

# Series 310-320

## Long Stroke AC Gaging LVDTs

The SERIES 310-320 LONG STROKE AC GAGING TRANSDUCERS consist of a precision AC LVDT, a rugged stainless steel outer housing, and a spring actuated, stainless steel shaft. Consistent with the high performance normally found in TRANS-TEK precision AC LVDTs, these transducers exhibit excellent non-linearity and extremely low temperature coefficients. Available in full stroke displacements of 0.5 to 20 inches, the transducers are ideal for use in single or multi-point gaging systems, thickness measurements, machine control, or any other applications requiring a precision, spring actuated linear displacement measurement.



### Key Features

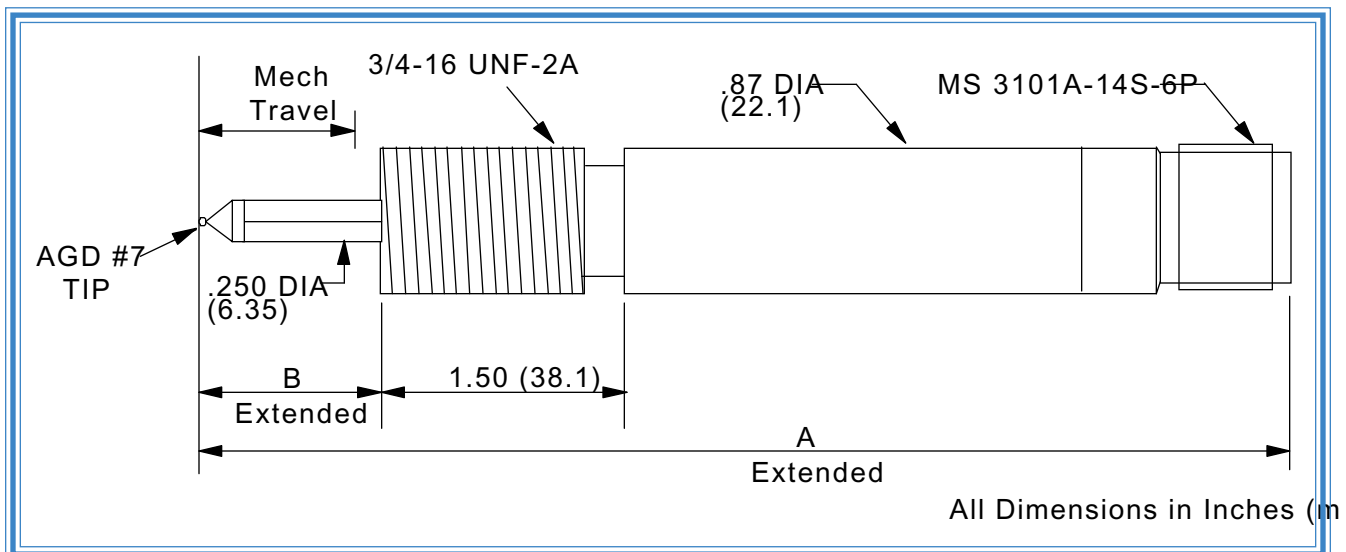
Ranges from  $\pm 0.25''$  to  $\pm 10.0''$   
Non-linearity < 0.25%

Stainless Steel Construction  
Reversible Spring

### SPECIFICATIONS

| MODEL     | LINEAR RANGE<br>$\pm$ Inches (mm) | MAX USABLE RANGE<br>$\pm$ Inches (mm) | MAX TIP FORCE<br>Ounces | TOTAL LENGTH "A"<br>Inches (mm) | SHAFT LENGTH "B"<br>Inches (mm) | INPUT IMPEDANCE<br>Ohms | DC INPUT RESISTANCE<br>Ohms | OUTPUT IMPEDANCE<br>Ohms | PHASE ANGLE<br>Degrees |
|-----------|-----------------------------------|---------------------------------------|-------------------------|---------------------------------|---------------------------------|-------------------------|-----------------------------|--------------------------|------------------------|
| 0315-0000 | 0.25 (6.35)                       | 0.50 (12.7)                           | 20                      | 8.96 (228)                      | 1.47 (37.3)                     | 205                     | 22                          | 265                      | 13                     |
| 0316-0000 | 0.50 (12.7)                       | 0.87 (22.1)                           | 27                      | 11.05 (281)                     | 2.32 (28.9)                     | 235                     | 31                          | 310                      | 17                     |
| 0317-0000 | 1.00 (25.4)                       | 1.37 (34.8)                           | 27                      | 15.26 (388)                     | 3.42 (86.9)                     | 195                     | 36                          | 205                      | 19                     |
| 0318-0000 | 2.00 (50.8)                       | 2.37 (60.2)                           | 36                      | 22.51 (572)                     | 5.56 (141)                      | 200                     | 46                          | 255                      | 22                     |
| 0319-0000 | 3.00 (76.2)                       | 3.62 (91.9)                           | 45                      | 31.13 (791)                     | 8.13 (207)                      | 225                     | 57                          | 285                      | 25                     |
| 0320-0000 | 5.00 (127)                        | 5.80 (147)                            | 42                      | 47.31 (1202)                    | 12.85 (326)                     | 360                     | 89                          | 460                      | 31                     |
| 0321-0000 | 7.50 (191)                        | 8.25 (210)                            | 41                      | 68.23 (1,733)                   | 18.38 (467)                     | 235                     | 55                          | 235                      | 30                     |
| 0322-0000 | 10.00 (254)                       | 10.75 (273)                           | 40                      | 86.93 (2,208)                   | 23.88 (607)                     | 330                     | 72                          | 285                      | 31                     |

### DIMENSIONAL DIAGRAM



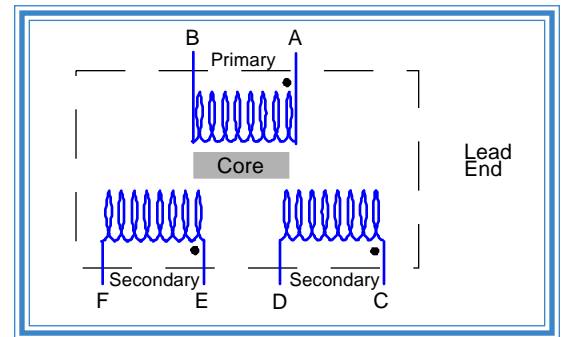
# SERIES 310-320

Long Stroke  
AC Gaging

## TRANSDUCER SPECIFICATIONS

|                                |   |
|--------------------------------|---|
| <b>Non-Linearity</b>           | $\pm 0.25\%$ FS (Best Fit Straight Line)                          |
| <b>Reference Frequency</b>     | 7.0 kHz   |
| <b>Sensitivity</b>             | 0.50 V/V $\pm 10\%$ at FULL SCALE                                 |
| <b>Input Voltage</b>           | 20 VRMS, Max.   |
| <b>Null Voltage</b>            | < 1.0% Excitation Voltage   |
| <b>Temperature Coefficient</b> | < $\pm 0.001\%$ FS/°F Zero, < $\pm 0.01\%$ Reading/°F Span        |
| <b>Materials</b>               | Stainless Steel Housing and Shaft; Aluminum Connector and Adapter |

## SCHEMATIC



## ACCESSORIES

| Part Number | Description   |
|-------------|---|
| C003-0057   | Mating connector assembly consisting of: connector MS3106A-14S-6S (mates with MS3101A-14S-6P), Cable Clamp, and Strain Relief   |
| G000-0000   | Replacement AGD #7 Gaging Tip   |
| C000-0036   | Cable Assembly: 15 Feet of 6 conductor, 24 AWG vinyl cable terminated with C003-0057. (Note: Operating temperature for cable is -22°F to +176°F); Color Code: A - Brown, B - White, C - Black, D - Green, E - Blue, F - Red |
| N001-0025   | 3/4 X 16 UNF-1B Hex Jam Nut   |
| 1000-0012   | Oscillator/ Demodulator   |

## DC-DC OPERATION WITH OPTIONAL OSCILLATOR/DEMODULATOR

To facilitate prototyping, or in instances where the preference is a DC in - DC out system, any of the standard SERIES 310-320 can be used in conjunction with the SERIES 1000 Oscillator/ Demodulator. Designed to work together, the DC system gives the same level of performance as provided by the AC LVDT alone. The high level DC output voltage can be directly interfaced

with analog circuits as well as data acquisition cards, PLCs, or A/D converters. Provisions for customizing the SERIES 1000 to provide zero offsets and nonstandard gains allow a simple and cost effective method of tailoring a system to meet individual customers requirements. Detailed connection information can be found in the Accessories portion of this catalog.

## SYSTEM SPECIFICATIONS *Combined Performance of LVDT and 1000-0012*

|                                  |  |
|----------------------------------|--|
| <b>Non-Linearity</b>             | $\pm 0.25\%$ FS (Best Fit Straight Line)   |
| <b>Input</b>                     | $\pm 14.5$ to $\pm 28.0$ VDC, $\pm 100$ mA max.; Internal regulation and input voltage reversal protection provided  |
| <b>Output</b>                    | Adjustable to $\pm 5.0$ VDC at end of linear stroke, via SPAN adjustment   |
| <b>Frequency Response (-3dB)</b> | 1,000 Hz min. (Electrical only, Mechanical response limited by spring)   |
| <b>Output Ripple</b>             | < 0.03 VRMS Max.   |
| <b>Temperature Coefficients</b>  | < $\pm 0.0035\%$ FS/°F Zero, < $\pm 0.02\%$ Reading/°F Span  |
| <b>Temperature Range</b>         | LVDT: -67°F to +220°F (-55°C to +104°C) Operating, -67°F to +275°F (-55°C to +135°C) Storage;<br>Osc/ Dem: +32°F to +158°F (0°C to +70°C) Operating, -67°F to +257°F (-55°C to +125°C) Storage |

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