ME 250 Term Project – LVDT Calibration Fixture

Your term project is one of the most important learning opportunities you will have in the class. The purpose of the term project is to give you an opportunity to apply the concepts presented in the class in a practical way. The goal of your project will be design a fixture that will facilitate the calibration of an LVDT transducer that is used in the ME 120 laboratory. The data sheet for the LVDT (PR 750-200) is attached.

You will develop detail drawings for parts making up your design, analyze the design for performance and cost to verify that your design will function properly and to know how much it will cost to fabricate, and document your work in a report.

You will work on the term project in teams of 2 to 3 people. Please submit the names of the team members to your instructor by 4/8/03.

Your grade for the term project will be based on performance in these areas:

1. Design and analysis 40%
   - Design: How well were principles of precision machine design used in the solution? How sound is the design from a performance and manufacturing standpoint?
   - Analysis: How thorough and accurate was your performance and cost analysis?

2. Completeness and quality of your final report and deliverables 40%

3. Individual contribution and effectiveness as a team member 20%

On the way, you must produce the following deliverables:

- **Project Team List**
  - Submit a list of the team members

- **Design Concepts**
  - You must generate at least 5 *fundamentally different* approaches to achieving the design goal. Each team member is responsible for at least one of the 5 concepts. Rough sketches with notes that clearly explain how the design is to work and how the parts are to be arranged should document your concepts.

- **Presentation of results**
  - You will present the results of your project to the class.

- **Final report**
  - The final report integrates the deliverables and the instructor’s comments into a coherent whole. Don’t just collect the deliverables and staple them together. Use the Guide for Project Reports format.

**Due Date**

- April 8, 2003
- April 17, 2003
- May 6-8, 2003
- May 13, 2003

**Additional Notes**

Please submit a softcopy in addition to the hardcopy of your report.
The PR750 Series LVDTs are general purpose AC-operated units, featuring superior operating specifications. PR 750s are double shielded, making them ideal for use in electrically noisy environments. These units are designed to be physically and electrically interchangeable with other makers' units. Using proven materials and construction, the PR 750 is a cost effective solution to many measurement problems.

### UNIT SPECIFICATIONS

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<tr>
<th>PARAMETER</th>
<th>UNIT OF MEASURE</th>
<th>PR 750-050</th>
<th>PR 750-100</th>
<th>PR 750-200</th>
<th>PR 750-500</th>
<th>PR 750-1000</th>
<th>PR 750-2000</th>
<th>PR 750-3000</th>
<th>PR 750-5000</th>
<th>PR 750-1000</th>
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<tr>
<td>STROKE</td>
<td>INCHES (mm)</td>
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<td>±0.100</td>
<td>±0.200</td>
<td>±0.500</td>
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<td>±2.000</td>
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<td>(50.8)</td>
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<td>0.25%</td>
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<td>4.0</td>
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<td></td>
<td>(mv/V/mm)</td>
<td>(260)</td>
<td>(160)</td>
<td>(97)</td>
<td>(26)</td>
<td>(26)</td>
<td>(15)</td>
<td>(10)</td>
<td>(5.1)</td>
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*nominal

### OUTLINE

[Diagram of LVDT connections]

**Primary**
- Yellow
- Blue & Green Tied For Differential Output

**Secondary**
- Red
- Blue
- Green

**LVDT Connections**
- Black

### GENERAL SPECIFICATIONS:
- Input: 3.0 V, 5 kΩ
- Operating Temperature Range: -65 °F to +221 °F
- Core-To-Bore Clearance: 0.031" (Radial)
- Housing Material: 400 Series Stainless Steel
- Environmental Seal: Epoxy Encapsulation

**Ordering Information:**
- Specify model number
- Specify if metric threaded core
- Specify operating conditions

**Macro Sensors™**
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**FAX:** 609-317-1005

Macro Sensors™ reserves the right to change specifications without notice.