

Service Note

Advanced Pollution Instrumentation

A Teledyne Technologies Company

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05-026A 28 February 2006

M300E TROUBLESHOOTING TREE

I. PURPOSE:

This document has the most common failures of the M300E analyzer, with possible problems and solutions

II. TOOLS:

NONE

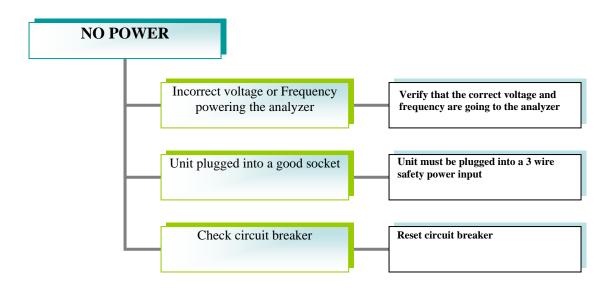
III. \underline{PARTS} :

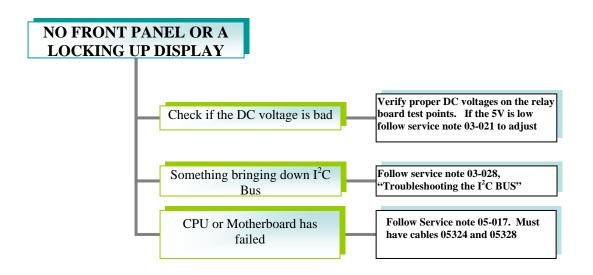
NONE

IV. **PROCEDURE**:

To use this document find the symptom of your analyzer in the list below. Then go to the appropriate page number. The problem could be anything on the list and you will want to start from the top and work your way down going though each possible cause until you find the problem.

| Page | Problem |
|------|--|
| 2.) | No Power |
| 2.) | No front panel or locking up Display |
| 3.) | Unstable Reading at Zero, Zero noise |
| 4.) | Unstable Reading at Span, Span noise |
| 5.) | Unable to Zero (No Zero Button) |
| 6.) | Unable to Span (No Span button or no response to Span gas) |
| 7.) | Non-Linear Response |
| 8.) | Slow Response to Zero or Span |
| 9.) | No Flow |
| 9.) | No analog or incorrect analog output |
| 10.) | Measure and Reference both Around 115mV, Sync Warning, or Source Warning |
| 10.) | Any Temperature Warning |

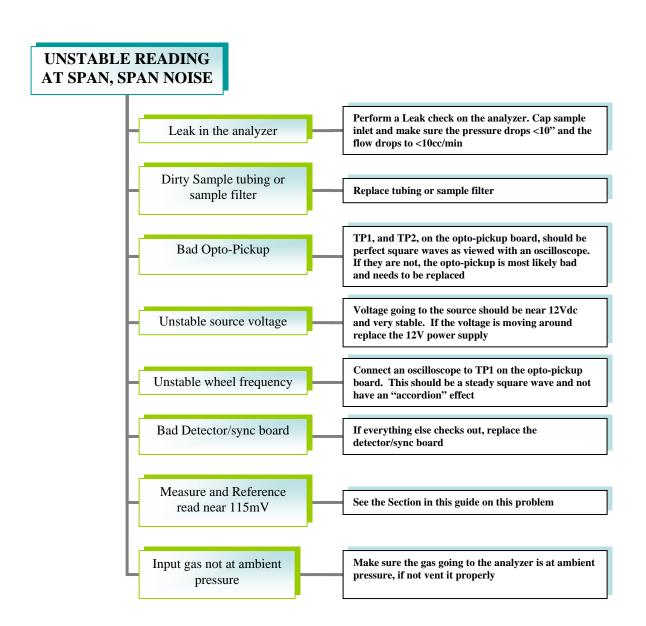




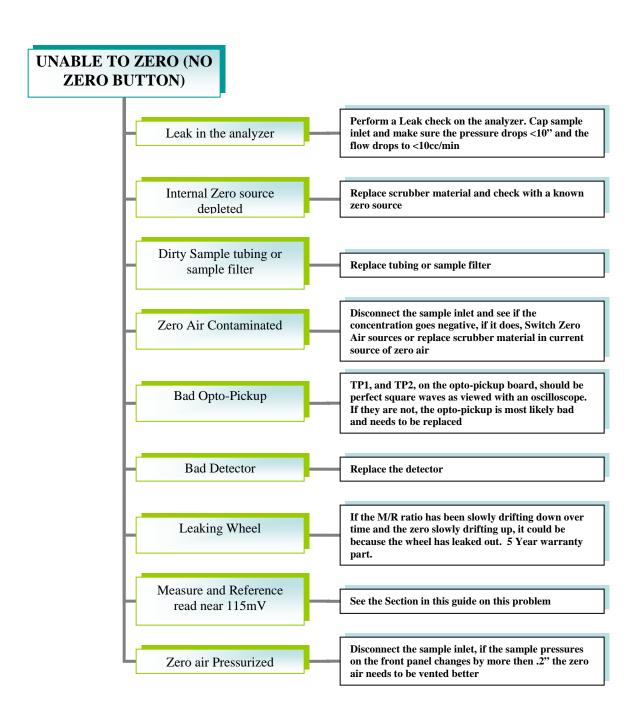
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UNSTABLE READING AT ZERO, ZERO NOISE Perform a Leak check on the analyzer. Cap sample Leak in the analyzer inlet and make sure the pressure drops <10" and the flow drops to <10cc/min Internal Zero source If you have an internal zero air source, replace scrubber material and check with a known zero depleted Dirty Sample tubing or Replace tubing or sample filter sample filter Zero Air Contaminated Switch Zero Air sources or replace scrubber material in current source of zero air TP1, and TP2, on the opto-pickup board, should be **Bad Opto-Pickup** perfect square waves as viewed with an oscilloscope. If they are not, the opto-pickup is most likely bad and needs to be replaced Voltage going to the source should be near 12Vdc Unstable source voltage and very stable. If the voltage is moving around, replace the 12V power supply Connect an oscilloscope to TP1 on the opto-pickup Unstable wheel frequency board. This should be a steady square wave and not have an "accordion" effect Bad Detector/sync board If everything else checks out, replace the detector/sync board Measure and Reference See the Section in this guide on this problem read near 115mV

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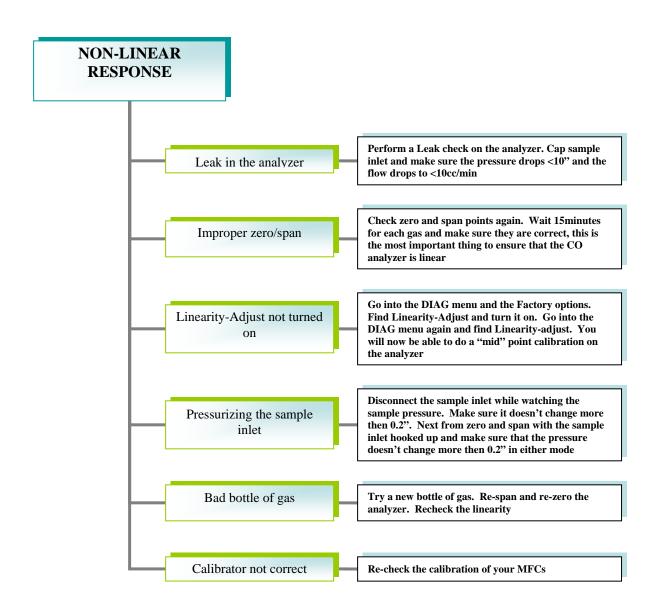


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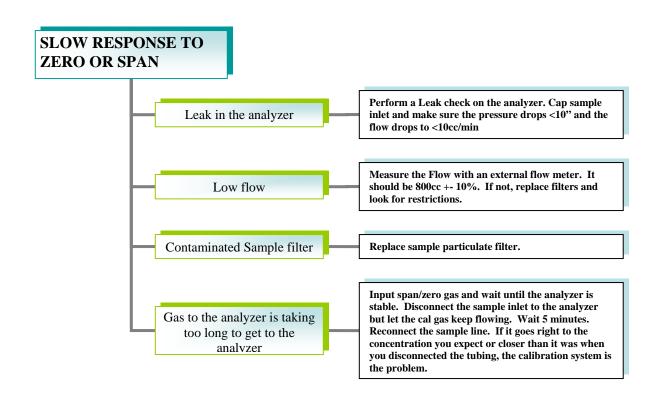
SPAN BUTTON OR NO RESPONSE TO SPAN) Perform a Leak check on the analyzer. Cap sample Leak in the analyzer inlet and make sure the pressure drops <10" and the flow drops to <10cc/min Make sure the pump is turning and there is suction No Flow from the vacuum side. Replace Filters. If still no flow, check for flow restrictions in the tubing. Make sure the proper span concentration is set in the Wrong span CONC entered **CONC** menu See the Section in this guide on this problem Measure and Reference read near 115mV Redo the zero making sure you give the analyzer enough time to become stable. If the zero is off a Zero not correct small amount it will cause the Span to be off by a large amount Dirty Sample tubing or Replace tubing or sample filter Bad Opto-Pickup TP1, and TP2, on the opto-pickup board, should be perfect square waves as viewed with an oscilloscope. **Bad Detector** Replace the detector If the M/R ratio has been slowly drifting down over Leaking Wheel time and the zero slowly drifting up, it could be because the wheel has leaked out. 5 Year warranty part. Measure and Reference See the Section in this guide on this problem read near 115mV

UNABLE TO SPAN (NO

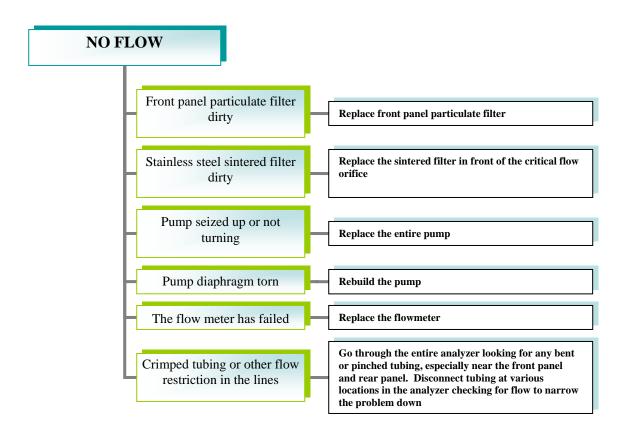
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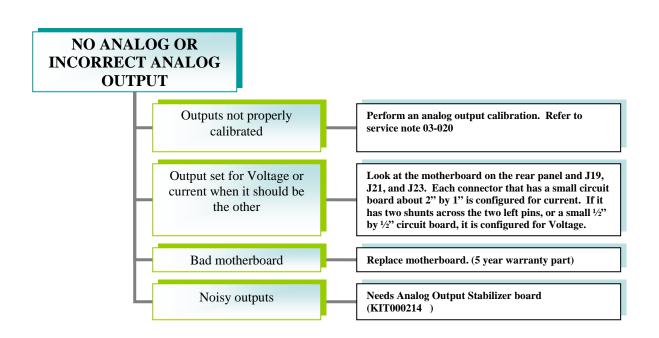


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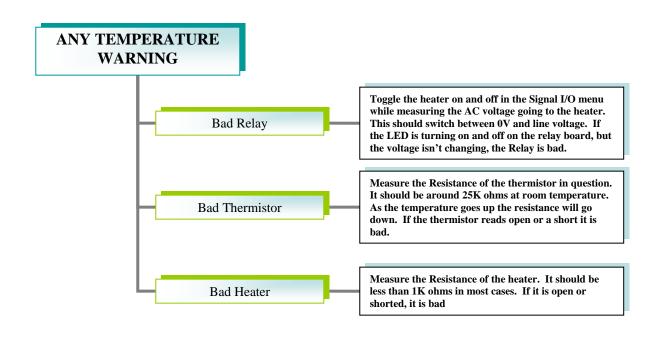




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MEASURE AND REFERENCE BOTH AROUND 115mV, SYNC WARNING, OR SOURCE WARNING Measure the 12V at the Relay board and the 12V going to the source. If they are bad replace the 12v DCPS Remove the source with the power still connected. If it isn't glowing orange it is bad and needs to be replaced. Wheel/Motor not Spinning Replace the Motor for the wheel Bad Detector If everything else checks out it is most likely a bad

detector, Replace the detector/sync board



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