replace magnets on cassette. [59-3141]
			No Power to solenoid valve.	Check cable 10-4354 and connection at J21, relay [15-3359], cable 10-4351, connection at J10
			Mechanical obstruction.	Correct mechanical defect.
			No compressed air supply.	Check pipes and air supply.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Picks more than one plate at a time.	Air Knives not working	Drive signal from GENINE 1 or cables to solenoid valves faulty, not plugged in correctly at J21	Check cable 10-4354 and connection at J21
			Mechanical problem. Air knives blocked, pipes kinked, No air.	Correct mechanical defect.
	Plates being scratched during picking	Plate floatation not working	Flotation Blower or cable faulty or disconnected.	Check blower, cable 10-4364 and J9 on PDB.
			Blower speed incorrect.	Set blower speed.[p]
			Firmware not turning blower on	Check Firmware.
MCU	No CANBUS comms with MCU	Message 'MCU GENINE not responding to commands'	Address setting on J26 incorrect	Set up correct address [1] by strapping the correct address selection pins on J26
			PDB and/or GENINE Firmware corrupt or incorrect version.	Check version. Reload or download correct version. [See firmware procedure]
	Cassette Door Problems	Message 'Door Stuck'	Main and Picker Door opto-reflective sensors [36-3141] faulty or not connected correctly.	Check/replace Sensors. There are 5 opto-reflective sensors on the cassette door. 4 on the main door,[two for open and two for closed]
			Cables from opto sensors to J4 GENINE 1 faulty or not plugged in correctly	Check cables [10-4742, 10-4743, 10-4698] and connection at J4
			Mechanical problem.Door not opening/closing completely. Mechanical obstruction.	Correct mechanical defect.
		Door does not open.	Main and Picker Door opto-interruptor sensors [36-3141] faulty or not connected correctly.	Check/replace Sensors. There are 5 opto-reflective sensors on the cassette door. 4 on the main door,[two for open and two for closed]
			Cables from sensors to J4 GENINE 1 faulty or not plugged in correctly	Check cables [10-4742, 10-4743, 10-4698] and connection at J4
			Drive signal from GENINE 1 or cables to solenoid valves faulty, not plugged in correctly at J21	Check cable 10-4706, 10-4729, and break out board 10-4727, and connection at J21
			Mechanical obstruction.	Correct mechanical defect.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
	Cassettes on forks problems.	Message 'cassette not detected'	Cassette not fully home.	Unlock Chariot manually. Force problem cassettes home until they are latched onto the fork..
			Cables faulty or not plugged in correctly.	Check/replace cables 10-4707, 10-4703, and check connection at J5 GENINE 1.
			Faulty Micro switches on forks.	Replace switches.
	Cassette positions incorrect	Cassette positions not detected or incorrect	Cassette height sensor module loose or mal-ajusted.	Adjust cassette height sensor plate.[p]
			Faulty opto-reflective position sensors and/or cables.	Check the four opto-reflective [36-3141]position sensors, cable 10-4705 and connection at J2 on GENINE 1.
	Chariot position problems.	Message 'Chariot position unknown.'	Faulty GENINE 1 [10-4227]	Replace GENINE 1.
			Mechanical problem. Reflective tab loose, or bent.	Correct mechanical defect.
			Chariot opto-reflective sensors out of adjustment.	Adjust sensor positions.[p]
			Chariot opto-reflective sensors [36-3141] faulty, or cables defective.[10-4707]	Check/replace defective sensor/cable. Also check connection at J5 on GENINE 1.
	Chariot lights.	Chariot lights not on or incorrectly lit.	Faulty GENINE 1 [10-4227]	Replace GENINE 1.
			Faulty LED board, cables	Check cables 10-4702, 10-4734, 10-4710 and connection at J18, GENINE 1.
	Cassette forks do not move up or down.	Unable to move forks.	Firmware not turning lights on.	Reload/check firmware.
			MCU safety loop open.	Fault find/Close safety loop[p]
			Motor controller not programmed.	Program motor controller.[p]
			Forks at top or bottom end of travel switches.	Drive forks out of end-of-travel position with JOG Panel.
			Manual/Auto switch on JOG panel set to manual position.	Set switch to automatic position.

Subsystem	PROBLEM	SYMPTOM	CAUSE	SOLUTION
			MCU safety/interface board faulty. [10-4697]	Replace board.
			Cables faulty, or not plugged in correctly.	Check cables 10-4706, 10-4736, 10-4735, and connection at J2, J18, GENINE 1, J42 PDB.
			Faulty JOG panel. 10-4736]	Replace JOG panel.
			Motor Power from PDB faulty.	Check/replace cables 10-4741, 10-4754, 10-4752, 10-4746, contactors 15-3445, motor 15-3421 and connection at J15, PDB.
			Faulty Motor Controller.[15-3422]	Replace controller.
SLIP SHEET BIN	Slip Sheet Bin Rollers, Compactor, do not operate correctly	Rollers do not revolve.	Slip Sheet Bin Safety loop open.	Troubleshoot slip sheet bin safety loop.[p]
			Faulty 24volt Power supply, and/or cables.	Check Power supply [13-4750] and cables 10-4754, 10-4648, 10-4652,and connection at power supply and J3, PDB.
			Motor Circuit Breaker open.	Check/reset circuit breaker on slip sheet bin.
			Faulty DC motor.	Replace motor.
			Power Supply not turned on by firmware.	Check/reload firmware.
		Rollers do not open/close.	Slip Sheet Bin Safety loop open.	Troubleshoot slip sheet bin safety loop.[p]
			Signal from GENINE absent, faulty cable, or solenoid.	Check cable 10-4710, 10-4706, break out board 10-4727, and connection at J21, GENINE 1.
		Compactor does not extend.	Slip Sheet Bin Safety loop open.	Troubleshoot slip sheet bin safety loop.[p]
			Signal from GENINE absent, faulty cable, or solenoid.	Check cable 10-4710, 10-4706, break out board 10-4727, and connection at J21, GENINE 1.
		Cant read roller position sensor, or compactor sensor.	Faulty reflective sensors [36-3141], or cables [10-4652], 10-4351.	Check/replace sensors and cables, also check connection at J10 and J20, GENINE 1.