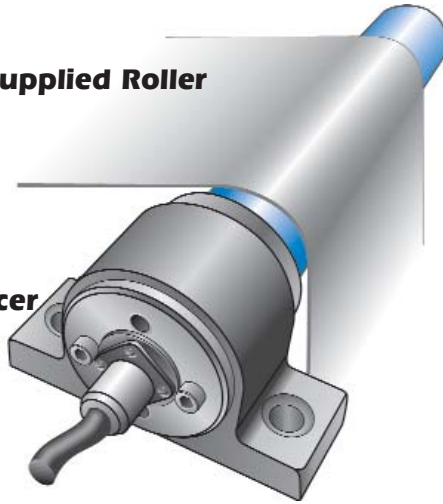


CLEVELAND-KIDDER® Ultra

Customer Supplied Roller

CLT Transducer



Performance Benefits

The new family of Cleveland-Kidder® Ultra Line Cantilevered Transducers CLT exceed industry standards for indicating precise tension and control in narrow webs, filament and wire.

The Cantilevered Transducer CLT provides additional flexibility and cost-savings. Users can specify the fixed shaft roller of their choice—any length, diameter and material. It will accommodate almost any roller type, while eliminating the expense of an integrated cantilevered roller. Because only the idler roller needs to be replaced, users will be able to save on maintenance costs. In addition, the Cantilevered Transducer CLT eliminates the need to custom-design transducers for non-standard applications.

The unique design eliminates the effects of shifting cantilevered loads. The force remains the same no matter where the material is placed along the roller.

Ten different load ratings within two body sizes are available to provide sensing from 0.1 lb. to 500 lb. Customers can select the roller of their choice, typically up to 20 inches long. With versatile transducer orientation, the Cantilevered Transducer CLT easily accommodates tension forces applied in any direction.

CANTILEVERED TRANSDUCER CLT

ULTRA LINE*



For use with Cantilevered Rollers - Unique design eliminates effects of shifting cantilevered loads. The force remains the same no matter where the material is placed along the roller. Also for use with pulleys (sheaves)

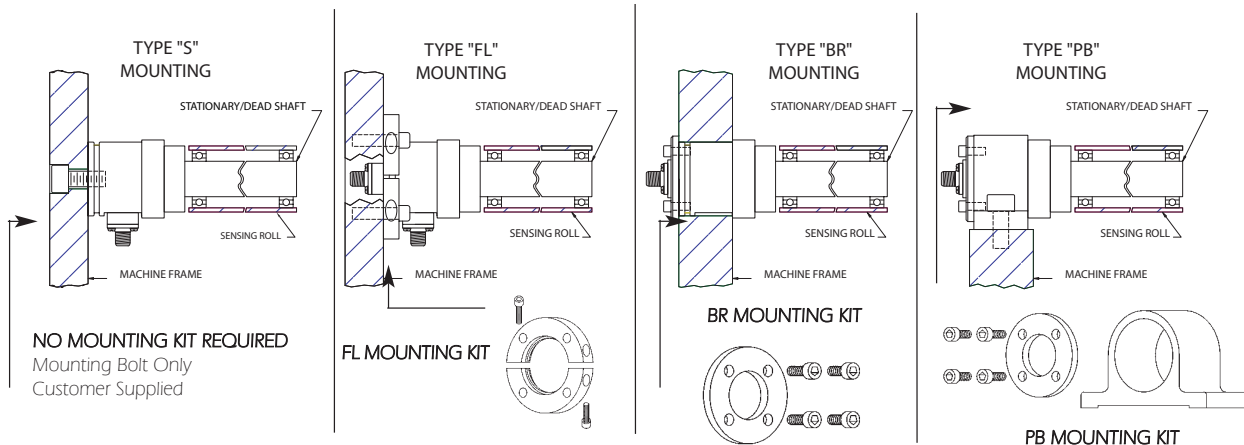
- Ultra Features a 40:1 tension range and noise immunity
- Accommodates almost any customer roller while eliminating the expense of an integrated cantilevered roller
- Provides the flexibility of specifying almost any fixed shaft roller
- Reduces maintenance costs
- Eliminates the need for custom-designed Transducers for non-standard applications
- Cylindrical body design and CMC mounting kits enable it to be oriented to any web path
- Wide range of Maximum Working Force ratings (from 0.1 to 500 lb.)
- Built-in overload stop

Benefits: Advantages Over Conventional Transducers	Features: Why It Can Be Done	Technical Specifics: How CMC Does It
Operates over a wider tension range. Provides up to 40:1 tension range. Competitive products typically provide tension ranges of only 8:1 or 16:1, at the very best.	Provides a higher output signal which results in better signal resolution.	Full Wheatstone Bridge semiconductor strain gage transducer design provides a higher and more stable signal. "Twin beam" design provides high mechanical gain with negligible displacement.
Ability to measure lower (light) tensions.	Substantial and stable output signal even at low tensions.	New amplifier technology eliminates drift, which distorts low-tension measurements.
Does not react to electrical noise from AC motors, servo, relay coils, or other electrical disturbances.	Rejects electrical noise resulting in clean and accurate output signal devoid of distortion.	Four-wire differential ended technology provides common mode rejection of electrical disturbances.
Better at maintaining proper tension measurement regardless of ambient temperature changes.	Minimum deviation of signal output due to temperature changes.	Precise temperature compensation network cancels out temperature influences.



Mounting Configuration

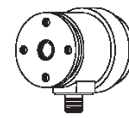
Ultra Series Cantilever Transducers can be mounted either inside the frame, on top or through the frame of the machine depending on the model type purchased. When choosing a mounting configuration, evaluate your options by considering model type, safety, machine frame orientation and ease of assembly.



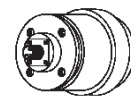
Mounting Type and Connector Capability

When using this type of Mounting Configuration:	The Connector can be located at:	
	End	Side
Flange (FL)	X	X
Stud (S)		X
Pillow Block (PB)	X	
Bearing (BR)	X	

TRANSDUCER CARTRIDGE TYPES



SC (Side Connector)



EC (End Connector)

SPECIFICATIONS

Transducer Weight	1T ALUM	1T STEEL	2T STEEL	
		1.9 lbs. 0.86 kg	2.7lb. 1.23 kg.	3.7lb. 1.68 kg
Weight + Mounting Kit	1T ALUM	1T STEEL	2T STEEL	
	Flange	2.9 lbs. 1.32 kg.	3.7 lbs. 1.68 kg.	5.3 lbs. 2.41 kg.
	Bearing	2.3 lbs. 1.05kg.	3.1 lbs. 1.41kg	4.2 lbs. 1.91 kg.
	Pillow Block	4.8 lbs. 2.18kg.	5.6 lbs. 2.54kg.	7.9 lbs. 3.59 kg.
Material	Strain Sensing beam - heat treated 4140 alloy steel or 2024 T351 Aluminum Body - 1117 Low Carbon steel			
Finish Material	Corrosion resistant Zinc plated with clear Chromate			
Bridge Resistance	Steel Transducer: 135-147 Ohms @ 20° C Aluminum Transducer: 122-134 Ohms @ 20° C			
Gage Type	Semi-conductor strain gage, gage factor equals 95 (nominal)			
Connector Type	M12 Quick-disconnect, 4 conductor, DC keyed			

Excitation Voltage	5.6 VDC or VAC (RMS) maximum (Excess voltage can cause permanent damage)
Nominal Output Signal at Rated MWF	+/- 350 mV per Transducer (with 5 VDC or VAC rms excitation voltage)
Output Impedance	Steel Transducer: Approximately 64 Ohms per Bridge leg Aluminum Transducer: Approximately 60 Ohms per Bridge leg
Non-destructive Overload	150% MWF
Ultimate Overload	300% MWF (type)
Maximum Voltage, Gage to Beam or Base (Ground)	50 Volts peak
Angular Deflection	0.01 inches Max. as measured at the far end of the sensing roll with maximum load present.
Operating Temperature Ranges	0° F to +200° F

SELECTING A CANTILEVERED TRANSDUCER FOR YOUR APPLICATION

Determine the MWF using the following equation: $MWF = 2T \times K \times \sin(A/2) \pm W \times \sin(B)^*$

MWF = Maximum Working Force (lbs.)

A = Wrap Angle (Degrees)

B = Angle of Tension Force from Horizontal (Degrees)

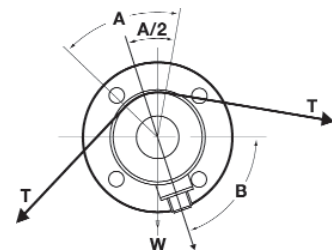
K = Transient Tension Overload Factor (normally between 1.4 and 2.0)

T = Maximum Total Tension (lbs.)

W = Weight of Cantilevered Idler Roller or Sheave (lbs.)

* Use + if Angle B is below horizontal and - if above horizontal.

Contact CMC application engineering to assist you in selecting the appropriate transducer.



INDUSTRIAL PRODUCTS DIVISION

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HOW TO ORDER

EXAMPLE: If you need to purchase a Transducer, Mounting Kit, Split Bushing and Cable corresponding to the following description:	Use The Following Catalog Numbers:
• Maximum Working Force (MWF) of 100lb - Size 2 Body	Ultra Series Transducer = MO-13458-00 (Refer to Table A)
• Side Connector (to allow flange mounting)	
• Flange Mount	Flange Mount Kit = MO-04498 (Refer to Table B)
• Shaft Adapter to Accommodate 1" (outside diameter) shaft	Shaft Adapter = MO-12145-1 (Refer to Table C)
• Eight Meter (26ft.) Cable	Cable = X44-33975-026 (Refer to Table D)

TABLE A - DETERMINING A CATALOG NUMBER FOR THE ULTRA SERIES CANTILEVERED TRANSDUCER

English Cartridge Size	End Connector (CLTEC)	Side Connector (CLTSC)	Order Code Suffix, M.W.F			
			-00	-10	-20	-30
1T ALUM	MO-13453	MO-13454	0.1 lb.	1 lb.	5 lb.	10 lb.
1T STEEL	MO-13455	MO-13456	25 lb.	50 lb.	100 lb.	
2T STEEL	MO-13457	MO-13458	100 lb.	250 lb.	500 lb.	
Metric Cartridge Size	End Connection (CLTECM)	Side Connection (CLTSCM)	Order Code Suffix, Metric M.W.F			
			-00	-10	-20	-30
1T ALUM	MO-13459	MO-13460	0.5 N	5 N	20 N	45 N
1T STEEL	MO-13461	MO-13462	100 N	200 N	450 N	
2T STEEL	MO-13463	MO-13464	450 N	1000 N	2000 N	

TABLE B - DETERMINING A MOUNTING KIT CATALOG NUMBER FOR THE ULTRA SERIES CANTILEVERED TRANSDUCER

Mounting Style	Size			
	1T (inch)	2T (inch)	1T (millimeter)	2T (millimeter)
Bearing (BR)	MO-04495	MO-04500	MO-05175	MO-05174
Flange (FL)	MO-04493	MO-04498	MO-05176	MO-05177
Pillow Block (PB)	MO-04494	MO-04499	MO-05172	MO-05173

TABLE C - DETERMINING A SHAFT ADAPTER CATALOG NUMBER FOR THE ULTRA SERIES CANTILEVERED TRANSDUCER

If Finished Bore Diameter (nominal I.D) equals:	1T Alum use catalog number	1T Steel use catalog number:	2T Steel use catalog number:
1/2 inch	MO-12143-0	MO-12144-0	
5/8 inch	MO-12143-1	MO-12144-1	
3/4 inch	MO-12143-2	MO-12144-2	MO-12145-0
1 inch	MO-12143-3	MO-12144-3	MO-12145-1
1-1/8 inches	MO-12143-4	MO-12144-4	MO-12145-2
1-1/4 inches	MO-12143-5	MO-12144-5	MO-12145-3
17 millimeter	MO-12146-0	MO-12147-0	
20 millimeter	MO-12146-1	MO-12147-1	MO-12148-0
25 millimeter	MO-12146-2	MO-12147-2	MO-12148-1
30 millimeter	MO-12146-3	MO-12147-3	MO-12148-2

Note: For demanding applications (large tensions and wide webs) CMC recommends using a larger roller shafts. Turndown the end to a diameter that fits the available shaft adapters.

TABLE D - DETERMINING A CABLE CATALOG NUMBER FOR THE ULTRA SERIES CARTRIDGE TRANSDUCER

The load cell end of the cordset is provided with a straight or right angle M12 Quick-Connect Sealed 4-pin keyed Connector as specified. The controller/amplifier end of the cordset is provided with flying leads (4 signal and 1 shield drain). The controller/amplifier end of the cable can be cut to length by the customer if the standard lengths provided are not the exact lengths required.

Cable Length	Part Number—Straight Connector	Part Number—Right Angle Connector
26 Feet (8 meters)	X44-33975-026	X44-33976-026
52 Feet (16 meters)	X44-33975-052	X44-33976-052
78 Feet (24 meters)	X44-33975-078	X44-33976-078
105 Feet (32 meters)	X44-33975-105	X44-33976-105
157 Feet (40 meters)	X44-33975-157	X44-33976-157

INDUSTRIAL PRODUCTS DIVISION

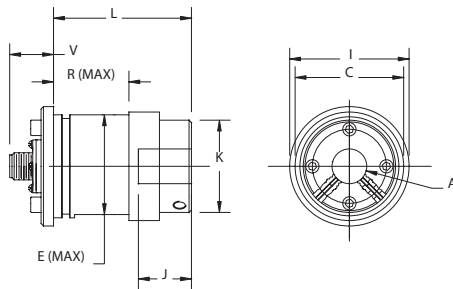
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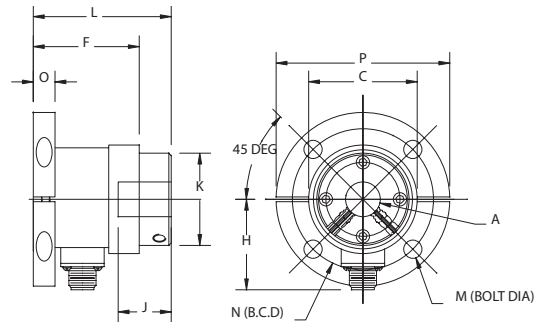
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CANTILEVERED TRANSDUCER CLT

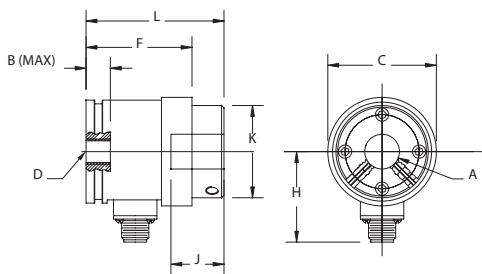
CLEVELAND-KIDDER® Ultra



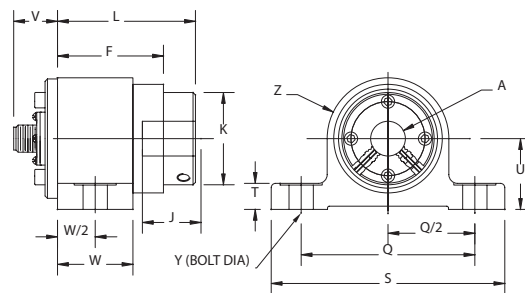
TYPE CLTEC and CLTECM Cartridge with BR Mounting Kit



TYPE CLTSC and CLTSCM Cartridge with FL Mounting Kit



TYPE CLTSC and CLTSCM Cartridge



TYPE CLTEC and CLTECM Cartridge with PB Mounting Kit

Mounting dimensions in Inches: CLTEC and CLTSC

Designator:	1T	2T
A	*Per Adapter	*Per Adapter
B	0.55	0.60
C	2.50	2.75
D	1/2-13	5/8-11
E	2.375	2.625
F	2.44	2.85
G	-	-
H	2.10	2.23
J	2.75	3.00
J	1.10	1.30
K	2.125	2.312
L	3.10	3.665
M	3/8	1/2
N	3.25	3.50
O	0.50	0.62
P	4.00	4.50
Q	4.00	5.00
R	1.74	1.87
S	5.38	6.12
T	0.58	0.68
U	1.63	1.94
V	1.02	1.02
W	1.75	1.88
X	-	-
Y	1/2	1/2

Mounting dimensions in millimeters: CLTECH and CLTESCM

Designator:	1T	2T
A	*Per Adapter	*Per Adapter
B	14.0	15.2
C	63.5	69.9
D	M12-1.75	M16-2
E	60.32	66.67
F	62.0	72.4
G	-	-
H	53.3	56.6
J	69.9	76.2
J	27.9	33.0
K	54.0	58.7
L	78.7	93.1
M	M-10	M-12
N	82.55	88.90
O	12.7	15.7
P	101.6	114.3
Q	101.6	127.0
R	44.2	47.5
S	136.6	155.4
T	14.7	17.3
U	41.3	49.2
V	25.9	25.9
W	44.5	47.7
X	-	-
Y	M-12	M12
Z	38.1	43.2

*Refer to Table C on Previous Page

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