

GCA SERIES

AC Operated Gage Heads

SPECIFICATIONS

- **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**

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 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 Series designs also require fewer parts and weld joints, thereby increasing overall structural integrity and reliability.

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

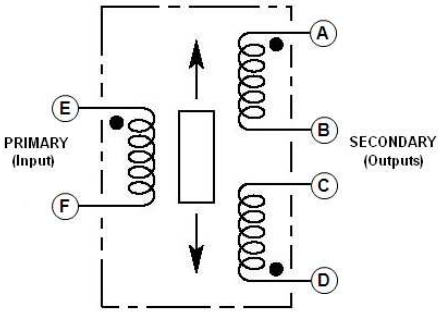
- Factory automation
- Industrial printing equipment
- Steel mills
- Metal thickness gaging
- High temperature applications
- Environments requiring hermetically sealed transducers
- In-process measurements (feedback loop with PLC or CNC controller)

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 to10kHz					
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)					
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

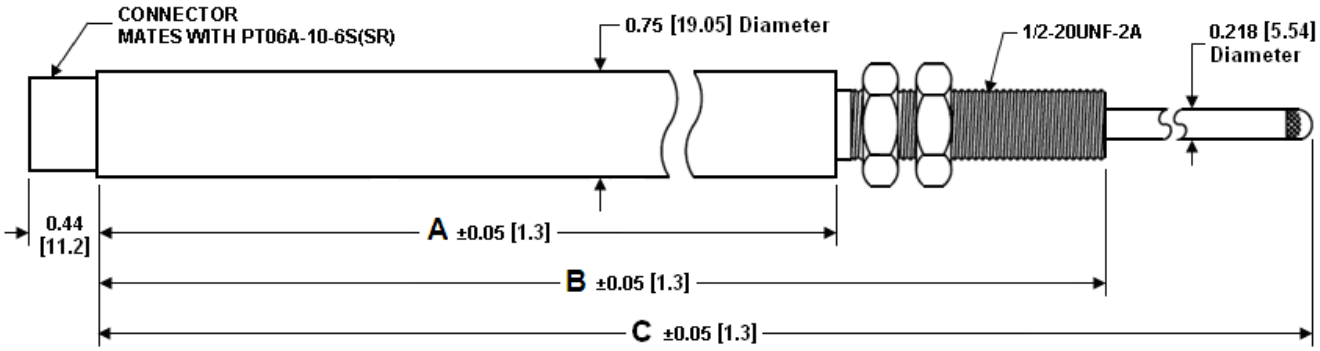
WIRING INFORMATION



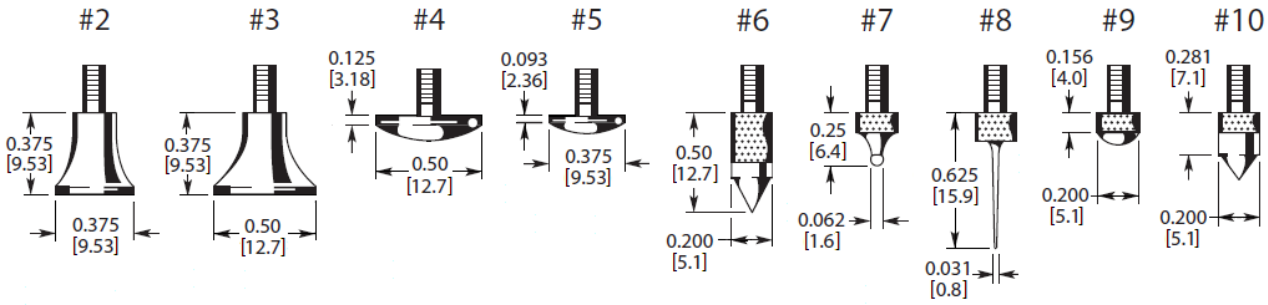
A through F: Connector pin assignments; Connect B to C for differential output

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]

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
OPTIONS		
Air extend/spring retract gage head *(Consult factory)*	All GC Series	XXXXXXXX-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		

ASIA

ABOUT MACRO SENSORS

Macro Sensors, founded by Howard A. Schaevitz, has more than three hundred man-years of experience in just one thing: the design and manufacture of LVDTs. We believe that you need solutions, not simply products. When you call us, you get the benefit of our experience and our commitment.

Most products listed are in stock for immediate delivery, and we strive to offer the finest customer service in the industry: technical support from people who understand LVDTs and how to apply them to your benefit, and a commitment to excellent pricing, quality products, and deliveries that you can truly rely on. Macro Sensors also has a comprehensive network of representatives and distributors in the U.S. and around the world to provide you with local support.

We manufacture an enormous array of LVDTs, from modified standards to complete custom designs. Our customers consistently tell us it is Macro Sensors? quality and service that keeps them coming back. Let our experience go to work for you.

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