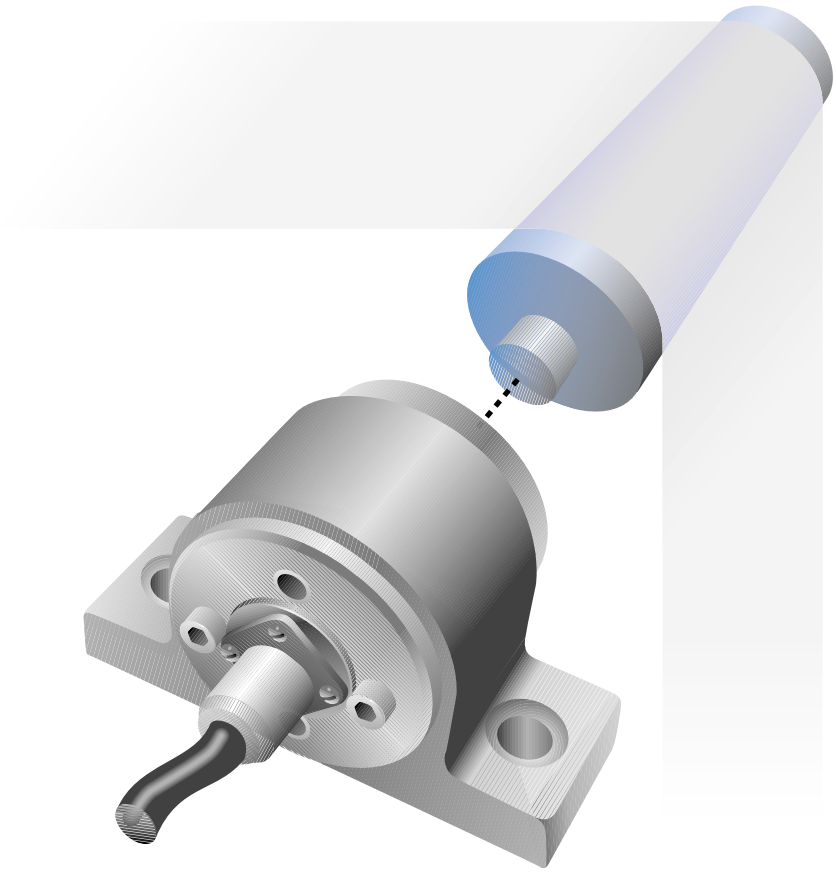
Cleveland-Kidder®

CANTILEVERED TRANSDUCER CLT



Cantilevered Transducer CLT provides a flexible solution for measuring and monitoring precise tension in narrow web processes

- 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.)
- Negligible displacement (typically 0.005 inches)
- Built-in overload stop
- Corrosion-resisting finish and dust seal
- Long-life reliability

Performance Benefits

Cleveland Motion Controls specializes in the design and application of web tension control product solutions. Included are Cleveland-Kidder® Tension Transducers, industry standards for indicating precise tension and control in the processing of paper, film, foil, tape, rubber, linoleum, filament, cable and many other products.

The Cantilevered Transducer CLT offers many of the same performance benefits, while providing 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.

Design Features

The Cantilevered Tension Transducer CLT has a cylindrical shape and is designed to support a standard idler roller. Flexibility of installation is accomplished by adding mounting hardware to a basic module to complete the body type. 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.

In addition, the Cantilevered Transducer CLT is designed so that semiconductor strain gages are bonded to the beam assembly, providing a linear output signal by the force acting on the roll. A built-in overload stop protects the transducer up to 300% of the maximum working force.

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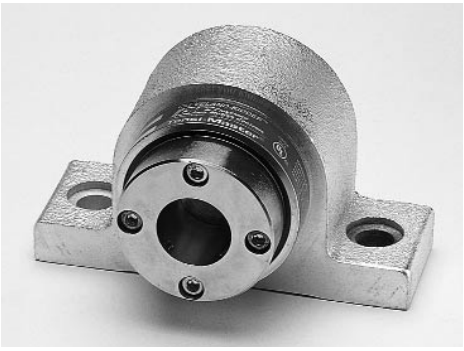
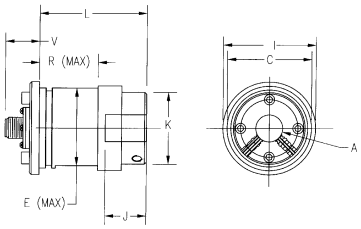
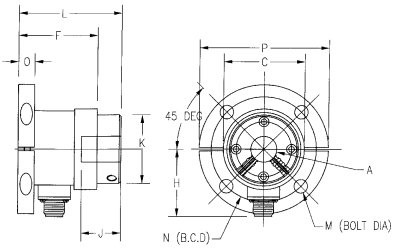


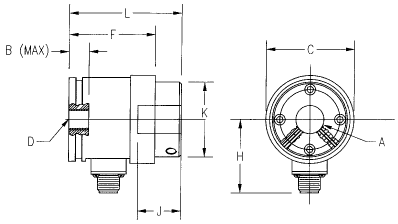
DIMENSIONAL DATA



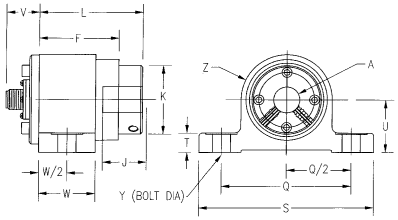
Type CLTEC Cartridge with BR Mounting Kit



Type CLTSC Cartridge with FL Mounting Kit



Type CLTSC Cartridge



Type CLTEC Cartridge with Pillow Block Mounting Kit

Dimensions are in Inches, Allow 2.5 in Clearance for Connector

Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1T		0.55	2.50	1/2	2.375	2.44	-	2.10	2.75	1.10	2.125	3.10	3/8	3.25	0.50	4.00	4.00	1.74	5.38	0.58	1.63	1.02	1.75	-	1/2	1.50
2T		0.60	2.75	5/8	2.625	2.85	-	2.23	3.00	1.30	2.312	3.665	1/2	3.50	0.62	4.50	5.00	1.87	6.12	0.68	1.94	1.02	1.88	-	1/2	1.70

Bore Diameters Available For Shaft Mounting (Refer To Shaft Adapters from the "How To Order" Section)

1T	1/2	3/8	3/4	1	1.125	1.25
2T	3/4	1	1.125	1.25	1.5	-

*For demanding applications (large tensions and web widths) we recommend using a larger roller shaft and machining the end to fit one of the available fixtures.

Weight (lb. Each)			
Description	**Size**		
	1T ALUM	**1T STL**	**2T STL**
Transducer Cartridge	1.7	2.5	3.6
With Type FL Mounting Kit	2.6	3.4	5.2
With Type BR Mounting Kit	2.0	2.8	4.1
With Type PB Mounting Kit	4.4	5.2	7.7

CLT Transducer Specification Data

Gage Resistance	Each transducer contains half a bridge having a nominal resistance of 120 ohms per gage.
Gage Factor	100 nominal
Excitation Voltage	10 VDC or VAC (rms) maximum
Output Signal @ Rated MWF	40 to 450 mV nominal
Operating Temperature Range	0 degrees to 200 degrees F (Consult factory if operating temperature is greater than 150 degrees)
Sensitivity Change with Temperature	Less than 0.02%/degree F of rated output typical
Humidity	95% R.H.
Combined Non-linearity and Hysteresis	±0.5% maximum of rated output
Repeatability	±0.2% maximum of rated output
Non-destructive Overload Rating	150% of maximum working force (MWF)
Ultimate Overload Rating	300% of MWF typical 500% of MWF for ratings ≤ 25lbs.
"MS" Connectors	MS-3102A-10SL-3P (3 Pin Connector)
Input Impedance required: (Transducer Signal Amplifier if not CMC supplied)	5K ohms per transducer
Output Impedance	• 880 ohms (nominal) for MWF ratings ≥ 25 lbs. • 120 ohms (nominal) for MWF ratings ≤ 10 lbs.

INDUSTRIAL PRODUCTS

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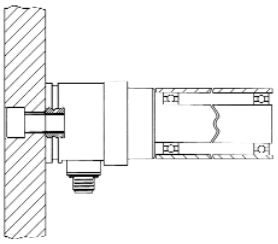
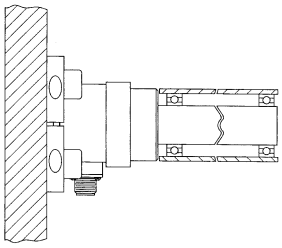
CANTILEVERED TRANSDUCER CLT

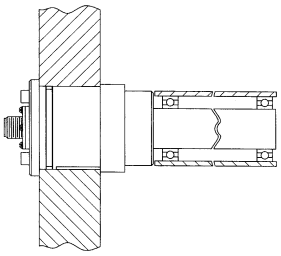
METHODS OF INSTALLATION



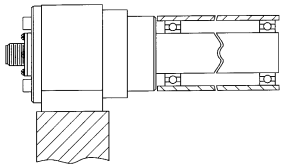
Type "S"
Stud Mounted



Type "FL"
Flange Mounted



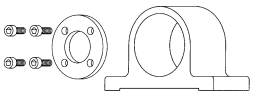
Type "BR"
Bearing Replacement



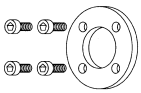
Type "PB"
Pillow Block

CLT CONFIGURATION GUIDE

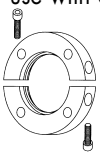
These diagrams illustrate the various configurations provided by the CLT modular design.
Note: Cantilevered Transducers CLT are designed for use with cantilevered rolls only. See operating parameters.



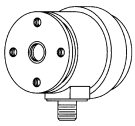
Type PB Mounting Kit
PB Size 1 (MO-04494)
PB Size 2 (MO-04499)



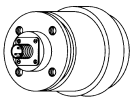
Type BR Mounting Kit
BR Size 1 (MO-04495)
BR Size 2 (MO-04500)



Type FL Mounting Kit
FL Size 1 (MO-04493)
FL Size 2 (MO-04498)



Transducer Cartridge (Side Connector)
CLTSC-1T (ALUM-MO-12131-XY)
CLTSC-1T (STEEL-MO-12133-XY)
CLTSC-2T (STEEL-MO-12135-XY)



Transducer Cartridge (End Connector)
CLTEC-1T (ALUM-MO-12132-XY)
CLTEC-1T (STEEL-MO-12134-XY)
CLTEC-2T (STEEL-MO-12136-XY)

HOW TO ORDER

Cartridges		MWF (lbs.)			
Type	**1T ALUM**	**0.1**	**1**	**5**	**10**
CLTSC	MO-12131-	00	10	20	30
CLTEC	MO-12132-	00	10	20	30
Type	**1T STEEL**	**25**	**50**	**100**	
CLTSC	MO-12133-	00	10	20	
CLTEC	MO-12134-	00	10	20	
Type	**2T STEEL**	**100**	**250**	**500**	
CLTSC	MO-12135-	00	10	20	
CLTEC	MO-12136-	00	10	20	

Shaft Adapters		Finished Bore Size						
Type	**NO.**	**1/2"**	**5/8"**	**3/4"**	**1"**	**1.125"**	**1.25"**	**1.5"**
1T ALUM	MO-12143-	0	1	2	3	4	5	
1T STEEL	MO-12144-	0	1	2	3	4	5	
2T STEEL	MO-12145-			0	1	2	3	4

Mounting Kits

Type	Size 1	Size 2
FL	MO-04493	MO-04498
BR	MO-04495	MO-04500
PB	MO-04494	MO-04499

ORDERING PROCESS:

1. Select the Maximum Working Force (MWF) rating based upon your calculations from the equation on back page.
2. Select the Transducer Cartridge type and size (SC refers to Side Connector, EC refers to End Connector).
3. Select the appropriate Shaft Adapter.
4. Select Kit for Type FL, BR, and PB installation.

EXAMPLE: 100 lb MWF with: end connector, 1.125" shaft adapter and PB mounting kit

ORDER THE FOLLOWING:

Model No.	Part No.	Description
CLTEC-IT Steel	MO-12134-20	Transducer cartridge type
IT Steel Shaft Adapter	MO-12144-4	Shaft adapter
PB Size 1	MO-04494	PB mounting kit

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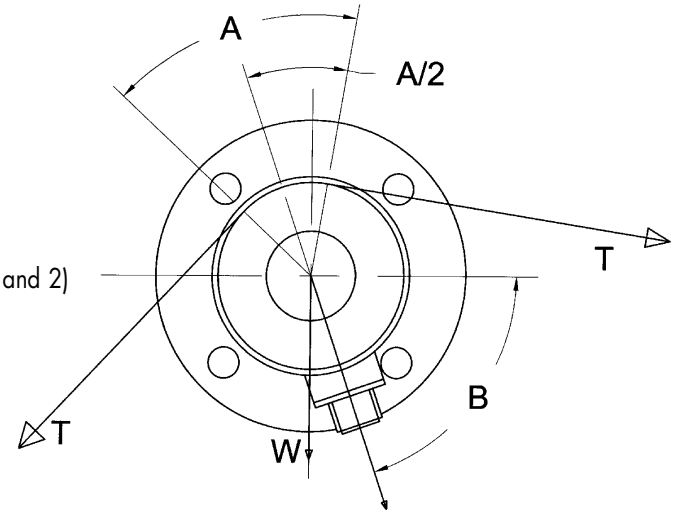
SELECTING A CANTILEVERED TRANSDUCER CLT FOR YOUR APPLICATION:

1. Determine the MWF using the following equation:

   MWF= 2T x K x sin (A/2) ±W x sin (B)*

   MWF = Maximum Working Force (lbs.)
   T= Maximum Total Tension (lbs.)
   K= Transient Tension Overload Factor (normally between 1.4 and 2)
   A= Wrap Angle
   B= Angle of Tension Force
   W= Weight of Cantilevered Roller

   *Use + if Angle B is below horizontal and – if above.
   Do not use W for 0.1 or 1 lb. ratings.



2. Determine the required web width.

3. Contact CMC application engineering to assist you in designing your roller and for selecting the appropriate transducer.

Maximum Roll Width Examples for a given shaft diameter providing 0.01 inches or less of angular deflection:

Transducer MWF (lb.)	Shaft Diameter (in.)	Recommended Maximum Limits		
		Roll Weight (lb.)	Roll Width (in.)*	Critical Speed (RPM)
0.1 (without W)	0.625	1.0	17	1800
1 (without W)	0.625	1.0	17	2000
5	1	5	23	2400
10	1.125	10	20	3500
25	1.25	15	19	3000
50	2	30	18	3200
100	2	40	14	3500
100	2	50	18	5000
250	2	60	11	5000
500	2	100	8	5000

*Using the full load rating of the transducer. Longer roll or smaller deflection can be achieved.

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