

HCA-Series

Hermetically Sealed LVDT

DESCRIPTION

The HCA Series LVDTs are tungsten-inert gas (TIG) welded to form a hermetic seal that is impervious to dirt, water, steam and corrosive liquids and vapors. They feature a glass-sealed, MS-type connector, but do not permit through-bore operation. (A right angle version – HCA-RA series – allows the core and core rod to pass through the unit.) All exposed surfaces are stainless steel, including the boreliner and connector shell. Units can withstand external pressure up to 1,000 psi (70 bars). Double magnetic shielding resists external magnetic influences.

FEATURES

- ◆ Hermetically Sealed Welded Housing Suitable for Hostile Environments
- ◆ Connector Termination
- ◆ Calibration Certificate Supplied with All Models
- ◆ Compatible with Schaevitz® Signal Conditioners
- ◆ High Temperature (220°C) Available – Consult Factory

APPLICATIONS

- ◆ Harsh Industrial Environments–Submersible with Appropriate Connector

OPTIONS

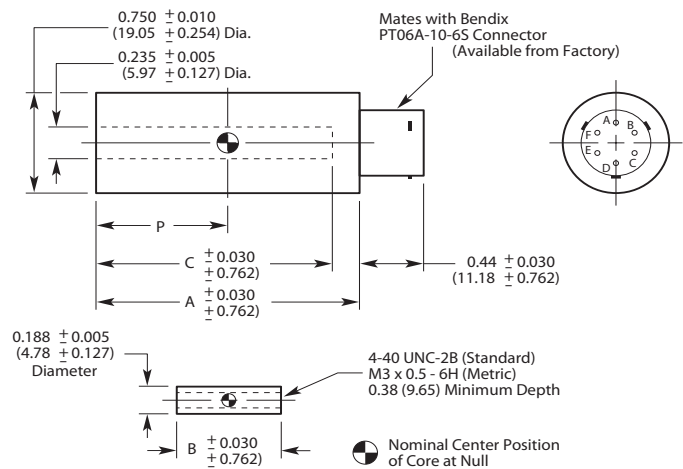
- ◆ 5.0 and 10.0 kHz Excitation Frequency Testing*
- ◆ Metric Thread Core
- ◆ Guided Core
- ◆ Small Diameter/Low Mass Core
- ◆ Mild Radiation Resistance (withstands 10^{12} NVT total integrated flux; 10^7 rads Gamma)
- ◆ Captive Core Option for Convenient Installation



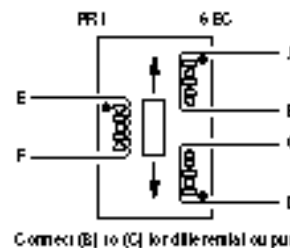
specifications

Input Voltage	3 V rms (nominal)
Frequency Range	400 Hz to 5 kHz
Operating Temperature	-65°F to 300°F
Range	(-55°C to 150°C)
Null Voltage	<0.5% full scale output
Shock Survival	1,000 g for 11 msec
Vibration Tolerance	20 g up to 2 kHz
Coil Form Material	High density, glass-filled polymer
Housing Material	AISI 400 series stainless steel
Electrical Termination	6-pin connector

dimensions



wiring



measurement
SPECIALTIES

HCA-Series

performance and electrical specifications @ 2.5 kHz¹

HCA Series Model	Nominal Linear Range		Linearity (±% full range)				Sensitivity mV out/V in Per		Impedance Ohms		Phase Shift
	inches	mm	50	100	125	150	0.001 in	mm	Pri	Sec	Degrees
050 HCA	±0.050	±1.27	0.20	0.25	0.25	0.50	4.2	165	430	950	+6
125 HCA	±0.125	±3.17	0.20	0.25	0.25	0.50	2.4	95	1710	1820	+5
250 HCA	±0.250	±6.35	0.20	0.25	0.30	0.50	1.6	63	800	940	+5
500 HCA	±0.500	±12.70	0.20	0.25	0.30	0.55	1.1	44	900	1150	+2
1000 HCA	±1.000	±25.40	0.20	0.25	0.35	0.55*	0.84	34	900	2100	+1
2000 HCA	±2.000	±50.80	0.20	0.25	0.40*	0.70*	0.34	14	525	535	-1
3000 HCA	±3.000	±76.20	0.20	0.25	0.50*	1.00*	0.20	8.0	930	1040	+1
5000 HCA	±5.000	±127.0	0.20	0.25	0.80*	n/r	0.16	6.4	1200	1640	-5
10000 HCA	±10.00	±254	0.20	0.25	0.90*	n/r	0.13	5.0	930	3000	-6

* Requires special reduced core length

¹All calibration is performed at room ambient temperature.

mechanical specifications

HCA Series Model	Weight				Dimensions							
	Body		Core		A (Body)		B (Core)		C		P	
Number	oz	gm	oz	gm	in	mm	in	mm	in	mm	in	mm
050 HCA	1.20	34	0.07	2	1.66	42.2	0.59	15.0	1.50	38.1	0.55	14.0
125 HCA	1.73	49	0.11	3	2.50	63.5	1.10	27.9	1.91	48.5	0.96	24.4
250 HCA	2.22	63	0.14	4	3.36	85.3	1.80	45.7	2.77	70.4	1.39	35.3
500 HCA	2.93	83	0.28	8	5.05	128.3	3.00	76.2	4.46	113.3	2.23	56.6
1000 HCA	5.22	148	0.39	11	7.29	185.2	3.80	96.5	6.72	170.7	3.32	84.3
2000 HCA	5.65	160	0.46	13	10.68	271.3	5.30	134.6	10.20	259.1	5.05	128.3
3000 HCA	8.33	236	0.49	14	15.76	400.3	6.20	157.5	15.17	385.3	7.59	192.8
5000 HCA	10.31	292	0.60	17	19.70	500.4	6.20	157.5	19.12	485.6	9.56	242.8
10000 HCA	18.57	526	0.85	24	33.82	859.0	12.00	304.8	33.23	844.1	16.61	421.9

ordering information

Specify the HCA Model followed by the desired option number(s) added together.

Ordering Example:

Model Number 050 HCA-019 is an HCA Series LVDT with a ±0.05" range (050 HCA), with 10 kHz testing (003), Metric thread core (006), and a guided core (010).

new captive core option!

The HCA features a captive core design that greatly simplifies installation. The design utilizes a core rod and bearing assembly that is captured and guided within the LVDT providing low friction travel throughout the stroke length. The assembly incorporates two Delrin bearings on the core rod traveling through the stainless steel boreliner. A bronze bearing on the front end utilizes a self-aligning feature to accommodate lateral LVDT movement during operation. The core rod and bearing assembly are field replaceable.



HCA model

050 HCA
125 HCA
250 HCA
500 HCA
1000 HCA
2000 HCA
3000 HCA
5000 HCA
10000 HCA

options

Number	Description
002	5.0 kHz Linearity Test ¹
003	10 kHz Linearity Test ¹
006	Metric Thread Core
010	Guided Core
020	Small Diameter/Low Mass Core ^{1&2}
080	Radiation Resistance
200	Captive Core ³

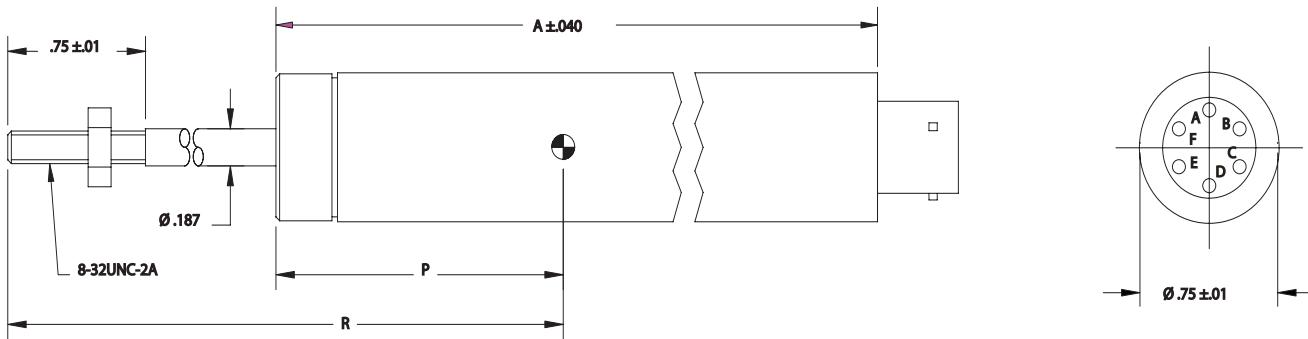
¹Available on models 050 HCA, 125 HCA, 250 HCA, and 500 HCA only.

²Consult factory for mass, dimensions and thread size.

³Available on 050 HCA through 3000 HCA models only.

Captive Core Option

Connection Configurations for HCA, HCD and HCT Series



HCA Series mechanical specifications

HCA Series		Weight		Dimensions					
Model	Linear Range	Assembly		A		P		R	
Number	in mm	oz	gm	in	mm	in	mm	in	mm
050 HCA	±0.050 ±1.25	1.98	56	2.00	50.8	.89	22.8	3.70	94.0
125 HCA	±0.125 ±3.0	2.61	74	2.84	72.1	1.30	33.0	4.28	108.7
250 HCA	±0.250 ±6.0	3.14	89	3.70	94.0	1.73	43.9	4.75	120.7
500 HCA	±0.500 ±12.5	4.06	115	5.39	136.9	2.57	65.3	6.04	153.4
1000 HCA	±1.000 ±25	6.64	188	7.63	193.8	3.66	93.0	7.90	200.7
2000 HCA	±2.000 ±50	7.38	209	11.02	279.9	5.39	138.9	10.52	267.2
3000 HCA	±3.000 ±75	10.63	301	16.10	408.9	7.93	201.4	15.27	387.9

HCD Series mechanical specifications

HCD Series		Weight		Dimensions					
Model	Linear Range	Assembly		A		P		R	
Number	in mm	oz	gm	in	mm	in	mm	in	mm
050 HCD	±0.050 ±1.25	2.19	62	2.74	69.6	.89	22.8	3.78	96.0
125 HCD	±0.125 ±3.0	2.65	75	3.57	90.7	1.30	33.0	4.36	110.7
250 HCD	±0.250 ±6.0	3.14	89	4.44	112.8	1.73	43.9	4.85	123.2
500 HCD	±0.500 ±12.5	4.06	115	6.13	155.7	2.57	65.3	6.04	153.4
1000 HCD	±1.000 ±25	5.61	159	8.39	213.1	3.66	89.4	7.90	200.7
2000 HCD	±2.000 ±50	7.87	223	11.76	298.7	5.39	113.4	10.52	267.2
3000 HCD	±3.000 ±75	10.63	301	16.96	430.8	7.93	201.4	15.27	387.9

HCT Series mechanical specifications

HCT Series		Weight		Dimensions					
Model	Linear Range	Assembly		A		P		R	
Number	in mm	oz	gm	in	mm	in	mm	in	mm
HCT 420-250	0-0.250 0-6.25	3.74	106	4.63	117.6	1.30	33.0	4.36	110.7
HCT 420-500	0-0.500 0-12.5	4.66	132	5.75	146.1	1.86	47.2	4.75	120.7
HCT 420-1000	0-1.000 0-25	5.47	155	7.16	181.9	2.57	65.3	6.04	153.4
HCT 420-2000	0-2.000 0-50	6.85	194	9.42	239.3	3.88	93.5	7.87	199.9
HCT 420-5000	0-5.000 0-125	9.60	272	12.52	318.0	5.25	133.4	12.36	313.9