

# GCA Series – AC Operated Gage Heads



- Hermetically sealed housing
- 25 µ-inch [0.6 µm] repeatability
- IEC IP68 rating to 1,000 PSI [70 bars]
- Long strokes up to ±2 inches
- Hardened tool steel contact tip
- High side load resistance
- Long cycle life
- High temperature

## DESCRIPTION

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

These robust high-temperature gage heads allow measurements over long strokes up to ±2 inches [±50.8mm]. The spring force is typically 9oz [255 grams] at fully compressed electrical stroke. 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 ½-20 mounting thread and the two locknuts supplied with each unit.

Like in most of our LVDTs, the GCA 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 Series provide the lowest 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 Series designs also require fewer parts and weld joints, thereby increasing overall structural integrity and reliability.

MEAS offers options, such as mating connector plugs, special contact tips (including AGD dial indicator tips), air-extend/spring retract, and cable assemblies to connect to our signal conditioners. Also see our models with built-in signal conditioning: **GCD** (DC voltage), **GCD-SE** (single-ended DC voltage), **GCT** (4-20mA 2-wire loop) and **GC-485** (RS-485 Digital Series).

Measurement Specialties, Inc. (NASDAQ MEAS) offers many other types of sensors and signal conditioners. Data sheets can be downloaded from our web site at: <http://www.meas-spec.com/datasheets.aspx>

MEAS acquired Schaevitz Sensors and the **Schaevitz™** trademark in 2000.

## FEATURES

- 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
- Air extend/spring retract available (*Consult factory*)

## 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 050	GCA 125	GCA 250	GCA 500	GCA 1000	GCA 2000
Stroke/gaging range	±0.050 [1.27]	±0.125 [3.17]	±0.25 [6.35]	±0.50 [12.7]	±1.0 [25.4]	±2.0 [50.8]
Sensitivity, V/V/inch	4.2	2.4	1.6	1.1	0.84	0.34
Sensitivity, mV/V/mm	165	94.5	63.0	43.3	33.1	13.4
Output at stroke ends (*)	210mV/V	300mV/V	400mV/V	550mV/V	840mV/V	680mV/V
Phase shift (nominal)	+6°	+5°	+5°	+2°	+1°	-1°
Input impedance (PRI)	430 Ω	1710 Ω	800 Ω	900 Ω	900 Ω	525 Ω
Output impedance (SEC)	950 Ω	1820 Ω	940 Ω	1150 Ω	2100 Ω	535 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					
Frequency response (dynamic)	15Hz, 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					
Electrical connector	6-pin MS type connector (MIL-C-5015)					
NEMA 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

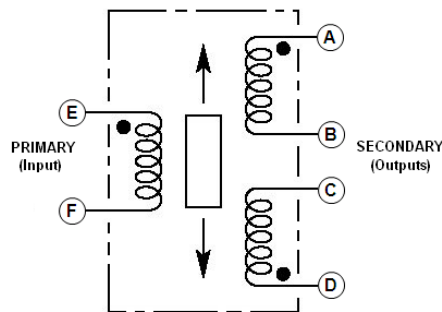
Dimensions are in inch [mm] unless otherwise noted

(\*): 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

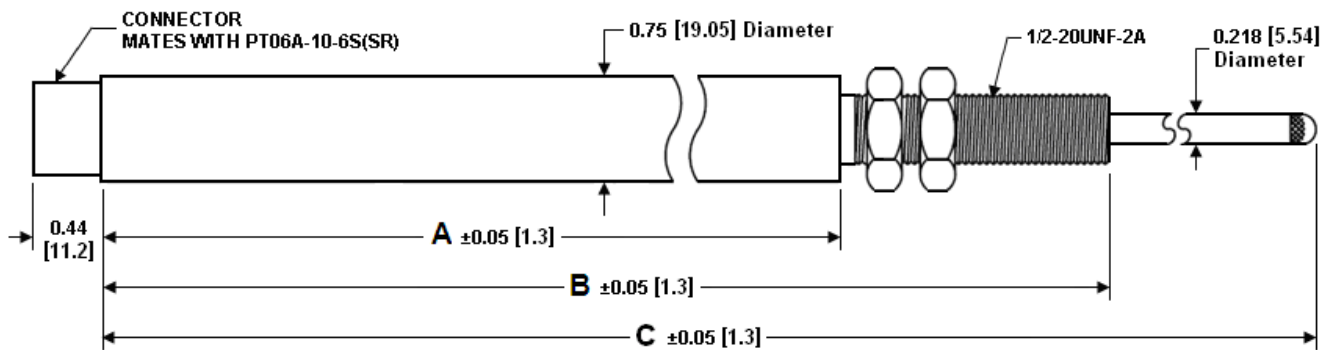


A through F: Connector pin assignments; Connect B to C for differential output

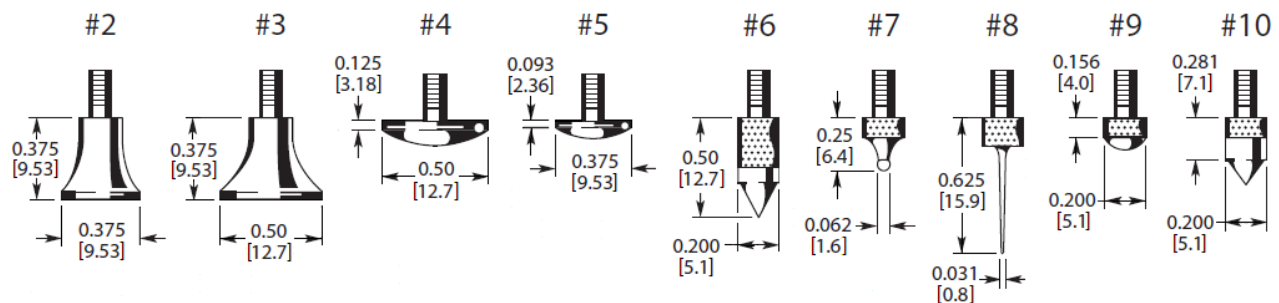
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## MECHANICAL SPECIFICATIONS

Parameter	GCA 050	GCA 125	GCA 250	GCA 500	GCA 1000	GCA 2000
Stroke/gaging range	±0.050 [1.27]	±0.125 [3.17]	±0.25 [6.35]	±0.5 [12.7]	±1 [25.4]	±2 [50.8]
Pre-travel	0.26 [6.6]	0.35 [8.9]	0.15 [3.8]	0.18 [4.6]	0.07 [1.8]	0.10 [2.5]
Over-travel (minimum)	0.15 [3.8]	0.15 [3.8]	0.15 [3.8]	0.90 [22.9]	0.15 [3.8]	0.00
Main body length "A"	1.91 [48.5]	2.75 [69.9]	3.61 [91.7]	5.30 [134.6]	7.56 [192.0]	10.89 [276.6]
Overall body length "B"	3.28 [83.31]	4.12 [104.7]	4.98 [126.5]	8.29 [210.6]	10.55 [268.0]	16.37 [415.8]
Plunger length "C" (fully extended)	4.33 [110.0]	5.14 [130.6]	6.02 [152.9]	10.76 [273.3]	13.01 [330.5]	20.94 [531.9]
Weight, Ounce	2.2 oz	2.9 oz	3.2 oz	5.0 oz	7.5 oz	13.0 oz
Weight, Gram	62 G	82 G	91 G	142 G	213 G	339 G
Spring force	Typically 9oz [255 grams] at fully compressed electrical stroke					



## REPLACEMENT/OPTIONAL CONTACT TIPS



Dimensions are in inch [mm]

# GCA Series – AC Operated Gage Heads

## ORDERING INFORMATION

Description	Model	Part Number
±0.050 inch gage head	GCA 050	02350499-000
±0.125 inch gage head	GCA 125	02350500-000
±0.25 inch gage head	GCA 250	02350501-000
±0.5 inch gage head	GCA 500	02350502-000
±1 inch gage head	GCA 1000	02350503-000
±2 inch gage head	GCA 2000	02350614-000
<b>OPTIONS</b>		
Air extend/spring retract gage head ( <i>Consult factory</i> )	All GC Series	XXXXXXXX-150
<b>ACCESSORIES</b>		
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, <b>200°C</b> (1)	GCA to Stripped/Tinned	04290595-000
Replacement contact tips	<b>Model</b>	<b>Part Number</b>
	Contact Tip 2	67010005-000
	Contact Tip 3	67010006-000
	Contact Tip 4	67010002-000
	Contact Tip 5	67010007-000
	Contact Tip 6	67010008-000
	<b>Model</b>	<b>Part Number</b>
	Contact Tip 7	67010009-000
	Contact Tip 8	67010010-000
	Contact Tip 9	67010001-000
	Contact Tip 10	67010011-000

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

Refer to our [“Options and Accessories for Gage Head”](#) data sheet.

## TECHNICAL CONTACT INFORMATION

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