

#### FEATURES

- All-welded stainless steel construction
- Shock and vibration tolerant
- Low noise, ±10VDC output
- Double magnetic shielding
- MS type connector (MIL-C-5015)
- Calibration certificate supplied with each unit

#### **APPLICATIONS**

- Harsh industrial environments
- Pressurized installations up to 1,000 psi
- Paper processing mills
- Roller gap position feedback
- Automated test systems
- X-Y Positional Feedback

# HCD SERIES Hermetically Sealed DC LVDT

# **SPECIFICATIONS**

- Hermetically sealed, all welded
- Stainless steel housing
- High level ±10VDC output
- Stroke ranges from ±0.05 to ±10 inches
- Shock and vibration tolerant
- MS style connector
- IEC IP68 rating to 1,000 PSI [70 bars]
- Captive core option

**The HCD Series** hermetically sealed DC operated LVDTs are the perfect choice for high performance measurements in environments containing moisture, dirt, and fluid contaminants. Operating on a nominal  $\pm 15$ VDC supply, these heavy-duty LVDTs deliver an extremely linear, low noise, yet high frequency response  $\pm 10$ VDC output.

The integral electrical connector (welded, glass-sealed MS type) provides for easy installation and allows replacing a damaged cable without sacrificing the sensor.

The HCD is available in stroke ranges of  $\pm 0.05$  inch  $[\pm 1.27mm]$  up to  $\pm 10$  inches  $[\pm 254mm]$ , and with a number of standard options including imperial or metric threaded core, guided core and captive core.

Like in most of our LVDTs, the HCD 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.

Captive core option: The HCD features an optional captive core design (available for most models) that greatly simplifies installation. The core rod and bearing assembly includes a Bronze bearing on the front end for self-alignment, while a PTFE sleeve allows low-friction travel through the stainless steel boreliner (spool tube).

#### PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS									
Parameter	HCD 050	HCD 125	HCD 250	HCD 500	HCD 1000	HCD 2000	HCD 3000	HCD 5000	HCD 10000
	±0.050	±0.125	±0.25	±0.5	±1	±2	±3	±5	±10
Stroke range	[±1.27]	[±3.17]	[±6.85]	[±12.7]	[±25.4]	[±50.8]	[±76.2]	[±127]	[±254]
Sensitivity, VDC/inch	200	80	40	20	10	5	3.3	2.0	1.0
Sensitivity, VDC/mm	7.87	3.15	1.575	0.787	0.394	0.197	0.130	0.079	0.0394
Frequency response Hertz @ -3db	500	500	500	200	200	200	200	200	200
Input voltage	+/-15VD0	2							
Input current	±25mA								
Output @ stroke ends	+/-10VDC (Output is positive when the core is displaced from null towards the connector)								
Non-linearity	±0.25% of FR, maximum								
Output ripple	25mVRMS, maximum								
Stability	0.125% of FSO								
Output impedance	1 Ohm								

ENVIRONMENTAL SPECIFICATIONS & MATERIALS						
Operating temperature	+32°F to +160°F [0°C to +70°C]					
Survival temperature	-65°F to +200°F [-55°C to +95°C]					
Shock survival	250 g (11ms half-sine)					
Vibration tolerance	10 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					

<u>Notes</u>:

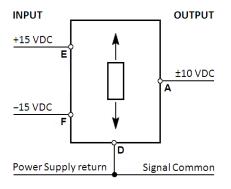
All values are nominal unless otherwise noted

Dimensions are in inch [mm] unless otherwise noted

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

FSO (Full Scale Output): Largest absolute value of the outputs measured at the ends of the range

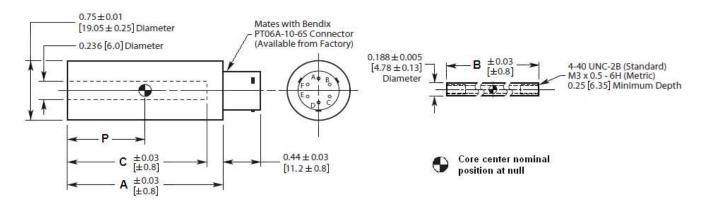
#### WIRING INFORMATION



A through F: Connector pin assignments

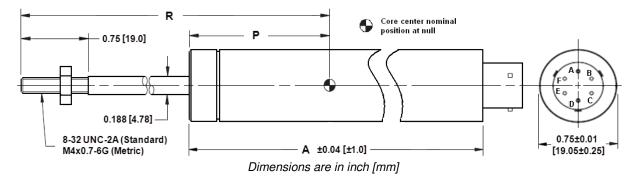
# MECHANICAL SPECIFICATIONS - NON CAPTIVE CORE (STANDARD)

Parameter	HCD 050	HCD 125	HCD 250	HCD 500	HCD 1000	HCD 2000	HCD 3000	HCD 5000	HCD 10000
	2.40	3.23	4.10	5.79	8.05	11.42	16.62	20.45	34.57
Main body length "A"	[61.0]	[82.0]	[104.1]	[147.1]	[204.5]	[290.1]	[422.1]	[519.4]	[878.1]
	0.75	1.25	2.0	3.0	3.8	5.3	6.2	6.2	12.0
Core length "B"	[19.1]	[31.8]	[50.8]	[76.2]	[96.5]	[134.6]	[157.5]	[157.5]	[304.8]
	1.90	2.73	3.60	5.29	7.55	10.92	16.10	19.95	34.03
Bore depth "C"	[48.3]	[69.3]	[91.4]	[134.4]	[191.8]	[277.4]	[408.9]	[506.7]	[864.4]
Coro contor @null "D"	0.55	0.96	1.39	2.23	3.18	4.91	7.59	9.56	16.61
Core center @null "P"	[14.0]	[24.4]	[35.3]	[56.6]	[80.8]	[124.7]	[192.8]	[242.8]	[421.9]
Weight, body oz	1.41	1.77	2.19	2.93	4.24	6.14	8.33	10.38	18.57
[gram]	[40]	[50]	[62]	[83]	[120]	[174]	[236]	[294]	[526]
Weight, core oz	0.07	0.11	0.18	0.28	0.35	0.53	0.64	0.64	0.85
[gram]	[2]	[3]	[5]	[8]	[10]	[15]	[18]	[18]	[24]



## MECHANICAL SPECIFICATIONS – CAPTIVE CORE OPTION

Parameter	HCD 050	HCD 125	HCD 250	HCD 500	HCD 1000	HCD 2000	HCD 3000
Main body length "A"	2.74	3.57	4.44	6.13	8.39	11.76	16.96
	[69.6]	[90.7]	[112.8]	[155.7]	[213.1]	[298.7]	[430.8]
Core center at null "P"	0.89	1.30	1.73	2.57	3.52	5.25	7.93
	[22.6]	[33.0]	[43.9]	[65.3]	[89.4]	[133.4]	[201.4]
Core rod position at null "R"	3.78	4.36	4.85	6.04	7.90	10.52	15.27
	[96.0]	[110.7]	[123.2]	[153.4]	[200.7]	[267.2]	[387.9]
Weight, oz [gram]	2.19 [62]	2.65 [75]	3.14 [89]	4.06 [115]	5.61 [159]	7.87 [223]	10.63 [301]



### ORDERING INFORMATION

Description	Model	Part Number	Desc		ription	Model	Part Number	
±0.050 inch LVDT	HCD 050	02560440-000	±2 inch LVDT		ch LVDT HCD 2000		02560445-000	
±0.125 inch LVDT	HCD 125	02560441-000 ±3 in		ch LVDT	HCD 3000	02560446-000		
±0.25 inch LVDT	HCD 250	02560442-000	±5 inc		ch LVDT	HCD 5000	02560447-000	
±0.5 inch LVDT	HCD 500	02560443-000	±10 inch LVDT		nch LVDT	HCD 10000	02560448-000	
±1 inch LVDT	HCD 1000	02560444-000						
OPTIONS								
Metric threaded core (Non-captive) or connecting rod (Captive core)				ore)		All	XXXXXXXX-006	
Guided core					Ava	XXXXXXXX-010		
Small-diameter/low-mass core (consult factory for mass & dimension				ns)	non-captive core models only		XXXXXXXX-020	
Captive core					HCD 050 thru 3000 only		XXXXXXXX-200	

<u>Note</u>: Add multiple option dash numbers together to determine proper ordering suffix

Example: HCD 1000, ±1 inch, with captive core and metric threaded connecting rod, P/N 02560444-206

ACCESSORIES							
Dual rail DC power supply (±15VDC)	Model PSD 40-15	02291339-000					
Core connecting rod, 6 inches long, 4-40 threads		05282946-006					
Core connecting rod, 12 inches long, 4-40 threads		05282946-012					
Core connecting rod, 24 inches long, 4-40 threads		05282946-024					
Core connecting rod, 36 inches long, 4-40 threads		05282946-036					
Core connecting rod, 6 inches long, M3x0.5 metric threads		05282977-006					
Core connecting rod, 12 inches long, M3x0.5 metric threads		05282977-012					
Mounting block		04560950-000					
Mating connector kit	PT06A-10-6S(SR)	62101011-000					
Cable with wired mating connector	HCD to Stripped/Tinned	04290583-000					

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

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