



## GCA series Gage Heads

- Hermetically sealed housing
- 25 µ-inch [0.6 micron] repeatability
- IEC IP68 rating to 1,000 PSI [70 bars]
- Long strokes up to ±2.0"
- 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 ±2.0 inches [±50mm]. The maximum spring force is typically less than 8 oz [227 grams]. 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.

The ruggedness, long life cycle, and very high reliability of the GC 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 GC Series designs also require fewer parts and weld joints, thereby increasing overall structural integrity and reliability.

Altheris 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).

### 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	4.2 mV/V/.001in	2.4 mV/V/.001in	1.6 mV/V/.001in	1.1 mV/V/.001in	.84 mV/V/.001in	.34 mV/V/.001in
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) @ 2.5KHz	430 Ω	1710 Ω	800 Ω	900 Ω	900 Ω	525 Ω
Output impedance (SEC) @ 2.5KHz	950 Ω	1820 Ω	940 Ω	1150 Ω	2100 Ω	535 Ω
Input voltage	3Vrms sine wave					
Input frequency range	4Hz to10KHz					
Test input frequency	2.5KHz					
Linearity (maximum band)	±0.25% FS (% of Full Scale)					
Repeatability	25 micro-inches [0.06 microns]					
Null voltage (maximum)	0.5% FSO (% of Full Scale Output)					
Electrical connector	6-pin MS type connector (MIL-C-5015)					

### 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 "C"	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 "B" (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]
Spring force (Ounce)	3.5 to 5.8 oz	3.5 to 5.8 oz	3.5 to 5.8 oz	3.2 to 8.0 oz	3.2 to 8.0 oz	3.2 to 8.0 oz
Spring force (Gram)	99 to 164 G	99 to 164 G	99 to 164 G	91 to 227 G	91 to 227 G	91 to 227 G
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

### Environmental specifications

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
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

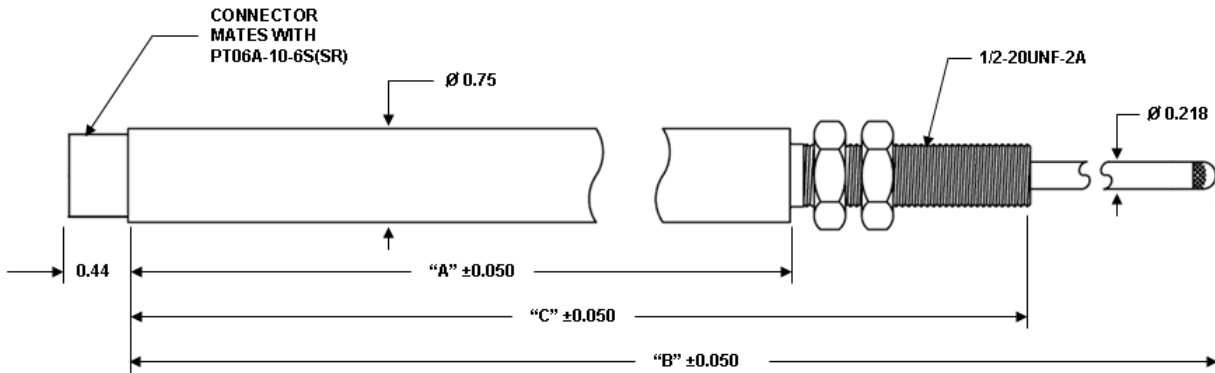
Dimensions are in inch [mm] unless otherwise noted

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

FS: Full Scale is 2X for ±X stroke

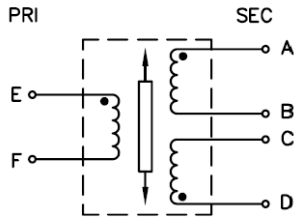
FSO: Full Scale Output is the output at X position for ±X stroke

■ **Dimensions**



Dimensions are in inches  
 (Refer to mechanical specifications for dimensions "A", "B" and "C")

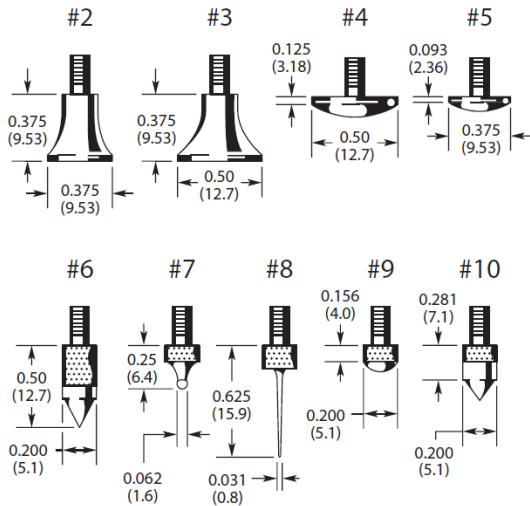
■ **Wiring schematic**



WIRING SCHEMATIC

CONNECT (B) TO (C) FOR DIFFERENTIAL OUTPUT  
 A through F: Connector pin assignments

■ **Replacement/optional contact tips**



## ■ 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
10 foot shielded cable with wired mating connector <i>(consult factory for other cable lengths)</i>	GCA cable assembly	04290417-000
Mating connector kit	PT06A-10-6S(SR)	62101011-000
Interconnect cable assembly for ATA-2001 Signal Conditioner	GCA to 9 PIN D	04290457-000
Interconnect cable assembly for LVM-110 and LiM 4-20 Signal Conditioners	GCA TO LiM/LVM	04290417-000
Interconnect cable assembly for MP2000 Series Dual Channel LVDT/RVDT Indicator & Set-Point Controller	GCA to 05BL5M	04290560-000

### ALTHERIS bv

Scheveningseweg 15  
2517 KS DEN HAAG  
The Netherlands

☎ +31 (0)70 3924421

☎ +31 (0)70 3644249

Offices in : Benelux | Germany | France | UK | Italy | USA

🌐 [www.altheris.com](http://www.altheris.com)

✉ [sales@altheris.nl](mailto:sales@altheris.nl)

LEADERS IN SENSORS & HEAVY DUTY JOYSTICKS

**ALTHERIS**  
SENSORS & CONTROLS