



## GCA-AE SERIES

### Air Extend AC Operated Gage Heads

#### SPECIFICATIONS

- ◆ Hermetically sealed housing
- ◆ 25  $\mu$ -inch [0.6  $\mu$ m] repeatability
- ◆ IEC IP68 rating to 1,000 PSI [70 bars]
- ◆ Long strokes up to  $\pm 1$  inch
- ◆ Hardened tool steel contact tip
- ◆ High side load resistance
- ◆ Long cycle life
- ◆ High temperature

The **GCA-AE Series** heavy-duty gage heads enable high performance in environments containing moisture, dirt, and fluid contaminants. These Gage heads are air-extend, spring-retract LVDTs (Linear Variable Differential Transformers) with precision linear bearings.

These robust high-temperature gage heads allow measurements over long strokes up to  $\pm 1$  inch [ $\pm 25.4$ mm]. A removable black-chromed, hardened tool steel tip is threaded (4-48UNF-2A) to the working end. Internal construction prevents the core and shaft from rotating as they move longitudinally. The integral electrical connector (welded) provides for easy installation and allows replacing a damaged cable without sacrificing the sensor. Installation and adjustment are facilitated by an external  $\frac{1}{2}$ -20 mounting thread and the two locknuts supplied with each unit.

Like in most of our LVDTs, the GCA-AE windings are vacuum impregnated with a specially formulated, high temperature, flexible resin, and the coil assembly is potted inside its housing with a two-component epoxy. This provides excellent protection against hostile environments such as high vibration and shock.

The ruggedness, long life cycle, and very high reliability of the GCA-AE Series provide a low cost of ownership over the life of the equipment onto which they are installed. The one-piece front end (barrel which contains the bearing assembly), machined from solid stainless steel bar, coupled with a bronze bushing, has far greater resistance to bending forces and side loads compared to other designs. This is particularly important on the longer stroke versions; it reduces the common risk of probe damage/bending during installation or maintenance of industrial equipment. The GCA-AE Series designs also require fewer parts and weld joints, thereby increasing overall structural integrity and reliability.

#### FEATURES

- ◆ Air extend, spring retract
- ◆ All-welded stainless steel construction
- ◆ Resistant to harsh environments
- ◆ MS type connector (MIL-C-5015)
- ◆ High temperature
- ◆ High side loading resistance
- ◆ Long cycle life
- ◆ Calibration certificate supplied with each unit

#### APPLICATIONS

- ◆ Factory automation
- ◆ Industrial printing equipment
- ◆ Steel mills
- ◆ Metal thickness gaging
- ◆ High temperature applications
- ◆ Environments requiring hermetically sealed transducers
- ◆ In-process measurements (feedback loop with PLC or CNC controller)

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### PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS					
Parameter	GCA-AE 050	GCA-AE 125	GCA-AE 250	GCA-AE 500	GCA-AE 1000
Stroke/gaging range	±0.050 [1.27]	±0.125 [3.17]	±0.25 [6.35]	±0.50 [12.7]	±1.0 [25.4]
Sensitivity, V/V/inch	4.2	2.4	1.6	1.1	0.84
Sensitivity, mV/V/mm	165	94.5	63.0	43.3	33.1
Output at stroke ends (*)	210mV/V	300mV/V	400mV/V	550mV/V	840mV/V
Phase shift (nominal)	+6°	+5°	+5°	+2°	+1°
Input impedance (PRI)	430 Ω	1710 Ω	800 Ω	900 Ω	900 Ω
Output impedance (SEC)	950 Ω	1820 Ω	940 Ω	1150 Ω	2100 Ω
Input voltage	3 VRMS sine wave				
Input frequency range	400Hz to 10kHz				
Test input frequency	2.5kHz				
Non-linearity	±0.25% of FR, maximum				
Repeatability	25 micro-inches [0.06 microns]				
Null voltage	0.5% of FRO, maximum				

ENVIRONMENTAL SPECIFICATIONS & MATERIALS	
Operating temperature	-65°F to +300°F [-55°C to 150°C]
Shock survival	1,000 g (11ms half-sine)
Vibration tolerance	20 g up to 2kHz
Housing material	AISI 400 Series stainless steel
Air pressure connection	Use 1/16" [1.6mm] ID flexible tubing; pressure 25 to 35 PSI; filtered & dried air; no lubrication
Electrical connector	6-pin MS type connector (MIL-C-5015)
IEC 60529 rating	IP68 to 1,000 PSI [70 bars] with use of proper mating connector plug

#### Notes:

All values are nominal unless otherwise noted

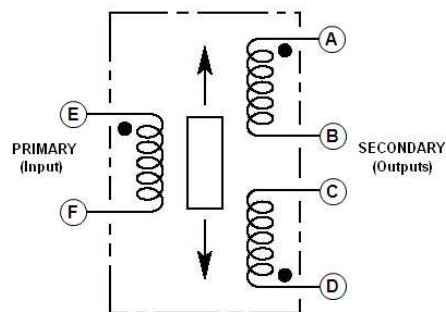
Dimensions are in inch [mm] unless otherwise noted

(\*): Unit for output at stroke ends is millivolt per volt of excitation (input voltage)

FR: Full Range is the stroke range, end to end; FR=2xS for ±S stroke range

FRO (Full Range Output): Algebraic difference in outputs measured at the ends of the range

### WIRING INFORMATION



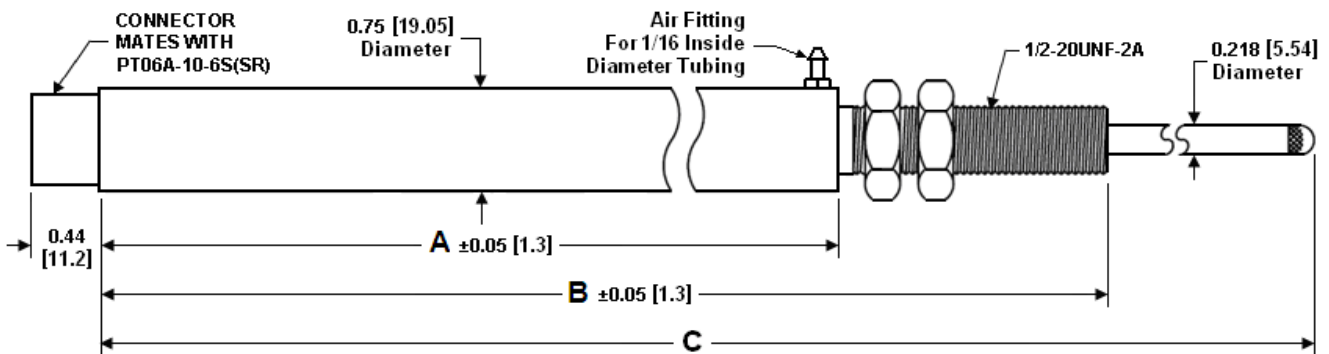
A through F: Connector pin assignments; Connect B to C for differential output

# GCA-AE SERIES

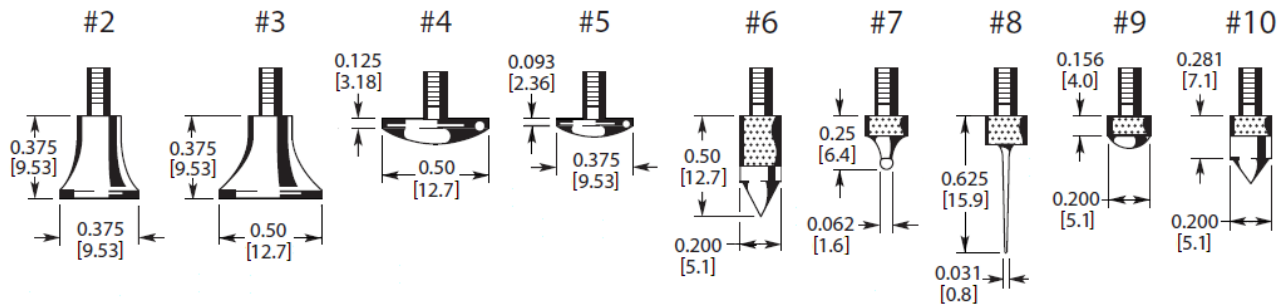
Air Extend AC Operated Gage Heads

## MECHANICAL SPECIFICATIONS

Parameter	GCA-AE 050	GCA-AE 125	GCA-AE 250	GCA-AE 500	GCA-AE 1000
Stroke/gaging range	±0.050 [1.27]	±0.125 [3.17]	±0.25 [6.35]	±0.5 [12.7]	±1 [25.4]
Pre-travel	0.26 [6.6]	0.35 [8.9]	0.15 [3.8]	0.18 [4.6]	0.07 [1.8]
Over-travel (minimum)	0.15 [3.8]	0.15 [3.8]	0.15 [3.8]	0.90 [22.9]	0.15 [3.8]
Main body length "A"	1.91 [48.5]	2.75 [69.9]	3.61 [91.7]	5.30 [134.6]	7.56 [192.0]
Overall body length "B"	3.28 [83.31]	4.12 [104.7]	4.98 [126.5]	8.29 [210.6]	10.55 [268.0]
Plunger length "C" (fully extended)	4.13 [104.9]	4.97 [126.2]	5.97 [151.6]	10.59 [269.0]	13.00 [330.2]
Weight, Ounce	2.2 oz	2.9 oz	3.2 oz	5.0 oz	7.5 oz
Weight, Gram	62 G	82 G	91 G	142 G	213 G



## REPLACEMENT/OPTIONAL CONTACT TIPS



Dimensions are in inch [mm]

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### ORDERING INFORMATION

Description	Model	Part Number
±0.050 inch air-extend gage head	GCA-AE 050	02350499-150
±0.125 inch air-extend gage head	GCA-AE 125	02350500-150
±0.25 inch air-extend gage head	GCA-AE 250	02350501-150
±0.5 inch air-extend gage head	GCA-AE 500	02350502-150
±1 inch air-extend gage head	GCA-AE 1000	02350503-150

ACCESSORIES				
Mating connector kit	PT06A-10-6S(SR)		62101011-000	
Interconnect cable for LVM-110 and LiM 4-20 Signal Conditioners (1)	GCA to Stripped/Tinned		04290417-000	
Interconnect cable for IEM-422 Signal Conditioner (1)	GCA to PTO6A-10-6P		04290133-000	
Interconnect cable for ATA-2001 Signal Conditioner (1)	GCA to DB-9P		04290457-000	
Interconnect cable for MP-2000 Series Set-Point Controller (1)	GCA to 05BL5M		04290560-000	
Interconnect cable for LDM-1000/PML-1000 Signal Conditioners, 200°C (1)	GCA to Stripped/Tinned		04290595-000	
Replacement contact tips	Model	Part Number	Model	Part Number
	Contact Tip 2	67010005-000	Contact Tip 7	67010009-000
	Contact Tip 3	67010006-000	Contact Tip 8	67010010-000
	Contact Tip 4	67010002-000	Contact Tip 9	67010001-000
	Contact Tip 5	67010007-000	Contact Tip 10	67010011-000
	Contact Tip 6	67010008-000		

(1) All cables are shielded, 10 foot long, and rated 80°C [176°F] operating unless otherwise noted. Consult factory for other lengths.

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