

ELECTRICAL TROUBLESHOOTING

eHydro Electronic Operating System Fault Codes

Purpose:

The LED status indicator light flashes in specific sequences of four flashes to provide a visual indication of fault diagnostic codes. These fault codes will aid in the diagnosis of operational problems that may occur.

Operation:



MX10694

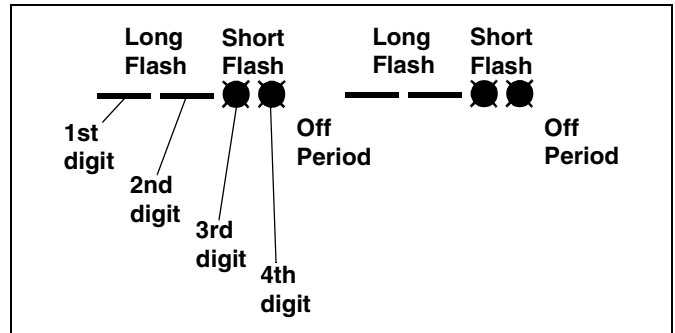
During normal operation the status indicator light (A) will be illuminated for approximately 4 seconds when the key is turned on as part of a self test, then the light will not be illuminated. The status indicator light will begin to flash a specific fault code when an operational command input is given and any one or more parts of that circuit are not operating properly.

The status indicator light will begin to flash a fault code that will help identify the problem. If more than one fault exists each fault will be displayed before the controller repeats the fault codes. If for example, the controller reads a fault on both forward and reverse pedals, the controller will flash the forward fault code then the reverse fault code and then it will repeat the cycle.

Each fault will have to be corrected and clear one by one should there be multiple faults.

When the first fault has been cleared, the electronic operating system will reset. When the vehicle is operated the electronic operating system will flash the next fault code that is recorded if there are any problems that still exist.

The electronic operating system has 12 different fault codes available to assist with diagnostics. Each fault code is a combination of four long and/or short flashes.



A fault code of 2 long and 2 short flashes (example shown) would be signaling that the reverse pedal potentiometer is malfunctioning or is out of calibration.

When the reverse potentiometer is recalibrated, adjusted, or replaced, the electronic operating system would reset, clearing the fault code and resuming normal operation.

This code would flash two long flashes followed by two short flashes followed by an off period. This sequence would then repeat itself until the correction is made and power to the controller cycled off and back on.

The long flash is approximately 1.0 second, the short flash is approximately 0.5 second and the off period is approximately 4 seconds. The flash code begins after the off period. Whenever reading a fault flash code be sure to let the code cycle several times while reading the code to be sure you are at the beginning of the code.

Once a code has been read, it can be matched to the fault code chart to explain what the electronic operating system is reading as a problem and what corrective action is needed to positively identify and correct the source of the fault.

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eHydro Electronic Operating System Fault Code Chart

The long flash “—” = 1.0 second

The short flash “•” = 0.5 second

OFF period = 3 to 4 seconds.

The flash code begins after the off period.

Whenever reading a fault flash code be sure to let the code cycle several times while reading the code to be sure you are at the beginning of the code.

FAULT CODE	FLASH SEQUENCE	STARTING TEST POINT	FAULT CAUSE	MACHINE RESPONSE	RESET ACTION
1	• • •	Forward Pedal Potentiometer	Normal Operation:		
			Voltage signal is out of range. Input is not calibrated.	No drive in either direction.	Power recycled through off to clear error status. Sensor has to be re-calibrated.
			Calibration Routine:		
			Voltage signal is out of range.	Calibration routine stops.	Power recycled through off to clear error status. Calibration repeated after signal is back within range.
2	- - •	Reverse Pedal Potentiometer	Normal Operation:		
			Voltage signal is out of range. Input is not calibrated.	No drive in either direction.	Power recycled through off to clear error status. Sensor has to be re-calibrated.
			Calibration Routine:		
			Voltage signal is out of range.	Calibration routine stops.	Power recycled through off to clear error status. Calibration repeated after signal is back within range.
3	• • • -	Throttle Position Potentiometer	Normal Operation:		
			Voltage signal is out of range. Input is not calibrated.	Load Match is disabled; loss of performance.	Power recycled through off to clear error status. Sensor has to be re-calibrated.
			Calibration Routine:		
			Voltage signal is out of range.	Calibration routine stops.	Power recycled through off to clear error status. Calibration repeated after signal is back within range.

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FAULT CODE	FLASH SEQUENCE	STARTING TEST POINT	FAULT CAUSE	MACHINE RESPONSE	RESET ACTION
4	• • • •	Flywheel Speed Sensor	Normal Operation:		
			Output current exceeds a certain value without detecting an engine speed. MFWD speed must also be available at same time.	Load Match and cruise control will be disabled; loss of performance.	Power recycled through off to clear error status.
			Calibration Routine:		
			Missing engine speed or signal exceeds rpm tolerance.	Load Match is disabled.	Engine speed has to be adjusted. Calibration repeated.
5	• - - •	MFWD Speed Sensor	Normal Operation:		
			Output current exceeds a certain value without detecting an MFWD speed. Engine speed must also be available at same time.	Cruise control will be disabled; loss of performance.	Power recycled through off to clear error status.
			Calibration Routine:		
			Missing MFWD speed or signal exceeds rpm tolerance.	Calibration routine stops.	MFWD signal has to be available. Calibration repeated.
6	- • • -	Cruise Control/Max Speed Switch	Normal Operation:		
			Both inputs are active at the same time.	Load Match and cruise control will be disabled; loss of performance.	Power recycled through off to clear error status.
7	- - • -	Res/+ Set/- Switch	Normal Operation:		
			Both inputs are active at the same time.	Load Match and cruise control will be disabled; loss of performance.	Power recycled through off to clear error status.
8	- - - -	Off-Seat Command	Normal Operation:		
			Drive command selected while the seat switch is in open position.	No drive in either direction.	Error status will reset when seat switch is placed in on position.
			Calibration Routine:		
			Threshold calibration while the seat switch in open position.	No drive in either direction.	Error status will reset when seat switch is placed in on position. Calibration can then be continued.

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FAULT CODE	FLASH SEQUENCE	STARTING TEST POINT	FAULT CAUSE	MACHINE RESPONSE	RESET ACTION
9	-	Simultaneous command from Forward and Reverse	Normal Operation:		
			Controller receives a command from both pedals at the same time.	No drive in either direction.	Error status will reset when both pedal commands return to zero.
			Calibration Routine:		
			No fault situation.	Flash code will be present, no other machine response.	None
10	. - - -	Valve output to Forward or Reverse coil	Normal Operation:		
			The calculated value for the coil resistance exceeds the valid range due to open or short circuit.	No drive in either direction.	Power recycled through off to clear error status.
			Calibration Routine:		
			The calculated value for the coil resistance exceeds the valid range due to open or short circuit.	No drive in either direction.	Power recycled through off to clear error status. Calibration repeated.
11	- . . . (S/N - H120712 - H131963 - H141271	Sensor supply voltage	Normal Operation:		
			Voltage is out of range.	No drive in either direction.	Power recycled through off to clear error status.
11 (S/N H120713 - H131964 - H141272 -	Sensor supply voltage	Normal Operation:		
			Voltage is out of range.	No drive in either direction.	Power recycled through off to clear error status.
12 (continuous)	Software	Normal Operation:		
			No application software loaded into the microprocessor.	No machine operation.	Replace Controller. Download correct software.
13	- . . . (S/N H120713 - H131964 - H141272 -	Brake switch input	Normal Operation:		
			Brake engaged	Cruise not available to set.	Release brake. Adjust or replace brake switch.