



Kysor Instrumentation Troubleshooting Guide

Troubleshooting Emergency One Commercial System

The Medallion II instrumentation system is a Microprocessor based system utilizing both Sensor and Data bus information to display both gauge and warning information. With a microprocessor system the need for a good clean Ground is very important. Whenever the system is giving erratic behavior please check the grounds between the VDC(Pin J & H), and Battery(Ground post). Knowing that the Ground is good as well as the Battery and Ignition connections are good will save a lot of trouble shooting time.

Gauge Troubleshooting

All the gauges are built the same way. They all have a Microprocessor, Stepper Motor, and LED for lighting. Knowing this will add in trouble shooting for a faulty gauge. The gauges get their information by a single data line connection to the VDC. This is important because now the Gauge harness is a universal harness. This means you can plug any connector into any gauge and it should work assuming that the information is coming across that data line.

If none of the gauges function these checks can be made.

1. Measure battery voltage on pin F at the VDC connector.
2. Turn the ignition key on. There should be 12 volts at pin E of the VDC.
3. Check to be sure Pin J and H of the VDC goes to battery ground. These two pins are internally connected on the VDC.
4. If the gauges will not power up check the connection at pin E of the VDC. If this pin is shorted to the battery with power off the system will not power up.

If the system powers up but a single gauge or several gauges don't function, perform the following tests to determine if you have a harness or a gauge failure.

1. As you turn on the key switch, have someone watch the gauges on the pump panel. All the gauges should go fully counter clockwise and vibrate. This is what we call reset or zero calibration and they do this every time the ignition key is turned on.
2. If any of the gauges do not reset, swap instrument connectors with a gauge that did reset and repeat process.
3. At this point the Vehicle is not running and the key is on. The gauges that have information will start working - Fuel level and Voltage. The other gauges will not work until the engine is running.
4. If the same gauge still fails to reset the instrument is bad but, if it now does reset the harness may be bad. Look for the following voltage information on the suspect 5-pin gauge connector with key on.

If a gauge will not light up check for 12 volts at pin G of the gauge harness connector with the headlight switch on.



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Pin	G	H	J	K	L
DC Voltage	12vdc*	3-7vdc	GND	7±.5 vdc	N/A

*When lights are on. Voltage supplied directly from chassis and not through the VDC.

5. If all gauges reset and seem to work properly start the engine and use following chart to test the inputs that drive the gauges.

Gauge	Input	Test
Volt Gauge	Battery	Use a meter to insure gauge matches battery.
Fuel Gauge (optional)	Fuel sender	Pin 16 of the 24-pin connector, on the VDC, between 88 to 0 ohms. If you ground this pin the gauge will go to full scale.
Coolant Temperature Gauge	Engine ECM	Use engine diagnostic tools to compare the gauge readings with the readings from the engine computer.
Oil Pressure Gauge	Engine ECM	Use engine diagnostic tools to compare gauge readings with the engine computer.
Tachometer	Engine ECM	Use engine diagnostic tools to compare gauge readings from engine computer.
Transmission Oil Gauge (optional)	Transmission ECM	Use transmission diagnostic tools to compare gauge reading with transmission computer.

Replace any gauge that has different readings than what the test equipment reads.

6. If you perform all the tests and a single instrument seems to reset fine but will not respond after the sender has been confirmed good the instrument is bad.

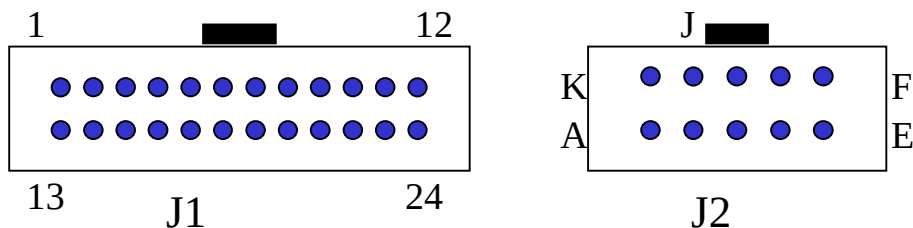


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E-One VDC I/O Connections (COMMERCIAL)

JPin	Name of input	Input Characteristic
J1-1	High water	Switch to ground to activate
J1-2	Low Oil Pressure light	Switch to ground to activate
J1-3	Not Used	Not used
J1-4	Not Used	Not used
J1-5	Not Used	Not used
J1-6	Not Used	Not used
J1-7	Warning Buzzer	Switch to ground to activate
J1-8	Not Used	Not used
J1-9	Not Used	Not used
J1-10	Not Used	Not used
J1-11	Not Used	Not used
J1-12	Low Voltage light	Switch to ground to activate
J1-13	Not Used	Not used
J1-14	Not Used	Not used
J1-15	Not Used	Not used
J1-16	Fuel	Resistive sender type
J1-17	Not Used	Not used
J1-18	Not Used	Not used
J1-19	Not Used	Not used
J1-20	Not Used	Not used
J1-21	Not Used	Not used
J1-22	Not Used	Not used
J1-23	Not Used	Not used
J1-24	Not Used	Not used
J2-A	Vehicle Data Bus + (Pos)	J1708/J1587
J2-B	Vehicle Data Bus – (Neg)	J1708/J1587
J2-C	Not Used	RS-485
J2-D	Not Used	RS-485
J2-E	Ignition	Switched 12 V
J2-F	Battery	12V Nominal
J2-G	7Vdc Power	7Vdc power supply
J2-H	Sensor Ground	Sensor Return
J2-J	Module Ground	To Chassis Ground
J2-K	Single Wire Instr Bus	To instruments



View is looking at VDC housing



Troubleshooting Emergency One Custom System

The Medallion II instrumentation system is a Microprocessor based system utilizing both Sensor and Data bus information to display both instrumentation and warning information. With a microprocessor system the need for a good clean Ground is very important. Whenever the system is giving erratic behavior please check the grounds between the VDC (Pin J), Message Center (Pin 4 on 15 pin connector) and Battery (Ground Post). Knowing that the Ground is good as well as the Battery and Ignition connections are good will save a lot of trouble shooting time.

Gauge Troubleshooting

All the gauges are built the same way. They all have a Microprocessor, Stepper Motor, and LED for lighting. Knowing this will add in trouble shooting a faulty gauge. The gauges get their information by a single data line (Pin 9 of 15 pin connector) of the Message Center. This is important because now the gauge harness is a universal harness. This means you can plug any connector into any gauge and it should work assuming that the information is coming across that data line. Perform the following tests to determine if you have a harness or instrument failure.

1. As you turn on key switch watch gauges. All the gauges should go fully counter clockwise and vibrate. This is what we call reset.
2. At this point the vehicle is not running and the key is on. The gauges that have information will start working.
3. If any of the instruments do not reset, swap instrument connectors with a gauge that did reset and repeat process.
4. If the same instruments do not reset swap instrument connectors with a gauge that did reset and repeat process.

Pin	G	H	J	K	L
DC Voltage	12 VDC*	3-7 VDC	GND	7±.5 VDC	N/A

*When lights are on.

5. If all gauges reset and seem to work properly start the engine and use the following chart to test the inputs that drive the gauges.



Gauge	Input	Test
Volt Gauge	Battery	Use a meter to insure gauge matches battery.
Fuel Gauge	Fuel sender	Pin 16 of the 24-pin connector, on the VDC, between 88 to 0 ohms. If you ground this pin the gauge will go to full scale.
Pri and Sec Air	Air Pressure	The two gauges use direct air pressure into the computer. Insure that there is air pressure at two inputs by unplugging the airline to see if pressure is at the computer.
Temperature Gauge	Engine ECM	Use engine diagnostic tools to compare the gauge readings with the readings from the engine computer.
Oil Pressure Gauge	Engine ECM	Use engine diagnostic tools to compare gauge readings with the engine computer.
Speedometer	Engine ECM	Use engine diagnostic tools to compare gauge readings with the engine computer.
Tachometer	Engine ECM	Use engine diagnostic tools to compare gauge readings from engine computer.
Transmission Oil Gauge	Transmission ECM	Use transmission diagnostic tools to compare gauge reading with transmission computer.

Replace any gauge that has different readings than what the test equipment reads.

6. If you perform all the tests and a single instrument seems to reset fine but will not respond after the signal has been confirmed good the instrument is bad.

Troubleshooting the Medallion II Computer and Message Center

The computer (VDC) and the Message Center are the brains of the system. The VDC was designed to take the inputs (some digital some analog) and convert them into an all digital signals that the Message Center can use to turn on the warning lights and drive the gauges.

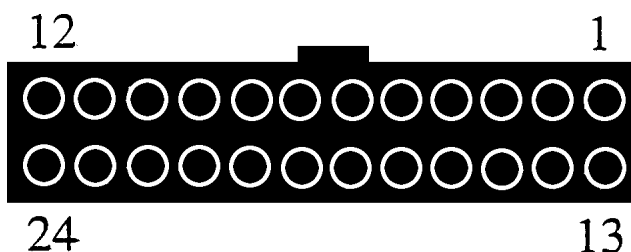
A good portion of the information that the VDC uses is directly from the engine data bus. If for any reason the data bus is lost at the VDC for 18 seconds the odometer will start flashing. After 23 seconds the gauges will return to zero (reset) and after 45 seconds the Message Center will start scrolling the lights which we call the return to normal.

If for any reason the gauges and the Message Center fails to power up, you can ground pin 8 of the 15-pin connector on the Message Center and the gauges and lights should go through the power up sequence. This is a helpful hint to help eliminate half the system when trying to diagnose a dead system.

Use the pin out guides to help trouble shoot the system and the input characteristics as suggestions for testing.

Emergency One 24 Pin VDC Connector (CUSTOM)

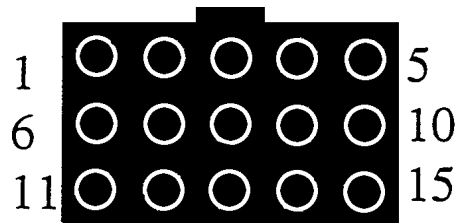
PIN	Name of Input	Input Characteristic
1	High Water	Outputs 12 VDC to activate.
2	Low Oil Pressure Light	Outputs 12 VDC to activate.
3	Not used	Not used
4	OK to Pump	Switched to 12 VDC to activate.
5	Park Brake	Switched to 12 VDC to activate.
6	Engine Run	Switched to 12 VDC to activate.
7	Warning Buzzer	Switch to ground to activate.
8	Not used	Not used
9	Not used	Not used
10	Not used	Not used
11	ABS	Switch to ground to activate.
12	Low Voltage Light	Switch to ground to activate.
13	Not used	Not used
14	Not used	Not used
15	Not used	Not used
16	Fuel Sender	Resistive sender 0 = Full 88 = Empty.
17	Not used	Not used
18	Pump Engage	Switched to 12 VDC to activate.
19	Not used	Not used
20	Not used	Not used
21	Not used	Not used
22	Not used	Not used
23	Generator Engage	Switch to ground to activate.
24	Not used	Not used



View from bottom of connector on harness

Emergency One Message Center Connector Pinouts

PIN	Name of Input	Input Characteristic
1	Data Bus +	From VDC J1587 pin A.
2	Ground	Chassis ground.
3	Instrument Power	7 VDC provided by message center.
4	Ground	Ground for instruments.
5	Battery	12 VDC from battery.
6	No Connection	Switched to ground to activate.
7	No Connection	Switched to ground to activate.
8	Message Center Power Control	From VDC pin G Ground to activate.
9	Gauge Data	Instrumentation data.
10	Data Bus	From VDC J1587 pin B.
11	Fan Clutch	Switched to ground to activate.
12	No Connection	
13	No Connection	
14	No Connection	
15	No Connection	

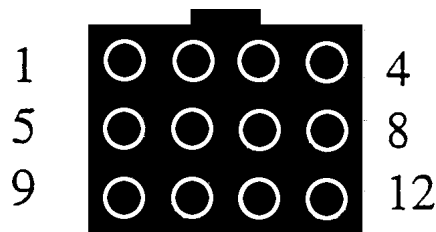


View from bottom of connector on harness



Emergency One Message Center Connector Pinouts

PIN	Name of Input	Input Characteristic
1	Maintenance	Switched to ground to activate.
2	Right Turn Signal	Switched signal to 12 VDC to activate.
3	Left Turn Signal	Switched signal to 12 VDC to activate.
4	High Beam	Switch to 12 VDC to activate.
5	Air Filter	Switched to 12 VDC to activate.
6	Aerial Engage	Switched to ground to activate.
7	Stop Engine	Switched to ground to activate.
8	Check Engine	Switched to ground to activate.
9	Check Transmission	Switched to ground to activate.
10	Standard/Metric Select	Grounded to standard/open for metric.
11	Cab Ajar	Switched to ground to activate.
12	No Connection	



View from bottom of connector on harness

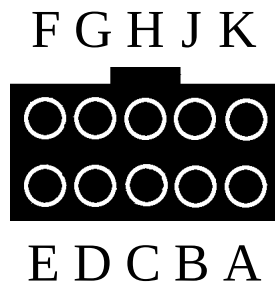


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Emergency One 10 Pin VDC Connector

PIN	Name of Input	Input Characteristic
A	Vehicle Data Bus +	J1587 data bus +
B	Vehicle Data Bus -	J1587 data bus -
C	Gauge Data Bus +	RS-485
D	Gauge Data Bus -	RS-485
E	Ignition	Switch 12 VDC.
F	Battery	12 VDC
G	Message Center Power Control	Switch to ground.
H	Ground	Battery ground.
J	Ground	Battery ground.
K	Single Wire Instrument Bus	Data for rear instruments.



View from bottom of connector on harness

Troubleshooting the Kysor Medallion Message Center

	STOP ENG	CHECK ENG	CAB AJAR			ATC WARN	ENG RUN	CHECK TRANS	GEN ENGAGE	AERIAL ENGAGE	
	GRID HEATER	ENG MAINT		LOW FUEL				AIR FILTER	LOW AIR	PUMP ENGAGE	OK TO PUMP

System Operation

When the key is in the off position the gauges will not be on. The Message Center may be indication left and right turn signal lights if the hazards are on. The high beam indicator will be on if the headlights are on with the high beams enabled.

With key on and battery voltage above 10 VDC all the gauges will return to the left and vibrate for a moment then begin to operate. At the same time all the lights on the Message Center will light up for one second. Except for the Turn Signal indicators and High beam indicator. After on second several icons may stay lit until the engine is running or the fault is corrected.



1. Left Turn Signal

Color = Green

Left turn signal is controlled by a twelve volt switched signal.



2. Stop Engine

Color = Red

Activated by a switch to ground from ECM.

Activates buzzer.



3. Check Engine

Color = Yellow

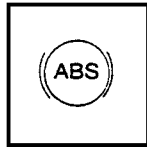
Activated by a switch to ground from ECM.



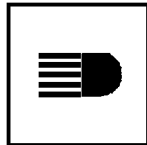
4. Cab Ajar

Color = Red

Activated by a switch to ground.



- 5. ABS Warning**
Color = Yellow
Controlled by a switch to ground.



- 6. High Beam**
Color = Blue
Activated by 12 VDC switched signal.



- 7. ATC Warning Indicator**
Color = Yellow
Activated by signal from ECM (J1587).



- 8. Engine Run**
Color = Blue
Activated by switch to 12 VDC



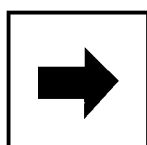
- 9. Check Transmission**
Color = Red
Activated by switch to ground.



- 10. Generator Engage**
Color = Green
Activated by switch to ground.



- 11. Aerial Engage**
Color = Green
Activated by switch to ground.



- 12. Right Turn**
Color = Green
Activated by 12 VDC switched signal.



13. Park

Color = Red

Activated by switch to 12 VDC.



14. Grid Heater

Color = Yellow

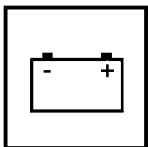
Activated by signal from ECM (J1587).



15. Engine Maintenance

Color = Yellow

Activated by switch to ground.



16. Volt Indicator

Color = Red

Activates when voltage is less than 11.8 or greater than 14.5 volts and resets at 12 volts and 14.3 volts.

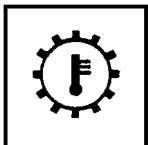
Activates buzzer.



17. Low Fuel

Color = Yellow

Activated when resistance is 22 ohms and off when 26.4 ohms or higher.



18. Transmission Temperature

Color = Yellow

Activates when temperature reaches 250 degrees F and turns off at 245 degrees F.



19. High Engine Temperature

Color = Red

Activates when temperature reaches 220 degrees F and resets at 215 degrees F.

Activates buzzer.



20. Oil Pressure

Color = Red

Activates when oil pressure drops below 5 psi and resets at 10 psi.

Activates buzzer.



AIR
FILTER

21. Air Filter

Color = Yellow

Activates by switch to 12 VDC.

LOW
AIR

22. Low Air

Color = Red

Activates when air pressure drops below 70 psi and resets at 72 psi.

Activates buzzer.

PUMP
ENGAGE

23. Pump Engage

Color = Green

Activated by switch to 12 VDC.

OK
TO
PUMP

24. OK to Pump

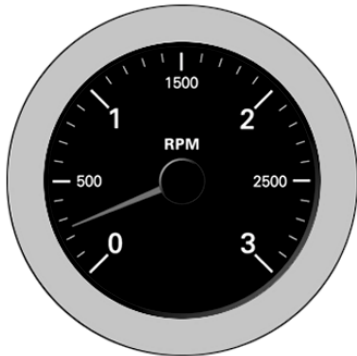
Color = Green

Activated by switch to 12 VDC.

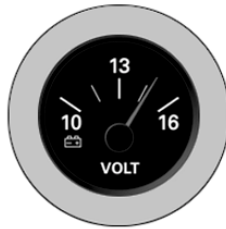


SERVICE MANUAL

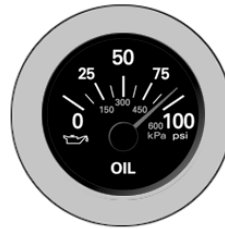
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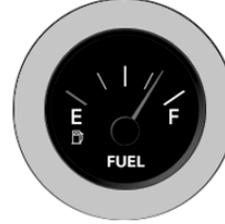
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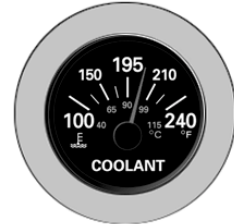
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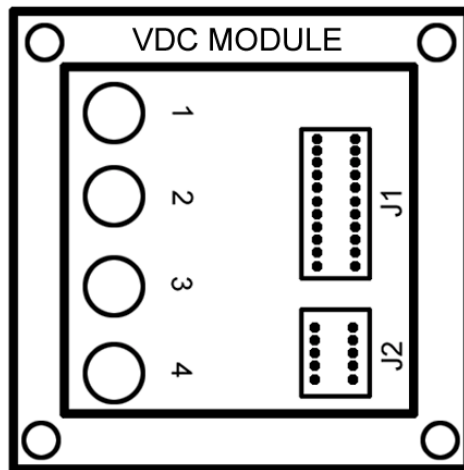
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576528 (custom)



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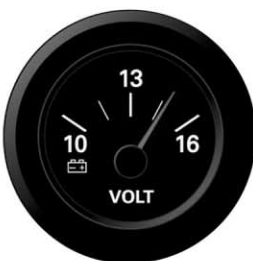
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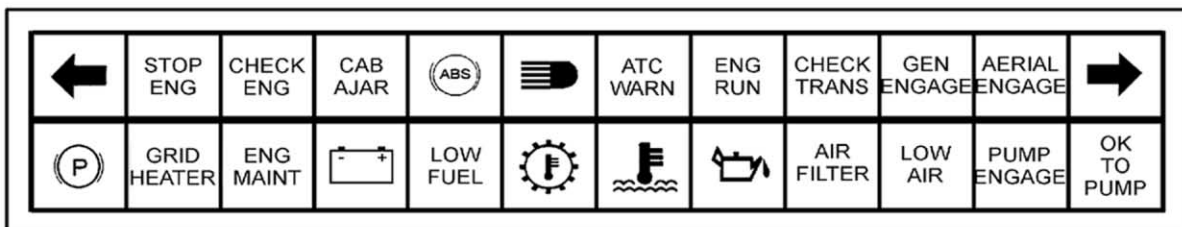
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