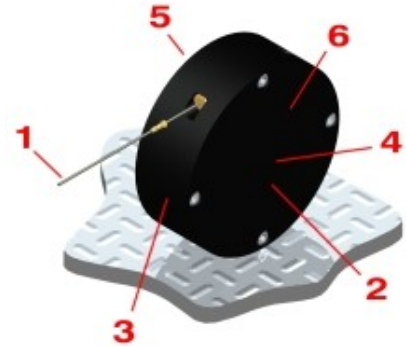


Data Sheet - Series 173, 174, 175 and 176 Subminiature Position Transducer

Subminiature Size, Easy Mounting

Key Features

- 6.5-Inch (165-mm) Maximum Travel (Series 176)
- Analog Signal Using Precision Conductive Plastic Potentiometer
- AccuTrak™ Grooved Drum for Enhanced Repeatability
- Bearing-Mounted Rotating Components
- Optional Flexible Mounting Bases
- DirectConnect™ Sensor-To-Drum Technology = Zero Backlash, No Torsion Springs or Clutches



Potentiometer Specifications

Potentiometer Type	1-turn, precision, conductive plastic
Resistance: Value, Tolerance	5K ohms, $\pm 10\%$
Travel: Electrical, Mechanical	340°, 340° min
Mechanical Life	100 million shaft revolutions min
Output Signal	analog signal from 0 to supply voltage (voltage divider circuit)
Power Rating	1.0 W at 158° F (70° C)
Supply Current	12 mA max
Supply Voltage	35 VDC max (using voltage divider circuit)
Independent Linearity Error	$\pm 0.5\%$ max per VRCI-P-100A
Output Smoothness	0.1% max
Insulation Resistance	1000 Mohms at 500 VDC min
Dielectric Strength	1000 VDC min
Resolution	infinite signal
Operating Temperature	-85° to +257° F (-65° to +125° C)
Shock, Vibration	100 g for 6 ms, 10 to 2000 Hz at 15 g per Mil-R-39023
Temperature Coefficient	± 400 ppm/°C max

Other Specifications

Case Materials	precision-machined anodized 2024 aluminum				
Displacement Cable	0.018-inch (0.46-mm) dia., 7-by-7 stranded stainless steel, 40-lb (177-N) min breaking strength				
Displacement Cable Hardware	1 each of 300196 loop sleeve, 300292 copper sleeve, 300688 ball-end plug, 300495 pull ring, 160026 brass swivel, and 301003 nickel swivel; all items provided uncrimped				
Series	173 (Opt. 1)	173 (Opt. 2)	174	175	176
Nominal Mass	1 oz (28 g)	1 oz (28 g)	2 oz (57 g)	3 oz (85 g)	4 oz (113 g)
Displ. Cable Tension (Nom., Min)	0.5 oz (0.1 N)	2 oz (0.6 N)	3 oz (0.8 N)	2 oz (0.6 N)	2.5 oz (0.7 N)
Displ. Cable Tension (Nom., Max)	4 oz (1.1 N)	10 oz (2.8 N)	12 oz (3.3 N)	10 oz (2.8 N)	8 oz (2.2 N)
Displ. Cable Accel. (Nom., Max)	8 g	17 g	9 g	8 g	6 g
Environmental Protection	NEMA 3S / IP 54, DO-160D (ED-14D) Env. Cat. E1E1ABSHXFDXSAXXXXXXXXXXX				

Model Numbers and Ordering Codes

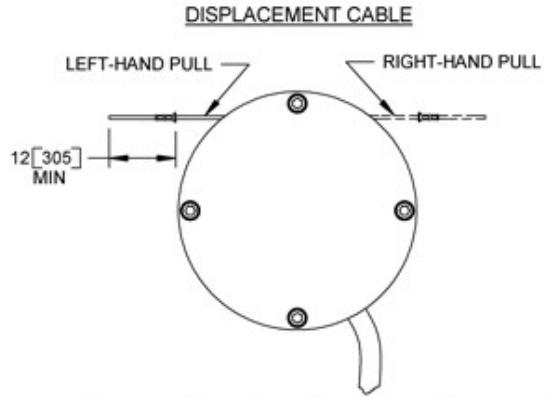
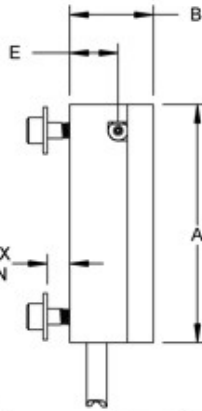
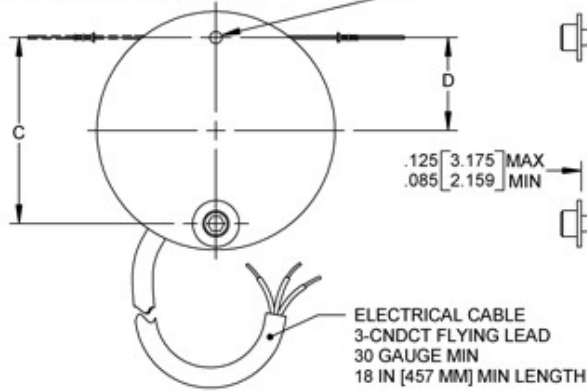
173-0241-abc	position transducer (3.00-inch (76-mm) range)
174-0321-abc	position transducer (4.00-inch (102-mm) range)
175-0401-abc	position transducer (5.00-inch (127-mm) range)
176-0521-abc	position transducer (6.50-inch (165-mm) range)
Example: 173-0241-L2N (left-hand displacement cable pull, cable tension: -020, no base)	

Variable	Value	Description
a	L	left-hand displacement cable pull
	R	right-hand displacement cable pull
b	1	cable tension: -010 (173 only)
	2	cable tension: -020 (173 only)
	3	cable tension: -030 (174, 175, and 176 only)
c	N	no base
	C	base: L (173 only); pn 173015
	D	base: L (174/175 only); pn 174015
	E	base: L (176 only); pn 176015

Drawing

SERIES 173, 174, 175 - 2X 2-56 UNC THREADED MNTG HOLES
(PROVIDED WITH FLAT WASHERS AND 2-56 UNC x 1/4 INCH SOCKET HEAD CAP SCREWS, 5/64 SOCKET)

SERIES 176 - 2X 4-40 UNC THREADED MNTG HOLES
(PROVIDED WITH FLAT WASHERS AND 4-40 UNC x 1/4 INCH SOCKET HEAD CAP SCREWS, 3/32 SOCKET)
(SCREW REMOVED FOR CLARITY)



SERIES	A	B	C	D	E
173	1.28 [32.5]	.45 [11.4]	1.00 [25.4]	.50 [12.7]	.260 [6.60]
174	1.705 [43.31]	.49 [12.5]	1.425 [36.20]	.713 [18.1]	.260 [6.60]
175	1.99 [50.5]	.52 [13.2]	1.425 [36.20]	.845 [21.46]	.275 [6.99]
176	2.46 [63.3]	.52 [13.2]	1.425 [36.20]	1.104 [28.04]	.275 [6.99]

Electrical Connection for Increasing Output with Displacement Cable Extraction

<i>Left-Hand Pull</i> black white red	<i>Right-Hand Pull</i> red white black	Signal input, V+ output, signal, S+ ground, common, V-, S-
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For crimping of hardware to displacement cable, consider the 160001-01 installation kit.

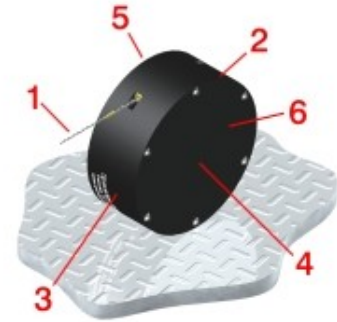
All dimensions are REFERENCE and are in inches [mm]

Data Sheet - Model 174-0321T High-Frequency-Response Position Transducer

For Crash Test, Impact Testing, and High-Acceleration Applications

Key Features

1. 4-Inch (102-mm) Maximum Travel
2. Analog Signal Using Precision Conductive Plastic Potentiometer
3. AccuTrak™ Grooved Drum for Enhanced Repeatability and Longer Cable Life
4. Bearing-Mounted Rotating Components
5. High-Tension Displacement Cable
6. DirectConnect™ Sensor-To-Drum Technology = Zero Backlash, No Torsion Springs or Clutches



Potentiometer Specifications

Potentiometer Type	1-turn, precision, conductive plastic
Resistance: Value, Tolerance	5K ohms, ±10%
Travel: Electrical, Mechanical	340°, 340° min
Mechanical Life	100 million shaft revolutions min
Output Signal	analog signal from 0 to supply voltage (voltage divider circuit)
Power Rating	1.0 W at 158° F (70° C)
Supply Current	12 mA max
Supply Voltage	35 VDC max (using voltage divider circuit)
Independent Linearity Error	±0.5% max per VRCI-P-100A
Output Smoothness	0.1% max
Insulation Resistance	1000 Mohms at 500 VDC min
Dielectric Strength	1000 VDC min
Resolution	infinite signal
Operating Temperature	-85° to +257° F (-65° to +125° C)
Shock, Vibration	100 g for 6 ms, 10 to 2000 Hz at 15 g per Mil-R-39023
Temperature Coefficient	±400 ppm/°C max

Other Specifications

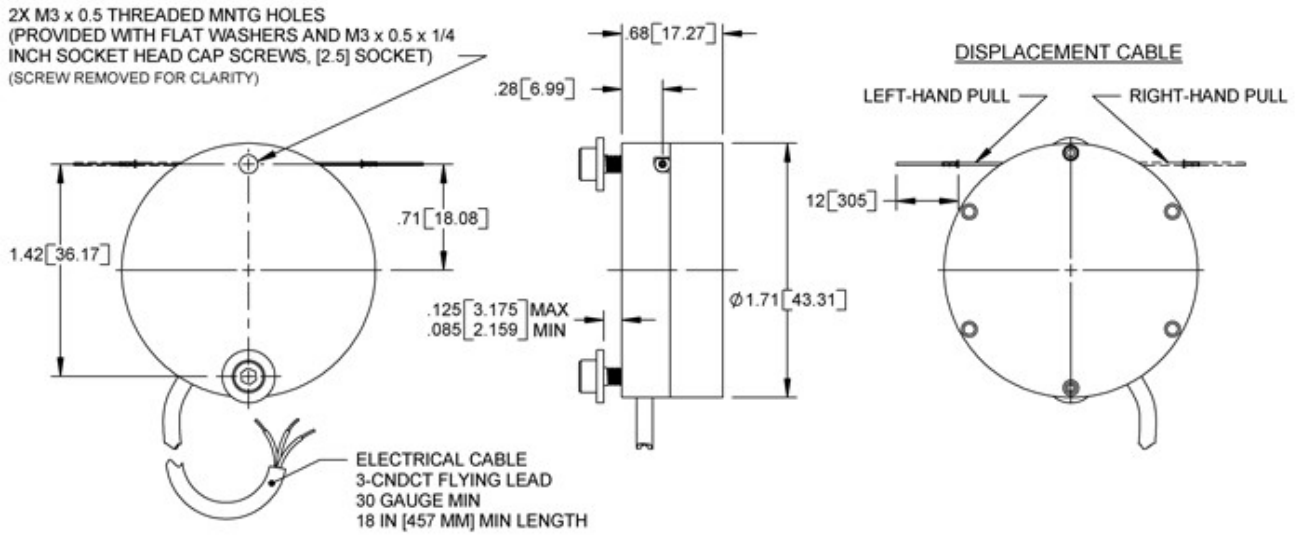
Case Materials	precision-machined anodized 2024 aluminum
Displacement Cable	0.024-inch (0.61-mm) dia., 7-by-7 stranded stainless steel, 70-lb (311-N) min breaking strength
Displacement Cable Hardware	1 each of 300196 loop sleeve, 300292 copper sleeve, 160032 copper sleeve, 300688 ball-end plug, 300495 pull ring, and 301003 nickel swivel; all items provided uncrimped
Nominal Mass	3 oz (85 g)
Displacement Cable Tension (Nominal)	56 oz (15.5 N) min
Cable Acceleration (Nominal)	50 g's max
Environmental Protection	NEMA 3S / IP 54, DO-160D (ED-14D) Env. Cat. E1E1ABSHXFDXSAXXXXXXXXXXX

Model Numbers and Ordering Codes

174-0321Ta	position transducer (4.00-inch (102-mm) range)
Example: 174-0321T (left-hand displacement cable pull)	

Variable	Value	Description
a	-	left-hand displacement cable pull
	R	right-hand displacement cable pull

Drawing



Electrical Connection for Increasing Output with Displacement Cable Extraction

<p><i>Left-Hand Pull</i> black white red</p>	<p><i>Right-Hand Pull</i> red white black</p>	<p><i>Signal</i> input, V+ output, signal, S+ ground, common, V-, S-</p>
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For crimping of hardware to displacement cable, consider the 160001-01 installation kit.

All dimensions are REFERENCE and are in inches [mm]